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# DEPARTMENT OF SANSKRIT

# CO & PO ATTAINMENT

## 2019 – 2020

**CO – PO ATTAINMENT METHODOLOGY**

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\textit{some of the level weitage of all students of a course}}{\textit{total number of students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\textit{Sum of the weigtages of blooms levels mapped}}{\textit{number of levels mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:
- **Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(3 - \boldsymbol{COWA}) \times \left(1 - \frac{\boldsymbol{COLLI}}{3.5}\right)^2\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

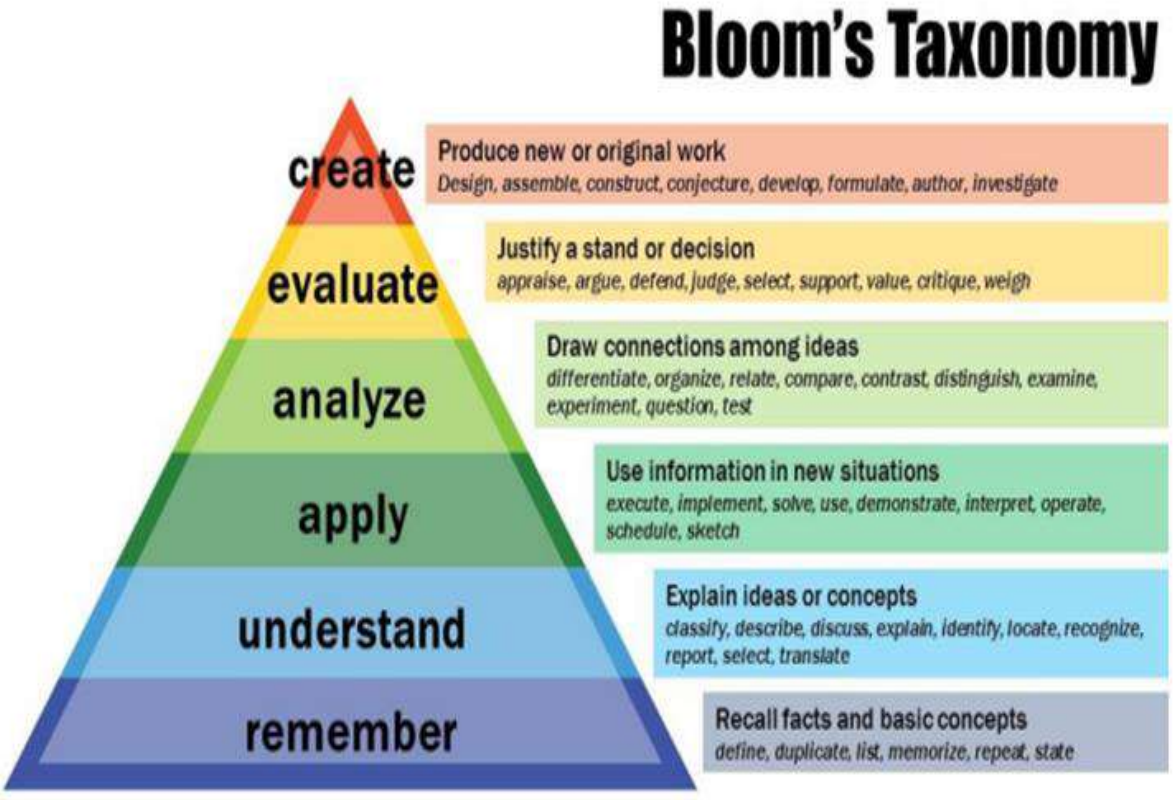
$$\textbf{PO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PSO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

| Levels of Bloom's Taxonomoy | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

## PROGRAMME SPECIFIC OUTCOMES:

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Learn basic concepts, principles, and theories in Sanskrit. |
| PSO2 | Analyzes contemporary issues with background of sanskrit. |
| PSO3 | Acquire employability and research skills in the field of Sanskrit Language Literature. |
| PSO4 | Gain knowledge to understand the society around. |
| PSO5 | Learn soft and life skills for effective communication and personality development. |

## SEMESTER- 1

## PAPER-1: SANSKRIT

**COURSE OUTCOME WEIGHTED AVERAGE: 2.6763**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Sanskrit Literature. | L1(REMEMBER) | 1 | 2.9075 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.6764 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.6764 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.5839 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.5376 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 |
| C02 | 2 | 2 | 1 | 0 | 2 | 0 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 | 2 | 0 | 2 | 1 | 1 |
| CO4 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 8 | 7 | 4 | 4 | 7 | 5 | 7 | 5 | 6 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 3 | 1 | 0 |
| C02 | 3 | 3 | 2 | 1 | 0 |
| CO3 | 3 | 2 | 2 | 1 | 1 |
| CO4 | 3 | 3 | 1 | 1 | 1 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 11 | 10 | 10 | 7 | 4 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 2.9075 | 2.9075 | 0.0000 | 0.0000 | 2.9075 | 0.0000 | 2.9075 | 2.9075 | 5.8151 |
| CO2 | 5.3527 | 5.3527 | 2.6764 | 0.0000 | 5.3527 | 0.0000 | 2.6764 | 2.6764 | 2.6764 |
| CO3 | 2.6764 | 5.3527 | 2.6764 | 2.6764 | 5.3527 | 0.0000 | 5.3527 | 2.6764 | 2.6764 |
| CO4 | 5.1678 | 2.5839 | 2.5839 | 2.5839 | 2.5839 | 7.7516 | 2.5839 | 2.5839 | 2.5839 |
| CO 5 | 5.0753 | 2.5376 | 2.5376 | 5.0753 | 2.5376 | 5.0753 | 5.0753 | 2.5376 | 2.5376 |
| FINAL ATTAINMENT | **2.6475** | **2.6764** | **2.6186** | **2.5839** | **2.6764** | **2.5654** | **2.6565** | **2.6764** | **2.7149** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8151 | 5.8151 | 8.7226 | 2.9075 | 0.0000 |
| CO2 | 8.0291 | 8.0291 | 5.3527 | 2.6764 | 0.0000 |
| CO3 | 8.0291 | 5.3527 | 5.3527 | 2.6764 | 2.6764 |
| CO4 | 7.7516 | 7.7516 | 2.5839 | 2.5839 | 2.5839 |
| CO 5 | 0.0000 | 0.0000 | 5.0753 | 7.6129 | 5.0753 |
| FINAL ATTAINMENT | **2.6932** | **2.6948** | **2.7087** | **2.6367** | **2.5839** |

## SEMESTER- 2

## PAPER-1: SANSKRIT

**COURSE OUTCOME WEIGHTED AVERAGE: 2.6928**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Sanskrit Literature. | L1(REMEMBER) | 1 | 2.9123 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.6929 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.6929 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.6051 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.5613 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 1 | 0 | 3 | 1 | 0 | 0 | 1 |
| C02 | 3 | 3 | 2 | 2 | 3 | 3 | 1 | 1 | 2 |
| CO3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 11 | 11 | 10 | 8 | 11 | 10 | 8 | 5 | 8 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 3 | 2 | 2 |
| C02 | 3 | 2 | 3 | 1 | 3 |
| CO3 | 3 | 2 | 2 | 3 | 3 |
| CO4 | 3 | 3 | 2 | 1 | 3 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 11 | 10 | 12 | 10 | 13 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.8245 | 8.7368 | 2.9123 | 0.0000 | 8.7368 | 2.9123 | 0.0000 | 0.0000 | 2.9123 |
| CO2 | 8.0786 | 8.0786 | 5.3858 | 5.3858 | 8.0786 | 8.0786 | 2.6929 | 2.6929 | 5.3858 |
| CO3 | 5.3858 | 5.3858 | 8.0786 | 5.3858 | 5.3858 | 5.3858 | 8.0786 | 5.3858 | 5.3858 |
| CO4 | 5.2103 | 5.2103 | 7.8154 | 5.2103 | 5.2103 | 5.2103 | 5.2103 | 2.6051 | 5.2103 |
| CO 5 | 5.1225 | 2.5613 | 2.5613 | 5.1225 | 2.5613 | 5.1225 | 5.1225 | 2.5613 | 2.5613 |
| **FINAL ATTAINMENT** | **2.6929** | **2.7248** | **2.6753** | **2.6380** | **2.7248** | **2.6709** | **2.6380** | **2.6490** | **2.6819** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8245 | 8.7368 | 8.7368 | 5.8245 | 5.8245 |
| CO2 | 8.0786 | 5.3858 | 8.0786 | 2.6929 | 8.0786 |
| CO3 | 8.0786 | 5.3858 | 5.3858 | 8.0786 | 8.0786 |
| CO4 | 7.8154 | 7.8154 | 5.2103 | 2.6051 | 7.8154 |
| CO 5 | 0.0000 | 0.0000 | 5.1225 | 7.6838 | 5.1225 |
| **FINAL ATTAINMENT** | **2.7088** | **2.7324** | **2.7112** | **2.6885** | **2.6861** |

## SEMESTER- 3

## PAPER-1: SANSKRIT

**COURSE OUTCOME WEIGHTED AVERAGE: 2.7121**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Sanskrit Literature. | L1(REMEMBER) | 1 | 2.9177 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.7121 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.7121 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.6299 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.5887 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 1 | 2 | 1 | 0 | 1 | 1 | 2 |
| C02 | 1 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 1 |
| CO3 | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 2 |
| CO4 | 2 | 3 | 2 | 0 | 0 | 2 | 1 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 9 | 10 | 8 | 8 | 6 | 6 | 5 | 4 | 7 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 3 | 2 | 2 |
| C02 | 3 | 3 | 3 | 1 | 2 |
| CO3 | 3 | 2 | 2 | 2 | 2 |
| CO4 | 0 | 1 | 2 | 2 | 2 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 8 | 8 | 12 | 10 | 10 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.8355 | 5.8355 | 2.9177 | 5.8355 | 2.9177 | 0.0000 | 2.9177 | 2.9177 | 5.8355 |
| CO2 | 2.7121 | 2.7121 | 2.7121 | 5.4242 | 5.4242 | 0.0000 | 0.0000 | 0.0000 | 2.7121 |
| CO3 | 5.4242 | 8.1363 | 8.1363 | 5.4242 | 5.4242 | 5.4242 | 2.7121 | 2.7121 | 5.4242 |
| CO4 | 5.2597 | 7.8896 | 5.2597 | 0.0000 | 0.0000 | 5.2597 | 2.6299 | 2.6299 | 2.6299 |
| CO 5 | 5.1775 | 2.5887 | 2.5887 | 5.1775 | 2.5887 | 5.1775 | 5.1775 | 2.5887 | 2.5887 |
| **FINAL ATTAINMENT** | **2.7121** | **2.7162** | **2.7018** | **2.7327** | **2.7258** | **2.6436** | **2.6874** | **2.7121** | **2.7415** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8355 | 5.8355 | 8.7532 | 5.8355 | 5.8355 |
| CO2 | 8.1363 | 8.1363 | 8.1363 | 2.7121 | 5.4242 |
| CO3 | 8.1363 | 5.4242 | 5.4242 | 5.4242 | 5.4242 |
| CO4 | 0.0000 | 2.6299 | 5.2597 | 5.2597 | 5.2597 |
| CO 5 | 0.0000 | 0.0000 | 5.1775 | 7.7662 | 5.1775 |
| **FINAL ATTAINMENT** | **2.7635** | **2.7532** | **2.7293** | **2.6998** | **2.7121** |

## SEMESTER- 4

## PAPER-1: SANSKRIT

**COURSE OUTCOME WEIGHTED AVERAGE: 2.8175**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Sanskrit Literature. | L1(REMEMBER) | 1 | 2.9479 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.8175 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.8175 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.7654 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.7393 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 1 | 2 |
| C02 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 3 | 3 | 2 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 10 | 11 | 10 | 11 | 12 | 8 | 8 | 8 | 9 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 2 | 1 | 1 | 2 |
| CO3 | 2 | 2 | 2 | 2 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 2 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 9 | 8 | 9 | 10 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.8957 | 5.8957 | 5.8957 | 8.8436 | 8.8436 | 2.9479 | 2.9479 | 2.9479 | 5.8957 |
| CO2 | 5.6350 | 5.6350 | 5.6350 | 5.6350 | 8.4525 | 5.6350 | 2.8175 | 5.6350 | 5.6350 |
| CO3 | 5.6350 | 8.4525 | 8.4525 | 5.6350 | 5.6350 | 2.8175 | 5.6350 | 5.6350 | 5.6350 |
| CO4 | 5.5307 | 8.2961 | 5.5307 | 5.5307 | 8.2961 | 5.5307 | 5.5307 | 5.5307 | 5.5307 |
| CO 5 | 5.4786 | 2.7393 | 2.7393 | 5.4786 | 2.7393 | 5.4786 | 5.4786 | 2.7393 | 2.7393 |
| **FINAL ATTAINMENT** | **2.8175** | **2.8199** | **2.8253** | **2.8294** | **2.8305** | **2.8012** | **2.8012** | **2.8110** | **2.8262** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8957 | 5.8957 | 5.8957 | 5.8957 | 5.8957 |
| CO2 | 8.4525 | 5.6350 | 2.8175 | 2.8175 | 5.6350 |
| CO3 | 5.6350 | 5.6350 | 5.6350 | 5.6350 | 2.8175 |
| CO4 | 5.5307 | 5.5307 | 5.5307 | 5.5307 | 5.5307 |
| CO 5 | 0.0000 | 0.0000 | 5.4786 | 8.2179 | 5.4786 |
| **FINAL ATTAINMENT** | **2.8349** | **2.8371** | **2.8175** | **2.8097** | **2.8175** |

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# CO & PO ATTAINMENT

## 2019 – 2020

CO – PO ATTAINMENT METHODOLOGY

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\textbf{COLLI} = \frac{\textbf{Sum of the weigtages of blooms levels mapped}}{\textbf{number of levels mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(3 - \boldsymbol{COWA}) \times \left(1 - \frac{\boldsymbol{COLLI}}{3.5}\right)\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PSO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

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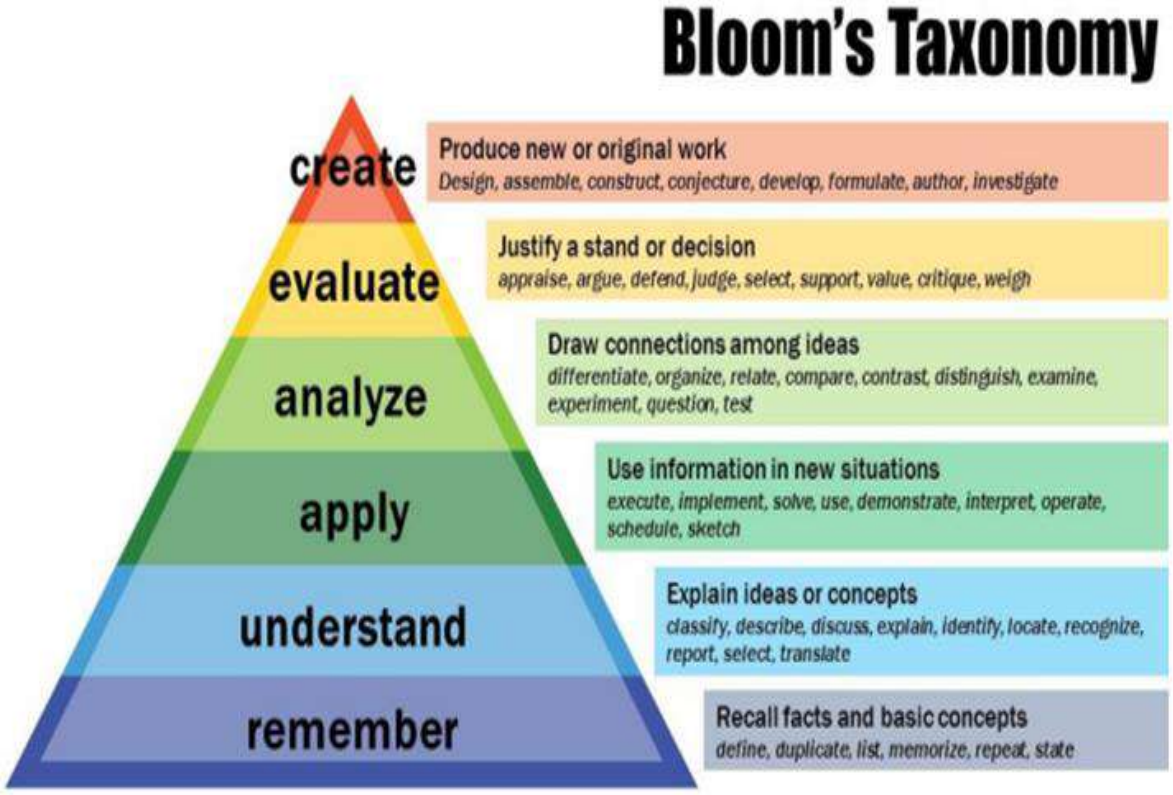
## Levels of Bloom's Taxonomoy

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

# Program Specific Outcomes (PSOs)

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | **PSO 1: Academic Proficiency** – To understand the foundations and principles of evolution, diversity, biomolecules, biochemical processes, genetics, propagation and control of microorganisms which forms the basis for microbiology discipline and its allied subdisciplines. |
| PSO2 | **PSO 2: Technical and Skill Proficiency** – To perform a wide range of microbiological and diagnostic procedures such as handling of microscope, sterilization and disinfection, isolation, cultivation and characterization of microorganisms, blood grouping, chromatography, electrophoresis and immunological assays. |
| PSO3 | **PSO 3: Professional and Research Proficiency** – To carry out data collection, visualization, interpretation, laboratory related numerical calculations, biochemical data interpretation, generate ideas, write scientific reports, present the ideas, apply the theoretical microbiology and interrelated subject knowledge in seeking solutions to societal problems. |
| PSO4 | **PSO 4: Ethical and Social Proficiency** – To gain awareness about ethics in academics and research, scientific misconduct, Intellectual Property Rights (IPR) and plagiarism. To employ the skills acquired in Microbiology for industrial production, clinical research and agriculture for human welfare in the ethical manner. |
| PSO5 | **Career Building –** Toimpart to students the knowledge of microbiology and allied applied life science courses for preparing them to have promising career options in industry, research and academic fields. |

## SEMESTER- 1

### PAPER-1: INTRODUCTORY MICROBIOLOGY AND MICROBIAL DIVERSITY

**COURSE OUTCOME WEIGHTED AVERAGE:** 2.47

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Gain knowledge about the origins of microbiology discipline, relationship between microorganisms and disease, major contributions of important microbiologists to the field of microbiology and different classification system of bacteria. | L2 | 2 | 2.6971 |
| CO2 | Understand the morphological, physiological and biochemical properties of different groups of microorganisms like bacteria, archaea, cyanobacteria and viruses. | L3 | 3 | 2.5457 |
| CO3 | Able to identify a microorganism as bacteria, fungi, algae and protozoa and operate the microscope independently. | L3 | 3 | 2.5457 |
| CO4 | Apply the principles of staining techniques to distinguish different groups of microorganisms and plan a suitable physical and chemical methods of sterilization in creating the aseptic environment. | L2 | 2 | 2.6971 |
| CO5 | Design suitable methods for isolation of microbes from different environments by applying the principles of pure culture and enrichment methods. | L2 L4 | 3 | 2.5457 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | **1** | **0** | 0 | 0 | **3** | **3** | **2** |
| C02 | **2** | **2** | **1** | **0** | **0** | **0** | **3** | **2** | **1** |
| CO3 | **3** | **2** | **1** | **0** | **0** | **0** | **3** | **2** | **1** |
| CO4 | **3** | **2** | **1** | **0** | **0** | **0** | **3** | **2** | **2** |
| CO5 | **3** | **2** | **1** | **0** | **0** | **0** | **3** | **3** | **2** |
| TOTAL | 14 | 10 | 5 | 0 | 0 | 0 | 15 | 12 | 8 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **3** | **3** | **3** | **3** |
| C02 | **3** | **3** | **3** | **3** | **3** |
| CO3 | **3** | **3** | **3** | **3** | **3** |
| CO4 | **3** | **3** | **2** | **3** | **3** |
| CO5 | **3** | **3** | **2** | **3** | **3** |
| TOTAL | 15 | 15 | 13 | 15 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO 1 | 8.0914 | 5.3943 | 2.6971 | 0.0000 | 0.0000 | 0.0000 | 8.0914 | 8.0914 | 5.3943 |
| CO2 | 5.0914 | 5.0914 | 2.5457 | 0.0000 | 0.0000 | 0.0000 | 7.6371 | 5.0914 | 2.5457 |
| CO3 | 7.6371 | 5.0914 | 2.5457 | 0.0000 | 0.0000 | 0.0000 | 7.6371 | 5.0914 | 2.5457 |
| CO4 | 8.0914 | 5.3943 | 2.6971 | 0.0000 | 0.0000 | 0.0000 | 8.0914 | 5.3943 | 5.3943 |
| CO 5 | 7.6371 | 5.0914 | 2.5457 | 0.0000 | 0.0000 | 0.0000 | 7.6371 | 7.6371 | 5.0914 |
| **FINAL ATTAINMENT** | **2.6106** | **2.6063** | **2.6063** | **0** | **#DIV/0!** | **#DIV/0!** | **2.6063** | **2.6088** | **2.6214** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | 3.857143 | 3.857143 | 3.857143 | 3.857143 | 3.857143 |
| CO 1 | 8.0914 | 8.0914 | 8.0914 | 8.0914 | 8.0914 |
| CO2 | 7.6371 | 7.6371 | 7.6371 | 7.6371 | 7.6371 |
| CO3 | 7.6371 | 7.6371 | 7.6371 | 7.6371 | 7.6371 |
| CO4 | 8.0914 | 8.0914 | 5.3943 | 8.0914 | 8.0914 |
| CO 5 | 7.6371 | 7.6371 | 5.0914 | 7.6371 | 7.6371 |
| **FINAL ATTAINMENT** | **2.6063** | **2.6063** | **2.6040** | **2.6063** | **2.6063** |

## SEMESTER – 2

## PAPER- 2 MICROBIAL BIOCHEMISTRY & METABOLISM

# COURSE OUTCOME WEIGHTED AVERAGE: 2.2979

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels) | CO Learning LevelIndex | CO ATTAINMENT |
|---|---|---|---|---|
| CO 1 | Describe different classes of macromolecules such as carbohydrates, lipids, proteins and nucleic acids, classify them and understand their functions. | L3 | 2.5 | 2.4985 |
| CO2 | Understand the principles and instrumentation for colorimetry, spectrophotometry, chromatography, centrifugation and electrophoresis. | L5 | 5 | 1.9970 |
| CO3 | Explain enzyme properties and factors affecting the enzyme activity and role of cofactors in defining the enzymatic activity. | L4 | 4 | 2.1976 |
| CO4 | Illustrate different nutritional groups of microorganisms, growth requirements of microbes, different stages of microbial growth and factors affecting the microbial growth. | L3 L4 | 3.5 | 2.2979 |
| CO5 | Explain different life processes such as aerobic and anaerobic respiration, fermentation, oxygenic and anoxygenic photosynthesis. | L3 L5 | 3.5 | 2.2979 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **2** | **1** | 0 | 0 | 2 | **2** | **2** | **1** |
| C02 | **3** | **2** | **1** | 1 | 1 | 2 | **3** | **2** | **2** |
| CO3 | **3** | **2** | **1** | 2 | 1 | 3 | **2** | **1** | **1** |
| CO4 | **3** | **2** | **1** | 1 | 0 | 1 | **3** | **2** | **1** |
| CO5 | **2** | **1** | **1** | 3 | 0 | 0 | **2** | **2** | **1** |
| TOTAL | 13 | 9 | 5 | 7 | 2 | 8 | 12 | 9 | 6 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **2** | **3** | **2** | **3** |
| C02 | **3** | **3** | **3** | **2** | **3** |
| CO3 | **3** | **3** | **2** | **2** | **3** |
| CO4 | **3** | **3** | **2** | **2** | **3** |
| CO5 | **2** | **2** | **2** | **2** | **2** |
| TOTAL | 14 | 13 | 12 | 10 | 14 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 4.9970 | 4.9970 | 2.4985 | 0.0000 | 0.0000 | 4.9970 | 4.9970 | 4.9970 | 2.4985 |
| C02 | 5.9910 | 3.9940 | 1.9970 | 1.9970 | 1.9970 | 3.9940 | 5.9910 | 3.9940 | 3.9940 |
| CO3 | 6.5928 | 4.3952 | 2.1976 | 4.3952 | 2.1976 | 6.5928 | 4.3952 | 2.1976 | 2.1976 |
| CO4 | 6.8937 | 4.5958 | 2.2979 | 2.2979 | 0.0000 | 2.2979 | 6.8937 | 4.5958 | 2.2979 |
| CO5 | 4.5958 | 2.2979 | 2.2979 | 6.8937 | 0.0000 | 0.0000 | 4.5958 | 4.5958 | 2.2979 |
| **FINAL ATTAINMENT** | **2.2362** | **2.2533** | **2.2578** | **2.2263** | **2.0973** | **2.2352** | **2.2394** | **2.2645** | **2.2143** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.4955 | 4.9970 | 7.4955 | 4.9970 | 7.4955 |
| C02 | 5.9910 | 5.9910 | 5.9910 | 3.9940 | 5.9910 |
| CO3 | 6.5928 | 6.5928 | 4.3952 | 4.3952 | 6.5928 |
| CO4 | 6.8937 | 6.8937 | 4.5958 | 4.5958 | 6.8937 |
| CO5 | 4.5958 | 4.5958 | 4.5958 | 4.5958 | 4.5958 |
| **FINAL ATTAINMENT** | **2.2549** | **2.2362** | **2.2561** | **2.2578** | **2.2549** |

## SEMESTER- 3

## PAPER-3 :MICROBIAL GENETICS AND MOLECULAR BIOLOGY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.5444

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the importance of DNA and RNA in inheritance, DNA organization, replication and extrachromosomal elements. | L2 | 2 | 2.7397 |
| CO2 | Explain mutations, mutation types, different types of mutagens and list out different DNA repair mechanisms. | L2 L3 | 2.5 | 2.6746 |
| CO3 | Compare and contrast concepts such as gene, cistron, muton, recon, enzyme, polypeptide etc. one gene – enzyme vs one gene – one polypeptide hypothesis. | L3 | 3 | 2.6095 |
| CO4 | Illustrate different classes of genes, outline the steps involved in transcription and translation mechanisms and gene regulatory mechanisms. | L6 | 6 | 2.2190 |
| CO5 | Examine the applications of vectors, DNA modifying enzymes, polymerase chain reaction and creating of genomic and cDNA libraries in gene cloning. | L4 | 4 | 2.4793 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **1** | **1** | **0** | 0 | 0 | **3** | **1** | **1** |
| C02 | **3** | **2** | **1** | **0** | **0** | **0** | **3** | **2** | **1** |
| CO3 | **3** | **2** | **1** | **0** | **0** | **0** | **2** | **2** | **1** |
| CO4 | **3** | **2** | **1** | **0** | **0** | **0** | **3** | **2** | **1** |
| CO5 | **3** | **2** | **1** | **0** | **0** | **0** | **3** | **2** | **1** |
| TOTAL | 15 | 9 | 5 | 0 | 0 | 0 | 14 | 9 | 5 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **2** | **2** | **2** | **3** |
| C02 | **3** | **3** | **3** | **2** | **3** |
| CO3 | **3** | **3** | **3** | **2** | **3** |
| CO4 | **3** | **3** | **3** | **2** | **3** |
| CO5 | **3** | **3** | **3** | **3** | **3** |
| TOTAL | 15 | 14 | 14 | 11 | 15 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 8.2190 | 2.7397 | 2.7397 | 0.0000 | 0.0000 | 0.0000 | 8.2190 | 2.7397 | 2.7397 |
| C02 | 8.0237 | 5.3491 | 2.6746 | 0.0000 | 0.0000 | 0.0000 | 8.0237 | 5.3491 | 2.6746 |
| CO3 | 7.8285 | 5.2190 | 2.6095 | 0.0000 | 0.0000 | 0.0000 | 5.2190 | 5.2190 | 2.6095 |
| CO4 | 6.6569 | 4.4379 | 2.2190 | 0.0000 | 0.0000 | 0.0000 | 6.6569 | 4.4379 | 2.2190 |
| CO5 | 7.4379 | 4.9586 | 2.4793 | 0.0000 | 0.0000 | 0.0000 | 7.4379 | 4.9586 | 2.4793 |
| **FINAL ATTAINMENT** | **2.5444** | **2.5227** | **2.5444** | **#DIV/0!** | **0** | **0** | **2.5398** | **2.5227** | **2.5444** |

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.2190 | 5.4793 | 5.4793 | 5.4793 | 8.2190 |
| CO2 | 8.0237 | 8.0237 | 8.0237 | 5.3491 | 8.0237 |
| CO3 | 7.8285 | 7.8285 | 7.8285 | 5.2190 | 7.8285 |
| CO4 | 6.6569 | 6.6569 | 6.6569 | 4.4379 | 6.6569 |
| CO5 | 7.4379 | 7.4379 | 7.4379 | 7.4379 | 7.4379 |
| CO6 | **2.5444** | **2.5305** | **2.5305** | **2.5385** | **2.5444** |
| **FINAL ATTAINMENT** | 8.2190 | 5.4793 | 5.4793 | 5.4793 | 8.2190 |

## SEMESTER- 4

### PAPER-4:IMMUNOLOGY AND MEDICAL MICROBIOLOGY

### COURSE OUTCOME WEIGHTED AVERAGE: 2.7

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO LearningLevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Acquire knowledge about immune system, types of immunity, cells of immune system and role of lymphoid organs in immunity.<br>Determine the blood group of any individual by using a commercial blood typing kit using agglutination principle | L2 | 2 | 2.8286 |
| CO2 | Understand the concepts of antigen, antibody, haptens, and different types of antigen – antibody reactions.<br>Learn procedures for serum separation from blood and quantification of hemoglobin. | L2 | 2 | 2.8286 |
| CO3 | Explain the concepts in clinical microbiology and use procedures such as sample collection, storage, processing and apply culture based, biochemical, molecular tools for disease diagnosis. Undertake the biochemical tests for determination of bacterial identity for clinical or environmental isolates. | L4 | 4 | 2.6571 |
| CO4 | Apply the principles of antimicrobial resistance and use suitable methods to detect the antimicrobial resistance in microorganisms. | L4 | 4 | 2.6571 |

| | | | | |
|---|---|---|---|---|
| CO5 | Describe the epidemiological principles, pathogenesis, symptoms, diagnosis and treatment of various infectious diseases.Test the susceptibility or resistance of a microorganism to an antibiotic by Kirby-Bauer disc diffusion test. | L3 L4 | 3.5 | 2.7000 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **2** | **1** | 3 | 1 | 2 | **2** | **2** | **1** |
| C02 | **3** | **2** | **1** | 1 | 1 | 2 | **3** | **2** | **2** |
| CO3 | **3** | **2** | **1** | 1 | 0 | 2 | **3** | **3** | **2** |
| CO4 | **3** | **2** | **1** | 3 | 1 | 1 | **3** | **2** | **1** |
| CO5 | **3** | **2** | **1** | 2 | 1 | 1 | **3** | **2** | **1** |
| TOTAL | 14 | 10 | 5 | 10 | 4 | 8 | 14 | 11 | 7 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **2** | **3** | **2** | **3** |
| C02 | **3** | **3** | **3** | **2** | **3** |
| CO3 | **3** | **3** | **3** | **2** | **3** |
| CO4 | **3** | **3** | **3** | **2** | **3** |
| CO5 | **3** | **3** | **3** | **2** | **3** |

| | | | | | |
|---|---|---|---|---|---|
| TOTAL | 15 | 14 | 15 | 10 | 15 |

## ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.6571 | 5.6571 | 2.8286 | 8.4857 | 2.8286 | 5.6571 | 5.6571 | 5.6571 | 2.8286 |
| CO2 | 8.4857 | 5.6571 | 2.8286 | 2.8286 | 2.8286 | 5.6571 | 8.4857 | 5.6571 | 5.6571 |
| CO3 | 7.9714 | 5.3143 | 2.6571 | 2.6571 | 0.0000 | 5.3143 | 7.9714 | 7.9714 | 5.3143 |
| CO4 | 7.9714 | 5.3143 | 2.6571 | 7.9714 | 2.6571 | 2.6571 | 7.9714 | 5.3143 | 2.6571 |
| CO5 | 8.1000 | 5.4000 | 2.7000 | 5.4000 | 2.7000 | 2.7000 | 8.1000 | 5.4000 | 2.7000 |
| **FINAL ATTAINMENT** | **2.7276** | **2.7343** | **2.7343** | **2.7343** | **2.7536** | **2.7482** | **2.7276** | **2.7273** | **2.7367** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.4857 | 5.6571 | 8.4857 | 5.6571 | 8.4857 |
| CO2 | 8.4857 | 8.4857 | 8.4857 | 5.6571 | 8.4857 |
| CO3 | 7.9714 | 7.9714 | 7.9714 | 5.3143 | 7.9714 |
| CO4 | 7.9714 | 7.9714 | 7.9714 | 5.3143 | 7.9714 |

| | | | | | |
|---|---|---|---|---|---|
| CO5 | 8.1000 | 8.1000 | 8.1000 | 5.4000 | 8.1000 |
| **FINAL ATTAINMENT** | **2.7343** | **2.7276** | **2.7343** | **2.7343** | **2.7343** |

## SEMESTER- 5

## PAPER-5 :ENVIRONMENTAL & AGRICULTURAL MICROBIOLOGY

## COURSE OUTCOME WEIGHTED AVERAGE: 3

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the dynamics between microorganisms, soil, water, air environments and special adaptations of extremophiles.<br>Become well versed with procedures such as estimation of pH, moisture content, and water holding capacity. | L2 | 2 | 3.0000 |
| CO2 | Gain knowledge on the role of microorganisms in nutrient recycling, methods of determining the water potability and microbial interactions.<br>Perform isolation of microorganisms from soil and water. | L4 | 4 | 3.0000 |
| CO3 | Explain the methods of solid and liquid waste management and different levels of sewage treatment methods.<br>Estimate the water potability by adapting various methods such as presumptive and MPN tests. | L2 L4 | 3 | 3.0000 |
| CO4 | Identify the plant growth promoting and nitrogen fixing microbes and their utility in agriculture and biofertilizers.<br>Undertake the isolation of nitrogen fixing microbes or check the mycorrhizal staining and observation by microscope. | L2 L6 | 4 | 3.0000 |
| CO5 | Categorize various plant diseases based on symptoms and list out methods for controlling plant diseases.<br>Observe the symptoms of plant diseases and | L4 | 4 | 3.0000 |

| | | | | |
|---|---|---|---|---|
| | categorize them as fungal, bacterial and protozoan diseases | | | |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | **1** | **1** | 0 | **3** | **2** | **2** | **2** |
| C02 | **3** | **1** | **1** | **1** | 1 | **3** | **3** | **3** | **2** |
| CO3 | **3** | **2** | **1** | **1** | 1 | **3** | **3** | **3** | **2** |
| CO4 | **3** | **2** | **1** | **1** | 0 | **3** | **3** | **2** | **2** |
| CO5 | **3** | **2** | **1** | **1** | 0 | **3** | **3** | **2** | **2** |
| TOTAL | 15 | 9 | 5 | 5 | 2 | 15 | 14 | 12 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **2** | **3** | **3** | **3** |
| C02 | **3** | **3** | **3** | **3** | **3** |
| CO3 | **3** | **3** | **3** | **3** | **3** |
| CO4 | **3** | **3** | **3** | **3** | **3** |
| CO5 | **3** | **3** | **3** | **3** | **3** |
| TOTAL | 15 | 14 | 15 | 15 | 15 |

## ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 0.0000 | 9.0000 | 6.0000 | 6.0000 | 6.0000 |
| C02 | 9.0000 | 3.0000 | 3.0000 | 3.0000 | 3.0000 | 9.0000 | 9.0000 | 9.0000 | 6.0000 |
| CO3 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 3.0000 | 9.0000 | 9.0000 | 9.0000 | 6.0000 |
| CO4 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 0.0000 | 9.0000 | 9.0000 | 6.0000 | 6.0000 |
| CO5 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 0.0000 | 9.0000 | 9.0000 | 6.0000 | 6.0000 |
| FINAL ATTAINMENT | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 9.0000 | 6.0000 | 9.0000 | 9.0000 | 9.0000 |
| C02 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO3 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO4 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO5 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| FINAL ATTAINMENT | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

## SEMESTER- 5

## PAPER-6 :DIAGNOSTIC MICROBIOLOGY

## COURSE OUTCOME WEIGHTED AVERAGE: 3

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Acquire knowledge about causative agents and the pathogenesis of various bacterial, fungal, viral and protozoan diseases.<br>Acquire skills for collection of clinical samples such as sputum, urine, blood and skin swabs. | L2 | 2 | 3.0000 |
| CO2 | Understand the procedures used for collection and transport of various clinical samples such as sputum, urine, blood, CSF and stool.<br>Be able to analyze and process the clinical samples for isolation of microorganisms on selective or enrichment media. | L2 | 2 | 3.0000 |
| CO3 | Analyze the pathogens from clinical samples by staining and their isolation of selective or enrichment medium.<br>Undertake the antibiotic sensitivity testing by broth dilution, or Kirby-Bauer disk diffusion tests. | L2 L3 | 2.5 | 3.0000 |
| CO4 | Categorize a diagnostic procedure as serological, molecular or biochemical test. List out the symptoms of endemic diseases.<br>Categorize a diagnostic procedure as serological, molecular or biochemical test. List out the symptoms of | L4 | 4 | 3.0000 |

| | | | | |
|---|---|---|---|---|
| | endemic diseases. | | | |
| CO5 | Learn the principles of antibiotic-resistance mechanisms and methods of assessing the resistance or susceptibility of a pathogen to a given antibiotic.<br><br>Learn the principles of cryopreservation and various methods of storage of microbial isolated for long term preservation. | L4 | 4 | 3.0000 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | **1** | 1 | 1 | 2 | **3** | **3** | **1** |
| C02 | **3** | **2** | **1** | 1 | 1 | 2 | **3** | **3** | **1** |
| CO3 | **3** | **2** | **1** | 1 | 2 | 2 | **3** | **3** | **1** |
| CO4 | **3** | **2** | **1** | 2 | 1 | 1 | **3** | **3** | **1** |
| CO5 | **3** | **2** | **1** | 1 | 1 | 2 | **3** | **3** | **1** |
| TOTAL | 15 | 10 | 5 | 6 | 6 | 9 | 15 | 15 | 5 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **3** | **3** | **3** | **3** |
| C02 | **3** | **3** | **3** | **3** | **3** |
| CO3 | **3** | **3** | **3** | **3** | **3** |
| CO4 | **3** | **3** | **3** | **3** | **3** |
| CO5 | **3** | **3** | **3** | **3** | **3** |
| TOTAL | 15 | 15 | 15 | 15 | 15 |

## ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 3.0000 | 6.0000 | 9.0000 | 9.0000 | 3.0000 |
| C02 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 3.0000 | 6.0000 | 9.0000 | 9.0000 | 3.0000 |
| CO3 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 6.0000 | 6.0000 | 9.0000 | 9.0000 | 3.0000 |
| CO4 | 9.0000 | 6.0000 | 3.0000 | 6.0000 | 3.0000 | 3.0000 | 9.0000 | 9.0000 | 3.0000 |
| CO5 | 9.0000 | 6.0000 | 3.0000 | 3.0000 | 3.0000 | 6.0000 | 9.0000 | 9.0000 | 3.0000 |
| FINAL ATTAINMENT | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| C02 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO3 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO4 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO5 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| FINAL ATTAINMENT | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

## SEMESTER- 6

## PAPER-7A :FOOD AND INDUSTRIAL MICROBIOLOGY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.5092

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Gain an understanding of the intrinsic and extrinsic factors that influence microbial growth in food, recognize the microbial spoilage of various food items, and comprehend the concepts of food intoxication (botulism) and foodborne diseases (salmonellosis) along with their detection methods.<br><br>Students will be able to isolate bacteria and fungi responsible for the spoilage of bread, fruits, and vegetables. | L4 | 4 | 2.4391 |
| CO2 | Develop knowledge about the principles of food preservation, including physical and chemical methods, and explore the production processes and benefits of fermented dairy foods (cheese and yogurt). Additionally, understand the potential of microorganisms as food sources, such as single-cell proteins (SCP), edible mushrooms (white button, oyster, and paddy straw), and probiotics.<br><br>Students will learn how to prepare yogurt or dahi using appropriate microbial cultures. | L5 | 5 | 2.2989 |
| CO3 | Familiarize oneself with the microorganisms of industrial importance, including yeasts (*Saccharomyces cerevisiae*), molds (*Aspergillus niger*), bacteria (*E. coli*), and actinomycetes | L4 | 4 | 2.4391 |

| | | | | |
|---|---|---|---|---|
| | (*Streptomyces griseus*). Additionally, gain an outline of the procedures for isolating, screening, and improving industrially significant microorganisms.<br><br>Studentswill gain the skills to determine the microbiological quality of milk samples using the Most Probable Number (MPN) technique. | | | |
| CO4 | Acquire knowledge about different types of fermentation processes (solid state, liquid state, batch, fed-batch, continuous), understand the basic concepts of fermenter design, identify the ingredients of fermentation media, and explore the techniques involved in downstream processing, such as filtration, centrifugation, cell disruption, and solvent extraction.<br><br>Studentswill be able to isolate and identify antagonistic microorganisms using the crowd plate technique. | L4 | 4 | 2.4391 |
| CO5 | Develop an understanding of the microbial production of industrial products, including citric acid, ethanol, amylase, penicillin, glutamic acid, and vitamin B12, focusing on their production processes and applications.<br><br>Studentswill develop the ability to design a fermenter, including identifying different types of fermenters and labelling their parts. | L5 | 5 | 2.2989 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **1** | **1** | 3 | 1 | **2** | **2** | **2** | **1** |
| C02 | **2** | **1** | **1** | 1 | 1 | **2** | **2** | **2** | **1** |
| CO3 | **2** | **1** | **1** | 1 | 2 | **2** | **2** | **2** | **1** |
| CO4 | **2** | **1** | **1** | 3 | 1 | **2** | **2** | **2** | **1** |
| CO5 | **2** | **1** | **1** | 2 | 1 | **2** | **2** | **2** | **1** |
| TOTAL | 10 | 5 | 5 | 10 | 6 | 10 | 10 | 10 | 5 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **2** | **3** | **2** | **2** | **2** |
| C02 | **2** | **3** | **2** | **2** | **2** |
| CO3 | **2** | **3** | **2** | **2** | **2** |
| CO4 | **2** | **3** | **2** | **2** | **2** |
| CO5 | **2** | **3** | **2** | **2** | **2** |
| TOTAL | 15 | 15 | 15 | 15 | 15 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 4.8782 | 2.4391 | 2.4391 | 7.3173 | 2.4391 | 4.8782 | 4.8782 | 4.8782 | 2.4391 |
| C02 | 4.5977 | 2.2989 | 2.2989 | 2.2989 | 2.2989 | 4.5977 | 4.5977 | 4.5977 | 2.2989 |
| CO3 | 4.8782 | 2.4391 | 2.4391 | 2.4391 | 4.8782 | 4.8782 | 4.8782 | 4.8782 | 2.4391 |
| CO4 | 4.8782 | 2.4391 | 2.4391 | 7.3173 | 2.4391 | 4.8782 | 4.8782 | 4.8782 | 2.4391 |
| CO5 | 4.5977 | 2.2989 | 2.2989 | 4.5977 | 2.2989 | 4.5977 | 4.5977 | 4.5977 | 2.2989 |
| FINAL ATTAINMENT | **2.3830** | **2.3830** | **2.3830** | **2.3970** | **2.3923** | **2.3830** | **2.3830** | **2.3830** | **2.3830** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 4.8782 | 7.3173 | 4.8782 | 4.8782 | 4.8782 |
| C02 | 4.5977 | 6.8966 | 4.5977 | 4.5977 | 4.5977 |
| CO3 | 4.8782 | 7.3173 | 4.8782 | 4.8782 | 4.8782 |
| CO4 | 4.8782 | 7.3173 | 4.8782 | 4.8782 | 4.8782 |
| CO5 | 4.5977 | 6.8966 | 4.5977 | 4.5977 | 4.5977 |
| FINAL ATTAINMENT | **1.5887** | **2.3830** | **1.5887** | **1.5887** | **1.5887** |

## SEMESTER- 6

## PAPER-8:8A1 - INDUSTRIAL MICROBIOLOGY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.187

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Students will be able to understand the different types of microorganisms used in industry such as yeasts, molds, bacteria, and actinomycetes. They will also learn about primary and secondary microbial metabolites and the techniques involved in screening and selecting industrially important metabolites from microbes. | L4 | 4 | 2.0709 |
| CO2 | Students will have a clear understanding of fermentation and fermenters. They will learn about the concept and discovery of fermentation, the parts and functions of a fermenter, and the different types of fermenters including batch, continuous, and fed batch. | L4 | 4 | 2.0709 |
| CO3 | Students will be familiar with pharmaceutical and therapeutic enzymes. They will learn about the various enzymes used in industries such as detergents, textiles, and leather. | L5 | 5 | 1.8386 |

| | | | | |
|---|---|---|---|---|
| | Additionally, they will gain knowledge on the production of amylases, therapeutic enzymes, and the role of microorganisms in bioleaching and the textile industry. | | | |
| CO4 | Students will have a good understanding of industrial microorganisms. They will learn about cell growth, microbial growth kinetics, factors affecting growth, basic nutrition, principles of production media, and the chemical composition of media. | L4 | 4 | 2.0709 |
| CO5 | Students will be able to comprehend the basic structure of a bioreactor and the different types of bioreactors. They will also learn about the kinetics and methodology of batch and continuous bioreactors. Additionally, they will gain knowledge on the sterilization of bioreactors using fibrous filters and the concepts of aeration and agitation in shake flasks and tube rollers. | L5L6 | 5.5 | 1.7224 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | 3 | 1 | 1 | **3** | **3** | **3** | **2** |
| C02 | **3** | **2** | 2 | 2 | 1 | **1** | **3** | **3** | **2** |
| CO3 | **3** | **2** | 1 | 1 | 1 | **3** | **3** | **2** | **2** |
| CO4 | **3** | **2** | 1 | 1 | 1 | **3** | **3** | **3** | **2** |
| CO5 | **3** | **2** | 3 | 1 | 2 | **3** | **3** | **2** | **2** |
| TOTAL | 15 | 10 | 10 | 6 | 6 | 13 | 15 | 13 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **3** | **2** | **2** | **3** |
| C02 | **3** | **3** | **2** | **3** | **3** |
| CO3 | **3** | **3** | **2** | **2** | **3** |
| CO4 | **3** | **3** | **2** | **3** | **3** |
| CO5 | **3** | **3** | **2** | **3** | **3** |
| TOTAL | 15 | 15 | 15 | 15 | 15 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 6.2126 | 4.1417 | 6.2126 | 2.0709 | 2.0709 | 6.2126 | 6.2126 | 6.2126 | 4.1417 |
| C02 | 6.2126 | 4.1417 | 4.1417 | 4.1417 | 2.0709 | 2.0709 | 6.2126 | 6.2126 | 4.1417 |
| CO3 | 5.5157 | 3.6771 | 1.8386 | 1.8386 | 1.8386 | 5.5157 | 5.5157 | 3.6771 | 3.6771 |
| CO4 | 6.2126 | 4.1417 | 2.0709 | 2.0709 | 2.0709 | 6.2126 | 6.2126 | 6.2126 | 4.1417 |
| CO5 | 5.1673 | 3.4449 | 5.1673 | 1.7224 | 3.4449 | 5.1673 | 5.1673 | 3.4449 | 3.4449 |
| FINAL ATTAINMENT | **1.9547** | **1.9547** | **1.9431** | **1.9741** | **1.9160** | **1.9368** | **1.9547** | **1.9815** | **1.9547** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 6.2126 | 6.2126 | 4.1417 | 4.1417 | 6.2126 |
| C02 | 6.2126 | 6.2126 | 4.1417 | 6.2126 | 6.2126 |
| CO3 | 5.5157 | 5.5157 | 3.6771 | 3.6771 | 5.5157 |
| CO4 | 6.2126 | 6.2126 | 4.1417 | 6.2126 | 6.2126 |
| CO5 | 5.1673 | 5.1673 | 3.4449 | 5.1673 | 5.1673 |
| FINAL ATTAINMENT | **1.9547** | **1.9547** | **1.3031** | **1.6941** | **1.9547** |

## SEMESTER- 6

## PAPER-8:8A2 - FOOD MICROBIOLOGY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.8941

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the sources of microorganisms causing food spoilage and their detection methods. | L4 | 4 | 2.8790 |
| CO2 | Gain knowledge about the microbiological production of fermented foods and the biochemical activities of microbes in milk. | L4 | 4 | 2.8790 |
| CO3 | Comprehend the processes involved in the microbial production of distilled beverages, vinegar, yogurt, and cheese. | L3 | 3 | 2.9092 |
| CO4 | Familiarize with various methods of food preservation and their application,including aseptic handling, pasteurization, refrigeration, dehydration, and radiation. | L2L3 | 2.5 | 2.9244 |

| | | | | |
|---|---|---|---|---|
| CO5 | Course Outcome: Develop an understanding of probiotics, their common properties, and examples of probiotic microorganisms, as well as the production processes and uses of vitamins B12 and C. | L5 | 5 | 2.8487 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 3 | 1 | 0 | 0 | 2 | 2 | 1 |
| C02 | 1 | 2 | 0 | 2 | 1 | 1 | 2 | 0 | 1 |
| CO3 | 2 | 3 | 1 | 0 | 0 | 1 | 3 | 2 | 1 |
| CO4 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 2 | 1 |
| CO5 | 0 | 2 | 3 | 1 | 0 | 1 | 1 | 2 | 2 |
| TOTAL | 6 | 9 | 8 | 5 | 2 | 6 | 9 | 8 | 6 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | 2 |
| C02 | 2 | 3 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 1 | 2 | 2 |
| CO4 | 1 | 1 | 2 | 2 | 3 |
| CO5 | 2 | 2 | 3 | 3 | 1 |
| TOTAL | 15 | 15 | 15 | 15 | 15 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.7579 | 0.0000 | 8.6369 | 2.8790 | 0.0000 | 0.0000 | 5.7579 | 5.7579 | 2.8790 |
| C02 | 2.8790 | 5.7579 | 0.0000 | 5.7579 | 2.8790 | 2.8790 | 5.7579 | 0.0000 | 2.8790 |
| CO3 | 5.8185 | 8.7277 | 2.9092 | 0.0000 | 0.0000 | 2.9092 | 8.7277 | 5.8185 | 2.9092 |
| CO4 | 2.9244 | 5.8487 | 2.9244 | 2.9244 | 2.9244 | 8.7731 | 2.9244 | 5.8487 | 2.9244 |
| CO5 | 0.0000 | 5.6974 | 8.5461 | 2.8487 | 0.0000 | 2.8487 | 2.8487 | 5.6974 | 5.6974 |
| FINAL ATTAINMENT | **2.8966** | **2.8924** | **2.8771** | **2.8820** | **2.9017** | **2.9017** | **2.8907** | **2.8903** | **2.8815** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 8.6369 | 5.7579 | 2.8790 | 5.7579 | 5.7579 |
| C02 | 5.7579 | 8.6369 | 5.7579 | 5.7579 | 2.8790 |
| CO3 | 2.9092 | 8.7277 | 2.9092 | 5.8185 | 5.8185 |
| CO4 | 2.9244 | 2.9244 | 5.8487 | 5.8487 | 8.7731 |
| CO5 | 5.6974 | 5.6974 | 8.5461 | 8.5461 | 2.8487 |
| FINAL ATTAINMENT | **1.7284** | **2.1163** | **1.7294** | **2.1153** | **1.7385** |

## SEMESTER- 6

## PAPER-8: 8A3 - MANAGEMENT OF HUMAN MICROBIAL DISEASES

## COURSE OUTCOME WEIGHTED AVERAGE: 2.2464

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Students will be able to understand the definition and concept of health, disease, infection, and pathogen. They will also be able to identify different types of human microbial diseases, explain their transmission, and recognize the causative agents and symptoms associated with these diseases. | L4 | 4 | 2.1387 |
| CO2 | Students will gain an understanding of the principles of epidemiology and its significance in public health. They will be able to discuss current epidemics, such as AIDS, nosocomial infections, and acute respiratory syndromes. Furthermore, students will learn about various measures for preventing epidemics, including global health considerations, emerging and re-emerging infectious diseases, as well as the concept of biological warfare and biological weapons. | L4 | 4 | 2.1387 |

| | | | | |
|---|---|---|---|---|
| CO3 | Students will have a comprehensive understanding of several viral diseases, including AIDS, Hepatitis, Influenza, Rabies, Chikungunya, and Polio. They will be able to describe the history, causative agents, pathogenesis, diagnosis, and available drugs and inhibitors for these diseases. This knowledge will enable students to recognize the impact of viral infections on human health. | L6 | 5 | 1.9234 |
| CO4 | Students will have a clear understanding of how bacterial pathogens enter the human host, their mechanisms of pathogenicity, colonization, growth, and virulence. They will be able to identify different types of bacterial pathogens, including their virulence factors such as exotoxins, enterotoxins, endotoxins, and neurotoxins. Additionally, students will gain insights into the avoidance of host defence mechanisms by bacterial pathogens, the damage caused to host cells, and the host factors for infection and innate resistance to infection. | L5L6 | 5.5 | 1.8158 |
| CO5 | Students will be equipped with the knowledge and skills to perform laboratory diagnosis of common infective syndromes and parasitic manifestations. They will understand the methods of transmission and the role of vectors, focusing on the biology of house flies, mosquitoes, and sand flies. Moreover, students will recognize the need and significance of epidemiological | L6 | 6 | 1.7081 |

| | | | | |
|---|---|---|---|---|
| | studies, including epidemiological investigations to identify diseases, the challenges posed by drug resistance and drug sensitivity, and the emergence of antibiotic resistance in bacteria. | | | |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 3 | 1 | 0 | 0 | 2 | 2 | 1 |
| C02 | 1 | 2 | 0 | 2 | 1 | 1 | 2 | 0 | 1 |
| CO3 | 2 | 3 | 1 | 0 | 0 | 1 | 3 | 2 | 1 |
| CO4 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 2 | 1 |
| CO5 | 0 | 2 | 3 | 1 | 0 | 1 | 1 | 2 | 2 |
| TOTAL | 6 | 9 | 8 | 5 | 2 | 6 | 9 | 8 | 6 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | 2 |
| C02 | 2 | 3 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 1 | 2 | 2 |
| CO4 | 1 | 1 | 2 | 2 | 3 |
| CO5 | 2 | 2 | 3 | 3 | 1 |
| TOTAL | 15 | 15 | 15 | 15 | 15 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 4.2775 | 0.0000 | 6.4162 | 2.1387 | 0.0000 | 0.0000 | 4.2775 | 4.2775 | 2.1387 |
| C02 | 2.1387 | 4.2775 | 0.0000 | 4.2775 | 2.1387 | 2.1387 | 4.2775 | 0.0000 | 2.1387 |
| CO3 | 3.8469 | 5.7703 | 1.9234 | 0.0000 | 0.0000 | 1.9234 | 5.7703 | 3.8469 | 1.9234 |
| CO4 | 1.8158 | 3.6315 | 1.8158 | 1.8158 | 1.8158 | 5.4473 | 1.8158 | 3.6315 | 1.8158 |
| CO5 | 0.0000 | 3.4162 | 5.1243 | 1.7081 | 0.0000 | 1.7081 | 1.7081 | 3.4162 | 3.4162 |
| FINAL ATTAINMENT | **2.0131** | **1.8995** | **1.9100** | **1.9880** | **1.9773** | **1.8696** | **1.9832** | **1.8965** | **1.9055** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 6.4162 | 4.2775 | 2.1387 | 4.2775 | 4.2775 |
| C02 | 4.2775 | 6.4162 | 4.2775 | 4.2775 | 2.1387 |
| CO3 | 1.9234 | 5.7703 | 1.9234 | 3.8469 | 3.8469 |
| CO4 | 1.8158 | 1.8158 | 3.6315 | 3.6315 | 5.4473 |
| CO5 | 3.4162 | 3.4162 | 5.1243 | 5.1243 | 1.7081 |
| FINAL ATTAINMENT | **1.1899** | **1.4464** | **1.1397** | **1.4105** | **1.1612** |

# DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

# VISAKHAPATNAM

## DEPARTMENT OF MATHEMATICS

## CO & PO ATTAINMENT

**2019– 2020**

# Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE

(AUTONOMOUS)

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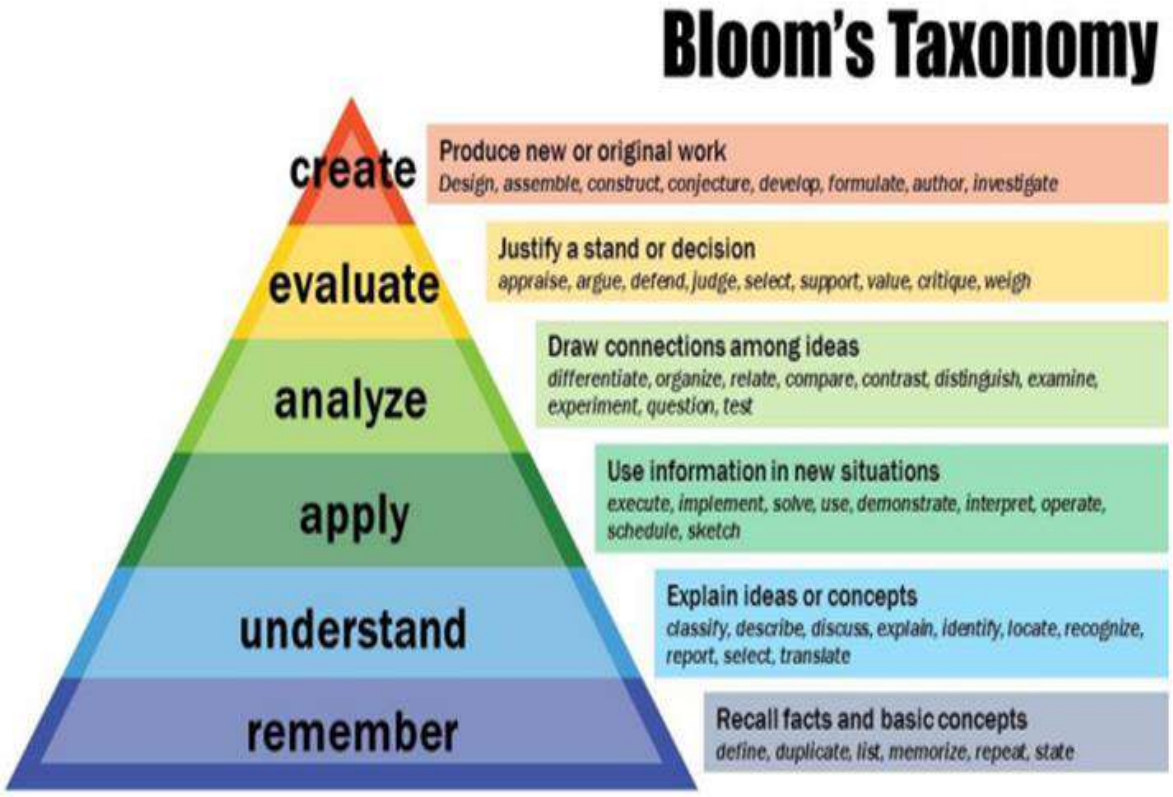
## Levels of Bloom's Taxonomoy

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

# Program Specific Outcomes (PSOs)

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations , terminology. |
| PSO2 | A student should get adequate exposure to global and local concerns that explore them many aspects of mathematical sciences. |
| PSO3 | Student is equipped with mathematical modeling ability, problem solving skills, creative talent and power of communication necessary for various kinds of employment. |
| PSO4 | Student should be able to apply their skills and knowledge that is translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion. |
| PSO5 | Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study. |

**CO – PO ATTAINMENT METHODOLOGY**

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

## SEMESTER- 1

## PAPER-1: Differential Equations

### COURSE OUTCOME WEIGHTED AVERAGE : 2.7689

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Solve first order first degree linear differential equations | Level-4 (Analyze), Level-5 (Evaluation), Level-6 (Create) | 5 | 2.6687 |
| CO2 | Convert a non-exact homogeneous equation to exact differential equation by using an integrating factor | Level-1 (Knowledge/Remember), Level-6 (Create) | 3.5 | 2.7681 |
| CO3 | Know the methods of finding solution of a differential equation of first order but not of first Degree | Level-2 (Understand), Level-3 (Application), Level-6 (Create) | 3.67 | 2.7569 |
| CO4 | Solve higher-order linear differential equations for both homogeneous and non-homogeneous, with constant coefficients | Level-2 (Understand), Level-3 (Application), Level-4 (Analyze), Level-6 (Create) | 3.75 | 2.7516 |

| | | | | |
|---|---|---|---|---|
| CO5 | Understand and apply the appropriate methods for solving higher order differential equations | Level-2 (Understand), Level-4 (Analyze), Level-5 (Evaluation), Level-6 (Create) | 4.25 | 2.7184 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 4 | 3 | 1 | 3 | 3 | 4 | 4 | 3 | 1 |
| C02 | 3 | 1 | 4 | 4 | 2 | 2 | 2 | 1 | 4 |
| CO3 | 1 | 3 | 3 | 2 | 3 | 1 | 2 | 4 | 3 |
| CO4 | 2 | 3 | 3 | 1 | 3 | 1 | 3 | 4 | 3 |
| CO5 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 1 | 3 |
| TOTAL | 11 | 12 | 13 | 12 | 14 | 10 | 13 | 13 | 14 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 4 | 1 |
| C02 | 2 | 3 | 4 | 2 | 3 |
| CO3 | 2 | 4 | 2 | 1 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| CO4 | 4 | 4 | 3 | 4 | 4 |
| CO5 | 1 | 2 | 1 | 4 | 4 |
| TOTAL | 11 | 16 | 12 | 15 | 13 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 10.6749 | 8.0062 | 2.6687 | 8.0062 | 8.0062 | 10.6749 | 10.6749 | 8.0062 | 2.6687 |
| CO2 | 8.3043 | 2.7681 | 11.0725 | 11.0725 | 5.5362 | 5.5362 | 5.5362 | 2.7681 | 11.0725 |
| CO3 | 2.7569 | 8.2706 | 8.2706 | 5.5137 | 8.2706 | 2.7569 | 5.5137 | 11.0274 | 8.2706 |
| CO4 | 5.5031 | 8.2547 | 8.2547 | 2.7516 | 8.2547 | 2.7516 | 8.2547 | 11.0062 | 8.2547 |
| CO 5 | 2.7184 | 5.4369 | 5.4369 | 5.4369 | 8.1553 | 5.4369 | 5.4369 | 2.7184 | 8.1553 |
| FINAL ATTAINMENT | 2.7234 | 2.7280 | 2.7464 | 2.7317 | 2.7302 | 2.7156 | 2.7243 | 2.7328 | 2.7444 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.3375 | 8.0062 | 5.3375 | 10.6749 | 2.6687 |
| CO2 | 5.5362 | 8.3043 | 11.0725 | 5.5362 | 8.3043 |

| | | | | | |
|---|---|---|---|---|---|
| CO3 | 5.5137 | 11.0274 | 5.5137 | 2.7569 | 2.7569 |
| CO4 | 11.0062 | 11.0062 | 8.2547 | 11.0062 | 11.0062 |
| CO 5 | 2.7184 | 5.4369 | 2.7184 | 10.8737 | 10.8737 |
| FINAL ATTAINMENT | 2.7375 | 2.7363 | 2.7414 | 2.7232 | 2.7392 |

## SEMESTER – 2

## PAPER- 2 Three Dimensional Analytical Solid Geometry

## COURSE OUTCOME WEIGHTED AVERAGE : 2.6871

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels) | CO Learning Level Index | CO ATTAINMENT |
|---|---|---|---|---|
| CO 1 | Get the knowledge of planes | Level-1 (Knowledge/Remember), Level-2 (Understand), Level-3 (Application), Level-5 (Evaluation) | 2.75 | 2.7542 |
| CO2 | Basic idea of lines, sphere and cones | Level-1 (Knowledge/Remember), Level-2 (Understand), Level-4 (Analyze), Level-6 (Create) | 3.25 | 2.7095 |
| CO3 | Understand the properties of planes, lines, spheres and cones | Level-5 (Evaluation), Level-6 (Create) | 5.5 | 2.5084 |

| | | | | |
|---|---|---|---|---|
| CO4 | Express the problems geometrically and then to get the solution | Level-2 (Understand), Level-5 (Evaluation), Level-6 (Create) | 4.33 | 2.6130 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 3 |
| C02 | 2 | 1 | 1 | 3 | 1 | 1 | 4 | 2 | 3 |
| CO3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 4 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 4 |
| TOTAL | 9 | 8 | 8 | 9 | 9 | 8 | 13 | 8 | 14 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 4 | 4 | 3 | 4 | 1 |
| C02 | 1 | 2 | 4 | 2 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| CO3 | 2 | 2 | 4 | 4 | 4 |
| CO4 | 2 | 1 | 2 | 2 | 4 |
| TOTAL | 9 | 9 | 13 | 12 | 13 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 8.2626 | 11.0168 | 8.2626 | 8.2626 | 8.2626 | 8.2626 | 11.0168 | 8.2626 | 8.2626 |
| C02 | 5.4190 | 2.7095 | 2.7095 | 8.1285 | 2.7095 | 2.7095 | 10.8380 | 5.4190 | 8.1285 |
| CO3 | 5.0168 | 5.0168 | 5.0168 | 5.0168 | 7.5252 | 5.0168 | 7.5252 | 5.0168 | 10.035 |
| CO4 | 5.2259 | 2.6130 | 5.2259 | 2.6130 | 5.2259 | 5.2259 | 5.2259 | 2.6130 | 10.459 |
| **FINAL ATTAINMENT** | 2.6583 | 2.6695 | 2.6518 | 2.6690 | 2.6359 | 2.6518 | 2.6620 | 2.6639 | 2.6340 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 11.0168 | 11.0168 | 8.2626 | 11.0168 | 2.7542 |
| CO2 | 2.7095 | 5.4190 | 10.8380 | 5.4190 | 10.8380 |
| CO3 | 5.0168 | 5.0168 | 10.0335 | 10.0335 | 10.0335 |
| CO4 | 5.2259 | 2.6130 | 5.2259 | 5.2259 | 10.4519 |
| FINAL ATTAINMENT | 2.6632 | 2.6739 | 2.6431 | 2.6413 | 2.6214 |

## SEMESTER- 3

## PAPER-3: Abstract Algebra

## COURSE OUTCOME WEIGHTED AVERAGE: 2.9131

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Acquire the basic knowledge and structure of groups, subgroups and cyclic groups | Level-4 (Analyze), Level-6 (Create) | 5 | 2.8760 |
| CO2 | Get the significance of the notation of a normal subgroups | Level-4 (Analyze), Level-5 (Evaluation) | 4.5 | 2.8884 |

| | | | | |
|---|---|---|---|---|
| CO3 | Get the behavior of permutations and operations on them | Level-2 (Understand), Level-3 (Application), Level-4 (Analyze) | 3 | 2.9256 |
| CO4 | Study the homomorphisms and isomorphisms with applications | Level-1 (Knowledge/Remember), Level-3 (Application), Level-5 (Evaluation) | 3 | 2.9256 |
| CO5 | Understand the concepts cyclic groups and prove the theorems | Level-4 (Analyze), Level-5 (Evaluation) | 4.5 | 2.8884 |
| CO6 | Understand the concept of regular permutation groups using Cayley theorem | Level-1 (Knowledge/Remember), Level-3 (Application) | 2 | 2.9504 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 3 | 3 | 3 | 2 | 4 | 1 | 2 |
| C02 | 3 | 2 | 1 | 1 | 2 | 1 | 3 | 2 | 4 |
| CO3 | 4 | 2 | 1 | 2 | 4 | 1 | 1 | 1 | 2 |
| CO4 | 2 | 2 | 1 | 4 | 2 | 4 | 2 | 3 | 1 |
| CO5 | 2 | 2 | 4 | 3 | 1 | 4 | 1 | 2 | 4 |
| CO6 | 1 | 4 | 3 | 2 | 3 | 4 | 2 | 1 | 1 |
| TOTAL | 14 | 14 | 13 | 15 | 15 | 16 | 13 | 10 | 14 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 1 | 2 |
| C02 | 4 | 2 | 3 | 2 | 3 |
| CO3 | 4 | 1 | 1 | 1 | 4 |
| CO4 | 1 | 1 | 4 | 1 | 1 |
| CO5 | 1 | 4 | 4 | 1 | 4 |
| CO6 | 1 | 4 | 2 | 1 | 3 |
| TOTAL | 14 | 14 | 17 | 7 | 17 |
| | | | | | |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO 1 | 5.7520 | 5.7520 | 8.6280 | 8.6280 | 8.6280 | 5.7520 | 11.500 | 2.8760 | 5.7520 |
| CO2 | 8.6652 | 5.7768 | 2.8884 | 2.8884 | 5.7768 | 2.8884 | 8.6652 | 5.7768 | 11.5536 |
| CO3 | 11.7024 | 5.8512 | 2.9256 | 5.8512 | 11.704 | 2.9256 | 2.9256 | 2.9256 | 5.8512 |
| CO4 | 5.8512 | 5.8512 | 2.9256 | 11.704 | 5.8512 | 11.704 | 5.8512 | 8.7768 | 2.9256 |
| CO5 | 5.7768 | 5.7768 | 11.5536 | 8.6652 | 2.8884 | 11.556 | 2.8884 | 5.7768 | 11.5536 |
| CO6 | 2.9504 | 11.8016 | 8.8512 | 5.9008 | 8.8512 | 11.806 | 5.9008 | 2.9504 | 2.9504 |
| **FINAL ATTAINMENT** | 2.9070 | 2.9150 | 2.9056 | 2.9091 | 2.9132 | 2.9140 | 2.9027 | 2.9082 | 2.8990 |

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.6280 | 5.7520 | 8.6280 | 2.8760 | 5.7520 |
| CO2 | 11.5536 | 5.7768 | 8.6652 | 5.7768 | 8.6652 |
| CO3 | 11.7024 | 2.9256 | 2.9256 | 2.9256 | 11.7024 |
| CO4 | 2.9256 | 2.9256 | 11.7024 | 2.9256 | 2.9256 |
| CO5 | 2.8884 | 11.5536 | 11.5536 | 2.8884 | 11.5536 |
| CO6 | 2.9504 | 11.8016 | 5.9008 | 2.9504 | 8.8512 |
| FINAL ATTAINMENT | 2.9035 | 2.9097 | 2.9044 | 2.9061 | 2.9088 |

## SEMESTER- 4

## PAPER-4: Real Analysis

## COURSE OUTCOME WEIGHTED AVERAGE: 2.5901

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Get clear idea about the real numbers and real valued functions | Level-1 (Knowledge/Remember), Level-2 (Understand), Level-3 (Application), Level-6 (Create) | 3 | 2.6487 |

| | | | | |
|---|---|---|---|---|
| CO2 | Obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/ series | Level-4 (Analyze), Level-6 (Create) | 5 | 2.4145 |
| CO3 | Test the continuity and differentiability and Riemann integration of a function | Level-1 (Knowledge/Remember), Level-2 (Understand), Level-6 (Create) | 3 | 2.6487 |
| CO4 | Know the geometrical interpretation of mean value theorems | Level-3 (Application), Level-5 (Evaluation) | 4 | 2.5316 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 3 | 1 | 3 | 2 | 1 | 1 | 4 |
| C02 | 2 | 1 | 4 | 3 | 1 | 4 | 4 | 4 | 3 |
| CO3 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 1 |
| CO4 | 4 | 2 | 4 | 1 | 2 | 4 | 4 | 1 | 1 |
| TOTAL | 12 | 8 | 14 | 7 | 8 | 12 | 11 | 9 | 9 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 1 | 4 | 1 | 3 |
| C02 | 1 | 1 | 4 | 2 | 1 |
| CO3 | 3 | 2 | 3 | 3 | 3 |
| CO4 | 3 | 4 | 3 | 1 | 1 |
| TOTAL | 10 | 8 | 14 | 7 | 8 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.2974 | 5.2974 | 7.9462 | 2.6487 | 7.9462 | 5.2974 | 2.6487 | 2.6487 | 10.5949 |
| CO2 | 4.8291 | 2.4145 | 9.6581 | 7.2436 | 2.4145 | 9.6581 | 9.6581 | 9.6581 | 7.2436 |
| CO3 | 10.5949 | 7.9462 | 7.9462 | 5.2974 | 5.2974 | 5.2974 | 5.2974 | 7.9462 | 2.6487 |
| CO4 | 10.1265 | 5.0633 | 10.1265 | 2.5316 | 5.0633 | 10.1265 | 10.1265 | 2.5316 | 2.5316 |
| **FINAL ATTAINMENT** | 2.5707 | 2.5902 | 2.5484 | 2.5316 | 2.5902 | 2.5316 | 2.5210 | 2.5316 | 2.5576 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.9462 | 2.6487 | 10.5949 | 2.6487 | 7.9462 |
| CO2 | 2.4145 | 2.4145 | 9.6581 | 4.8291 | 2.4145 |
| CO3 | 7.9462 | 5.2974 | 7.9462 | 7.9462 | 7.9462 |
| CO4 | 7.5949 | 10.1265 | 7.5949 | 2.5316 | 2.5316 |
| **FINAL ATTAINMENT** | 2.5902 | 2.5609 | 2.5567 | 2.5651 | 2.6048 |

## SEMESTER- 5

## PAPER-5: Linear Algebra

## COURSE OUTCOME WEIGHTED AVERAGE: 2.8456

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| CO 1 | Understand the concepts of vector spaces, subspaces, basises, dimension and their properties | Level-4 (Analyze), Level-5 (Evaluation) | 4.5 | 2.8014 |
| CO2 | Understand the concepts of linear transformations and their properties | Level-2 (Understand), Level-3 (Application), Level-4 (Analyze), Level-5 (Evaluation) | 3.5 | 2.8456 |
| CO3 | Apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods | Level-3 (Application), Level-6 (Create) | 4.5 | 2.8014 |
| CO4 | Learn the properties of inner product spaces and determine orthogonality in inner product spaces | Level-1 (Knowledge/Remember), Level-5 (Evaluation), Level-6 (Create) | 4 | 2.8235 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 4 | 4 | 3 | 4 | 4 | 1 | 1 | 3 |
| C02 | 1 | 3 | 2 | 3 | 1 | 4 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 4 | 1 | 2 | 1 | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO4 | 4 | 3 | 1 | 2 | 1 | 2 | 1 | 3 | 1 |
| TOTAL | 10 | 11 | 8 | 9 | 10 | 11 | 5 | 6 | 8 |

| CO- PSO MAPPING | | | | | |
|---|---|---|---|---|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 2 | 4 | 3 |
| C02 | 4 | 2 | 4 | 3 | 3 |
| CO3 | 3 | 2 | 4 | 3 | 4 |
| CO4 | 3 | 3 | 1 | 2 | 4 |
| TOTAL | 13 | 10 | 11 | 12 | 14 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.6029 | 11.2058 | 11.2058 | 8.4043 | 11.2058 | 11.2058 | 2.8014 | 2.8014 | 8.4043 |
| C02 | 2.8456 | 8.5367 | 5.6911 | 8.5367 | 2.8456 | 11.3823 | 2.8456 | 2.8456 | 8.5367 |
| CO3 | 8.4043 | 2.8014 | 2.8014 | 2.8014 | 11.2058 | 2.8014 | 5.6029 | 2.8014 | 2.8014 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO4 | 11.2940 | 8.4705 | 2.8235 | 5.6470 | 2.8235 | 5.6470 | 2.8235 | 8.4705 | 2.8235 |
| FINAL ATTAINMENT | 2.8147 | 2.8195 | 2.8152 | 2.8211 | 2.8081 | 2.8215 | 2.8147 | 2.8198 | 2.8208 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.4043 | 8.4043 | 5.6029 | 11.2058 | 8.4043 |
| C02 | 11.3823 | 5.6911 | 11.3823 | 8.5367 | 8.5367 |
| CO3 | 8.4043 | 5.6029 | 11.2058 | 8.4043 | 11.2058 |
| CO4 | 8.4705 | 8.4705 | 2.8235 | 5.6470 | 11.2940 |
| FINAL ATTAINMENT | 2.8201 | 2.8169 | 2.8195 | 2.8162 | 2.8172 |

## SEMESTER- 5

### PAPER-6 : Ring Theory and Vector Calculus

### COURSE OUTCOME WEIGHTED AVERAGE : 2.6224

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| CO 1 | Acquire the basic knowledge and structure of groups, subgroups, cyclic groups, and the significance of the notation of a normal subgroups | Level-2 (Understand), Level-3 (Application) | 2.5 | 2.7303 |
| CO2 | Study the homomorphisms and isomorphisms with applications | Level-4 (Analyze), Level-6 (Create) | 5 | 2.4606 |
| CO3 | Understand the concept of regular permutation groups using Cayley theorem | Level-2 (Understand), Level-3 (Application), Level-4 (Analyze), Level-5 (Evaluation) | 3.5 | 2.6224 |
| CO4 | Determine the gradient, divergence and curl of a vector and vector identities | Level-1 (Knowledge/Remember), Level-5 (Evaluation), Level-6 (Create) | 4 | 2.5685 |
| CO5 | Understand relation between surface and volume integrals (Gauss divergence theorem), relation between line integral and volume integral (Green's theorem), relation between line and surface integral (Stokes theorem) | Level-2 (Understand), Level-3 (Application), Level-5 (Evaluation), Level-6 (Create) | 4 | 2.5685 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 4 | 1 | 4 | 3 | 1 | 2 | 1 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| C02 | 1 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 4 |
| CO3 | 1 | 1 | 1 | 4 | 2 | 3 | 4 | 4 | 2 |

**PROGRAM OUTCOMES ATTAINMENT**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO4 | 1 | 3 | 3 | 1 | 3 | 3 | 2 | 1 | 4 |
| CO5 | 1 | 1 | 1 | 2 | 3 | 2 | 1 | 4 | 3 |
| TOTAL | 6 | 11 | 13 | 12 | 16 | 14 | 11 | 14 | 14 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 1 | 1 | 2 | 3 | 3 |
| C02 | 2 | 4 | 4 | 4 | 1 |
| CO3 | 4 | 2 | 4 | 3 | 2 |
| CO4 | 4 | 2 | 4 | 4 | 3 |
| CO5 | 4 | 1 | 3 | 3 | 4 |
| TOTAL | 15 | 10 | 17 | 17 | 13 |

## ATTAINMENT OF POs

## ATTAINMENT OF PSOs

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.4606 | 8.1909 | 10.9212 | 2.7303 | 10.9212 | 8.1909 | 2.7303 | 5.4606 | 2.7303 |
| C02 | 2.4606 | 7.3818 | 9.8424 | 9.8424 | 9.8424 | 7.3818 | 7.3818 | 7.3818 | 9.8424 |
| CO3 | 2.6224 | 2.6224 | 2.6224 | 10.4897 | 5.2448 | 7.8673 | 10.4897 | 10.4897 | 5.2448 |
| CO4 | 2.5685 | 7.7054 | 7.7054 | 2.5685 | 7.7054 | 7.7054 | 5.1370 | 2.5685 | 10.2739 |
| CO5 | 2.5685 | 2.5685 | 2.5685 | 5.1370 | 7.7054 | 5.1370 | 2.5685 | 10.2739 | 7.7054 |
| FINAL ATTAINMENT | 2.6134 | 2.5881 | 2.5892 | 2.5640 | 2.5887 | 2.5916 | 2.5734 | 2.5839 | 2.5569 |

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2.7303 | 2.7303 | 5.4606 | 8.1909 | 8.1909 |
| C02 | 4.9212 | 9.8424 | 9.8424 | 9.8424 | 2.4606 |
| CO3 | 10.4897 | 5.2448 | 10.4897 | 7.8673 | 5.2448 |
| CO4 | 10.2739 | 5.1370 | 10.2739 | 10.2739 | 7.7054 |
| CO5 | 10.2739 | 2.5685 | 7.7054 | 7.7054 | 10.2739 |
| FINAL ATTAINMENT | 2.5793 | 2.5523 | 2.5748 | 2.5812 | 2.6058 |

## SEMESTER- 6

## PAPER-7 : Numerical Analysis

## COURSE OUTCOME WEIGHTED AVERAGE: 2.8990

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy | CO Learning Level | CO Attainment |
|---|---|---|---|

| | | Learning Levels | Index | |
|---|---|---|---|---|
| CO 1 | Analyze and quantify errors in numerical computations to ensure accuracy and reliability in mathematical solutions | Level-2 (Understand), Level-3 (Application), Level-5 (Evaluation), Level-6 (Create) | 4 | 2.8848 |
| CO2 | Solve algebraic and transcendental equations using various numerical methods such as bisection, iteration, and Newton-Raphson methods | Level-2 (Understand), Level-3 (Application), Level-6 (Create) | 3.67 | 2.8943 |
| CO3 | Apply interpolation techniques and finite differences to approximate functions and detect errors in polynomial interpolation | Level-2 (Understand), Level-3 (Application) | 2.5 | 2.9280 |
| CO4 | Utilize Newton's and central difference interpolation formulae, including Gauss's, Stirling's, Bessel's, and Everett's formulas for precise data interpolation | Level-2 (Understand), Level-4 (Analyze), Level-5 (Evaluation), Level-6 (Create) | 4.25 | 2.8776 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 4 | 2 | 3 | 3 | 3 | 1 | 2 |
| C02 | 3 | 4 | 3 | 4 | 2 | 2 | 3 | 1 | 1 |
| CO3 | 3 | 3 | 1 | 3 | 4 | 2 | 1 | 4 | 1 |
| CO4 | 1 | 4 | 1 | 4 | 1 | 3 | 3 | 4 | 3 |
| TOTAL | 10 | 13 | 9 | 13 | 10 | 10 | 10 | 10 | 7 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 4 | 4 | 4 | 1 |
| C02 | 2 | 4 | 2 | 4 | 2 |
| CO3 | 3 | 4 | 3 | 1 | 1 |
| CO4 | 2 | 2 | 4 | 2 | 1 |
| TOTAL | 10 | 14 | 13 | 11 | 5 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 8.6545 | 5.7697 | 11.5393 | 5.7697 | 8.6545 | 8.6545 | 8.6545 | 2.8848 | 5.7697 |
| C02 | 8.6830 | 11.5773 | 8.6830 | 11.5773 | 5.7887 | 5.7887 | 8.6830 | 2.8943 | 2.8943 |
| CO3 | 8.7841 | 8.7841 | 2.9280 | 8.7841 | 11.7121 | 5.8560 | 2.9280 | 11.7121 | 2.9280 |
| CO4 | 2.8776 | 11.5105 | 2.8776 | 11.5105 | 2.8776 | 8.6329 | 8.6329 | 11.5105 | 8.6329 |
| FINAL ATTAINMENT | 2.8999 | 2.8955 | 2.8920 | 2.8955 | 2.9033 | 2.8932 | 2.8898 | 2.9002 | 2.8893 |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 8.6545 | 5.7697 | 11.5393 | 5.7697 | 8.6545 |
| C02 | 8.6830 | 11.5773 | 8.6830 | 11.5773 | 5.7887 |
| CO3 | 8.7841 | 8.7841 | 2.9280 | 8.7841 | 11.7121 |
| CO4 | 2.8776 | 11.5105 | 2.8776 | 11.5105 | 2.8776 |
| FINAL ATTAINMENT | 2.8999 | 2.8955 | 2.8920 | 2.8955 | 2.9033 |

**SEMESTER- 6**

**PAPER-8: Advanced Numerical Analysis**

## COURSE OUTCOME WEIGHTED AVERAGE: 2.7891

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Apply least-squares procedures for curve fitting, including linear and nonlinear models, and curve fitting by sums of exponentials | Level-4 (Analyze), Level-5 (Evaluation), Level-6 (Create) | 5 | 2.6987 |
| CO2 | Utilize various numerical differentiation techniques, including Newton's forward, backward, and central difference formulas, to find derivatives and extremum points of tabulated functions | Level-1 (Knowledge/Remember), Level-3 (Application), Level-4 (Analyze), Level-5 (Evaluation) | 3.25 | 2.8042 |
| CO3 | Implement numerical integration methods such as the trapezoidal rule, Simpson's rules, Weddle's rule, and the Euler-Maclaurin formula to approximate definite integrals | Level-4 (Analyze), Level-5 (Evaluation) | 4.5 | 2.7288 |
| CO4 | Solve linear systems of equations using direct methods like Gaussian elimination, Gauss-Jordan, and iterative methods such as Jacobi and Gauss-Seidel | Level-2 (Understand), Level-5 (Evaluation), Level-6 (Create) | 4.33 | 2.7391 |
| CO5 | Employ numerical methods for solving ordinary differential equations, including Taylor's series, Picard's method, Euler's methods, and Runge-Kutta methods | Level-2 (Understand), Level-5 (Evaluation), Level-6 (Create) | 4.33 | 2.7391 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 2 | 3 | 2 | 4 | 1 | 1 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| C02 | 3 | 2 | 4 | 4 | 1 | 1 | 3 | 1 | 2 |
| CO3 | 4 | 2 | 4 | 4 | 4 | 4 | 4 | 2 | 4 |
| CO4 | 2 | 3 | 4 | 4 | 2 | 1 | 3 | 3 | 1 |
| CO5 | 1 | 3 | 2 | 1 | 2 | 1 | 3 | 2 | 4 |
| TOTAL | 12 | 12 | 16 | 16 | 11 | 11 | 14 | 9 | 13 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 1 | 3 |
| C02 | 4 | 1 | 1 | 2 | 3 |
| CO3 | 4 | 3 | 2 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 | 1 |
| CO5 | 3 | 4 | 3 | 3 | 1 |
| TOTAL | 16 | 12 | 9 | 8 | 9 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.3974 | 5.3974 | 5.3974 | 8.0962 | 5.3974 | 10.7949 | 2.6987 | 2.6987 | 5.3974 |
| CO2 | 8.4125 | 5.6083 | 11.2167 | 11.2167 | 2.8042 | 2.8042 | 8.4125 | 2.8042 | 5.6083 |
| CO3 | 10.9154 | 5.4577 | 10.9154 | 10.9154 | 10.9154 | 10.9154 | 10.9154 | 5.4577 | 10.9154 |
| CO4 | 5.4782 | 8.2173 | 10.9564 | 10.9564 | 5.4782 | 2.7391 | 8.2173 | 8.2173 | 2.7391 |
| CO5 | 2.7391 | 8.2173 | 5.4782 | 2.7391 | 5.4782 | 2.7391 | 8.2173 | 5.4782 | 10.9564 |
| FINAL ATTAINMENT | 2.7452 | 2.7415 | 2.7478 | 2.7452 | 2.7339 | 2.7266 | 2.7472 | 2.7396 | 2.7397 |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 5.3974 | 8.0962 | 5.3974 | 2.6987 | 8.0962 |
| C02 | 11.2167 | 2.8042 | 2.8042 | 5.6083 | 8.4125 |
| CO3 | 10.9154 | 8.1865 | 5.4577 | 2.7288 | 2.7288 |
| CO4 | 8.2173 | 2.7391 | 2.7391 | 2.7391 | 2.7391 |
| CO5 | 8.2173 | 10.9564 | 8.2173 | 8.2173 | 2.7391 |
| FINAL ATTAINMENT | 2.7478 | 2.7319 | 2.7351 | 2.7490 | 2.7462 |

## SEMESTER- 6

## PAPER-9: Graph Theory

## COURSE OUTCOME WEIGHTED AVERAGE: 2.6601

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the fundamental concepts of graphs, including simple graphs, graph isomorphism, and various types of matrices and subgraphs | Level-2 (Understand), Level-3 (Application) | 2.5 | 2.7572 |
| CO2 | Apply graph theory to solve practical problems like the shortest path problem and understand the properties and applications of trees | Level-1 (Knowledge/Remember), Level-3 (Application), Level-4 (Analyze), Level-5 (Evaluation) | 3.25 | 2.6844 |
| CO3 | Utilize trees in solving problems such as the connector problem and understand concepts of connectivity, blocks, and network reliability | Level-1 (Knowledge/Remember), Level-3 (Application), Level-5 (Evaluation), Level-6 (Create) | 3.75 | 2.6358 |
| CO4 | Analyze Euler tours, Hamilton cycles, and their properties in various graphs, including the dodecahedron and Petersen graphs | Level-2 (Understand), Level-4 (Analyze) | 3 | 2.7087 |
| CO5 | Implement algorithms and solve real-world problems involving Eulerian graphs, such as the Chinese postman problem and the travelling salesman problem | Level-2 (Understand), Level-3 (Application) | 2.5 | 2.7572 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 2 | 4 | 4 | 2 | 2 | 4 | 4 |
| C02 | 1 | 2 | 2 | 2 | 3 | 1 | 4 | 4 | 2 |
| CO3 | 2 | 3 | 4 | 3 | 3 | 1 | 4 | 1 | 4 |
| CO4 | 4 | 2 | 2 | 3 | 4 | 3 | 4 | 2 | 2 |
| CO5 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 1 |
| TOTAL | 12 | 12 | 13 | 14 | 16 | 10 | 16 | 14 | 13 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 4 | 3 | 4 | 3 | 3 |
| C02 | 1 | 3 | 2 | 4 | 1 |
| CO3 | 1 | 2 | 1 | 3 | 4 |
| CO4 | 4 | 2 | 4 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 4 | 2 |
| TOTAL | 13 | 11 | 12 | 15 | 13 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.5144 | 5.5144 | 5.5144 | 11.0289 | 11.0289 | 5.5144 | 5.5144 | 11.0289 | 11.0289 |
| C02 | 2.6844 | 5.3688 | 5.3688 | 5.3688 | 8.0532 | 2.6844 | 10.7376 | 10.7376 | 5.3688 |
| CO3 | 5.2717 | 7.9075 | 10.5433 | 7.9075 | 7.9075 | 2.6358 | 10.5433 | 2.6358 | 10.5433 |
| CO4 | 10.8347 | 5.4173 | 5.4173 | 8.1260 | 10.8347 | 8.1260 | 10.8347 | 5.4173 | 5.4173 |
| CO5 | 8.2717 | 8.2717 | 8.2717 | 5.5144 | 5.5144 | 8.2717 | 5.5144 | 8.2717 | 2.7572 |
| FINAL ATTAINMENT | 2.7147 | 2.7066 | 2.7012 | 2.7104 | 2.7087 | 2.7232 | 2.6965 | 2.7208 | 2.7012 |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 11.0289 | 8.2717 | 11.0289 | 8.2717 | 8.2717 |
| C02 | 2.6844 | 8.0532 | 5.3688 | 10.7376 | 2.6844 |
| CO3 | 2.6358 | 5.2717 | 2.6358 | 7.9075 | 10.5433 |
| CO4 | 10.8347 | 5.4173 | 10.8347 | 2.7087 | 8.1260 |
| CO5 | 8.2717 | 2.7572 | 2.7572 | 11.0289 | 5.5144 |
| FINAL ATTAINMENT | 2.7273 | 2.7065 | 2.7188 | 2.7103 | 2.7031 |

PRINCIPAL
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VISAKHAPATNAM

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## DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

## VISAKHAPATNAM

## DEPARTMENT OF TELUGU

## CO & PO ATTAINMENT

DR. V. S. KRISHNA GOVT. DEGREE & P.G COLLEGE

**(AUTONOMOUS)**

# DEPARTMENT OF TELUGU

# CO & PO ATTAINMENT

## 2019 – 2020

**CO – PO ATTAINMENT METHODOLOGY**

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%

(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\textbf{\textit{some of the level weitage of all students of a course}}}{\textbf{\textit{total number of students}}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\textbf{\textit{Sum of the weigtages of blooms levels mapped}}}{\textbf{\textit{number of levels mapped}}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\mathbf{CO\ attainment} = \mathbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\mathbf{PO\ Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\textbf{\textit{Sum of the PO levels mapped with CO}}}$$

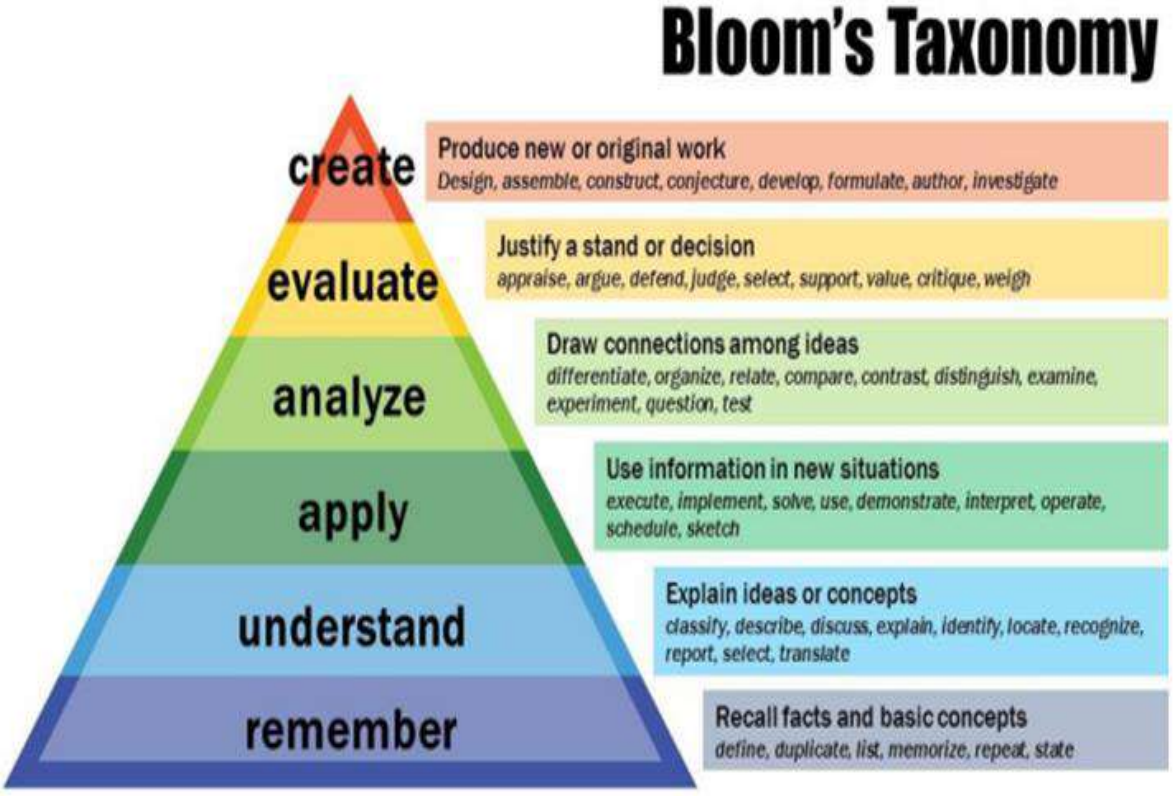
**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\mathbf{PSO\ Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\textbf{\textit{Sum of the PSO levels mapped with CO}}}$$

## Levels of Bloom's Taxonomoy

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



## PROGRAMME OUTCOMES

| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

## PROGRAMME SPECIFIC OUTCOMES:

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Learn basic concepts, principles, and theories in Telugu. |
| PSO2 | Analyzes contemporary issues with background of Telugu. |
| PSO3 | Acquire employability and research skills in the field of Telugu Language Literature. |
| PSO4 | Gain knowledge to understand the society around. |
| PSO5 | Learn soft and life skills for effective communication and personality development. |

## SEMESTER- 1

## PAPER-1: GENERAL TELUGU

**COURSE OUTCOME WEIGHTED AVERAGE: 2.6763**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Telugu Literature. | L1(REMEMBER) | 1 | 2.9075 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.6764 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.6764 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.5839 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.5376 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 |
| C02 | 2 | 2 | 1 | 0 | 2 | 0 | 1 | 1 | 1 |
| CO3 | 1 | 2 | 1 | 1 | 2 | 0 | 2 | 1 | 1 |
| CO4 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 8 | 7 | 4 | 4 | 7 | 5 | 7 | 5 | 6 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 3 | 1 | 0 |
| C02 | 3 | 3 | 2 | 1 | 0 |
| CO3 | 3 | 2 | 2 | 1 | 1 |
| CO4 | 3 | 3 | 1 | 1 | 1 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 11 | 10 | 10 | 7 | 4 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 2.9075 | 2.9075 | 0.0000 | 0.0000 | 2.9075 | 0.0000 | 2.9075 | 2.9075 | 5.8151 |
| CO2 | 5.3527 | 5.3527 | 2.6764 | 0.0000 | 5.3527 | 0.0000 | 2.6764 | 2.6764 | 2.6764 |
| CO3 | 2.6764 | 5.3527 | 2.6764 | 2.6764 | 5.3527 | 0.0000 | 5.3527 | 2.6764 | 2.6764 |
| CO4 | 5.1678 | 2.5839 | 2.5839 | 2.5839 | 2.5839 | 7.7516 | 2.5839 | 2.5839 | 2.5839 |
| CO 5 | 5.0753 | 2.5376 | 2.5376 | 5.0753 | 2.5376 | 5.0753 | 5.0753 | 2.5376 | 2.5376 |
| FINAL ATTAINMENT | **2.6475** | **2.6764** | **2.6186** | **2.5839** | **2.6764** | **2.5654** | **2.6565** | **2.6764** | **2.7149** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8151 | 5.8151 | 8.7226 | 2.9075 | 0.0000 |
| CO2 | 8.0291 | 8.0291 | 5.3527 | 2.6764 | 0.0000 |
| CO3 | 8.0291 | 5.3527 | 5.3527 | 2.6764 | 2.6764 |
| CO4 | 7.7516 | 7.7516 | 2.5839 | 2.5839 | 2.5839 |
| CO 5 | 0.0000 | 0.0000 | 5.0753 | 7.6129 | 5.0753 |
| FINAL ATTAINMENT | **2.6932** | **2.6948** | **2.7087** | **2.6367** | **2.5839** |

## SEMESTER- 2

## PAPER-1: GENERAL TELUGU

**COURSE OUTCOME WEIGHTED AVERAGE: 2.6928**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Telugu Literature. | L1(REMEMBER) | 1 | 2.9123 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.6929 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.6929 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.6051 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.5613 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 1 | 0 | 3 | 1 | 0 | 0 | 1 |
| C02 | 3 | 3 | 2 | 2 | 3 | 3 | 1 | 1 | 2 |
| CO3 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 11 | 11 | 10 | 8 | 11 | 10 | 8 | 5 | 8 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 3 | 2 | 2 |
| C02 | 3 | 2 | 3 | 1 | 3 |
| CO3 | 3 | 2 | 2 | 3 | 3 |
| CO4 | 3 | 3 | 2 | 1 | 3 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 11 | 10 | 12 | 10 | 13 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.8245 | 8.7368 | 2.9123 | 0.0000 | 8.7368 | 2.9123 | 0.0000 | 0.0000 | 2.9123 |
| CO2 | 8.0786 | 8.0786 | 5.3858 | 5.3858 | 8.0786 | 8.0786 | 2.6929 | 2.6929 | 5.3858 |
| CO3 | 5.3858 | 5.3858 | 8.0786 | 5.3858 | 5.3858 | 5.3858 | 8.0786 | 5.3858 | 5.3858 |
| CO4 | 5.2103 | 5.2103 | 7.8154 | 5.2103 | 5.2103 | 5.2103 | 5.2103 | 2.6051 | 5.2103 |
| CO 5 | 5.1225 | 2.5613 | 2.5613 | 5.1225 | 2.5613 | 5.1225 | 5.1225 | 2.5613 | 2.5613 |
| **FINAL ATTAINMENT** | **2.6929** | **2.7248** | **2.6753** | **2.6380** | **2.7248** | **2.6709** | **2.6380** | **2.6490** | **2.6819** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8245 | 8.7368 | 8.7368 | 5.8245 | 5.8245 |
| CO2 | 8.0786 | 5.3858 | 8.0786 | 2.6929 | 8.0786 |
| CO3 | 8.0786 | 5.3858 | 5.3858 | 8.0786 | 8.0786 |
| CO4 | 7.8154 | 7.8154 | 5.2103 | 2.6051 | 7.8154 |
| CO 5 | 0.0000 | 0.0000 | 5.1225 | 7.6838 | 5.1225 |
| **FINAL ATTAINMENT** | **2.7088** | **2.7324** | **2.7112** | **2.6885** | **2.6861** |

## SEMESTER- 3

## PAPER-1: GENERAL TELUGU

**COURSE OUTCOME WEIGHTED AVERAGE: 2.7121**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Telugu Literature. | L1(REMEMBER) | 1 | 2.9177 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.7121 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.7121 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.6299 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.5887 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 2 | 2 | 1 | 2 | 1 | 0 | 1 | 1 | 2 |
| C02 | 1 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 1 |
| CO3 | 2 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 2 |
| CO4 | 2 | 3 | 2 | 0 | 0 | 2 | 1 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 9 | 10 | 8 | 8 | 6 | 6 | 5 | 4 | 7 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2 | 2 | 3 | 2 | 2 |
| C02 | 3 | 3 | 3 | 1 | 2 |
| CO3 | 3 | 2 | 2 | 2 | 2 |
| CO4 | 0 | 1 | 2 | 2 | 2 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 8 | 8 | 12 | 10 | 10 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.8355 | 5.8355 | 2.9177 | 5.8355 | 2.9177 | 0.0000 | 2.9177 | 2.9177 | 5.8355 |
| CO2 | 2.7121 | 2.7121 | 2.7121 | 5.4242 | 5.4242 | 0.0000 | 0.0000 | 0.0000 | 2.7121 |
| CO3 | 5.4242 | 8.1363 | 8.1363 | 5.4242 | 5.4242 | 5.4242 | 2.7121 | 2.7121 | 5.4242 |
| CO4 | 5.2597 | 7.8896 | 5.2597 | 0.0000 | 0.0000 | 5.2597 | 2.6299 | 2.6299 | 2.6299 |
| CO 5 | 5.1775 | 2.5887 | 2.5887 | 5.1775 | 2.5887 | 5.1775 | 5.1775 | 2.5887 | 2.5887 |
| **FINAL ATTAINMENT** | **2.7121** | **2.7162** | **2.7018** | **2.7327** | **2.7258** | **2.6436** | **2.6874** | **2.7121** | **2.7415** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8355 | 5.8355 | 8.7532 | 5.8355 | 5.8355 |
| CO2 | 8.1363 | 8.1363 | 8.1363 | 2.7121 | 5.4242 |
| CO3 | 8.1363 | 5.4242 | 5.4242 | 5.4242 | 5.4242 |
| CO4 | 0.0000 | 2.6299 | 5.2597 | 5.2597 | 5.2597 |
| CO 5 | 0.0000 | 0.0000 | 5.1775 | 7.7662 | 5.1775 |
| **FINAL ATTAINMENT** | **2.7635** | **2.7532** | **2.7293** | **2.6998** | **2.7121** |

## SEMESTER- 4

## PAPER-1: GENERAL TELUGU

**COURSE OUTCOME WEIGHTED AVERAGE: 2.8175**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Telugu Literature. | L1(REMEMBER) | 1 | 2.9479 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.8175 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.8175 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.7654 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.7393 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 2 | 2 | 2 | 3 | 3 | 1 | 1 | 1 | 2 |
| C02 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 3 | 3 | 2 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 |
| TOTAL | 10 | 11 | 10 | 11 | 12 | 8 | 8 | 8 | 9 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 2 | 1 | 1 | 2 |
| CO3 | 2 | 2 | 2 | 2 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 2 |
| CO5 | 0 | 0 | 2 | 3 | 2 |
| TOTAL | 9 | 8 | 9 | 10 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.8957 | 5.8957 | 5.8957 | 8.8436 | 8.8436 | 2.9479 | 2.9479 | 2.9479 | 5.8957 |
| CO2 | 5.6350 | 5.6350 | 5.6350 | 5.6350 | 8.4525 | 5.6350 | 2.8175 | 5.6350 | 5.6350 |
| CO3 | 5.6350 | 8.4525 | 8.4525 | 5.6350 | 5.6350 | 2.8175 | 5.6350 | 5.6350 | 5.6350 |
| CO4 | 5.5307 | 8.2961 | 5.5307 | 5.5307 | 8.2961 | 5.5307 | 5.5307 | 5.5307 | 5.5307 |
| CO 5 | 5.4786 | 2.7393 | 2.7393 | 5.4786 | 2.7393 | 5.4786 | 5.4786 | 2.7393 | 2.7393 |
| **FINAL ATTAINMENT** | **2.8175** | **2.8199** | **2.8253** | **2.8294** | **2.8305** | **2.8012** | **2.8012** | **2.8110** | **2.8262** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.8957 | 5.8957 | 5.8957 | 5.8957 | 5.8957 |
| CO2 | 8.4525 | 5.6350 | 2.8175 | 2.8175 | 5.6350 |
| CO3 | 5.6350 | 5.6350 | 5.6350 | 5.6350 | 2.8175 |
| CO4 | 5.5307 | 5.5307 | 5.5307 | 5.5307 | 5.5307 |
| CO 5 | 0.0000 | 0.0000 | 5.4786 | 8.2179 | 5.4786 |
| **FINAL ATTAINMENT** | **2.8349** | **2.8371** | **2.8175** | **2.8097** | **2.8175** |

# DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

# VISAKHAPATNAM

## DEPARTMENT OF INDUSTRIAL CHEMISTRY

## CO & PO ATTAINMENT

**2019 – 2020**

## CO – PO ATTAINMENT METHODOLOGY

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

# Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE

(AUTONOMOUS)

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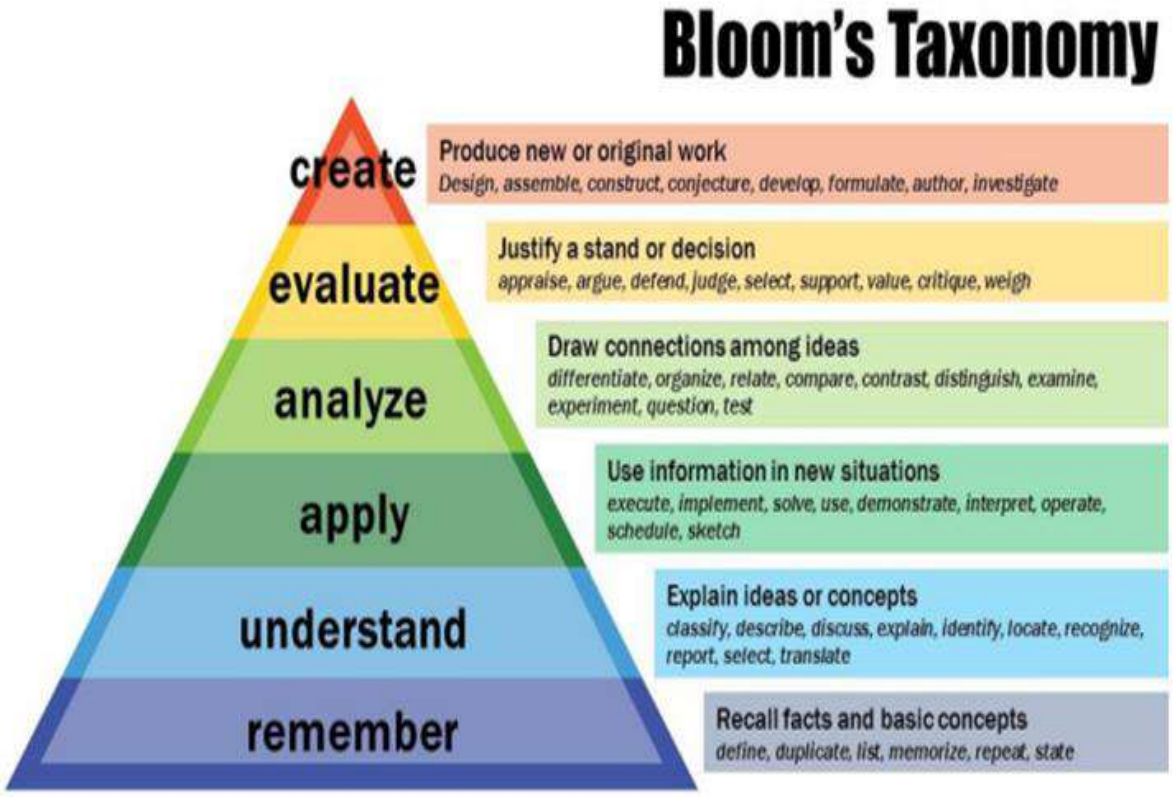
## Levels of Bloom's Taxonomoy

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

# Program Specific Outcomes (PSOs)

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Demonstrate, solve and an understanding of major concepts in all disciplines of industrial chemistry |
| PSO2 | Enhance the students ability to create the industrial perception. |
| PSO3 | Develop research oriented skills |
| PSO4 | To create awareness to the students regarding pollution and environment. |
| PSO5 | To demonstrate the experimental setup for future goal of Industry. |

## SEMESTER- 1

## COURSE I: Material and energy balances and utilities in chemical industry

**COURSE OUTCOME WEIGHTED AVERAGE: 2.3615**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Analyze the distinction between Atomic weight, Molecular weight and Equivalent Weight | Level 1,Level 4 | 2.5 | 2.5439 |
| CO2 | Apply the flow diagrams for chemical engineering operations | Level 3, Level 6 | 4.5 | 2.1791 |
| CO3 | Define and evaluate heat capacities of gases and gaseous mixtures and enthalpy changes | Level 1, Level 5 | 3.0 | 2.4527 |
| CO4 | To explain the utilities in chemical industry: boiler, water, stream and air | Level 2, Level 4 | 3.0 | 2.4527 |
| CO5 | To understand the concept of fluid flow and types of pumps | Level 1, Level 3 | 2.0 | 2.6351 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 1 | 3 | 2 | 2 | 2 | 3 | 3 |
| CO2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 1 | 3 | 3 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 |
| CO5 | 3 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 |
| TOTAL | 12 | 12 | 7 | 12 | 12 | 12 | 12 | 13 | 13 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 2 | 2 |
| CO3 | 3 | 2 | 2 | 1 | 2 |
| CO4 | 3 | 3 | 2 | 2 | 2 |
| CO5 | 2 | 3 | 2 | 1 | 2 |
| TOTAL | 14 | 12 | 10 | 7 | 10 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.0879 | 7.6319 | 2.5439 | 7.6319 | 5.0879 | 5.0879 | 5.0879 | 7.6319 | 7.6319 |
| CO2 | 4.3582 | 4.3582 | 2.1791 | 4.3582 | 4.3582 | 4.3582 | 6.5374 | 4.3582 | 6.5374 |
| CO3 | 4.9055 | 4.9055 | 2.4527 | 7.3582 | 7.3582 | 7.3582 | 4.9055 | 4.9052 | 7.3582 |
| CO4 | 7.3582 | 4.9055 | 4.9055 | 4.9055 | 7.3582 | 4.9055 | 7.3582 | 7.3582 | 4.9055 |
| CO 5 | 7.9055 | 7.9055 | 5.2703 | 5.2703 | 5.2703 | 7.9055 | 5.2703 | 7.9053 | 5.2703 |
| **FINAL ATTAINMENT** | **2.4679** | **2.4755** | **2.4788** | **2.4603** | **2.4527** | **2.4679** | **2.4299** | **2.4738** | **2.4387** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.6319 | 5.0879 | 2.5439 | 2.5439 | 5.0879 |
| CO2 | 6.5374 | 4.3582 | 6.5374 | 4.3582 | 4.3582 |
| CO3 | 7.3582 | 4.9055 | 4.9055 | 2.4527 | 4.9055 |
| CO4 | 7.3582 | 7.3582 | 4.9055 | 4.9055 | 4.9055 |
| CO 5 | 5.2703 | 7.9055 | 5.2703 | 2.6351 | 5.2703 |
| **FINAL ATTAINMENT** | **2.4397** | **2.4679** | **2.4162** | **2.4136** | **2.4527** |

**SEMESTER- II**

**Course II: Inorganic Materials**

**COURSE OUTCOME WEIGHTED AVERAGE: 2.1818**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels) | CO Learning Level Index | CO ATTAINMENT |
|---|---|---|---|---|
| CO 1 | To understand and apply the manufacturing and physical properties of glass | Level 2,Level 3 | 2.5 | 2.4155 |
| CO2 | To understand classification of cement, and analyze ingredients and their applications | Level 2, Level 4 | 3.0 | 2.2987 |
| CO3 | Evaluate different types of fertilizers | Level 2, Level 5 | 3.5 | 2.1818 |
| CO4 | To understand and evaluate Classification of alloys | Level 1, Level 5 | 3.0 | 2.2987 |
| CO5 | To study the concept of manufacturing of paints, and create awareness on types and different types of pigments | Level 2, Level 6 | 4.0 | 2.0649 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 2 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 3 | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 1 | 3 | 3 | 2 |
| CO5 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 |
| TOTAL | 12 | 9 | 12 | 13 | 13 | 12 | 14 | 13 | 12 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 2 | 2 |
| C02 | 3 | 2 | 2 | 2 | 2 |
| CO3 | 3 | 2 | 2 | 1 | 2 |
| CO4 | 3 | 2 | 2 | 1 | 2 |
| CO5 | 2 | 3 | 2 | 2 | 2 |
| TOTAL | 14 | 12 | 10 | 8 | 10 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 4.8311 | 4.8311 | 4.8311 | 7.2467 | 7.2467 | 7.2467 | 7.2467 | 4.8311 | 4.8311 |
| CO2 | 4.5974 | 2.2987 | 4.5974 | 4.5974 | 4.5974 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO3 | 4.3636 | 4.3636 | 4.3636 | 6.5454 | 6.5454 | 6.5454 | 4.3636 | 6.5454 | 6.5454 |
| CO4 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 2.2987 | 6.8961 | 6.8961 | 4.5974 |
| CO5 | 6.1948 | 4.1298 | 6.1948 | 6.1948 | 4.1297 | 6.1948 | 6.1948 | 6.1948 | 4.1298 |
| **FINAL ATTAINMENT** | **2.2402** | **2.24675** | **2.2402** | **2.24475** | **2.2627** | **2.2402** | **2.2569** | **2.2357** | **2.25** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.2467 | 7.2467 | 4.8311 | 4.8311 | 4.8311 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 4.5974 |
| CO3 | 6.5454 | 4.3636 | 4.3636 | 2.1818 | 4.3636 |
| CO4 | 6.8961 | 4.5974 | 4.5974 | 2.2987 | 4.5974 |
| CO5 | 4.1298 | 6.1948 | 4.1298 | 4.1298 | 4.1298 |
| **FINAL ATTAINMENT** | **2.2653** | **2.25** | **2.2519** | **2.2548** | **2.2519** |

# Semester III

**COURSE III: Cosmetics, fermentation, paints and pigments, sugar chemistry and industrial pollution**

**Course Outcome Weighted Average: 2.5594**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand the classification and apply industrial preparation of cosmetics | Level 2,Level 3 | 2.5 | 2.6853 |
| CO2 | To explain the general principle of fermentation process, and analyze manufacturing of antibiotics and synthesis of vitamins | Level 1, Level 4 | 2.5 | 2.6853 |
| CO3 | To apply the concept of manufacturing of paints, and evaluate their types | Level 3, Level 5 | 4.0 | 2.4965 |
| CO4 | To understand and create awareness on the concept of industrial manufacturing of sugar | Level 2, Level 6 | 4.0 | 2.4965 |
| CO5 | To describe and analyze the concept of air pollution | Level 2, Level 4 | 3.0 | 2.6224 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |
|---|

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 3 |
| CO2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |
| TOTAL | 15 | 10 | 14 | 12 | 14 | 12 | 14 | 10 | 14 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |
|---|

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 |
| CO2 | 3 | 2 | 3 | 2 | 2 |
| CO3 | 3 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 3 | 2 |
| CO5 | 2 | 3 | 2 | 3 | 2 |
| TOTAL | 14 | 12 | 14 | 12 | 10 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO 1 | 7.2467 | 4.8311 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 7.2467 | 2.4155 | 7.2467 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 6.5454 | 6.5454 | 6.5454 | 4.3636 | 4.3636 | 6.5454 |
| CO4 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO5 | 6.1948 | 4.1298 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 4.1298 |
| **FINAL ATTAINMENT** | **2.2519** | **2.2519** | **2.2486** | **2.2305** | **2.2402** | **2.2305** | **2.2569** | **2.2168** | **2.2653** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 7.2467 | 4.8311 | 7.2467 | 4.8311 | 4.8311 |
| CO2 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 4.5974 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 4.3636 | 4.3636 |
| CO4 | 6.8961 | 6.8961 | 6.8961 | 6.8961 | 4.5974 |
| CO5 | 4.1292 | 6.1948 | 4.1298 | 6.1948 | 4.1298 |
| **FINAL ATTAINMENT** | **2.2653** | **2.2402** | **2.2653** | **2.2402** | **2.2519** |

# Semester IV

**COURSE IV: Dyes, leather, paper, corrosion and industrial waste management**

**Course Outcome Weighted Average: 2.7967**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand the classification and apply industrial preparation of Dyes | Level 2,Level 3 | 2.5 | 2.8544 |
| CO2 | To study the concept of leather and analyze its manufacturing process | Level 1, Level 4 | 2.5 | 2.6853 |
| CO3 | To study the manufacturing of pulp and paper and evaluate its use | Level 3, Level 5 | 4.0 | 2.7671 |
| CO4 | To explain various types of corrosion and create awareness on its prevention methods | Level 2, Level 6 | 4.0 | 2.7671 |
| CO5 | To describe and analyze the concept of solid waste management | Level 2, Level 4 | 3.0 | 2.8252 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 3 |
| CO2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |
| TOTAL | 15 | 10 | 14 | 12 | 14 | 12 | 14 | 10 | 14 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 2 | 1 |
| CO2 | 3 | 2 | 2 | 1 | 2 |
| CO3 | 3 | 2 | 2 | 1 | 2 |
| CO4 | 3 | 2 | 2 | 2 | 2 |
| CO5 | 2 | 3 | 2 | 1 | 2 |
| TOTAL | 14 | 11 | 10 | 7 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.2467 | 4.8311 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 7.2467 | 2.4155 | 7.2467 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 6.5454 | 6.5454 | 6.5454 | 4.3636 | 4.3636 | 6.5454 |
| CO4 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO5 | 6.1948 | 4.1298 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 4.1298 |
| **FINAL ATTAINMENT** | **2.2519** | **2.2519** | **2.2486** | **2.2305** | **2.2402** | **2.2305** | **2.2569** | **2.2168** | **2.2653** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 2.4155 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 2.2987 | 4.5974 |
| CO3 | 6.5454 | 4.3636 | 4.3636 | 2.1818 | 4.3636 |
| CO4 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 4.5974 |
| CO5 | 4.1297 | 6.1948 | 4.1298 | 2.0649 | 4.1298 |
| **FINAL ATTAINMENT** | **2.2653** | **2.2349** | **2.2519** | **2.282** | **2.2337** |

# Semester V

## COURSE V: Drugs and pharmaceuticals, polymers and food additives

**Course Outcome Weighted Average: 2.9393**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand and create awareness on the synthesis of antipyretic agents, antibacterial and antifungal drugs | Level 2,Level 6 | 4.0 | 2.9503 |
| CO2 | To study and apply the concept of polymerization and classification of polymers | Level 1, Level 3 | 2.0 | 2.9751 |
| CO3 | To comprehend and analyze the concept of polymeric materials and their physical properties | Level 2, Level 4 | 3.0 | 2.9627 |
| CO4 | To understand and create awareness on the concepts of electro analytical technique and thermo analytical technique | Level 2, Level 6 | 4.0 | 2.9503 |
| CO5 | To apply and evaluate the general concept of food additives | Level 3, Level 5 | 4.0 | 2.9307 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 3 |
| CO2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 3 | 2 | 3 | 1 | 3 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 1 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |
| TOTAL | 15 | 10 | 14 | 10 | 14 | 11 | 14 | 10 | 14 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 2 | 2 |
| CO2 | 3 | 2 | 2 | 2 | 2 |
| CO3 | 3 | 2 | 3 | 1 | 2 |
| CO4 | 3 | 2 | 2 | 1 | 2 |
| CO5 | 2 | 3 | 2 | 1 | 2 |
| TOTAL | 14 | 11 | 11 | 7 | 10 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.2467 | 4.8311 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 7.2467 | 2.4155 | 7.2467 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 2.1818 | 6.5454 | 6.5454 | 4.3636 | 4.3636 | 6.5454 |
| CO4 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 2.2987 | 6.8961 | 4.5974 | 6.8961 |
| CO5 | 6.1948 | 4.1298 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 4.1298 |
| FINAL ATTAINMENT | **2.2519** | **2.2519** | **2.2486** | **2.2402** | **2.2402** | **2.2243** | **2.2569** | **2.2168** | **2.2653** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 4.8311 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 4.5974 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 2.1818 | 4.3636 |
| CO4 | 6.8961 | 4.5974 | 4.5974 | 2.2987 | 4.5974 |
| CO5 | 4.1298 | 6.1948 | 4.1298 | 2.0649 | 4.1298 |
| FINAL ATTAINMENT | **2.2653** | **2.2349** | **2.2455** | **2.282** | **2.2519** |

## Semester V

## COURSE VI: Industrial chemical analysis and Instrumental methods of analysis

### Course Outcome Weighted Average: 2.7961

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | To create awareness the concept of industrial chemical analysis with stastical calculations | Level 3,Level 6 | 4.5 | 2.8544 |
| CO2 | To study the principal and evaluate industrial applications of UV-Visible spectrophotometer, IR and NMR | Level 1, Level 5 | 3.0 | 2.6853 |
| CO3 | To understand the concept of instrumental methods and its applications in industry | Level 2, Level 4 | 3.0 | 2.767 |
| CO4 | To understand the concept of quality control and evaluate its applications in industry | Level 2, Level 5 | 3.5 | 2.767 |
| CO5 | To study the principle and application of spectrophotometer and atomic spectroscopy | Level 2, Level 4 | 3.0 | 2.8252 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 3 |
| CO2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |
| TOTAL | 15 | 10 | 14 | 12 | 14 | 12 | 14 | 10 | 14 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 2 | 1 |
| CO2 | 3 | 3 | 3 | 2 | 2 |
| CO3 | 3 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 3 | 0 | 3 |
| CO5 | 2 | 3 | 2 | 2 | 2 |
| TOTAL | 14 | 12 | 12 | 8 | 10 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.2467 | 4.8311 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 7.2467 | 2.4155 | 7.2467 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 6.5454 | 6.5454 | 6.5454 | 4.3636 | 4.3636 | 6.5454 |
| CO4 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO5 | 6.1948 | 4.1298 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 4.1298 |
| FINAL ATTAINMENT | **2.2519** | **2.2519** | **2.2486** | **2.2305** | **2.2402** | **2.2305** | **2.2569** | **2.2168** | **2.2653** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 2.4155 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 2.2987 | 4.5974 |
| CO3 | 6.5454 | 4.3636 | 4.3636 | 2.1818 | 4.3636 |
| CO4 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 4.5974 |
| CO5 | 4.1298 | 6.1948 | 4.1298 | 2.0649 | 4.1298 |
| FINAL ATTAINMENT | **2.2653** | **2.2349** | **2.2519** | **2.282** | **2.2337** |

## Semester VI

## COURSE VII: Oils and fats, fuel chemistry, lubricants and adhesives

### Course Outcome Weighted Average: 2.7766

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand and analyze the concept of soap and detergents | Level 2, Level 4 | 3.0 | 2.8085 |
| CO2 | To explain and analyze classification of fuels and their calorific value | Level 3, Level 4 | 3.5 | 2.7766 |
| CO3 | To gain knowledge and create on reforming petroleum and non-petroleum fuels | Level 1, Level 6 | 3.5 | 2.7766 |
| CO4 | To attain knowledge and evaluate on lubricating materials and their classification | Level 2, Level 5 | 3.5 | 2.7761 |
| CO5 | To explain and analyze the concepts of adhesives and its limitations | Level 2, Level 4 | 3.0 | 2.8085 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 3 |
| CO2 | 3 | 1 | 2 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 3 | 2 | 3 | 3 | 1 | 3 | 2 | 2 | 1 |
| CO4 | 3 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |
| TOTAL | 15 | 9 | 12 | 12 | 12 | 12 | 14 | 10 | 12 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 2 | 1 |
| CO2 | 3 | 3 | 3 | 2 | 2 |
| CO3 | 3 | 2 | 3 | 2 | 2 |
| CO4 | 3 | 3 | 3 | - | 3 |
| CO5 | 2 | 3 | 2 | 2 | 2 |
| TOTAL | 14 | 12 | 12 | 8 | 10 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 7.2467 | 4.8311 | 7.2467 | 4.8311 | 4.8311 | 4.8311 | 7.2467 | 2.4155 | 7.2467 |
| CO2 | 6.8961 | 2.2987 | 4.5974 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 6.5454 | 2.1818 | 6.5454 | 4.3636 | 4.3636 | 2.1818 |
| CO4 | 6.8961 | 4.5974 | 2.2987 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 6.8961 |
| CO5 | 6.1948 | 4.1298 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 4.1298 |
| FINAL ATTAINMENT | **2.2519** | **2.2467** | **2.2402** | **2.2305** | **2.25** | **2.2305** | **2.2569** | **2.2168** | **2.2792** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 7.2467 | 2.4155 | 2.4155 | 4.8311 | 2.4155 |
| CO2 | 6.8961 | 6.8961 | 6.8961 | 4.5974 | 4.5974 |
| CO3 | 6.5454 | 4.3636 | 6.5454 | 4.3636 | 4.3636 |
| CO4 | 6.8961 | 6.8961 | 6.8961 | 0 | 6.8961 |
| CO5 | 4.1298 | 6.1948 | 4.1298 | 4.1298 | 4.1298 |
| FINAL ATTAINMENT | **2.2653** | **2.2305** | **2.2402** | **2.2402** | **2.2402** |

## Semester - VI

### COURSE VIII-A-1: Chemical process economics, entrepreneurship and IPR

### Course Outcome Weighted Average: 3.0

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand and create awareness on marketing skills | Level 2,Level 6 | 4.0 | 3.0 |
| CO2 | To apply and evaluate the need and necessity of entrepreneurship and principles of products selection and developments | Level 3, Level 5 | 4.0 | 3.0 |
| CO3 | To understand and analyze the attain financial statements and funds flow analysis | Level 2, Level 4 | 3.0 | 2.6224 |
| CO4 | Apply and evaluate information on Licensing and registration and important provisions of Factory Act | Level 3, Level 5 | 4.0 | 2.4965 |
| CO5 | To analyze knowledge on industrial designs and patents | Level 1, Level 4 | 2.5 | 2.6853 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 1 | 3 |
| CO2 | 3 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 1 |
| CO3 | 1 | 2 | 3 | 3 | 3 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 1 | 3 | 2 | 3 | 2 | 1 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 |
| TOTAL | 13 | 9 | 14 | 11 | 14 | 12 | 12 | 10 | 12 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 3 | 2 | 2 | 3 |
| CO3 | 3 | 1 | 2 | - | 2 |
| CO4 | 1 | 2 | 3 | - | 1 |
| CO5 | 1 | 2 | 2 | 1 | 3 |
| TOTAL | 7 | 11 | 10 | 4 | 10 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 7.2467 | 4.8311 | 7.2467 | 4.831 | 4.8311 | 4.8311 | 7.2467 | 2.4155 | 7.2467 |
| CO2 | 6.8961 | 4.5974 | 4.5974 | 4.5974 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 2.2987 |
| CO3 | 2.1818 | 4.3636 | 6.5454 | 6.5454 | 6.5454 | 6.5454 | 4.3636 | 4.3636 | 6.5454 |
| CO4 | 6.8961 | 2.2987 | 6.8961 | 4.5974 | 6.8961 | 4.5974 | 2.2987 | 4.5974 | 6.8961 |
| CO5 | 6.1948 | 4.1298 | 6.1948 | 4.1298 | 6.1948 | 6.1948 | 6.1948 | 6.1948 | 4.1298 |
| FINAL ATTAINMENT | **2.2627** | **2.2467** | **2.2486** | **2.2455** | **2.2402** | **2.2305** | **2.25** | **2.2168** | **2.2597** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2.4155 | 7.2467 | 2.4155 | 2.4155 | 2.4155 |
| CO2 | 2.2987 | 6.8961 | 4.5974 | 4.5974 | 6.8961 |
| CO3 | 6.5454 | 2.1818 | 4.3636 | 0 | 4.3636 |
| CO4 | 2.2987 | 4.5974 | 6.8961 | 0 | 2.2987 |
| CO5 | 2.0649 | 4.1298 | 4.1298 | 2.0649 | 6.1948 |
| FINAL ATTAINMENT | **2.2319** | **2.2774** | **2.2402** | **2.2694** | **2.2168** |

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# DEPARTMENT OF HINDI

# CO & PO ATTAINMENT

## 2019 – 2020

**CO – PO ATTAINMENT METHODOLOGY**

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%

(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\mathbf{CO\ attainment} = \mathbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\mathbf{PO\ Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

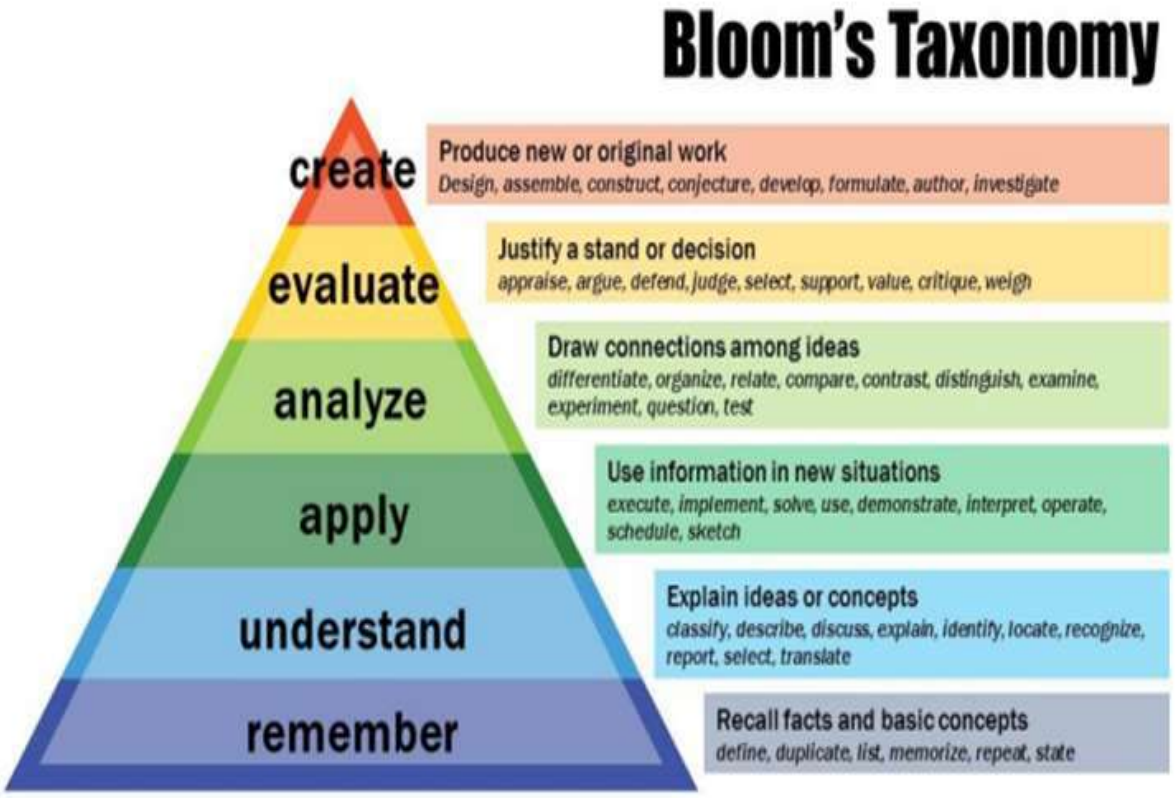
**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\mathbf{PSO\ Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

## Levels of Bloom's Taxonomoy

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



# PROGRAMME OUTCOMES

| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

## PROGRAMME SPECIFIC OUTCOMES:

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | A student should be able to recall basic facts about Hindi and should be able to display knowledge of conventions such as notations, terminology. |
| PSO2 | A student should get adequate exposure to global and local concerns that explore them many aspects of Hindi language. |
| PSO3 | Student is equipped with Hindi language ability, problem solving skills, relative talent and power of communication necessary for various kinds of employment. |
| PSO4 | Student should be able to apply their skills and knowledge that is translate information resented verbally into Hindi language. |
| PSO5 | Enabling students to develop a positive attitude towards Hindi as an interesting and valuable subject of study. |

## SEMESTER- 1

## PAPER-1: GENERAL HINDI

**COURSE OUTCOME WEIGHTED AVERAGE: 2.2264**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Develop Hindi reading & linguistic comprehension of students | L1(REMEMBER) | 1 | 2.7790 |
| CO2 | Inculcate moral and human values within Themselves | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.2265 |
| CO3 | Understand the types of Hindi Short Story Writing. Use their moral and social sense in life | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.2265 |
| CO4 | It gives knowledge of the word formation besides the knowledge in Hindi Grammar | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.0054 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 1.8949 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 2 | 0 | 2 | 1 | 2 | 0 | 2 | 1 | 1 |
| C02 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 2 | 1 |
| CO3 | 3 | 1 | 3 | 2 | 3 | 0 | 3 | 0 | 1 |
| CO4 | 3 | 2 | 1 | 0 | 1 | 1 | 2 | 2 | 0 |
| CO5 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| TOTAL | 9 | 7 | 10 | 5 | 8 | 3 | 7 | 5 | 3 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2 | 2 | 2 | 1 | 3 |
| C02 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 3 | 2 | 2 | 3 | 3 |
| CO4 | 1 | 1 | 2 | 2 | 2 |
| CO5 | 0 | 1 | 3 | 0 | 0 |
| TOTAL | 8 | 7 | 11 | 7 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 2.7790 |
| CO2 | 2.2265 | 4.4529 | 4.4529 | 2.2265 | 2.2265 | 4.4529 | 0.0000 | 4.4529 | 2.2265 |
| CO3 | 6.6794 | 2.2265 | 6.6794 | 4.4529 | 6.6794 | 0.0000 | 6.6794 | 0.0000 | 2.2265 |
| CO4 | 6.0163 | 4.0109 | 2.0054 | 0.0000 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 0.0000 |
| CO 5 | 0.0000 | 3.7899 | 3.7899 | 1.8949 | 1.8949 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| FINAL ATTAINMENT | **2.2756** | **2.0686** | **2.2486** | **2.2707** | **2.2955** | **2.1528** | **2.3212** | **2.2486** | **2.4106** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.5580 | 5.5580 | 5.5580 | 2.7790 | 8.3370 |
| CO2 | 4.4529 | 2.2265 | 4.4529 | 2.2265 | 2.2265 |
| CO3 | 6.6794 | 4.4529 | 4.4529 | 6.6794 | 6.6794 |
| CO4 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 4.0109 |
| CO 5 | 0.0000 | 1.8949 | 5.6848 | 0.0000 | 0.0000 |
| FINAL ATTAINMENT | **2.3370** | **2.3054** | **2.1963** | **2.2422** | **2.3615** |

## SEMESTER- 2

## PAPER-1: GENERAL HINDI

**COURSE OUTCOME WEIGHTED AVERAGE: 2.0758**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Telugu Literature. | L1(REMEMBER) | 1 | 2.7360 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.0758 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.0758 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 1.8118 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 1.6798 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 2 | 0 | 2 | 1 | 2 | 0 | 2 | 1 | 1 |
| C02 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 2 | 1 |
| CO3 | 3 | 1 | 3 | 2 | 3 | 0 | 3 | 0 | 1 |
| CO4 | 3 | 2 | 1 | 0 | 1 | 1 | 2 | 2 | 0 |
| CO5 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| TOTAL | 9 | 7 | 10 | 5 | 8 | 3 | 7 | 5 | 3 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2 | 2 | 2 | 1 | 3 |
| C02 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 3 | 2 | 2 | 3 | 3 |
| CO4 | 1 | 1 | 2 | 2 | 2 |
| CO5 | 0 | 1 | 3 | 0 | 0 |
| TOTAL | 8 | 7 | 11 | 7 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 2.7790 |
| CO2 | 2.2265 | 4.4529 | 4.4529 | 2.2265 | 2.2265 | 4.4529 | 0.0000 | 4.4529 | 2.2265 |
| CO3 | 6.6794 | 2.2265 | 6.6794 | 4.4529 | 6.6794 | 0.0000 | 6.6794 | 0.0000 | 2.2265 |
| CO4 | 6.0163 | 4.0109 | 2.0054 | 0.0000 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 0.0000 |
| CO 5 | 0.0000 | 3.7899 | 3.7899 | 1.8949 | 1.8949 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **FINAL ATTAINMENT** | **2.2756** | **2.0686** | **2.2486** | **2.2707** | **2.2955** | **2.1528** | **2.3212** | **2.2486** | **2.4106** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.5580 | 5.5580 | 5.5580 | 2.7790 | 8.3370 |
| CO2 | 4.4529 | 2.2265 | 4.4529 | 2.2265 | 2.2265 |
| CO3 | 6.6794 | 4.4529 | 4.4529 | 6.6794 | 6.6794 |
| CO4 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 4.0109 |
| CO 5 | 0.0000 | 1.8949 | 5.6848 | 0.0000 | 0.0000 |
| **FINAL ATTAINMENT** | **2.3370** | **2.3054** | **2.1963** | **2.2422** | **2.3615** |

## SEMESTER- 3

## PAPER-1: GENERAL HINDI

**COURSE OUTCOME WEIGHTED AVERAGE: 2.3196**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Telugu Literature. | L1(REMEMBER) | 1 | 2.8056 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.3196 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.3196 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.1253 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.0281 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 2 | 0 | 2 | 1 | 2 | 0 | 2 | 1 | 1 |
| C02 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 2 | 1 |
| CO3 | 3 | 1 | 3 | 2 | 3 | 0 | 3 | 0 | 1 |
| CO4 | 3 | 2 | 1 | 0 | 1 | 1 | 2 | 2 | 0 |
| CO5 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| TOTAL | 9 | 7 | 10 | 5 | 8 | 3 | 7 | 5 | 3 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2 | 2 | 2 | 1 | 3 |
| C02 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 3 | 2 | 2 | 3 | 3 |
| CO4 | 1 | 1 | 2 | 2 | 2 |
| CO5 | 0 | 1 | 3 | 0 | 0 |
| TOTAL | 8 | 7 | 11 | 7 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 2.7790 |
| CO2 | 2.2265 | 4.4529 | 4.4529 | 2.2265 | 2.2265 | 4.4529 | 0.0000 | 4.4529 | 2.2265 |
| CO3 | 6.6794 | 2.2265 | 6.6794 | 4.4529 | 6.6794 | 0.0000 | 6.6794 | 0.0000 | 2.2265 |
| CO4 | 6.0163 | 4.0109 | 2.0054 | 0.0000 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 0.0000 |
| CO 5 | 0.0000 | 3.7899 | 3.7899 | 1.8949 | 1.8949 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| FINAL ATTAINMENT | **2.2756** | **2.0686** | **2.2486** | **2.2707** | **2.2955** | **2.1528** | **2.3212** | **2.2486** | **2.4106** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.5580 | 5.5580 | 5.5580 | 2.7790 | 8.3370 |
| CO2 | 4.4529 | 2.2265 | 4.4529 | 2.2265 | 2.2265 |
| CO3 | 6.6794 | 4.4529 | 4.4529 | 6.6794 | 6.6794 |
| CO4 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 4.0109 |
| CO 5 | 0.0000 | 1.8949 | 5.6848 | 0.0000 | 0.0000 |
| FINAL ATTAINMENT | **2.3370** | **2.3054** | **2.1963** | **2.2422** | **2.3615** |

## SEMESTER- 4

## PAPER-1: GENERAL HINDI

**COURSE OUTCOME WEIGHTED AVERAGE: 2.3067**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Learn about the Languages and importance of Telugu Literature. | L1(REMEMBER) | 1 | 2.8019 |
| CO2 | Understand the Emergence of Culture and moral values and Ethics. | L2(UNDERTSAND)& L5(EVALUATE) | 3.5 | 2.3068 |
| CO3 | Know the psychological aspects of social behavior | L3(APPLICATION)& L4(ANALYZE) | 3.5 | 2.3068 |
| CO4 | Comprehend the Literature | L4(ANALYZE)& L5(EVALUATE) | 4.5 | 2.1087 |
| CO5 | Knowledge on writing skills, research Skills and Translation Skills | L4(ANALYZE)& L6(CREATE) | 5 | 2.0097 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 2 | 0 | 2 | 1 | 2 | 0 | 2 | 1 | 1 |
| C02 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 2 | 1 |
| CO3 | 3 | 1 | 3 | 2 | 3 | 0 | 3 | 0 | 1 |
| CO4 | 3 | 2 | 1 | 0 | 1 | 1 | 2 | 2 | 0 |
| CO5 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| TOTAL | 9 | 7 | 10 | 5 | 8 | 3 | 7 | 5 | 3 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2 | 2 | 2 | 1 | 3 |
| C02 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 3 | 2 | 2 | 3 | 3 |
| CO4 | 1 | 1 | 2 | 2 | 2 |
| CO5 | 0 | 1 | 3 | 0 | 0 |
| TOTAL | 8 | 7 | 11 | 7 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 5.5580 | 0.0000 | 5.5580 | 2.7790 | 2.7790 |
| CO2 | 2.2265 | 4.4529 | 4.4529 | 2.2265 | 2.2265 | 4.4529 | 0.0000 | 4.4529 | 2.2265 |
| CO3 | 6.6794 | 2.2265 | 6.6794 | 4.4529 | 6.6794 | 0.0000 | 6.6794 | 0.0000 | 2.2265 |
| CO4 | 6.0163 | 4.0109 | 2.0054 | 0.0000 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 0.0000 |
| CO 5 | 0.0000 | 3.7899 | 3.7899 | 1.8949 | 1.8949 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **FINAL ATTAINMENT** | **2.2756** | **2.0686** | **2.2486** | **2.2707** | **2.2955** | **2.1528** | **2.3212** | **2.2486** | **2.4106** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 5.5580 | 5.5580 | 5.5580 | 2.7790 | 8.3370 |
| CO2 | 4.4529 | 2.2265 | 4.4529 | 2.2265 | 2.2265 |
| CO3 | 6.6794 | 4.4529 | 4.4529 | 6.6794 | 6.6794 |
| CO4 | 2.0054 | 2.0054 | 4.0109 | 4.0109 | 4.0109 |
| CO 5 | 0.0000 | 1.8949 | 5.6848 | 0.0000 | 0.0000 |
| **FINAL ATTAINMENT** | **2.3370** | **2.3054** | **2.1963** | **2.2422** | **2.3615** |

# DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

# VISAKHAPATNAM

## DEPARTMENT OF POLITICAL SCIENCE

## CO & PO ATTAINMENT

**2019 – 2020**

## CO – PO ATTAINMENT METHODOLOGY

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

**Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE**
(AUTONOMOUS)
NODAL RESOURCE CENTRE & AU CENTRE FOR RESEARCH
Maddilapalem, Visakhapatnam – 530013, Andhra Pradesh.
0891-2563262, https://www.drvskrishnagdc.edu.in

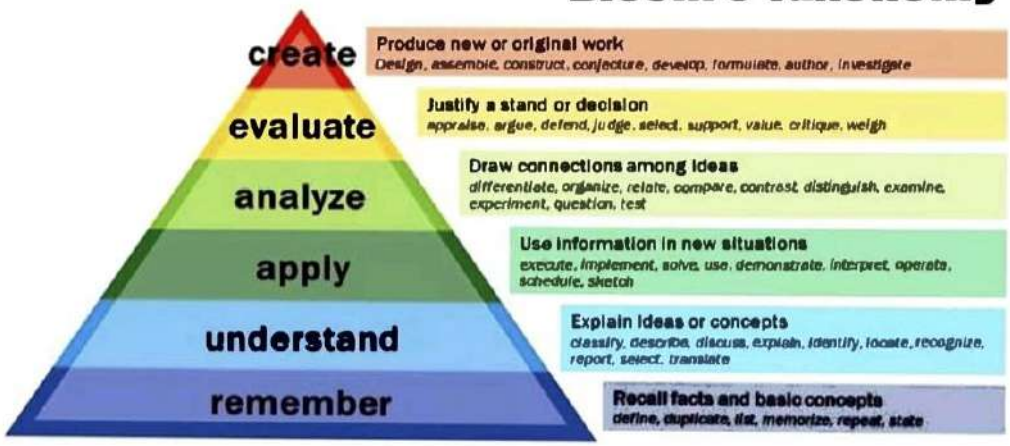
# DEPARTMENT OF POLITICAL SCIENCE

## POs & COs
## MAPPING 2019 - 2020

**Levels of Bloom's Taxonomy**

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |

## Bloom's Taxonomy



# PROGRAM OUTCOMES

| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

# Program Specific Outcomes (PSOs) B.A. HEP

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Understand the basic concepts like GDP, Poverty, Employment, International trade, Fiscal and Monetary policies, Economic conditions of various Historic periods, the development of Trade and Commerce from the ancient period to modern period and their role in administration, for formulating relevant policies for effective utilisation of resources and tackling. Evaluate the contemporary economic conditions with the economic theories and principles. |
| PSO2 | To analyze the concept of political science processes, institutions and the Welfare State and Urban governance of Mauryan administration, Local Self-Government of Chola administration and all Democratic practices of modern British administration. |
| PSO3 | Demonstrate proficiency in Historical knowledge of India and modern world.To understand the impact of economic prosperity that attracted the foreign invaders towards India, resulting in changed administration and economy in due course. |
| PSO4 | To provide life skills required for gainful employment by using domain knowledge such as Economics,History and Political Science at various levels. I play the equator knowledge to solve problems in relevant fields. |
| PSO5 | To promote values such as sustainable development, Optimum utilisation of resources, patriotism, respecting the ideals of freedom struggle and responsible citizenship, political participation and socialisation |

Dr. V S Krishna Government Degree and PG College (A)
First Year: Semester 1
2019 2020
B.A. Political Science
Course 1 (CORE): Basic Concepts of Political Science

**COURSE OUTCOME WEIGHTED AVERAGE: 2.3362**

**Course Outcomes**:
On successful completion of the course the students will be able to:

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | To understand the basic concepts of Political Science like State, Nation-State, Nation, Freedom, Equality, Fraternity& Justice etc., which are necessary to improve basic knowledge and perception of Society & the State. | L1 Remember L2 Understand | 1.5 | 2.715514286 |
| CO2 | To provide awareness of latest topics like Gender Equality, Women's Rights in India and Relationship between Rights & Duties, | L2 Understand and L5 Evaluate | 2.5 | 2.525857143 |
| CO3 | To examine different approaches to the study of Political Science and ideologies like Nationalism, Communitarianism. | L3 Apply and L4 Analyse | 3.5 | 2.3362 |
| CO4 | To inculcate the spirit of Nationalism and Patriotism among the students to make them responsible citizens in to establish a better society. | L4 Analyse and L5 Evaluate | 4.5 | 2.146542857 |
| CO5 | To have a deeper knowledge regarding freedom, equality and justice by understanding the importance of attaining them and the various ways to attain them | L4 Analyse and L6 Create | 5 | 2.051714286 |

. **CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 3 | - | 3 | 3 | - | - | - | 1 | - |
| CO:2 | 3 | 1 | 2 | 2 | 3 | - | 1 | - | 2 |
| CO:3 | 3 | - | 2 | - | 2 | - | - | 3 | - |
| CO:4 | 2 | 1 | 3 | 2 | 2 | - | - | - | 3 |
| CO:5 | 2 | 2 | 2 | 2 | - | - | 3 | 2 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 2 | 2 | 3 | 3 |
| CO:2 | 2 | 3 | 2 | 2 | - |
| CO:3 | 2 | - | 3 | 2 | 2 |
| CO:4 | 3 | 2 | - | 3 | - |
| CO:5 | 3 | 2 | 3 | 1 | 2 |

## ATTAINMENT OF POs

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 8.1465 | 0.0000 | 8.1465 | 8.1465 | 0.0000 | 0.0000 | 0.0000 | 2.7155 | 0.0000 |
| CO:2 | 7.5776 | 2.5259 | 5.0517 | 5.0517 | 7.5776 | 0.0000 | 2.5259 | 0.0000 | 5.0517 |
| CO:3 | 7.0086 | 0.0000 | 4.6724 | 0.0000 | 4.6724 | 0.0000 | 0.0000 | 7.0086 | 0.0000 |
| CO:4 | 4.2931 | 2.1465 | 6.4396 | 4.2931 | 4.2931 | 0.0000 | 0.0000 | 0.0000 | 6.4396 |
| CO:5 | 4.1034 | 4.1034 | 4.1034 | 4.1034 | 0.0000 | 0.0000 | 6.1551 | 4.1034 | 6.1551 |
| Final Program Outcome | **2.3946** | **2.1940** | **2.3678** | **2.3994** | **2.3633** | **#DIV/0!** | **2.1703** | **2.3046** | **2.2058** |

## ATTAINMENT OF PSOs

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 5.4310 | 5.4310 | 5.4310 | 8.1465 | 8.1465 |
| CO:2 | 5.0517 | 7.5776 | 5.0517 | 5.0517 | 0.0000 |
| CO:3 | 4.6724 | 0.0000 | 7.0086 | 4.6724 | 4.6724 |
| CO:4 | 6.4396 | 4.2931 | 0.0000 | 6.4396 | 0.0000 |
| CO:5 | 6.1551 | 4.1034 | 6.1551 | 2.0517 | 4.1034 |
| Final Program Outcome | **2.3125** | **2.3783** | **2.3646** | **2.3965** | **2.4175** |

Dr. V S Krishna Government Degree and PG College (A)
First Year: Semester 1I
2019 2020
B.A. Political Science
Course 1I (CORE): Political Institutions: Concepts, Theories and Institutions

**COURSE OUTCOME WEIGHTED AVERAGE: 2.0094**

**Course Outcomes**:

On successful completion of the course the students will be able to:

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | To understand the importance of constitutional law, the theories behind the separation of powers and to get the basic knowledge of the three organs of the government. | L1 Remember L3 Apply | 2 | 2.433942857 |
| CO2 | The student would get to understand the various levels of authority in the present modern state and to understand the basic features of federal and unitary forms of government. | L2 Understand and L5 Evaluate | 3.5 | 2.0094 |
| CO3 | To understand functions of legislature and judiciary, and to analyse the institutional forms of the modern state especially democracy. | L3 Apply and L4 Analyse | 3.5 | 2.0094 |
| CO4 | To understand various aspects of judiciary and its functions and concepts like judicial review and judicial activism. | L4 Analyse and L5 Evaluate | 4.5 | 1.726371429 |
| CO5 | To understand the relationship between legislature and executive in the policy making and implementation especially in the modern state in uni cameral and bi cameral legislatures. | L4 Analyse and L6 Create | 5 | 1.584857143 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 0 | 3 | 3 | 0 | 0 | 0 | 1 | 0 |
| CO:2 | 3 | 0 | 3 | 2 | 2 | 0 | 2 | 0 | 3 |
| CO:3 | 2 | 2 | 2 | 0 | 3 | 0 | 0 | 2 | 0 |
| CO:4 | 2 | 0 | 3 | 3 | 2 | 0 | 0 | 0 | 2 |
| CO:5 | 1 | 3 | 2 | 2 | 0 | 0 | 3 | 2 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 1 | 2 | 3 | 2 |
| CO:2 | 1 | 3 | 3 | 2 | 1 |
| CO:3 | 2 | 0 | 3 | 2 | 3 |
| CO:4 | 3 | 2 | 0 | 3 | - |
| CO:5 | 3 | 2 | 3 | 1 | 2 |

## ATTAINMENT OF POs

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 4.8679 | 0.0000 | 7.3018 | 7.3018 | 0.0000 | 0.0000 | 0.0000 | 2.4339 | 0.0000 |
| CO:2 | 6.0282 | 0.0000 | 6.0282 | 4.0188 | 4.0188 | 0.0000 | 4.0188 | 0.0000 | 6.0282 |
| CO:3 | 4.0188 | 4.0188 | 4.0188 | 0.0000 | 6.0282 | 0.0000 | 0.0000 | 4.0188 | 0.0000 |
| CO:4 | 3.4527 | 0.0000 | 5.1791 | 5.1791 | 3.4527 | 0.0000 | 0.0000 | 0.0000 | 3.4527 |
| CO:5 | 1.5849 | 4.7546 | 3.1697 | 3.1697 | 0.0000 | 0.0000 | 4.7546 | 3.1697 | 4.7546 |
| Final Program Attainment | **1.9952** | **1.7547** | **1.9767** | **1.9669** | **1.9285** | **#DIV/0!** | **1.7547** | **1.9245** | **1.7794** |

## ATTAINMENT OF PSOs

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 4.8679 | 2.4339 | 4.8679 | 7.3018 | 4.8679 |
| CO:2 | 2.0094 | 6.0282 | 6.0282 | 4.0188 | 2.0094 |
| CO:3 | 4.0188 | 0.0000 | 6.0282 | 4.0188 | 6.0282 |
| CO:4 | 5.1791 | 3.4527 | 0.0000 | 5.1791 | 0.0000 |
| CO:5 | 4.7546 | 3.1697 | 4.7546 | 1.5849 | 3.1697 |
| Final Program Attainment | **1.8936** | **1.8856** | **1.9708** | **2.0094** | **2.0094** |

Dr. V S Krishna Government Degree and PG College (A)
Second Year: Semester 1II
2019 2020
B.A. Political Science
Course 1II (CORE): Indian Constitution

**COURSE OUTCOME WEIGHTED AVERAGE: 2.32**

**Course Outcomes**:

On successful completion of the course the students will be able to:

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | The student will get minimum knowledge of how their constitution was made, the ideologies behind its making and how it works and on what principles they are being ruled. | L 1 Remember<br>L 2 Understand | 1.5 | 2.7086 |
| CO2 | As Constitution is the fundamental law of the land, the student will get to know the philosophical premises of the constitution, especially the preamble, as it forms the basic structure of the constitution. | L2 Understand and<br>L5 Evaluate | 3.5 | 2.3200 |
| CO3 | To understand the fundamental rights and directive principles of state policy, as they are the basic needs for a better society and to understand the differences between them. | L3 Apply and<br>L4 Analyse | 3.5 | 2.3200 |
| CO4 | To understand the quasi federal features of the Indian constitution and its unique features and how it fits the Indian system and its advantages and dis advantages. | L4 Analyse and<br>L5 Evaluate | 4.5 | 2.1257 |
| CO5 | Finally, the student will get to understand the core values of the Indian Constitution, various amendments to the constitution, and how the legislature, executive and judiciary works in | L4 Analyse and<br>L6 Create | 5 | 2.0286 |

| | | | | |
|---|---|---|---|---|
| | accordance with the constitution and how the judiciary works independently over the executive and legislature. | | | |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| CO:2 | 2 | 0 | 3 | 3 | 2 | 0 | 1 | 0 | 2 |
| CO:3 | 3 | 3 | 3 | 0 | 3 | 0 | 0 | 2 | 1 |
| CO:4 | 2 | 0 | 3 | 1 | 2 | 0 | 0 | 0 | 3 |
| CO:5 | 3 | 2 | 2 | 2 | 0 | 0 | 3 | 2 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 3 | 2 | 2 | 3 | 3 |
| CO:2 | 1 | 2 | 3 | 2 | 0 |
| CO:3 | 3 | 0 | 2 | 1 | 3 |
| CO:4 | 3 | 2 | 0 | 3 | 0 |
| CO:5 | 3 | 2 | 3 | 1 | 2 |

## ATTAINMENT OF POs

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2.4339 | 0.0000 | 4.8679 | 4.8679 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:2 | 4.0188 | 0.0000 | 6.0282 | 6.0282 | 4.0188 | 0.0000 | 2.0094 | 0.0000 | 4.0188 |
| CO:3 | 6.0282 | 6.0282 | 6.0282 | 0.0000 | 6.0282 | 0.0000 | 0.0000 | 4.0188 | 2.0094 |
| CO:4 | 3.4527 | 0.0000 | 5.1791 | 1.7264 | 3.4527 | 0.0000 | 0.0000 | 0.0000 | 5.1791 |
| CO:5 | 4.7546 | 3.1697 | 3.1697 | 3.1697 | 0.0000 | 0.0000 | 4.7546 | 3.1697 | 4.7546 |
| Final Program Outcome | **1.8808** | **1.8396** | **1.9441** | **1.9740** | **1.9285** | **#DIV/0!** | **1.6910** | **1.7971** | **1.7735** |

## ATTAINMENT OF PSOs

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 7.3018 | 4.8679 | 4.8679 | 7.3018 | 7.3018 |
| CO:2 | 2.0094 | 4.0188 | 6.0282 | 4.0188 | 0.0000 |
| CO:3 | 6.0282 | 0.0000 | 4.0188 | 2.0094 | 6.0282 |
| CO:4 | 5.1791 | 3.4527 | 0.0000 | 5.1791 | 0.0000 |
| CO:5 | 4.7546 | 3.1697 | 4.7546 | 1.5849 | 3.1697 |
| Final Program Outcome | **1.9441** | **1.9386** | **1.9669** | **2.0094** | **2.0625** |

Dr. V S Krishna Government Degree and PG College (A)
Second Year: Semester IV
2019 2020
B.A. Political Science
Course 1V (CORE): Indian Political Process

**COURSE OUTCOME WEIGHTED AVERAGE: 2.14**

**Course Outcomes**: On successful completion of the course the student will be able to :

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | Know and understand the federal system of the country and some of the vital contemporary emerging issues. | L1 Remember L2 Understand L 3 Apply | 3 | 2.2629 |
| CO2 | Evaluate the electoral system of the country and to identify the areas of electoral reforms. | L2 Understand and L 5 Evaluate | 3.5 | 2.1400 |
| CO3 | Know the constitutional base and functioning of local governments with special emphasis on 73rd& 74th Constitutional Amendment Acts | L3 Apply and l4 Analyse | 3.5 | 2.1400 |
| CO4 | Understand the dynamics of Indian politics, challenges faced and gain a sensitive comprehension to the contributing factors. | L4 Analyse and L5 Evaluate | 4.5 | 1.8943 |
| CO5 | Apply the knowledge and critically comprehend the functioning of some of the regulatory and governance institutions. Propose theoretical outline alternate models | L4 Analyse and L6 Create | 5 | 1.7714 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 1 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 |
| CO:2 | 3 | 0 | 3 | 2 | 2 | 0 | 2 | 0 | 2 |
| CO:3 | 3 | 0 | 3 | 0 | 2 | 0 | 0 | 2 | 0 |
| CO:4 | 2 | 0 | 3 | 3 | 2 | 0 | 0 | 0 | 2 |
| CO:5 | 2 | 2 | 2 | 2 | 0 | 0 | 3 | 2 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 1 | 2 | 3 | 3 |
| CO:2 | 0 | 2 | 3 | 2 | 0 |
| CO:3 | 2 | 0 | 3 | 4 | 3 |
| CO:4 | 3 | 2 | 0 | 3 | 0 |
| CO:5 | 3 | 2 | 3 | 1 | 2 |

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2.2629 | 0.0000 | 6.7886 | 4.5257 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:2 | 6.4200 | 0.0000 | 6.4200 | 4.2800 | 4.2800 | 0.0000 | 4.2800 | 0.0000 | 4.2800 |
| CO:3 | 6.4200 | 0.0000 | 6.4200 | 0.0000 | 4.2800 | 0.0000 | 0.0000 | 4.2800 | 0.0000 |
| CO:4 | 3.7886 | 0.0000 | 5.6829 | 5.6829 | 3.7886 | 0.0000 | 0.0000 | 0.0000 | 3.7886 |
| CO:5 | 3.5429 | 3.5429 | 3.5429 | 3.5429 | 0.0000 | 0.0000 | 5.3143 | 3.5429 | 5.3143 |
| Final Program Outcome | **2.0395** | **1.7714** | **2.0610** | **2.0035** | **2.0581** | **#DIV/0!** | **1.9189** | **1.9557** | **1.9118** |

**ATTAINMENT OF PSDs**

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 4.5257 | 2.2629 | 4.5257 | 6.7886 | 6.7886 |
| CO:2 | 0.0000 | 4.2800 | 6.4200 | 4.2800 | 0.0000 |
| CO:3 | 4.2800 | 0.0000 | 6.4200 | 8.5600 | 6.4200 |
| CO:4 | 5.6829 | 3.7886 | 0.0000 | 5.6829 | 0.0000 |
| CO:5 | 5.3143 | 3.5429 | 5.3143 | 1.7714 | 3.5429 |
| Final Program Outcome | **1.9803** | **1.9820** | **2.0618** | **2.0833** | **2.0939** |

Dr. V S Krishna Government Degree and PG College (A)
Third Year: Semester V
2019 2020
B.A. Political Science
Course V (CORE): Indian Political Thought

**COURSE OUTCOME WEIGHTED AVERAGE: 2.53**

**Course Outcomes:**

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | Enriches about variety of ancient Indian political thoughts. | L1 Remember L2 Understand | 1.5 | 2.5300 |
| CO2 | Understands the contributions of Kautilya. | L2 Understand and L5 Evaluate | 3.5 | 2.5300 |
| CO3 | Creates awareness on political ideologies of 19th century social reformers. | L3 Apply and L4 Analyse | 3.5 | 2.5300 |
| CO4 | Familiarizes the political philosophy of religious reformers. | L4 Analyse and L5 Evaluate | 4.5 | 2.3957 |
| CO5 | Imparts knowledge on nationalist political thinkers. | L4 Analyse and L6 Create | 5 | 2.3286 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 0 | 2 | 2 | 3 | 0 | 0 | 0 | 0 |
| CO:2 | 2 | 0 | 2 | 2 | 3 | 0 | 0 | 0 | 0 |
| CO:3 | 2 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 |
| CO:4 | 2 | 0 | 2 | 1 | 2 | 0 | 0 | 0 | 0 |
| CO:5 | 2 | 0 | 2 | 1 | 3 | 0 | 0 | 0 | 0 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 1 | 1 | 2 | 3 |
| CO:2 | 2 | 2 | 3 | 2 | 3 |
| CO:3 | 2 | 2 | 2 | 2 | 3 |
| CO:4 | 2 | 2 | 1 | 1 | 3 |
| CO:5 | 2 | 2 | 2 | 2 | 3 |

**ATTAINMENT OF POs**

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 5.0600 | 0.0000 | 5.0600 | 5.0600 | 7.5900 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:2 | 5.0600 | 0.0000 | 5.0600 | 5.0600 | 7.5900 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:3 | 5.0600 | 0.0000 | 5.0600 | 5.0600 | 5.0600 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:4 | 4.7914 | 0.0000 | 4.7914 | 2.3957 | 4.7914 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:5 | 4.6571 | 0.0000 | 4.6571 | 2.3286 | 6.9857 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Final Program Attainment | **2.4629** | **#DIV/0!** | **2.4629** | **2.4880** | **2.4629** | **#DIV/0!** | **#DIV/0!** | **#DIV/0!** | **#DIV/0!** |

**ATTAINMENT OF PSOs**

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 0.0000 | 5.0600 | 2.5300 | 2.5300 | 5.0600 |
| CO:2 | 0.0000 | 5.0600 | 5.0600 | 7.5900 | 5.0600 |
| CO:3 | 0.0000 | 5.0600 | 5.0600 | 5.0600 | 5.0600 |
| CO:4 | 0.0000 | 4.7914 | 4.7914 | 2.3957 | 2.3957 |
| CO:5 | 0.0000 | 4.6571 | 4.6571 | 4.6571 | 4.6571 |
| Final Program Attainment | **#DIV/0!** | **2.4629** | **2.4554** | **2.4703** | **2.4703** |

Dr. V S Krishna Government Degree and PG College (A)
Third Year: Semester V
2019 2020
B.A. Political Science
Course VI (CORE): Western Political Thought

**COURSE OUTCOME WEIGHTED AVERAGE: 2.5935**

**Course Outcomes**: On successful completion of the course the student will be able to :

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | Understand the fundamental contours classical, western political philosophy, basic features of medieval political thought and shift from medieval to modem era. | L1 Remember L3 Apply | 2 | 2.7677 |
| CO2 | Understand the Social Contract Theory and appreciate its implications on the perception of State in terms of its purposes and role. | L2 Understand and L5 Evaluate | 3.5 | 2.5935 |
| CO3 | Acquaint with the Liberal and Marxist philosophy and analyze some trends in Western Political Thought | L3 Apply and L4 Analyse | 3.5 | 2.5935 |
| CO4 | Critically analyse the evolution of western political thought | L4 Analyse and L5 Evaluate | 4.5 | 2.4774 |
| CO5 | Students will analyse contemporary interpretations of key documents and Students will interpret contemporary social movements. | L4 Analyse and L6 Create | 5 | 2.4193 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 1 | 3 | 2 | 0 | 0 | 0 | 0 | 0 |
| CO:2 | 3 | 0 | 1 | 3 | 2 | 0 | 2 | 0 | 1 |
| CO:3 | 2 | 3 | 3 | 0 | 2 | 0 | 0 | 2 | 0 |
| CO:4 | 2 | 0 | 3 | 3 | 2 | 0 | 0 | 0 | 3 |
| CO:5 | 4 | 3 | 2 | 2 | 0 | 0 | 3 | 2 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 1 | 2 | 3 | 3 |
| CO:2 | 0 | 2 | 3 | 2 | 0 |
| CO:3 | 2 | 0 | 3 | 3 | 3 |
| CO:4 | 3 | 2 | 0 | 3 | 0 |
| CO:5 | 3 | 2 | 3 | 1 | 2 |

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 5.5354 | 2.7677 | 8.3031 | 5.5354 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:2 | 7.7805 | 0.0000 | 2.5935 | 7.7805 | 5.1870 | 0.0000 | 5.1870 | 0.0000 | 2.5935 |
| CO:3 | 5.1870 | 7.7805 | 7.7805 | 0.0000 | 5.1870 | 0.0000 | 0.0000 | 5.1870 | 0.0000 |
| CO:4 | 4.9547 | 0.0000 | 7.4321 | 7.4321 | 4.9547 | 0.0000 | 0.0000 | 0.0000 | 7.4321 |
| CO:5 | 9.6771 | 7.2579 | 4.8386 | 4.8386 | 0.0000 | 0.0000 | 7.2579 | 4.8386 | 7.2579 |
| Final Program Attainment | **2.5488** | **2.5437** | **2.5790** | **2.5587** | **2.5548** | **#DIV/0!** | **2.4890** | **2.5064** | **2.4691** |

**ATTAINMENT OF PSOs**

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 5.5354 | 2.7677 | 5.5354 | 8.3031 | 8.3031 |
| CO:2 | 0.0000 | 5.1870 | 7.7805 | 5.1870 | 0.0000 |
| CO:3 | 5.1870 | 0.0000 | 7.7805 | 7.7805 | 7.7805 |
| CO:4 | 7.4321 | 4.9547 | 0.0000 | 7.4321 | 0.0000 |
| CO:5 | 7.2579 | 4.8386 | 7.2579 | 2.4193 | 4.8386 |
| Final Program Attainment | **2.5412** | **2.5354** | **2.5777** | **2.5935** | **2.6153** |

Dr. V S Krishna Government Degree and PG College (A)
Third Year: Semester VI
2019 2020
B.A. Political Science
Course VII B (ELECTIVE): Principals of Public Administration

**COURSE OUTCOME WEIGHTED AVERAGE: 2.3667**

**Course Outcomes**:

On successful completion of the course the students will be able to:

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | Know the meaning, nature, scope and significance of Public Administration | L1 Remember L2 Understand | 1.5 | 2.7286 |
| CO2 | To understand the basic theories of Public Administration | L2 Understand and l5 Evaluate | 3.5 | 2.3667 |
| CO3 | To understand the principles of Public Administration such as hierarchy and the decision making process. | L3 Apply and l4 Analyse | 3.5 | 2.3667 |
| CO4 | To understand the structure of the organization which helps in helps the students in gaining knowledge about the basic needs of the organization. | L4 Analyse and l5 Evaluate | 4.5 | 2.1858 |
| CO5 | Understanding the concept of motivation and the theories of X AND Y, which will the help the students in gaining the practical knowledge. | L4 Analyse and l6 Create | 5 | 2.0953 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 1 |
| CO:2 | 3 | 1 | 3 | 3 | 3 | 0 | 0 | 0 | 0 |
| CO:3 | 2 | 1 | 2 | 2 | 3 | 0 | 0 | 0 | 1 |
| CO:4 | 3 | 0 | 2 | 3 | 2 | 0 | 0 | 0 | 0 |
| CO:5 | 2 | 2 | 3 | 2 | 3 | 0 | 3 | 2 | 2 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 3 | 1 | 3 | 3 |
| CO:2 | 2 | 1 | 3 | 2 | 2 |
| CO:3 | 2 | 3 | 2 | 3 | 2 |
| CO:4 | 3 | 2 | 2 | 3 | 2 |
| CO:5 | 2 | 1 | 2 | 2 | 3 |

## ATTAINMENT OF POs

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 5.5354 | 0.0000 | 5.5354 | 5.5354 | 5.5354 | 0.0000 | 0.0000 | 0.0000 | 2.7677 |
| CO:2 | 7.7805 | 2.5935 | 7.7805 | 7.7805 | 7.7805 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:3 | 5.1870 | 2.5935 | 5.1870 | 5.1870 | 7.7805 | 0.0000 | 0.0000 | 0.0000 | 2.5935 |
| CO:4 | 7.4321 | 0.0000 | 4.9547 | 7.4321 | 4.9547 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| CO:5 | 4.8386 | 4.8386 | 7.2579 | 4.8386 | 7.2579 | 0.0000 | 7.2579 | 4.8386 | 4.8386 |
| Final Program Attainment | **2.5645** | **2.5064** | **2.5596** | **2.5645** | **2.5622** | **#DIV/0!** | **2.4193** | **2.4193** | **2.5499** |

## ATTAINMENT OF PSOS

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 5.5354 | 8.3031 | 2.7677 | 8.3031 | 8.3031 |
| CO:2 | 5.1870 | 2.5935 | 7.7805 | 5.1870 | 5.1870 |
| CO:3 | 5.1870 | 7.7805 | 5.1870 | 7.7805 | 5.1870 |
| CO:4 | 7.4321 | 4.9547 | 4.9547 | 7.4321 | 4.9547 |
| CO:5 | 4.8386 | 2.4193 | 4.8386 | 4.8386 | 7.2579 |
| Final Program Attainment | **2.5618** | **2.6051** | **2.5529** | **2.5801** | **2.5741** |

Dr. V S Krishna Government Degree and PG College (A)
Third Year: Semester VI
2019 2020
B.A. Political Science
Course VIII C 1 (Cluster Elective) : International Relations

**COURSE OUTCOME WEUGHTE AVERAGE: 2.3401**

**Course Outcomes**:

On successful completion of the course the students will be able to:

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | Understand nature and scope of theory of International Relations. | L1 Remember<br>L2 Understand | 1.5 | 2.7172 |
| CO2 | Familiarize with different theories of International Relations | L2 Understand and L5 Evaluate | 3.5 | 2.3401 |
| CO3 | Assess the concepts of power. | L3 Apply and L4 Analyse<br>L5 Evaluate | 6 | 1.8687 |
| CO4 | Debate the significance of Foreign Policy. | L4 Analyse and L5 Evaluate | 4.5 | 2.1516 |
| CO5 | Speculate on security and disarmament. | L4 Analyse and L6 Create | 5 | 2.0573 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 2 |
| CO:2 | 2 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 2 |
| CO:3 | 2 | 1 | 3 | 2 | 0 | 0 | 2 | 0 | 3 |
| CO:4 | 2 | 0 | 1 | 2 | 3 | 0 | 2 | 0 | 1 |
| CO:5 | 3 | 1 | 2 | 3 | 3 | 0 | 3 | 0 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 2 | 2 | 3 | 3 |
| CO:2 | 2 | 2 | 3 | 3 | 3 |
| CO:3 | 3 | 2 | 2 | 3 | 3 |
| CO:4 | 3 | 1 | 3 | 3 | 2 |
| CO:5 | 2 | 1 | 3 | 3 | 2 |

**ATTAINMENT OF POs**

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 5.4344 | 8.1516 | 8.1516 | 5.4344 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 5.4344 |
| CO:2 | 4.6802 | 4.6802 | 7.0203 | 4.6802 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 4.6802 |
| CO:3 | 3.7375 | 1.8687 | 5.6062 | 3.7375 | 0.0000 | 0.0000 | 3.7375 | 0.0000 | 5.6062 |
| CO:4 | 4.3031 | 0.0000 | 2.1516 | 4.3031 | 6.4547 | 0.0000 | 4.3031 | 0.0000 | 2.1516 |
| CO:5 | 6.1719 | 2.0573 | 4.1146 | 6.1719 | 6.1719 | 0.0000 | 6.1719 | 0.0000 | 6.1719 |
| Final Program Attainment | **2.2115** | **2.3940** | **2.2537** | **2.2115** | **2.1044** | **#DIV/0!** | **2.0304** | **#DIV/0!** | **2.1858** |

**ATTAINMENT OF PSOs**

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 5.4344 | 5.4344 | 5.4344 | 8.1516 | 8.1516 |
| CO:2 | 4.6802 | 4.6802 | 7.0203 | 7.0203 | 7.0203 |
| CO:3 | 5.6062 | 3.7375 | 3.7375 | 5.6062 | 5.6062 |
| CO:4 | 6.4547 | 2.1516 | 6.4547 | 6.4547 | 4.3031 |
| CO:5 | 4.1146 | 2.0573 | 6.1719 | 6.1719 | 4.1146 |
| Final Program Attainment | **2.1908** | **2.2576** | **2.2168** | **2.2270** | **2.2458** |

Dr. V S Krishna Government Degree and PG College (A)
Third Year: Semester VI
2019 2020
B.A. Political Science
Course VIII C 2 (Cluster Elective): Indian Foreign Policy

**COURSE OUTCOME WEIGHTED AVERAGE: 2.1906**

**Course Outcomes**:

On successful completion of the course the students will be able to:

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Level Learning Index | CO Attainment |
|---|---|---|---|---|
| CO1 | Understands the theoretical framework of foreign policy. | L1 Remember L3 Apply | 2 | 3.9637 |
| CO2 | Enables the student to know the role of foreign policy and national interest. | L 2 Understand and L5 Evaluate | 3.5 | 2.1906 |
| CO3 | Learns about the origin, principles and basics of Indian foreign policy. | L3 Apply and L4 Analyse | 3.5 | 2.1906 |
| CO4 | Assess importance of Panchsheel agreement between India and China. | L4 Analyse and L5 Evaluate | 4.5 | 1.9593 |
| CO5 | Understands the geo-political, geo-strategic determinants and cross-border terrorism in India. | L4 Analyse and L6 Create | 5 | 1.8437 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 2 |
| CO:2 | 2 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 1 |
| CO:3 | 2 | 2 | 3 | 2 | 0 | 0 | 2 | 0 | 2 |
| CO:4 | 2 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 1 |
| CO:5 | 3 | 1 | 2 | 3 | 0 | 0 | 3 | 0 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 2 | 2 | 2 | 3 |
| CO:2 | 2 | 3 | 1 | 3 | 2 |
| CO:3 | 1 | 2 | 2 | 2 | 3 |
| CO:4 | 3 | 1 | 3 | 3 | 2 |
| CO:5 | 2 | 1 | 3 | 3 | 1 |

## ATTAINMENT OF POs

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 7.9273 | 11.8910 | 11.8910 | 7.9273 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 7.9273 |
| CO:2 | 4.3812 | 4.3812 | 6.5718 | 4.3812 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 2.1906 |
| CO:3 | 4.3812 | 4.3812 | 6.5718 | 4.3812 | 0.0000 | 0.0000 | 4.3812 | 0.0000 | 4.3812 |
| CO:4 | 3.9187 | 0.0000 | 3.9187 | 3.9187 | 0.0000 | 0.0000 | 3.9187 | 0.0000 | 1.9593 |
| CO:5 | 5.5311 | 1.8437 | 3.6874 | 5.5311 | 0.0000 | 0.0000 | 5.5311 | 0.0000 | 5.5311 |
| Final Program Attainment | **2.3763** | **2.8121** | **2.5108** | **2.3763** | **#DIV/0!** | **#DIV/0!** | **1.9759** | **#DIV/0!** | **2.4433** |

## ATTAINMENT OF PSOs

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 7.9273 | 7.9273 | 7.9273 | 7.9273 | 11.8910 |
| CO:2 | 4.3812 | 6.5718 | 2.1906 | 6.5718 | 4.3812 |
| CO:3 | 2.1906 | 4.3812 | 4.3812 | 4.3812 | 6.5718 |
| CO:4 | 5.8780 | 1.9593 | 5.8780 | 5.8780 | 3.9187 |
| CO:5 | 3.6874 | 1.8437 | 5.5311 | 5.5311 | 1.8437 |
| Final Program Attainment | **2.4065** | **2.5204** | **2.3553** | **2.3300** | **2.6006** |

Dr. V S Krishna Government Degree and PG College (A)
Third Year: Semester VI
2019 2020
B.A. Political Science
Course VIII C 3 (Cluster Elective) : Contemporary Global Issues

**COURSE OUTCOME WEIGHTED AVERAGE: 2.4633**

**Course Outcomes**:

On successful completion of the course the students will be able to:

| S.No | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1 | Understands the conception of Globalisation | L1 Remember L3 Apply | 2 | 2.6933 |
| CO2 | Enables the student to know anchors of Global Economy such as World Bank. | L2 Understand and L5 Evaluate | 3.5 | 2.4633 |
| CO3 | Learns about the origin of Nation – State in the context of globalization and the consequences of globalization. | L3 Apply and L4 Analyse | 3.5 | 2.4633 |
| CO4 | Understand various global issues the humanity is facing such as environmental degradation and terrorism. | L4 Analyse and L5 Evaluate | 4.5 | 2.3100 |
| CO5 | Understands and get deeper knowledge regarding the development and under development of different countries and politics involved in it. | L4 Analyse and L6 Create | 5 | 2.2333 |

**CO-PO Mapping**

1. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 3 | 3 | 2 | 0 | 0 | 0 | 0 | 2 |
| CO:2 | 2 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 1 |
| CO:3 | 2 | 2 | 3 | 2 | 0 | 0 | 2 | 0 | 2 |
| CO:4 | 2 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 1 |
| CO:5 | 3 | 1 | 2 | 3 | 0 | 0 | 3 | 0 | 3 |

**CO-PSO Mapping**

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 2 | 2 | 2 | 3 |
| CO:2 | 2 | 3 | 1 | 3 | 2 |
| CO:3 | 1 | 2 | 2 | 2 | 3 |
| CO:4 | 3 | 1 | 3 | 3 | 2 |
| CO:5 | 2 | 1 | 3 | 3 | 1 |

## ATTAINMENT OF PSOs

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | P**O:8** Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 5.3866 | 8.0799 | 8.0799 | 5.3866 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 5.3866 |
| CO:2 | 4.9266 | 4.9266 | 7.3899 | 4.9266 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 2.4633 |
| CO:3 | 4.9266 | 4.9266 | 7.3899 | 4.9266 | 0.0000 | 0.0000 | 4.9266 | 0.0000 | 4.9266 |
| CO:4 | 4.6199 | 0.0000 | 4.6199 | 4.6199 | 0.0000 | 0.0000 | 4.6199 | 0.0000 | 2.3100 |
| CO:5 | 6.6999 | 2.2333 | 4.4666 | 6.6999 | 0.0000 | 0.0000 | 6.6999 | 0.0000 | 6.6999 |
| Final Program Outcome | **2.4145** | **2.5208** | **2.4574** | **2.4145** | **#DIV/0!** | **#DIV/0!** | **2.3209** | **#DIV/0!** | **2.4207** |

## ATTAINMENT OF POs

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 5.3866 | 5.3866 | 5.3866 | 5.3866 | 8.0799 |
| CO:2 | 4.9266 | 7.3899 | 2.4633 | 7.3899 | 4.9266 |
| CO:3 | 2.4633 | 4.9266 | 4.9266 | 4.9266 | 7.3899 |
| CO:4 | 6.9299 | 2.3100 | 6.9299 | 6.9299 | 4.6199 |
| CO:5 | 4.4666 | 2.2333 | 6.6999 | 6.6999 | 2.2333 |
| Final Program Outcome | **2.4173** | **2.4718** | **2.4006** | **2.4102** | **2.4772** |

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0891-2553262, https://www.drvskrishnagdc.edu.in

# DEPARTMENT OF ENGLISH

# CO & PO ATTAINMENT

## 2019 – 2020

**CO – PO ATTAINMENT METHODOLOGY**

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%

(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**
The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(3 - \boldsymbol{COWA}) \times \left(1 - \frac{\boldsymbol{COLLI}}{3.5}\right)\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

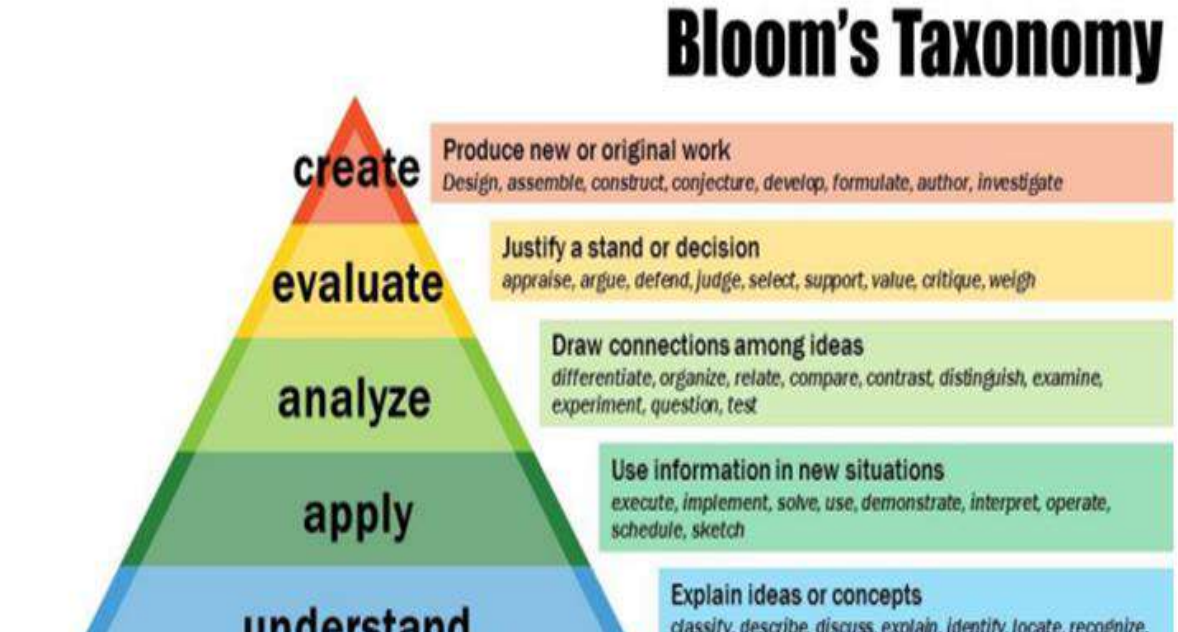
Calculation of PO attainment:
The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**
The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PSO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

| Levels of Bloom's Taxonomoy | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



## PROGRAMME OUTCOMES

| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

## PROGRAMME SPECIFIC OUTCOMES:

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Grasp and analyze fundamental laws and concepts, enabling exploration in advanced branches of science and technology. |
| PSO2 | Perform basic experiments, and competently handle, understand, and design equipment for specific scientific purposes. |
| PSO3 | Develop essential analytical and mathematical skills, providing the advanced competence needed for higher education, research, and industry. |
| PSO4 | Gain qualifications for job opportunities in schools, colleges, and scientific organizations, facilitating career initiation in the scientific field. |
| PSO5 | Expand the boundaries of human knowledge, uncovering new facts and phenomena in the universe. |

## SEMESTER- 1

## PAPER-1: GENERAL ENGLISH

**COURSE OUTCOME WEIGHTED AVERAGE: 2.300005272**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Demonstrate improvement in all four language skills: reading, writing, speaking, and listening | L3 (APPLY) & L2 (UNDERSTAND) | 2.5 | 2.500003766 |
| CO2 | Engage in effective interpersonal communication | L3(APPLY) | 3 | 2.400004519 |
| CO3 | Develop grammatical accuracy and fluency in spoken and written English | L1(REMEMBER), L2 (UNDERSTAND) & L4(ANALYSE) | 2.3 | 2.540003464 |
| CO4 | Develop professional communication skills | L3(APPLY), L4(ANALYSE) & L5(CREATE) | 4 | 2.200006025 |
| CO5 | Acquire the ability to use relevant vocabulary in professional and daily life | L3(APPLY) | 3 | 2.400004519 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 3 | 1 | 0 | 3 | 1 | 1 | 3 |
| C02 | 1 | 2 | 3 | 0 | 1 | 3 | 1 | 2 | 1 |
| CO3 | 2 | 3 | 1 | 0 | 0 | 3 | 1 | 0 | 2 |
| CO4 | 1 | 2 | 0 | 0 | 1 | 3 | 1 | 0 | 2 |
| CO5 | 1 | 2 | 0 | 3 | 0 | 3 | 3 | 2 | 2 |
| TOTAL | 8 | 12 | 7 | 4 | 2 | 15 | 7 | 5 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 1 | 0 |
| C02 | 3 | 3 | 1 | 0 | 0 |
| CO3 | 2 | 3 | 3 | 1 | 0 |
| CO4 | 3 | 3 | 1 | 3 | 3 |
| CO5 | 3 | 3 | 1 | 2 | 2 |
| TOTAL | 14 | 15 | 8 | 7 | 5 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.500011 | 7.500011 | 7.500011 | 2.500004 | 0 | 7.500011 | 2.500004 | 2.500004 | 7.500011 |
| CO2 | 2.400005 | 4.800009 | 7.200014 | 0 | 2.400005 | 7.200014 | 2.400005 | 4.800009 | 2.400005 |
| CO3 | 5.080007 | 7.62001 | 2.540003 | 0 | 0 | 7.62001 | 2.540003 | 0 | 5.080007 |
| CO4 | 2.200006 | 4.400012 | 0 | 0 | 2.200006 | 6.600018 | 2.200006 | 0 | 4.400012 |
| CO 5 | 2.400005 | 4.800009 | 0 | 7.200014 | 0 | 7.200014 | 7.200014 | 4.800009 | 4.800009 |
| FINAL ATTAINMENT | **2.447504** | **2.426671** | **2.462861** | **2.425004** | **2.300005** | **2.408004** | **2.405719** | **2.420004** | **2.418004** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.500011 | 7.500011 | 5.000008 | 2.500004 | 0 |
| CO2 | 7.200014 | 7.200014 | 2.400005 | 0 | 0 |
| CO3 | 5.080007 | 7.62001 | 7.62001 | 2.540003 | 0 |
| CO4 | 6.600018 | 6.600018 | 2.200006 | 6.600018 | 6.600018 |
| CO 5 | 7.200014 | 7.200014 | 2.400005 | 4.800009 | 4.800009 |
| FINAL ATTAINMENT | **2.398576** | **2.408004** | **2.452504** | **2.348576** | **2.280005** |

## SEMESTER- 2

## PAPER-1: GENERAL ENGLISH

**COURSE OUTCOME WEIGHTED AVERAGE: 2.673154623**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Develop active listening strategies to enhance comprehension and retention of spoken lanČuaČe. | L3(APPLY) | 3 | 2.71984682 |
| CO2 | Build up a repository of active vocabulary | L1(REMEMBER) & L3(APPLY) | 2 | 2.813231213 |
| CO3 | Enhance writing skills for future purposes | L2(UNDERSTAND), L3(APPLY) & L4(ANALYSE) | 3 | 2.71984682 |
| CO4 | Foster skills in organizing ideas logically and coherently in written form. | L4(ANALYSE) & L5(EVALUATE) | 4.5 | 2.57977023 |
| CO5 | Analyze the formal elements of poetry, including enter, rhyme, imagery, and figurative lanČuaČe. | L4(ANALYSE) | 4 | 2.626462426 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| C02 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| TOTAL | 9 | 4 | 3 | 6 | 6 | 9 | 7 | 5 | 10 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 1 | 2 | 2 |
| C02 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 |
| TOTAL | 9 | 9 | 5 | 10 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.439694 | 0 | 2.719847 | 2.719847 | 0 | 5.439694 | 2.719847 | 2.719847 | 8.15954 |
| CO2 | 5.626462 | 0 | 0 | 0 | 2.813231 | 5.626462 | 2.813231 | 5.626462 | 2.813231 |
| CO3 | 2.719847 | 2.719847 | 0 | 5.439694 | 5.439694 | 2.719847 | 2.719847 | 0 | 5.439694 |
| CO4 | 2.57977 | 2.57977 | 0 | 2.57977 | 2.57977 | 5.15954 | 2.57977 | 0 | 5.15954 |
| CO 5 | 7.879387 | 5.252925 | 5.252925 | 5.252925 | 5.252925 | 5.252925 | 7.879387 | 5.252925 | 5.252925 |
| **FINAL ATTAINMENT** | **2.693907** | **2.638135** | **2.657591** | **2.665373** | **2.680937** | **2.688719** | **2.673155** | **2.719847** | **2.682493** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.15954 | 8.15954 | 2.719847 | 5.439694 | 5.439694 |
| CO2 | 2.813231 | 5.626462 | 2.813231 | 5.626462 | 2.813231 |
| CO3 | 5.439694 | 5.439694 | 2.719847 | 8.15954 | 2.719847 |
| CO4 | 2.57977 | 2.57977 | 2.57977 | 5.15954 | 2.57977 |
| CO 5 | 5.252925 | 2.626462 | 2.626462 | 2.626462 | 2.626462 |
| **FINAL ATTAINMENT** | **2.693907** | **2.714659** | **2.691832** | **2.70117** | **2.696501** |

## SEMESTER- 3

## PAPER-1: GENERAL ENGLISH

**COURSE OUTCOME WEIGHTED AVERAGE: 2.216176158**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Foster reflective listening abilities. | L2(UNDERSTAND) | 2 | 2.552100662 |
| CO2 | Develop effective public speaking skills | L3(APPLY) | 3 | 2.328150993 |
| CO3 | Develop techniques for preparing for various types of interviews. | L4(ANALYSE). L5(EVALUATE) C L6(CREATE) | 4 | 2.104201323 |
| CO4 | Active listening to improve interactions and relationships. | L2(UNDERSTAND) | 2 | 2.552100662 |
| CO5 | Cultivate effective communication strategies for entrepreneurship skills. | L1(REMEMBER) & L3(APPLY) | 2 | 2.552100662 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 0 | 0 | 2 | 1 | 1 | 3 |
| C02 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 2 | 1 |
| CO3 | 1 | 3 | 2 | 2 | 2 | 2 | 1 | 0 | 2 |
| CO4 | 2 | 2 | 1 | 1 | 2 | 3 | 1 | 0 | 2 |
| CO5 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 |
| TOTAL | 8 | 12 | 8 | 5 | 9 | 11 | 7 | 5 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 3 | 3 | 2 | 3 |
| C02 | 2 | 2 | 1 | 2 | 3 |
| CO3 | 3 | 3 | 3 | 0 | 3 |
| CO4 | 3 | 1 | 3 | 3 | 2 |
| CO5 | 3 | 2 | 3 | 2 | 3 |
| TOTAL | 14 | 11 | 13 | 9 | 14 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.439694 | 8.15954 | 5.439694 | 0 | 0 | 5.439694 | 2.719847 | 2.719847 | 8.15954 |
| CO2 | 2.813231 | 2.813231 | 0 | 0 | 5.626462 | 2.813231 | 2.813231 | 5.626462 | 2.813231 |
| CO3 | 2.719847 | 8.15954 | 5.439694 | 5.439694 | 5.439694 | 5.439694 | 2.719847 | 0 | 5.439694 |
| CO4 | 5.15954 | 5.15954 | 2.57977 | 2.57977 | 5.15954 | 7.739311 | 2.57977 | 0 | 5.15954 |
| CO 5 | 5.252925 | 7.879387 | 7.879387 | 5.252925 | 7.879387 | 7.879387 | 7.879387 | 5.252925 | 5.252925 |
| **FINAL ATTAINMENT** | **2.673155** | **2.680937** | **2.667318** | **2.654478** | **2.678343** | **2.664665** | **2.673155** | **2.719847** | **2.682493** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.15954 | 8.15954 | 8.15954 | 5.439694 | 8.15954 |
| CO2 | 5.626462 | 5.626462 | 2.813231 | 5.626462 | 8.439694 |
| CO3 | 8.15954 | 8.15954 | 8.15954 | 0 | 8.15954 |
| CO4 | 7.739311 | 2.57977 | 7.739311 | 7.739311 | 5.15954 |
| CO 5 | 7.879387 | 5.252925 | 7.879387 | 5.252925 | 7.879387 |
| **FINAL ATTAINMENT** | **2.68316** | **2.707113** | **2.673155** | **2.673155** | **2.699836** |

## SEMESTER-4

### PAPER-1: SPL. ENG, P-4

**COURSE OUTCOME WEIGHTED AVERAGE: 2.1978**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Students will develop an appreciation for the diversity of literary expression during the Romantic and Victorian periods | L2 (UNDERSTAND) | 2 | 2.5416 |
| CO2 | Students will be able to distinguish between a variety of literary forms, such as prose, and poetry, and each of its subgenres | L2(UNDERSTAND) & L5(EVALUATE) | 3.5 | 2.1978 |
| CO3 | Develop critical and analytical skills necessary for advanced literary study. | L4(ANALYSE) | 4 | 2.0832 |
| CO4 | Students will show active engagement with course materials | L3(APPLY), L4(ANALYSE) & L5(CREATE) | 4 | 2.0832 |
| CO5 | Students will demonstrate a commitment to lifelong learning | L3(APPLY) | 3 | 2.3124 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 0 | 0 | 3 | 1 | 1 | 1 | 3 |
| C02 | 1 | 2 | 3 | 0 | 0 | 3 | 1 | 2 | 1 |
| CO3 | 1 | 0 | 3 | 3 | 0 | 3 | 1 | 0 | 2 |
| CO4 | 0 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 2 |
| CO5 | 1 | 2 | 0 | 3 | 3 | 3 | 3 | 2 | 2 |
| TOTAL | 6 | 9 | 7 | 6 | 6 | 13 | 7 | 5 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 0 | 3 | 0 |
| C02 | 2 | 3 | 0 | 3 | 0 |
| CO3 | 2 | 1 | 3 | 3 | 2 |
| CO4 | 1 | 0 | 3 | 3 | 3 |
| CO5 | 0 | 0 | 3 | 1 | 3 |
| TOTAL | 8 | 6 | 9 | 13 | 8 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.6249 | 7.6249 | 0.0000 | 0.0000 | 7.6249 | 2.5416 | 2.5416 | 2.5416 | 7.6249 |
| CO2 | 2.1978 | 4.3957 | 6.5935 | 0.0000 | 0.0000 | 6.5935 | 2.1978 | 4.3957 | 2.1978 |
| CO3 | 2.0832 | 0.0000 | 6.2497 | 6.2497 | 0.0000 | 6.2497 | 2.0832 | 0.0000 | 4.1665 |
| CO4 | 0.0000 | 4.1665 | 2.0832 | 0.0000 | 0.0000 | 6.2497 | 2.0832 | 0.0000 | 4.1665 |
| CO 5 | 2.3124 | 4.6249 | 0.0000 | 6.9373 | 6.9373 | 6.9373 | 6.9373 | 4.6249 | 4.6249 |
| **FINAL ATTAINMENT** | **2.3697** | **2.3124** | **2.1324** | **2.1978** | **2.4270** | **2.1978** | **2.2633** | **2.3124** | **2.2781** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.6249 | 5.0832 | 0.0000 | 7.6249 | 0.0000 |
| CO2 | 4.3957 | 6.5935 | 0.0000 | 6.5935 | 0.0000 |
| CO3 | 4.1665 | 2.0832 | 6.2497 | 6.2497 | 4.1665 |
| CO4 | 2.0832 | 0.0000 | 6.2497 | 6.2497 | 6.2497 |
| CO 5 | 0.0000 | 0.0000 | 6.9373 | 2.3124 | 6.9373 |
| **FINAL ATTAINMENT** | **2.2838** | **2.2933** | **2.1596** | **2.2331** | **2.1692** |

## SEMESTER-5

## PAPER-1: SPL. ENG, P-6-A

**COURSE OUTCOME WEIGHTED AVERAGE: 2.3887**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the central principles of Teaching English. | L3 (APPLY) & L2 (UNDERSTAND) | 2.5 | 2.5634 |
| CO2 | Acquire the skills of Teaching English. | L3(APPLY) | 3 | 2.4761 |
| CO3 | Demonstrate different classroom management techniques. | L1(REMEMBER), L2 (UNDERSTAND) & L4(ANALYSE) | 2.3 | 2.5983 |
| CO4 | Teach English in a systematic way. | L3(APPLY), L4(ANALYSE) & L5(CREATE) | 4 | 2.3015 |
| CO5 | Make use of Technology for Teaching English. | L3(APPLY) | 3 | 2.4761 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 0 | 1 | 2 | 3 | 1 | 1 | 3 |
| C02 | 1 | 2 | 1 | 0 | 3 | 3 | 1 | 2 | 1 |
| CO3 | 0 | 3 | 2 | 0 | 1 | 2 | 1 | 0 | 2 |
| CO4 | 1 | 2 | 1 | 1 | 2 | 3 | 1 | 0 | 2 |
| CO5 | 1 | 0 | 3 | 0 | 2 | 2 | 3 | 2 | 2 |
| TOTAL | 6 | 9 | 7 | 2 | 10 | 13 | 7 | 5 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 1 | 0 |
| C02 | 0 | 3 | 3 | 2 | 0 |
| CO3 | 3 | 1 | 3 | 3 | 3 |
| CO4 | 2 | 2 | 3 | 3 | 2 |
| CO5 | 3 | 0 | 0 | 0 | 0 |
| TOTAL | 11 | 9 | 11 | 9 | 5 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.6903 | 5.1268 | 0.0000 | 2.5634 | 5.1268 | 7.6903 | 2.5634 | 2.5634 | 7.6903 |
| CO2 | 2.4761 | 4.9522 | 2.4761 | 0.0000 | 7.4283 | 7.4283 | 2.4761 | 4.9522 | 2.4761 |
| CO3 | 0.0000 | 7.7950 | 5.1967 | 0.0000 | 2.5983 | 5.1967 | 2.5983 | 0.0000 | 5.1967 |
| CO4 | 2.3015 | 4.6029 | 2.3015 | 2.3015 | 4.6029 | 6.9044 | 2.3015 | 0.0000 | 4.6029 |
| CO 5 | 2.4761 | 0.0000 | 7.4283 | 0.0000 | 4.9522 | 4.9522 | 7.4283 | 4.9522 | 4.9522 |
| **FINAL ATTAINMENT** | **2.4907** | **2.4974** | **2.4861** | **2.4324** | **2.4709** | **2.4748** | **2.4811** | **2.4936** | **2.4918** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.6903 | 7.6903 | 5.1268 | 2.5634 | 0.0000 |
| CO2 | 0.0000 | 7.4283 | 7.4283 | 4.9522 | 0.0000 |
| CO3 | 7.7950 | 2.5983 | 7.7950 | 7.7950 | 7.7950 |
| CO4 | 4.6029 | 4.6029 | 6.9044 | 6.9044 | 4.6029 |
| CO 5 | 7.4283 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **FINAL ATTAINMENT** | **2.5015** | **2.4800** | **2.4777** | **2.4683** | **2.4796** |

## SEMESTER-5

### PAPER-1: SPL. ENG, P-7-A

**COURSE OUTCOME WEIGHTED AVERAGE: 2.6627**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the central issues of Translation. | L3 (APPLY) & L2 (UNDERSTAND) | 2.5 | 2.7591 |
| CO2 | Use the methods of Translation. | L3(APPLY) | 3 | 2.7109 |
| CO3 | Translate from English to Telugu and vice-versa. | L1(REMEMBER), L2 (UNDERSTAND) & L4(ANALYSE) | 2.3 | 2.7784 |
| CO4 | Translate Different Genres. | L3(APPLY), L4(ANALYSE) & L5(CREATE) | 4 | 2.6145 |
| CO5 | Make use of Technology for Translation. | L3(APPLY) | 3 | 2.7109 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 0 | 2 | 3 | 3 | 0 | 1 | 1 | 3 |
| C02 | 3 | 0 | 1 | 2 | 2 | 0 | 1 | 2 | 1 |
| CO3 | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 2 |
| CO4 | 3 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 |
| CO5 | 0 | 2 | 1 | 0 | 2 | 2 | 3 | 2 | 2 |
| TOTAL | 12 | 2 | 5 | 9 | 8 | 2 | 7 | 5 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 0 | 1 | 0 |
| C02 | 3 | 3 | 2 | 0 | 3 |
| CO3 | 3 | 2 | 2 | 3 | 3 |
| CO4 | 2 | 2 | 2 | 3 | 0 |
| CO5 | 1 | 2 | 0 | 0 | 3 |
| TOTAL | 12 | 11 | 6 | 7 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.2773 | 0.0000 | 5.5182 | 8.2773 | 8.2773 | 0.0000 | 2.7591 | 2.7591 | 8.2773 |
| CO2 | 8.1327 | 0.0000 | 2.7109 | 5.4218 | 5.4218 | 0.0000 | 2.7109 | 5.4218 | 2.7109 |
| CO3 | 8.3351 | 0.0000 | 2.7784 | 5.5567 | 2.7784 | 0.0000 | 2.7784 | 0.0000 | 5.5567 |
| CO4 | 7.8436 | 0.0000 | 0.0000 | 5.2291 | 0.0000 | 0.0000 | 2.6145 | 0.0000 | 5.2291 |
| CO 5 | 0.0000 | 5.4218 | 2.7109 | 0.0000 | 5.4218 | 5.4218 | 8.1327 | 5.4218 | 5.4218 |
| **FINAL ATTAINMENT** | **2.7157** | **2.7109** | **2.7437** | **2.7205** | **2.7374** | **2.7109** | **2.7137** | **2.7205** | **2.7196** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.2773 | 5.5182 | 0.0000 | 2.7591 | 0.0000 |
| CO2 | 8.1327 | 8.1327 | 5.4218 | 0.0000 | 8.1327 |
| CO3 | 8.3351 | 5.5567 | 5.5567 | 8.3351 | 8.3351 |
| CO4 | 5.2291 | 5.2291 | 5.2291 | 7.8436 | 0.0000 |
| CO 5 | 2.7109 | 5.4218 | 0.0000 | 0.0000 | 8.1327 |
| **FINAL ATTAINMENT** | **2.7238** | **2.7144** | **2.7013** | **2.7054** | **2.7334** |

# Dr V S Krishna Government Degree College (A), Visakhapatnam

## Department of Computer Science

### CO – PO ATTAINMENT METHODOLOGY

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

## Academic Year 2019-2020

## Semester: I

## Paper 1: Computer Fundamentals and Photoshop

## CO- Bloom's Taxonomy Mapping

**Course Objectives:**

1. Learn to various generations of computers
2. Learn to various input and output devices.
3. Learn to Photoshop tool box.

**COURSE OUTCOME WEIGHTED AVERAGE: 2.5424**

| **Course Learning Outcomes: Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** To explore basic knowledge on computers | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8039 |
| **CO 2:** To acquire knowledge on working of I/O devices, memories | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8039 |
| **CO 3:** To explore knowledge on Adobe Photoshop | Level 1 ( Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.7385 |
| **CO 4:** To work with Adobe Photoshop tool box. | Level 1 ( Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.7385 |
| **CO 5:** To create basic designs using Adobe Photoshop | Level 1 ( knowledge)<br>Level 2 (Understand)<br>Level 3( Application)<br>Level 6 ( Create) | 3 | 2.6078 |

## Semester: I

## Paper 1: Computer Fundamentals and Photoshop

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 2 |
| **CO2** | 3 | 2 | 0 | 0 | 1 | 2 | 3 | 3 | 3 |
| **CO3** | 3 | 2 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 2 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |
| **CO5** | 3 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 3 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 2 | 2 | 1 |
| **CO2** | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 1 | 2 | 2 |
| **CO4** | 2 | 2 | 2 | 3 | 3 |
| **CO5** | 3 | 2 | 2 | 2 | 3 |

**Attainments of Program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.6078 | 5.6078 | 2.8039 | 2.8039 | 2.8039 | 5.6078 | 8.4117 | 5.6078 | 5.6078 |
| CO2 | 8.4117 | 5.6078 | 0.0000 | 0.0000 | 2.8039 | 5.6078 | 8.4117 | 8.4117 | 8.4117 |
| CO3 | 8.2156 | 5.4771 | 0.0000 | 0.0000 | 2.7385 | 2.7385 | 8.2156 | 8.2156 | 8.2156 |
| CO4 | 8.2156 | 5.4771 | 0.0000 | 0.0000 | 2.7385 | 2.7385 | 5.4771 | 5.4771 | 5.4771 |
| CO5 | 7.8234 | 5.2156 | 0.0000 | 0.0000 | 2.6078 | 2.6078 | 7.8234 | 5.2156 | 7.8234 |
| **FINAL PROGRAM ATTAINMENT** | **2.7339** | **2.7385** | **2.8039** | **2.8039** | **2.7385** | **2.7572** | **2.7385** | **2.7440** | **2.7335** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 5.6078 | 2.8039 | 5.6078 | 5.6078 | 2.8039 |
| **CO2** | 8.4117 | 8.4117 | 5.6078 | 8.4117 | 8.4117 |
| **CO3** | 8.2156 | 5.4771 | 2.7385 | 5.4771 | 5.4771 |
| **CO4** | 5.4771 | 5.4771 | 5.4771 | 8.2156 | 8.2156 |
| **CO5** | 7.8234 | 5.2156 | 5.2156 | 5.2156 | 7.8234 |
| **FINAL PROGRAM ATTAINMENT** | **2.7335** | **2.7385** | **2.7385** | **2.7440** | **2.7276** |

## Semester: II
## Paper 2: Programming in C
## CO- Bloom's Taxonomy Mapping

**Course Objectives:**

1. Learn how to solve common types of computing problems.
2. Learn data types and control structures of C
3. Learn to map problems to programming features of C.
4. Learn to write good portable C programs

**COURSE OUTCOME WEIGHTED AVERAGE: 2.5755**

| **Course Learning Outcomes:**<br>**Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Appreciate and understand the working of a digital computer | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8181 |
| **CO 2:** Analyze a given problem and develop an algorithm to solve the problem | Level 2 ( Understand)<br>Level 3 (Application) | 2.5 | 2.6968 |
| **CO 3:** Improve upon a solution to a problem | Level 2 ( Understand)<br>Level 3 ( Application) | 2.5 | 2.6968 |
| **CO 4:** Use the 'C' language constructs in the right way | Level 2 (Understand)<br>Level 3 (Application)<br>Level 6 ( Create) | 3.6 | 2.5634 |
| **CO 5:** Design, develop and test programs written in 'C' | Level 1( knowledge)<br>Level 2 (Understand) | 1.5 | 2.8181 |

## Semester: II

## Paper 2: Programming in C

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 2 | 2 |
| **CO2** | 3 | 2 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO3** | 3 | 2 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 |
| **CO5** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 2 | 2 | 1 |
| **CO2** | 3 | 3 | 2 | 3 | 3 |
| **CO3** | 3 | 2 | 2 | 3 | 2 |
| **CO4** | 3 | 2 | 2 | 2 | 2 |
| **CO5** | 2 | 2 | 2 | 2 | 2 |

**Attainments of Program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.6362 | 5.6362 | 2.8181 | 2.8181 | 2.8181 | 2.8181 | 8.4543 | 5.6362 | 5.6362 |
| CO2 | 8.0905 | 5.3937 | 0.0000 | 0.0000 | 2.6968 | 2.6968 | 8.0905 | 8.0905 | 8.0905 |
| CO3 | 8.0905 | 5.3937 | 0.0000 | 0.0000 | 2.6968 | 2.6968 | 8.0905 | 8.0905 | 8.0905 |
| CO4 | 7.6903 | 5.1269 | 0.0000 | 0.0000 | 2.5634 | 2.5634 | 7.6903 | 5.1269 | 5.1269 |
| CO5 | 5.6362 | 5.6362 | 0.0000 | 0.0000 | 2.8181 | 2.8181 | 5.6362 | 5.6362 | 5.6362 |
| **FINAL PROGRAM ATTAINMENT** | **2.7034** | **2.7187** | **2.8181** | **2.8181** | **2.7187** | **2.7187** | **2.7116** | **2.7150** | **2.7150** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 5.6362 | 2.8181 | 5.6362 | 5.6362 | 2.8181 |
| **CO2** | 8.0905 | 8.0905 | 5.3937 | 8.0905 | 8.0905 |
| **CO3** | 8.0905 | 5.3937 | 5.3937 | 8.0905 | 5.3937 |
| **CO4** | 7.6903 | 5.1269 | 5.1269 | 5.1269 | 5.1269 |
| **CO5** | 5.6362 | 5.6362 | 5.6362 | 5.6362 | 5.6362 |
| **FINAL PROGRAM ATTAINMENT** | **2.7034** | **2.7065** | **2.7187** | **2.7150** | **2.7065** |

## Semester: III
## Paper 3: Data Structures
## CO- Bloom's Taxonomy Mapping

**Course Objectives:**

To introduce the fundamental concept of data structures and to emphasize the importance of data structures in developing and implementing efficient algorithms.

**COURSE OUTCOME WEIGHTED AVERAGE: 2.6145**

| **Course Learning Outcomes: Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Describe how arrays, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8348 |
| **CO 2:** Describe common applications for arrays, linked structures, stacks, queues, trees, and graphs. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.7797 |
| **CO 3:** Write programs that use arrays, linked structures, stacks, queues, trees, and graphs. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.7797 |
| **CO 4:** Demonstrate different methods for traversing trees. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.7797 |
| **CO 5:** Compare alternative implementations of data structures with respect to performance | Level 1( Knowledge)<br>Level 2 ( Understand)<br>Level 3 (Application)<br>Level 4 ( Analyze) | 2.5 | 2.7247 |
| **CO 6:** Compare and contrast the benefits of | Level 1 (Knowledge)<br>Level 2 ( Understand) | 3 | 2.6696 |

| | | | |
|---|---|---|---|
| dynamic and static data structures implementations | Level 4 (Analyze)<br>Level 5 (Evaluation) | | |
| **CO 7:** Describe the concept of recursion, give examples of its use, and describe how it can be implemented using a stack. | Level 1 (Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.7797 |
| **CO 8:** Discuss the computational efficiency of the principal algorithms for sorting, searching. | Level 1(Knowledge)<br>Level 2 (Understand)<br>Level 4 (Analyze) | 2.3 | 2.7467 |

## Semester: III

## Paper 3: Data Structures

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 |
| **CO2** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |
| **CO3** | 3 | 3 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 0 | 0 | 1 | 1 | 3 | 2 | 3 |
| **CO5** | 3 | 2 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO6** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |
| **CO7** | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 3 |
| **CO8** | 2 | 2 | 0 | 0 | 1 | 1 | 3 | 2 | 2 |

| CO – PSO Mapping |
| --- |
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| --- | --- | --- | --- | --- | --- |
| **CO1** | 3 | 1 | 3 | 2 | 1 |
| **CO2** | 3 | 3 | 2 | 2 | 2 |
| **CO3** | 3 | 2 | 3 | 3 | 3 |
| **CO4** | 3 | 2 | 2 | 3 | 3 |
| **CO5** | 3 | 3 | 3 | 3 | 3 |
| **CO6** | 3 | 2 | 2 | 3 | 3 |
| **CO7** | 3 | 2 | 2 | 3 | 3 |
| **CO8** | 3 | 2 | 1 | 2 | 3 |

**Attainments of Program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.6696 | 5.6696 | 2.8348 | 2.8348 | 2.8348 | 2.8348 | 5.6696 | 2.8348 | 5.6696 |
| CO2 | 5.6696 | 5.6696 | 0.0000 | 0.0000 | 2.8348 | 2.8348 | 5.6696 | 5.6696 | 5.6696 |
| CO3 | 8.5044 | 8.5044 | 0.0000 | 0.0000 | 2.8348 | 2.8348 | 8.5044 | 8.5044 | 8.5044 |
| CO4 | 8.5044 | 8.5044 | 0.0000 | 0.0000 | 2.8348 | 2.8348 | 8.5044 | 5.6696 | 8.5044 |
| CO5 | 8.5044 | 5.6696 | 0.0000 | 0.0000 | 2.8348 | 2.8348 | 8.5044 | 8.5044 | 8.5044 |
| CO6 | 5.6696 | 5.6696 | 0.0000 | 0.0000 | 2.8348 | 2.8348 | 5.6696 | 5.6696 | 5.6696 |
| CO7 | 5.6696 | 5.6696 | 0.0000 | 0.0000 | 2.8348 | 2.8348 | 8.5044 | 5.6696 | 8.5044 |
| CO8 | 5.6696 | 5.6696 | 0.0000 | 0.0000 | 2.8348 | 2.8348 | 8.5044 | 5.6696 | 5.6696 |
| **FINAL PROGRAM ATTAINMENT** | **2.8348** | **2.8348** | **2.8348** | **2.8348** | **2.8348** | **2.8348** | **2.8348** | **2.8348** | **2.8348** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 8.5044 | 2.8348 | 8.5044 | 5.6696 | 2.8348 |
| **CO2** | 8.5044 | 8.5044 | 5.6696 | 5.6696 | 5.6696 |
| **CO3** | 8.5044 | 5.6696 | 8.5044 | 8.5044 | 8.5044 |
| **CO4** | 8.5044 | 5.6696 | 5.6696 | 8.5044 | 8.5044 |
| **CO5** | 8.5044 | 8.5044 | 8.5044 | 8.5044 | 8.5044 |
| **CO6** | 8.5044 | 5.6696 | 5.6696 | 8.5044 | 8.5044 |
| **CO7** | 8.5044 | 5.6696 | 5.6696 | 8.5044 | 8.5044 |
| **CO8** | 8.5044 | 5.6696 | 2.8348 | 5.6696 | 8.5044 |
| **FINAL** | **2.8348** | **2.8348** | **2.8348** | **2.8348** | **2.8348** |

| ATTAINMENT | | | | | |
|---|---|---|---|---|---|

## Semester: IV
## Paper 4: Object Oriented Programming using JAVA
## CO- Bloom's Taxonomy Mapping

**Course Objectives:**

As the business environment becomes more sophisticated, the software development is becoming increasingly complex. As of the best programming paradigm which helps to eliminate complexity of large projects, Object Oriented Programming (OOP) has become the predominant technique for writing software in the past decade. Many other important software development techniques are based upon the fundamental ideas captured by object-oriented programming.

**COURSE OUTCOME WEIGHTED AVERAGE:** 2.7140

| **Course Learning Outcomes:**<br>**Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Understand the concept and underlying principles of Object-Oriented Programming | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8774 |
| **CO 2:** Understand how object-oriented concepts are incorporated into the Java programming language | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8366 |
| **CO 3:** Develop problem-solving and programming skills using OOP concept | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 (Application) | 2 | 2.8366 |
| **CO 4:** Understand the benefits of a well-structured program | Level 1 (Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8774 |
| **CO 5:** Develop the ability to solve real-world problems through software development in high-level programming language like Java | Level 3 (Application)<br>Level 4 (Analyze)<br>Level 6(Create) | 4.3 | 2.6486 |
| **CO 6:** Develop efficient Java applets and applications using OOP concept | Level 3 (Application)<br>Level 6 (Create) | 3 | 2.7549 |
| **CO 7:** Become familiar with the fundamentals and acquire programming | Level 1 ( Knowledge)<br>Level 2 (Understand) | 2 | 2.8366 |

| | | | |
|---|---|---|---|
| skills in the Java language. | Level 3(Application) | | |

## Semester: IV

## Paper 4: Object Oriented Programming through JAVA

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 |
| **CO2** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 1 | 2 |
| **CO3** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |
| **CO4** | 3 | 3 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO5** | 3 | 3 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO6** | 3 | 3 | 0 | 0 | 1 | 1 | 2 | 1 | 3 |
| **CO7** | 3 | 3 | 0 | 0 | 1 | 1 | 1 | 2 | 2 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 2 | 2 | 1 |
| **CO2** | 2 | 2 | 2 | 2 | 2 |
| **CO3** | 2 | 2 | 1 | 2 | 2 |
| **CO4** | 3 | 3 | 2 | 3 | 3 |
| **CO5** | 3 | 3 | 3 | 3 | 3 |
| **CO6** | 3 | 1 | 2 | 2 | 3 |
| **CO7** | 3 | 2 | 2 | 3 | 3 |

**Attainments of Program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.7549 | 5.7549 | 2.8774 | 2.8774 | 2.8774 | 2.8774 | 5.7549 | 2.8774 | 5.7549 |
| CO2 | 5.6732 | 5.6732 | 0.0000 | 0.0000 | 2.8366 | 2.8366 | 5.6732 | 2.8366 | 5.6732 |
| CO3 | 5.6732 | 5.6732 | 0.0000 | 0.0000 | 2.8366 | 2.8366 | 5.6732 | 5.6732 | 5.6732 |
| CO4 | 8.6323 | 8.6323 | 0.0000 | 0.0000 | 2.8774 | 2.8774 | 8.6323 | 8.6323 | 8.6323 |
| CO5 | 7.9459 | 7.9459 | 0.0000 | 0.0000 | 2.6486 | 2.6486 | 7.9459 | 7.9459 | 7.9459 |
| CO6 | 7.9459 | 7.9459 | 0.0000 | 0.0000 | 2.6486 | 2.6486 | 5.2973 | 2.6486 | 7.9459 |
| CO7 | 7.9459 | 7.9459 | 0.0000 | 0.0000 | 2.6486 | 2.6486 | 2.6486 | 5.2973 | 5.2973 |
| **FINAL PROGRAM ATTAINMENT** | **4.1309** | **4.1309** | **2.8774** | **2.8774** | **3.8748** | **3.8748** | **3.4688** | **3.5911** | **3.9102** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 5.7549 | 2.8774 | 5.7549 | 5.7549 | 2.8774 |
| **CO2** | 5.6732 | 5.6732 | 5.6732 | 5.6732 | 5.6732 |
| **CO3** | 5.6732 | 5.6732 | 2.8366 | 5.6732 | 5.6732 |
| **CO4** | 8.6323 | 8.6323 | 5.7549 | 8.6323 | 8.6323 |
| **CO5** | 7.9459 | 7.9459 | 7.9459 | 7.9459 | 7.9459 |
| **CO6** | 7.9459 | 2.6486 | 5.2973 | 5.2973 | 7.9459 |
| **CO7** | 7.9459 | 5.2973 | 5.2973 | 7.9459 | 7.9459 |

| | | | | | |
|---|---|---|---|---|---|
| **FINAL PROGRAM ATTAINMENT** | **4.1309** | **3.5225** | **3.8560** | **3.9102** | **4.2449** |

## Semester: V

## Paper 5: Database Management Systems

## CO- Bloom's Taxonomy Mapping

**Course Objectives:**

1. Design & develop database for large volumes & varieties of data with optimized data processing techniques.
2. Learn to logical database design using ER diagrams.
3. Learn to relational model.
4. Learn to SQL and PL/SQL.

**COURSE OUTCOME WEIGHTED AVERAGE: 2.6277**

| **Course Learning Outcomes: Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Design and model of data in database. | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8405 |
| **CO 2:** Store, Retrieve data in database. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.7873 |
| **CO 3:** To explore knowledge on Relational Model | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 (Application) | 2 | 2.7873 |
| **CO 4:** To write queries using SQL | Level 1 (Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.7873 |
| **CO 5:** To write programs using PL/SQL. | Level 1 (Knowledge)<br>Level 2 (Understand) | 2 | 2.7873 |

| | | | |
|---|---|---|---|
| | Level 3 (Application) | | |

## Semester: V

## Paper 5: Database Management Systems

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 |
| **CO2** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 1 | 2 |
| **CO3** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |
| **CO4** | 3 | 3 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO5** | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 2 | 1 | 1 | 2 | 1 |
| **CO2** | 2 | 2 | 1 | 2 | 1 |
| **CO3** | 3 | 2 | 1 | 2 | 3 |
| **CO4** | 3 | 3 | 2 | 2 | 2 |
| **CO5** | 3 | 3 | 2 | 2 | 2 |

**Attainments of Program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.6810 | 5.6810 | 2.8405 | 2.8405 | 2.8405 | 2.8405 | 5.6810 | 2.8405 | 5.6810 |
| CO2 | 5.5746 | 5.5746 | 0.0000 | 0.0000 | 2.7873 | 2.7873 | 5.5746 | 2.7873 | 5.5746 |
| CO3 | 5.5746 | 5.5746 | 0.0000 | 0.0000 | 2.7873 | 2.7873 | 5.5746 | 5.5746 | 5.5746 |
| CO4 | 8.3619 | 8.3619 | 0.0000 | 0.0000 | 2.7873 | 2.7873 | 8.3619 | 8.3619 | 8.3619 |
| CO5 | 5.5746 | 5.5746 | 0.0000 | 0.0000 | 2.7873 | 2.7873 | 5.5746 | 5.5746 | 5.5746 |
| **FINAL PROGRAM ATTAINMENT** | **2.7970** | **2.7970** | **2.8405** | **2.8405** | **2.7979** | **2.7979** | **2.7970** | **2.7932** | **2.7970** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 5.6810 | 2.8405 | 2.8405 | 5.6810 | 2.8405 |
| **CO2** | 5.5746 | 5.5746 | 2.7873 | 5.5746 | 2.7873 |
| **CO3** | 8.3619 | 5.5746 | 2.7873 | 5.5746 | 8.3619 |
| **CO4** | 8.3619 | 8.3619 | 5.5746 | 5.5746 | 5.5746 |
| **CO5** | 8.3619 | 8.3619 | 5.5746 | 5.5746 | 5.5746 |
| **FINAL PROGRAM ATTAINMENT** | **2.7955** | **2.7921** | **2.7949** | **2.7979** | **2.7932** |

## Semester: V

### Paper 6: Software Engineering
## CO- Bloom's Taxonomy Mapping

**Course Objectives:**

The Objective of the course is to assist the student in understanding the basic theory of software engineering, and to apply these basic theoretical principles to a group software development project.

**COURSE OUTCOME WEIGHTED AVERAGE: 2.5716**

| **Course Learning Outcomes: Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Ability to gather and specify requirements of the software projects | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Analyze) | 2 | 2.8114 |
| **CO 2:** Ability to analyze software requirements with existing tools | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Analyze) | 2 | 2.8114 |
| **CO 3:** Able to differentiate different testing methodologies | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Analyze) | 2 | 2.8114 |
| **CO 4:** Able to understand and apply the basic project management practices in real life projects | Level 1 (Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8114 |
| **CO5:** Ability to work in a team as well | Level 1 (Knowledge) | | 2.7502 |

| | | | |
|---|---|---|---|
| as independently on software projects | Level 2 (Understand)<br>Level 3 (Application)<br>Level 4 (Analyze) | 2.5 | |

## Semester: V

### Paper 6: Software Engineering

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 |
| **CO2** | 2 | 2 | 1 | 1 | 1 | 2 | 3 | 2 | 2 |
| **CO3** | 3 | 3 | 1 | 1 | 1 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |
| **CO5** | 3 | 2 | 0 | 0 | 1 | 1 | 2 | 3 | 3 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 2 | 2 | 2 |
| **CO2** | 3 | 2 | 2 | 2 | 3 |
| **CO3** | 2 | 2 | 1 | 3 | 3 |
| **CO4** | 3 | 2 | 2 | 2 | 2 |
| **CO5** | 3 | 1 | 2 | 3 | 2 |

**Attainments of Program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.6227 | 5.6227 | 2.8114 | 2.8114 | 2.8114 | 2.8114 | 5.6227 | 2.8114 | 5.6227 |
| CO2 | 5.6227 | 5.5746 | 2.7873 | 2.7873 | 2.7873 | 5.5746 | 8.3619 | 5.5746 | 5.5746 |
| CO3 | 8.4341 | 8.4341 | 2.8114 | 2.8114 | 2.8114 | 2.8114 | 8.4341 | 8.4341 | 8.4341 |
| CO4 | 8.4341 | 8.4341 | 0.0000 | 0.0000 | 2.8114 | 2.8114 | 8.4341 | 8.4341 | 8.4341 |
| CO5 | 8.2505 | 5.5003 | 0.0000 | 0.0000 | 2.7502 | 2.7502 | 5.5003 | 8.2505 | 8.2505 |
| **FINAL PROGRAM ATTAINMENT** | **2.7972** | **2.7972** | **2.8033** | **2.8033** | **2.7943** | **2.7931** | **2.7964** | **2.7921** | **2.7935** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 8.4341 | 5.6227 | 5.6227 | 5.6227 | 5.6227 |
| **CO2** | 8.3619 | 5.5746 | 5.5746 | 5.5746 | 8.3619 |
| **CO3** | 5.6227 | 5.6227 | 2.8114 | 8.4341 | 8.4341 |
| **CO4** | 8.4341 | 5.6227 | 5.6227 | 5.6227 | 5.6227 |
| **CO5** | 8.2505 | 2.7502 | 5.5003 | 8.2505 | 5.5003 |
| **FINAL PROGRAM ATTAINMENT** | **2.7931** | **2.7992** | **2.7924** | **2.7921** | **2.7951** |

**Semester: VI**

**Paper 7A: Operating Systems**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

1. To understand the services provided by and the design of an operating system.
2. To understand the structure and organization of the file system.
3. To understand what a process is how processes are synchronized and scheduled.
4. To understand different approaches to memory management.
5. Students should be able to use system calls for managing processes, memory and the file system.

| **Course Learning Outcomes:**<br>**Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO 1:** Analyze the concepts of processes in operating system and illustration of the scheduling of processes for a given problem instance. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application)<br>Level 4 ( Analyze) | 2.5 |
| **CO 2:** identify the deadlock situation and provide appropriate solution so that protection and security of the operating system is also maintained. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 |
| **CO 3:** Analyze memory management techniques, concepts of virtual memory and disk scheduling. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application)<br>Level 4 (Analyze) | 2.5 |
| **CO 4:** Understand the implementation of file systems and directories along with the interfacing of IO devices with the operating system. | Level 1 (Knowledge)<br>Level 2 (Understand) | 2 |

| | | |
|---|---|---|
| | Level 3 (Application) | |

## Semester: VI

### Paper 7A: Operating Systems

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| **CO3** | 3 | 3 | 1 | 1 | 1 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 0 | 0 | 1 | 1 | 3 | 3 | 3 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 2 | 2 | 2 |
| **CO2** | 3 | 2 | 2 | 2 | 3 |
| **CO3** | 2 | 2 | 1 | 3 | 3 |
| **CO4** | 3 | 2 | 2 | 3 | 3 |

**Semester: VI**

**Paper 7B: Computer Networks**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

1. To provide an introduction to the fundamental concepts on data communication and the design of computer networks.
2. To get familiarized with the basic protocols of computer networks.

| **Course Learning Outcomes:**<br>**Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO 1:** Identify the different components in a communication system and their respective roles. | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 |
| **CO 2:** Describe the technical issues related to Local Area Networks. | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 |
| **CO 3:** Identify the common technologies available in establishing LAN infrastructure. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 |

## Semester: V

**Paper 7B: Computer Networks**

| **CO – PO Mapping** |
|---|
| **1-Low, 2-Moderate, 3-High, 0- No Correlation** |

| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| **CO3** | 3 | 3 | 2 | 1 | 2 | 2 | 3 | 3 | 3 |

| **CO – PSO Mapping** |
|---|
| **1-Low, 2-Moderate, 3-High, 0- No Correlation** |

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 2 | 2 | 2 |
| **CO2** | 3 | 2 | 2 | 3 | 3 |
| **CO3** | 3 | 3 | 1 | 3 | 3 |

**Semester: VI**

**Paper 7C: Web Technologies**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

1. To provide knowledge on web architecture, web services, client side and server side scripting technologies to focus on the development of web-based information systems and web services.
2. To provide skills to design interactive and dynamic web sites.

COURSE OUTCOME WEIGHTED AVERAGE: 2.6960

| **Course Learning Outcomes:**<br>**Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** To understand the web architecture and web services. | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 | 2.8697 |
| **CO 2:** To practice latest web technologies and tools by conducting experiments. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 ( Application)<br>Level 6 (Create) | 3 | 2.7395 |
| **CO 3:** To design interactive web pages using HTML and Style sheets. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application)<br>Level 6 (Create) | 3 | 2.7395 |

| | | | |
|---|---|---|---|
| **CO 4:** To study the framework and building blocks of .NET Integrated Development Environment. | Level 1 (Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8263 |
| **CO 5:** To provide solutions by identifying and formulating IT related problems | Level 1 (Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8263 |

## Semester: VI

### Paper 7C: Web Technologies

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO3** | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO4** | 3 | 3 | 2 | 1 | 1 | 1 | 3 | 3 | 3 |
| **CO5** | 3 | 3 | 2 | 1 | 1 | 1 | 2 | 2 | 2 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 2 | 3 | 3 |
| **CO3** | 3 | 3 | 1 | 3 | 3 |
| **CO4** | 3 | 3 | 2 | 3 | 3 |
| **CO5** | 3 | 3 | 2 | 2 | 3 |

**Attainments of Program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.7395 | 5.7395 | 5.7395 | 2.8697 | 2.8697 | 5.7395 | 5.7395 | 5.7395 | 5.7395 |
| CO2 | 5.4790 | 5.4790 | 5.4790 | 2.7395 | 2.7395 | 2.7395 | 5.4790 | 5.4790 | 5.4790 |
| CO3 | 5.4790 | 5.4790 | 5.4790 | 2.7395 | 2.7395 | 2.7395 | 5.4790 | 5.4790 | 5.4790 |
| CO4 | 8.4790 | 8.4790 | 5.6527 | 2.8263 | 2.8263 | 2.8263 | 8.4790 | 8.4790 | 8.4790 |
| CO5 | 8.4790 | 8.4790 | 5.6527 | 2.8263 | 2.8263 | 2.8263 | 5.6527 | 5.6527 | 5.6527 |
| **FINAL PROGRAM ATTAINMENT** | **2.7974** | **2.7974** | **2.7938** | **2.7938** | **2.7938** | **2.8090** | **2.7974** | **2.7974** | **2.7974** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 5.7395 | 5.7395 | 5.7395 | 5.7395 | 5.7395 |
| **CO2** | 5.4790 | 5.4790 | 5.4790 | 8.2185 | 8.2185 |
| **CO3** | 8.2185 | 8.2185 | 2.7395 | 8.2185 | 8.2185 |
| **CO4** | 8.4790 | 8.4790 | 5.6527 | 8.4790 | 8.4790 |
| **CO5** | 8.4790 | 8.4790 | 5.6527 | 5.6527 | 8.4790 |
| **FINAL PROGRAM ATTAINMENT** | **2.7916** | **2.7916** | **2.8015** | **2.7869** | **2.7869** |

**Semester: VI**

**Paper 8A1: Foundations of Data Science**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

Modern scientific, engineering, and business applications are increasingly dependent on data, existing traditional data analysis technologies were not designed for the complexity of the modern world. Data Science has emerged as a new, exciting, and fast-paced discipline that explores novel statistical, algorithmic, and implementation challenges that emerge in processing, storing, and extracting knowledge from Big Data.

| **Course Learning Outcomes:**<br>**Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO 1:** Able to apply fundamental algorithmic ideas to process data. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 |
| **CO 2:** Learn to apply hypotheses and data into actionable predictions. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 ( Application) | 2 |
| **CO 3:** Document and transfer the results and effectively communicate the findings using visualization techniques. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 |

## Semester: V

### Paper 8A1: Foundations of Data Science

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO3** | 3 | 3 | 1 | 1 | 1 | 1 | 3 | 3 | 3 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 2 | 3 | 2 |
| **CO2** | 3 | 2 | 2 | 3 | 3 |
| **CO3** | 3 | 3 | 1 | 3 | 3 |

**Semester: VI**

**Paper 8A3: Computing for Data Analytics**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

The objective of this course is to teach fundamental concepts and tools needed to understand the emerging role of business analytics in organizations.

| **Course Learning Outcomes:**<br>**Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO 1:** Learn the Big Data in Technology Perspective. | Level 1 ( Knowledge)<br>Level 2 (Understand) | 1.5 |
| **CO 2:** Understanding of the statistical procedures most often used by practicing applications. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 ( Application) | 2 |
| **CO 3:** Understand forecasting methods and apply for business applications. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 |

## Semester: V

### Paper 8A3: Computing for Data Analytics

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO3** | 3 | 3 | 1 | 1 | 1 | 1 | 3 | 3 | 3 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 2 | 3 | 3 |
| **CO2** | 3 | 2 | 2 | 3 | 3 |
| **CO3** | 3 | 3 | 1 | 3 | 3 |

**Semester: VI**

**Paper 8B1: Distributed Systems**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

- To expose the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.
- To discuss multiple levels of distributed algorithms, distributed file systems, distributed databases, security and protection.

**COURSE OUTCOME WEIGHTED AVERAGE: 2.7982**

| **Course Learning Outcomes: Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Create models for distributed systems. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8847 |
| **CO 2:** Apply different techniques learned in the distributed systems. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 ( Application) | 2 | 2.8847 |

| **CO – PO Mapping** |
|---|
| **1-Low, 2-Moderate, 3-High, 0- No Correlation** |

| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |

| **CO – PSO Mapping** |
|---|

| 1-Low, 2-Moderate, 3-High, 0- No Correlation | | | | | |
|---|---|---|---|---|---|
| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 2 | 2 | 3 | 3 |
| **CO2** | 3 | 2 | 2 | 3 | 3 |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.7694 | 5.7694 | 2.8847 | 2.8847 | 2.8847 | 5.7694 | 5.7694 | 5.7694 | 5.7694 |
| CO2 | 5.7694 | 5.7694 | 2.8847 | 2.8847 | 2.8847 | 2.8847 | 5.7694 | 5.7694 | 5.7694 |
| **FINAL PROGRAM ATTAINMENT** | **2.8847** | **2.8847** | **2.8847** | **2.8847** | **2.8847** | **2.8847** | **2.8847** | **2.8847** | **2.8847** |

**Attainments of Program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 8.6541 | 5.7694 | 5.7694 | 8.6541 | 8.6541 |
| **CO2** | 8.6541 | 5.7694 | 5.7694 | 8.6541 | 8.6541 |
| **FINAL PROGRAM ATTAINMENT** | **2.8847** | **2.8847** | **2.8847** | **2.8847** | **2.8847** |

**Semester: VI**

**Paper 8B2: Cloud Computing**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet, cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas and developing cloud based software applications on top of cloud platforms.

**COURSE OUTCOME WEIGHTED AVERAGE: 2.7238**

| **Course Learning Outcomes: Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Compare the strengths and limitations of cloud computing. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8422 |
| **CO 2:** Identify the architecture, infrastructure and delivery models of cloud computing. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 ( Application) | 2 | 2.8422 |
| **CO 3:** Apply suitable virtualization concept. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.8422 |
| **CO 4:** Choose the appropriate cloud player, Programming Models and approach. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.8422 |
| **CO 5**: Address the core issues of cloud computing such as security, privacy and interoperability. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.8422 |

| | | | |
|---|---|---|---|
| **CO6:** Design Cloud Services and Set a private cloud | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.8422 |

## Semester: VI

### Paper 8B2: Cloud Computing

| CO – PO Mapping | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation | | | | | | | | |
| | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** |
| **CO1** | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO3** | 3 | 3 | 1 | 1 | 1 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 3 |
| **CO5** | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 3 |
| **CO6** | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 3 |

| CO – PSO Mapping | | | | | |
|---|---|---|---|---|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation | | | | | |
| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| **CO1** | 3 | 2 | 2 | 3 | 3 |
| **CO2** | 3 | 2 | 2 | 3 | 3 |
| **CO3** | 3 | 3 | 1 | 3 | 3 |
| **CO4** | 3 | 3 | 1 | 3 | 3 |
| **CO5** | 2 | 1 | 1 | 2 | 3 |
| **CO6** | 2 | 2 | 1 | 2 | 1 |

**Attainments of program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.6844 | 5.6844 | 2.8422 | 2.8422 | 2.8422 | 5.6844 | 5.6844 | 5.6844 | 5.6844 |
| CO2 | 5.6844 | 5.6844 | 2.8422 | 2.8422 | 2.8422 | 2.8422 | 5.6844 | 5.6844 | 5.6844 |
| CO3 | 8.5265 | 8.5265 | 2.8422 | 2.8422 | 2.8422 | 2.8422 | 8.5265 | 8.5265 | 8.5265 |
| CO4 | 8.5265 | 8.5265 | 2.8422 | 2.8422 | 2.8422 | 2.8422 | 5.6844 | 5.6844 | 8.5265 |
| CO5 | 8.5265 | 8.5265 | 2.8422 | 2.8422 | 2.8422 | 2.8422 | 2.8422 | 5.6844 | 8.5265 |
| CO6 | 8.5265 | 8.5265 | 2.8422 | 2.8422 | 2.8422 | 2.8422 | 5.6844 | 2.8422 | 8.5265 |
| **FINAL PROGRAM ATTAINMENT** | **2.8422** | **2.8422** | **2.8422** | **2.8422** | **2.8422** | **2.8422** | **2.8422** | **2.8422** | **2.8422** |

**Attainments of program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 8.5265 | 5.6844 | 5.6844 | 8.5265 | 8.5265 |
| **CO2** | 8.5265 | 5.6844 | 5.6844 | 8.5265 | 8.5265 |
| **CO3** | 8.5265 | 8.5265 | 2.8422 | 8.5265 | 8.5265 |
| **CO4** | 8.5265 | 8.5265 | 2.8422 | 8.5265 | 8.5265 |
| **CO5** | 5.6844 | 2.8422 | 2.8422 | 5.6844 | 8.5265 |
| **CO6** | 5.6844 | 5.6844 | 2.8422 | 5.6844 | 2.8422 |
| **FINAL PROGRAM ATTAINMENT** | **2.8422** | **2.8422** | **2.8422** | **2.8422** | **2.8422** |

**Semester: VI**

**Paper 8B3: Grid Computing**
**CO- Bloom's Taxonomy Mapping**

**Course Objectives:**

The student will learn about the grid environment, building software systems and components that scale to millions of users in modern internet, Grid concepts capabilities across the various Grid services.

**COURSE OUTCOME WEIGHTED AVERAGE: 2.7477**

| **Course Learning Outcomes: Upon successful completion of the course, a student will be able to:** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** | CO Attainment |
|---|---|---|---|
| **CO 1:** Compare the strengths and limitations of Grid Computing. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8559 |
| **CO 2:** Identify the architecture, infrastructure and delivery models of Grid Computing. | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 ( Application) | 2 | 2.8559 |
| **CO 3:** Apply suitable virtualization concept. | Level 1(Knowledge)<br>Level 2 ( Understand)<br>Level 3 ( Application) | 2 | 2.8559 |
| **CO4 :** Address the core issues of Grid Computing such as security, privacy and interoperability | Level 1 ( Knowledge)<br>Level 2 (Understand)<br>Level 3 (Application) | 2 | 2.8559 |

## Semester: V

### Paper 8B3: Grid Computing

| CO – PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| **CO1** | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| **CO2** | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| **CO3** | 3 | 3 | 1 | 1 | 1 | 1 | 3 | 3 | 3 |
| **CO4** | 3 | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 3 |

| CO – PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, 0- No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| **CO1** | 3 | 2 | 2 | 3 | 3 |
| **CO2** | 3 | 2 | 2 | 3 | 3 |
| **CO3** | 3 | 3 | 1 | 3 | 3 |
| **CO4** | 3 | 3 | 1 | 2 | 2 |

**Attainments of program Outcomes**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.7117 | 5.7117 | 2.8559 | 2.8559 | 2.8559 | 5.7117 | 5.7117 | 5.7117 | 5.7117 |
| CO2 | 5.7117 | 5.7117 | 2.8559 | 2.8559 | 2.8559 | 2.8559 | 5.7117 | 5.7117 | 5.7117 |
| CO3 | 8.5676 | 8.5676 | 2.8559 | 2.8559 | 2.8559 | 2.8559 | 8.5676 | 8.5676 | 8.5676 |
| CO4 | 8.5676 | 8.5676 | 2.8559 | 2.8559 | 2.8559 | 2.8559 | 5.7117 | 5.7117 | 8.5676 |
| **FINAL PROGRAM ATTAINMENT** | **2.8559** | **2.8559** | **2.8559** | **2.8559** | **2.8559** | **2.8559** | **2.8559** | **2.8559** | **2.8559** |

**Attainments of program Specific Outcomes**

| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
|---|---|---|---|---|---|
| **CO1** | 8.5676 | 5.7117 | 5.7117 | 8.5676 | 8.5676 |
| **CO2** | 8.5676 | 5.7117 | 5.7117 | 8.5676 | 8.5676 |
| **CO3** | 8.5676 | 8.5676 | 2.8559 | 8.5676 | 8.5676 |
| **CO4** | 8.5676 | 8.5676 | 2.8559 | 5.7117 | 5.7117 |
| **FINAL PROGRAM ATTAINMENT** | **2.8559** | **2.8559** | **2.8559** | **2.8559** | **2.8559** |

# DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

# VISAKHAPATNAM

## DEPARTMENT OF CHEMISTRY

## CO & PO ATTAINMENT

## 2019 – 2020

# CO – PO ATTAINMENT METHODOLOGY

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students was assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorized into four levels

| S.No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as Course Outcome Weighted Average (COWA).

$$\mathbf{COWA} = \frac{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}{total\ number\ of\ students}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}{number\ of\ levels\ mapped}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(3 - \boldsymbol{COWA}) \times \left(1 - \frac{\boldsymbol{COLLI}}{3.5}\right)\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using the below formula

$$\textbf{PSO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PSO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

# Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE

(AUTONOMOUS)

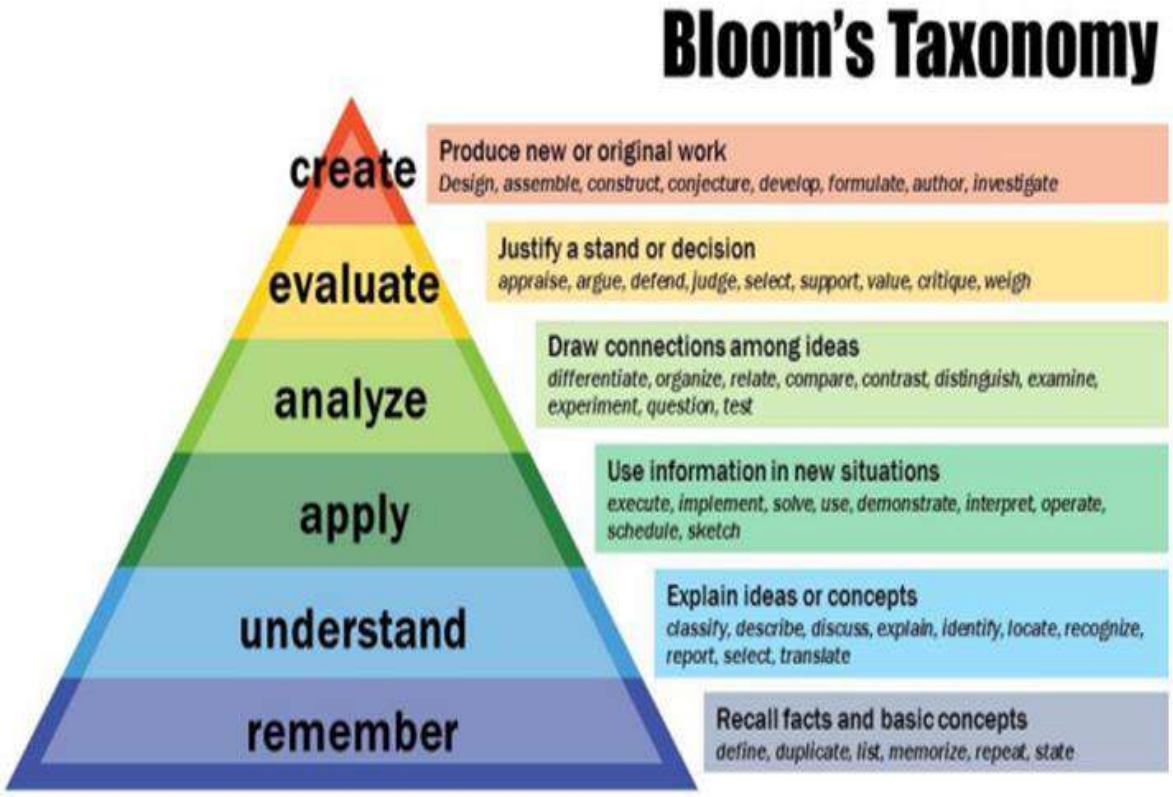
NODAL RESOURCE CENTRE & AU CENTRE FOR RESEARCH

Maddilapalem, Visakhapatnam – 530013, Andhra Pradesh.

0891-2553262, https://www.drvskrishnagdc.edu.in


## Levels of Bloom's Taxonomoy

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest |

# Program Specific Outcomes (PSOs)

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Grasp and analyze fundamental laws and concepts, enabling exploration in advanced branches of science and technology. |
| PSO2 | Perform basic experiments, and competently handle, understand, and design equipment for specific scientific purposes. |
| PSO3 | Develop essential analytical and mathematical skills, providing the advanced competence needed for higher education, research, and industry. |
| PSO4 | Gain qualifications for job opportunities in schools, colleges, and scientific organizations, facilitating career initiation in the scientific field. |
| PSO5 | Expand the boundaries of human knowledge, uncovering new facts and phenomena in the universe. |

## SEMESTER- 1

## PAPER-1: INORGANIC AND ORGANIC CHEMISTRY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.59420289855072

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Explain the methods of synthesizing diborane and higher boranes. Describe the structural features and bonding in diborane and various higher boranes. | L-1 (Knowledge) L-2(Understand) | 3.5 | 2.594202899 |
| CO2 | Classify oxides based on their chemical behavior (acidic, basic, amphoteric, neutral). Distinguish between different types of oxides (simple, mixed, peroxide, superoxide) | L-1 (knowledge) L-4(Analyze) | 2.5 | 2.710144928 |
| CO3 | Explore recent advances and innovative uses of lithium and magnesium alkyls in chemical research.Analyze case studies of complex syntheses involving these organometallic compounds, understanding their role in modern chemistry. | L-2(Understand) L-3(Apply) L-6(Create) | 3.6 | 2.582608696 |
| CO4 | Develop critical thinking skills to analyze and predict the outcomes of various organic reactions. Solve problems related to bond polarization, reactivity, and stability of organic molecules. | L-1 (knowledge) L-2(Understand) | 2.5 | 2.710144928 |
| CO5 | Explain the mechanism of halogen addition to alkenes. Perform and predict the products of halogen addition reactions. | L-2(Understand) L-3(Apply) L-6(Create) | 3 | 2.652173913 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 | 3 | 3 | 2 | 2 | 2 |
| C02 | 3 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 3 |
| CO3 | 2 | 1 | 1 | 2 | 3 | 2 | 3 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO5 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 12 | 5 | 7 | 9 | 13 | 13 | 13 | 10 | 11 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 1 | 2 |
| C02 | 2 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 1 | 2 | 1 | 2 | 3 |
| CO5 | 1 | 2 | 1 | 2 | 3 |
| TOTAL | 9 | 9 | 9 | 9 | 12 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.782609 | 2.594203 | 2.594203 | 2.59420 | 7.78260 | 7.782609 | 5.18840 | 5.18840 | 5.188406 |
| CO2 | 8.130435 | 2.710145 | 2.710145 | 5.42029 | 8.13043 | 5.42029 | 5.42029 | 5.42029 | 8.130435 |
| CO3 | 5.42029 | 2.710145 | 2.710145 | 5.42029 | 8.13043 | 5.42029 | 8.13043 | 5.42029 | 5.42029 |
| CO4 | 5.42029 | 2.710145 | 5.42029 | 5.42029 | 5.42029 | 8.130435 | 8.1304 | 5.42029 | 5.42029 |
| CO 5 | 5.42029 | 2.710145 | 5.42029 | 5.42029 | 5.42029 | 8.130435 | 8.130435 | 5.42029 | 5.42029 |
| FINAL ATTAINMENT | 2.681159 | 2.686957 | 2.693582 | 2.69722 | 2.68338 | 2.683389 | 2.69230 | 2.68695 | 2.689065 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.782609 | 5.188406 | 5.188406 | 2.594203 | 5.188406 |
| CO2 | 5.42029 | 5.42029 | 8.130435 | 5.42029 | 5.42029 |
| CO3 | 5.42029 | 2.710145 | 5.42029 | 5.42029 | 5.42029 |
| CO4 | 2.710145 | 5.42029 | 2.710145 | 5.42029 | 8.130435 |
| CO 5 | 2.710145 | 5.42029 | 2.710145 | 5.42029 | 8.130435 |
| FINAL ATTAINMENT | 2.671498 | 2.68438 | 2.68438 | 2.697262 | 2.690821 |

## SEMESTER – 2

## PAPER- 2 PHYSICAL & GENERAL CHEMISTRY

# COURSE OUTCOME WEIGHTED AVERA GE: 2.51997924234562

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels) | CO Learning Level Index | CO ATTAINMENT |
|---|---|---|---|---|
| CO 1 | To know the elements of symmetry in crystals, Definition of lattice point and space lattice.Description of the unit cell, the smallest repeating unit in the crystal lattice. Overview of Bravais lattices and different crystal systems | L-1 (knowledge) L-2(Understand) | 3.5 | 2.519979242 |
| CO2 | To distinguish between the Deviation of real gases from ideal behavior, Understanding the temperature change of a real gas when it expands or is compressed without any heat exchange with the environment | L-2(Understand) L-3(Apply) L-4(Analyze) | 3 | 2.588553636 |
| CO3 | To differentiate between the structural states of matter. Understand the unique properties of liquid crystals and their applications. | L-2(Understand) L-4(Analyze) | 3 | 2.588553636 |
| CO4 | Application to ideal solutions where the partial vapor pressure of each component is directly proportional to its mole fraction in the solution.Deviations from Raoult's law due to solute-solvent interactions. | L-2(Understand) L-4(Analyze) | 3 | 2.588553636 |
| CO5 | Overview of colloids and their importance in various fields.Techniques for preparing sols, such as dispersion methods and condensation methods. | L-1 (knowledge) L-6(Create) | 3.3 | 2.547409 |
| CO6 | To understand the Wedge, Fischer, Newman, and Saw-Horse formulae for depicting three-dimensional structures of molecules. | L-2(Understand) L-4(Analyze) | 3.5 | 2.519979242 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO6 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 15 | 12 | 11 | 12 | 14 | 15 | 16 | 13 | 14 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 3 | 2 |
| C02 | 3 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 3 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 3 |
| CO6 | 2 | 2 | 2 | 1 | 2 |
| TOTAL | 13 | 14 | 14 | 12 | 14 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.5599 | 5.03995 | 7.559938 | 5.039958 | 5.03995 | 5.039958 | 5.039958 | 5.0399 | 5.03995 |
| C02 | 7.7656 | 2.58855 | 2.588554 | 7.765661 | 7.76566 | 5.177107 | 7.765661 | 5.1771 | 7.76566 |
| CO3 | 5.1771 | 5.17710 | 5.177107 | 2.588554 | 5.17710 | 5.177107 | 5.177107 | 7.7656 | 5.17710 |
| CO4 | 7.7656 | 7.76566 | 2.588554 | 5.177107 | 7.76566 | 7.765661 | 7.765661 | 5.1771 | 7.76566 |
| CO5 | 5.1771 | 5.17710 | 5.177107 | 5.177107 | 5.17710 | 7.765661 | 7.765661 | 5.1771 | 5.17710 |
| **FINAL ATTAINMENT** | 5.1771 | 5.17710 | 5.177107 | 5.177107 | 5.17710 | 7.765661 | 7.765661 | 5.1771 | 5.17710 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 5.039958 | 7.559938 | 5.039958 | 7.559938 | 5.039958 |
| C02 | 7.765661 | 5.177107 | 7.765661 | 5.177107 | 5.177107 |
| CO3 | 5.177107 | 7.765661 | 5.177107 | 5.177107 | 5.177107 |
| CO4 | 5.177107 | 5.177107 | 7.765661 | 5.177107 | 7.765661 |
| CO5 | 5.177107 | 5.177107 | 5.177107 | 5.177107 | 7.765661 |
| CO6 | 5.177107 | 5.177107 | 5.177107 | 2.588554 | 5.177107 |
| **FINAL ATTAINMENT** | **2.578004** | **2.573859** | **2.578757** | **2.57141** | **2.578757** |

## SEMESTER- 3

## PAPER-3 : INORGANIC & ORGANIC CHEMISTRY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.7333333

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand the electronic configuration, variable valence, magnetic properties, catalytic properties and ability to form complexes. | L-1 (knowledge) L-2(Understand) | 3.5 | 2.7333333 |
| CO2 | Overview of properties like malleability, ductility, conductivity, etc.Explanation of conductors, semiconductors, and insulators based on band structure. | L-2(Understand) L-4(Analyze) | 3 | 2.771428543 |
| CO3 | Calculation and significance of EAN.Structures of metal carbonyls of vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), cobalt (Co), and nickel (Ni). | L-1 (knowledge) L-5(Evaluate) | 3 | 2.771428543 |
| CO4 | General electronic configuration and specific examples.To diffentiate between Lanthanide and actinides Contraction and Explain its consequences. | L-1 (knowledge) L-4(Analyze) | 2.5 | 2.809523786 |
| CO5 | Primary, secondary, and tertiary alcohols.Common and IUPAC naming conventions. Mechanism and application in synthesizing primary alcohols. | L-2(Understand) L-3(Apply) | 2.5 | 2.809523786 |
| CO6 | Naming aliphatic and aromatic aldehydes and ketones. Understanding of common names and IUPAC nomenclature. | L-2(Understand) L-3(Apply) | 2.5 | 2.809523786 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |
|---|

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO6 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 15 | 12 | 11 | 12 | 14 | 15 | 16 | 13 | 14 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |
|---|

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 3 | 2 |
| C02 | 3 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 3 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 3 |
| CO6 | 2 | 2 | 2 | 1 | 2 |
| TOTAL | 13 | 14 | 14 | 12 | 14 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO 1 | 8.2 | 5.466667 | 8.2 | 5.4666 | 5.4666 | 5.4666 | 5.4666 | 5.466667 | 5.466667 |
| CO2 | 8.31428 | 2.771429 | 2.771429 | 8.3142 | 8.3142 | 5.5428 | 8.3142 | 5.542857 | 8.314286 |
| CO3 | 5.54285 | 5.542857 | 5.542857 | 2.7714 | 5.5428 | 5.5428 | 5.5428 | 8.314286 | 5.542857 |
| CO4 | 8.31428 | 8.314286 | 2.771429 | 5.5428 | 8.3142 | 8.3142 | 8.3142 | 5.542857 | 8.314286 |
| CO5 | 5.54285 | 5.542857 | 5.542857 | 5.5428 | 5.5428 | 8.3142 | 8.3142 | 5.542857 | 5.542857 |
| CO6 | 5.54285 | 5.542857 | 5.542857 | 5.5428 | 5.5428 | 8.3142 | 8.3142 | 5.542857 | 5.542857 |
| **FINAL ATTAINMENT** | **2.76380** | **2.765079** | **2.761039** | **2.7650** | **2.7659** | **2.7663** | **2.7666** | **2.76556** | **2.765986** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO 1 | 5.466667 | 8.2 | 5.466667 | 8.2 | 5.466667 |
| CO2 | 8.314286 | 5.542857 | 8.314286 | 5.542857 | 5.542857 |
| CO3 | 5.542857 | 8.314286 | 5.542857 | 5.542857 | 5.542857 |
| CO4 | 5.542857 | 5.542857 | 8.314286 | 5.542857 | 8.314286 |
| CO5 | 5.542857 | 5.542857 | 5.542857 | 5.542857 | 8.314286 |
| CO6 | 5.542857 | 5.542857 | 5.542857 | 2.771429 | 5.542857 |
| **FINAL ATTAINMENT** | **2.765568** | **2.763265** | **2.765986** | **2.761905** | **2.765986** |

## SEMESTER- 4

## PAPER-4 : SPECTROSCOPY & PHYSICAL CHEMISTRY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.64460547504026

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Definition and mathematical expression. Limitations of Beer-Lambert Law. Concepts of transmittance, absorbance, and molar absorptivity. | L-1 (knowledge) L-2(Understand) | 3.5 | 2.611179111 |
| CO 2 | Types of molecular spectra. Energy levels of molecular orbitals (σ, π, η). Selection rules for electronic spectra. Types of electronic transitions in molecules. Effect of conjugation. Concepts of chromophore and auxochrome. | L-2(Understand) L-4(Analyze) | 3 | 2.666724952 |
| CO 3 | Modes of vibrations in diatomic and polyatomic molecules. Characteristic absorption bands of various functional groups. Interpretation of IR spectra for Alkanes, Aromatic compounds, Alcohols, Carbonyls, and Amines (one example each). | L-1 (knowledge) L-5(Evaluate) | 3 | 2.666724952 |
| CO 4 | Nuclear magnetic resonance and its basic principles. Equivalent and non-equivalent protons. Position of NMR signals. Chemical shift, spin-spin splitting, and coupling constants. Applications of NMR with examples: Ethyl bromide, Ethanol, Acetaldehyde, 1,1,2-tribromoethane, Ethyl acetate, Toluene, and Acetophenone. | L-1 (knowledge) L-4(Analyze) | 2.5 | 2.722270793 |
| CO 5 | Specific conductance and equivalent conductance. Variation of equivalent conductance with dilution. Migration of ions and Kohlrausch's law. | L-2(Understand) L-3(Apply) | 2.5 | 2.722270793 |
| CO 6 | Single electrode potential and sign convention. Reversible and irreversible cells. Nernst Equation. | L-2(Understand) L-3(Apply) | 2.5 | 2.722270793 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 |
| | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 3 |
| CO4 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 15 | 12 | 11 | 12 | 14 | 15 | 16 | 13 | 14 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 3 | 2 |
| C02 | 3 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 3 | 2 | 2 | 2 |
| | | | | | |
| CO4 | 2 | 2 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 3 |
| CO6 | 2 | 2 | 2 | 1 | 2 |
| TOTAL | 13 | 14 | 14 | 12 | 14 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.93381 | 5.289211 | 7.933816 | 5.289211 | 5.2892 | 5.289211 | 5.28921 | 5.2892 | 5.28921 |
| CO2 | 8.08612 | 2.695376 | 2.695376 | 8.086128 | 8.0861 | 5.390752 | 8.08612 | 5.3907 | 8.08612 |
| CO3 | 5.39075 | 5.390752 | 5.390752 | 2.695376 | 5.3907 | 5.390752 | 5.39075 | 8.0861 | 5.39075 |
| CO4 | 8.08612 | 8.086128 | 2.695376 | 5.390752 | 8.0861 | 8.086128 | 8.08612 | 5.3907 | 8.08612 |
| CO5 | 5.39075 | 5.390752 | 5.390752 | 5.390752 | 5.3907 | 8.086128 | 8.08612 | 5.3907 | 5.39075 |
| CO6 | 5.39075 | 5.390752 | 5.390752 | 5.390752 | 5.3907 | 8.086128 | 8.08612 | 5.3907 | 5.39075 |
| **FINAL ATTAINMENT** | **2.68522** | **2.686914** | **2.68153** | **2.686914** | **2.6881** | **2.688607** | **2.68903** | **2.6875** | **2.68812** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 5.289211 | 7.933816 | 5.289211 | 7.933816 | 5.289211 |
| CO2 | 8.086128 | 5.390752 | 8.086128 | 5.390752 | 5.390752 |
| | 5.390752 | 8.086128 | 5.390752 | 5.390752 | 5.390752 |
| CO3 | 5.390752 | 5.390752 | 8.086128 | 5.390752 | 8.086128 |
| CO4 | 5.390752 | 5.390752 | 5.390752 | 5.390752 | 8.086128 |
| CO5 | 5.390752 | 5.390752 | 5.390752 | 2.695376 | 5.390752 |
| **FINAL ATTAINMENT** | **2.687565** | **2.684497** | **2.688123** | **2.682683** | **2.688123** |

## SEMESTER- 5

## PAPER-5 : INORGANIC, PHYSICAL & ORGANIC CHEMISTRY

**COURSE OUTCOME WEIGHTED AVERAGE: 2.64861379754997**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Students will gain proficiency in the IUPAC nomenclature of coordination compounds. They will be able to explain and apply Werner's theory and Sedgwick's concept of coordination. | L-1 (knowledge) L-2(Understand) | 3.5 | 2.648613798 |
| CO2 | Students will identify and differentiate between structural and stereoisomerism in coordination compounds. They will understand the stereochemistry of complexes with coordination numbers 4 and 6. | L-2(Understand) L-4(Analyze) | 3 | 2.698811826 |
| CO3 | Students will learn about different types of magnetic behavior and how to calculate magnetic moments using the spin-only formula. They will understand the experimental determination of magnetic susceptibility using the Gouy method. | L-1 (knowledge) L-5(Evaluate) | 3 | 2.698811826 |
| CO4 | Students will determine the composition of complexes using Job's method and the mole ratio method. | L-1 (knowledge) L-4(Analyze) | 2.5 | 2.749009855 |
| CO5 | Students will be proficient in the nomenclature and classification of nitro hydrocarbons. They will understand the structure and tautomerism of nitroalkanes. Students will learn the preparation methods of nitroalkanes and their reactivity, including halogenations, reactions with nitrous acid, Neff reaction, Mannich reaction, Michael addition, and reduction. | L-2(Understand) L-3(Apply) | 2.5 | 2.749009855 |
| CO6 | Students will classify and name aliphatic and aromatic amines, including primary, secondary, tertiary amines, and quaternary ammonium compounds. Students will understand the first law, including internal energy, enthalpy, and heat capacities. | L-2(Understand) L-3(Apply) | 2.5 | 2.749009855 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO6 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO7 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| TOTAL | 15 | 12 | 11 | 12 | 14 | 15 | 16 | 13 | 14 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 3 | 2 |
| C02 | 3 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 3 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 3 |
| CO6 | 2 | 2 | 2 | 1 | 2 |
| CO7 | 2 | 3 | 2 | 3 | 2 |
| TOTAL | 13 | 14 | 14 | 12 | 14 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.945841 | 5.297228 | 7.945841 | 5.297228 | 5.297228 | 5.297228 | 5.297228 | 5.297228 | 5.297228 |
| C02 | 8.096435 | 2.698812 | 2.698812 | 8.096435 | 8.096435 | 5.397624 | 8.096435 | 5.397624 | 8.096435 |
| CO3 | 5.397624 | 5.397624 | 5.397624 | 2.698812 | 5.397624 | 5.397624 | 5.397624 | 8.096435 | 5.397624 |
| CO4 | 8.096435 | 8.096435 | 2.698812 | 5.397624 | 8.096435 | 8.096435 | 8.096435 | 5.397624 | 8.096435 |
| CO5 | 5.397624 | 5.397624 | 5.397624 | 5.397624 | 5.397624 | 8.096435 | 8.096435 | 5.397624 | 5.397624 |
| CO6 | 5.397624 | 5.397624 | 5.397624 | 5.397624 | 5.397624 | 8.096435 | 8.096435 | 5.397624 | 5.397624 |
| CO6 | 7.945841 | 5.297228 | 7.945841 | 5.297228 | 5.297228 | 5.297228 | 5.297228 | 5.297228 | 5.297228 |
| FINAL ATTAINMENT | **2.688772** | **2.690445** | **2.685121** | **2.690445** | **2.691641** | **2.692119** | **2.692537** | **2.691089** | **2.691641** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 5.297228 | 7.945841 | 5.297228 | 7.945841 | 5.297228 |
| C02 | 8.096435 | 5.397624 | 8.096435 | 5.397624 | 5.397624 |
| CO3 | 5.397624 | 8.096435 | 5.397624 | 5.397624 | 5.397624 |
| CO4 | 5.397624 | 5.397624 | 8.096435 | 5.397624 | 8.096435 |
| CO5 | 5.397624 | 5.397624 | 5.397624 | 5.397624 | 8.096435 |
| CO6 | 5.397624 | 5.397624 | 5.397624 | 2.698812 | 5.397624 |
| FINAL ATTAINMENT | **2.691089** | **2.688055** | **2.691641** | **2.686262** | **2.691641** |

## SEMESTER- 5

## PAPER-6 : INORGANIC, ORGANIC & PHYSICAL CHEMISTRY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.63924349881797

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Students will differentiate between labile and inert metal complexes. They will understand SN1 and SN2 mechanisms for ligand substitution reactions. Also, Substitution Reactions in Square Planar Complexes | L-1 (knowledge) L-2(Understand) | 3.5 | 2.639243499 |
| CO 2 | Students will learn the biological significance of essential elements like Na, K, Mg, Ca, Fe, Co, Ni, Cu, Zn, and Cl. They will understand the structure and functions of key metalloporphyrins, such as hemoglobin, myoglobin, and chlorophyll. | L-2(Understand) L-4(Analyze) | 3 | 2.690780142 |
| CO 3 | Students will define the order and molecularity of reactions.<br>They will derive rate constants for first, second, third, and zero-order reactions and understand their significance. | L-1 (knowledge) L-5(Evaluate) | 3 | 2.690780142 |
| CO 4 | Students will learn about the aromatic character and structures of five-membered ring compounds like furan, thiophene, and pyrrole. | L-1 (knowledge) L-4(Analyze) | 2.5 | 2.742316785 |
| CO 5 | Students will provide evidence for cyclic structures of glucose and fructose. They will understand methods for interconversion between different monosaccharides, such as the Kiliani-Fischer method and Ruff degradation. | L-2(Understand) L-3(Apply) | 2.5 | 2.742316785 |
| CO 6 | Students will classify amino acids into alpha, beta, and amma categories, and identify natural and essential amino acids. | L-2(Understand) L-3(Apply) | 2.5 | 2.742316785 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| CO6 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 15 | 12 | 11 | 12 | 14 | 15 | 16 | 13 | 14 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 2 | 3 | 2 |
| C02 | 3 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 3 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 3 | 2 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 3 |
| CO6 | 2 | 2 | 2 | 1 | 2 |
| TOTAL | 13 | 14 | 14 | 12 | 14 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.91773 | 5.278487 | 7.91773 | 5.278487 | 5.278487 | 5.278487 | 5.278487 | 5.278487 | 5.278487 |
| C02 | 8.07234 | 2.69078 | 2.69078 | 8.07234 | 8.07234 | 5.38156 | 8.07234 | 5.38156 | 8.07234 |
| CO3 | 5.38156 | 5.38156 | 5.38156 | 2.69078 | 5.38156 | 5.38156 | 5.38156 | 8.07234 | 5.38156 |
| CO4 | 8.07234 | 8.07234 | 2.69078 | 5.38156 | 8.07234 | 8.07234 | 8.07234 | 5.38156 | 8.07234 |
| CO5 | 5.38156 | 5.38156 | 5.38156 | 5.38156 | 5.38156 | 8.07234 | 8.07234 | 5.38156 | 5.38156 |
| CO6 | 5.38156 | 5.38156 | 5.38156 | 5.38156 | 5.38156 | 8.07234 | 8.07234 | 5.38156 | 5.38156 |
| FINAL ATTAINMENT | **2.680473** | **2.682191** | **2.676725** | **2.682191** | **2.683418** | **2.683909** | **2.684338** | **2.682851** | **2.683418** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 5.278487 | 7.91773 | 5.278487 | 7.91773 | 5.278487 |
| C02 | 8.07234 | 5.38156 | 8.07234 | 5.38156 | 5.38156 |
| CO3 | 5.38156 | 8.07234 | 5.38156 | 5.38156 | 5.38156 |
| CO4 | 5.38156 | 5.38156 | 8.07234 | 5.38156 | 8.07234 |
| CO5 | 5.38156 | 5.38156 | 5.38156 | 5.38156 | 8.07234 |
| CO6 | 5.38156 | 5.38156 | 5.38156 | 2.69078 | 5.38156 |
| FINAL ATTAINMENT | **2.682851** | **2.679737** | **2.683418** | **2.677896** | **2.683418** |

## SEMESTER- 6

## PAPER-7B: ENVIRONMENTAL CHEMISTRY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.78335795868023

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the environment functions and how it is affected by human activities. | L-1 (knowledge) L-2(Understand) | 2.5 | 2.845255685 |
| CO 2 | Acquire chemical knowledge to ensure sustainable use of the world's resources and ecosystem services. | L-2(Understand) | 2 | 2.876204548 |
| CO 3 | Engage in simple and advanced analytical tools used to measure the different types | L-4(Analyze) | 4 | 2.752409096 |
| CO 4 | Explain the energy crisis and different aspects of sustainability of pollution. | L-3 (Apply) L-6(Create) | 4.5 | 2.721460233 |
| CO 5 | Analyze key ethical challenges concerning biodiversity and understand the moral principles, goals and virtues important for guiding decisions that affect Earth's plant and animal life. | L-4(Analyze) | 4 | 2.752409096 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
| C02 | 3 | 1 | 0 | 2 | 2 | 3 | 3 | 2 | 3 |
| CO3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 1 | 1 | 2 | 3 | 2 | 2 | 2 | 3 |
| CO5 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 13 | 5 | 6 | 9 | 11 | 12 | 12 | 11 | 12 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 1 | 2 |
| C02 | 2 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 1 | 2 | 1 | 2 | 3 |
| CO5 | 2 | 1 | 3 | 2 | 1 |
| TOTAL | 10 | 9 | 11 | 9 | 10 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 8.535767 | 2.845256 | 2.845256 | 2.845256 | 5.690511 | 5.690511 | 5.690511 | 5.690511 | 5.690511 |
| C02 | 8.628614 | 2.876205 | 0 | 5.752409 | 5.752409 | 8.628614 | 8.628614 | 5.752409 | 8.628614 |
| CO3 | 5.752409 | 2.876205 | 5.752409 | 5.752409 | 5.752409 | 5.752409 | 5.752409 | 8.628614 | 5.752409 |
| CO4 | 8.628614 | 2.876205 | 2.876205 | 5.752409 | 8.628614 | 5.752409 | 5.752409 | 5.752409 | 8.628614 |
| CO5 | 5.752409 | 2.876205 | 5.752409 | 5.752409 | 5.752409 | 8.628614 | 8.628614 | 5.752409 | 5.752409 |
| FINAL ATTAINMENT | **2.869063** | **2.870015** | **2.871046** | **2.872766** | **2.870577** | **2.871046** | **2.871046** | **2.870577** | **2.871046** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 8.535767 | 8.535767 | 5.690511 | 2.845256 | 5.690511 |
| C02 | 5.752409 | 5.752409 | 8.628614 | 5.752409 | 5.752409 |
| CO3 | 5.752409 | 2.876205 | 5.752409 | 5.752409 | 5.752409 |
| CO4 | 2.876205 | 5.752409 | 2.876205 | 5.752409 | 8.628614 |
| CO5 | 5.752409 | 2.876205 | 8.628614 | 5.752409 | 2.876205 |
| FINAL ATTAINMENT | **2.86692** | **2.865888** | **2.870577** | **2.872766** | **2.870015** |

## SEMESTER- 6

## PAPER-8C1: ORGANIC SPECTROSCOPIC TECHNIQUES

## COURSE OUTCOME WEIGHTED AVERAGE: 2.8

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Gain a comprehensive understanding of the principles and theoretical background of NMR, UV, and visible spectroscopy | L-1 (Knowledge) | 1 | 2.942857143 |
| CO 2 | Develop the ability to interpret and analyze spectral data for identifying chemical structures | L-2(Understand) L-4(Analyze) | 3 | 2.828571429 |
| CO 3 | Learn to apply spectroscopic techniques in various fields such as medical diagnostics and reaction kinetics | L-2(Understand) L-3(Apply) | 2.5 | 2.857142857 |
| CO 4 | Acquire knowledge of advanced NMR techniques and their practical applications. | L-4(Analyze) | 4 | 2.771428571 |
| CO 5 | Develop skills in chemical analysis using electronic spectroscopy and understand the practical implications of Beer-Lambert's law and its deviations | L-5(Evaluate) L-3(Apply) | 4 | 2.771428571 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 0 | 2 | 2 | 3 | 1 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 1 | 2 | 2 | 3 | 3 | 2 | 3 | 3 |
| CO5 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 13 | 6 | 7 | 9 | 11 | 12 | 13 | 11 | 12 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 2 | 1 | 2 |
| C02 | 2 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 1 | 2 | 1 | 2 | 3 |
| CO5 | 2 | 1 | 2 | 3 | 2 |
| TOTAL | 10 | 9 | 10 | 10 | 11 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 8.828571 | 2.942857 | 2.942857 | 0 | 5.885714 | 5.885714 | 8.828571 | 2.942857 | 5.885714 |
| C02 | 8.485714 | 2.828571 | 2.828571 | 8.485714 | 8.485714 | 5.657143 | 8.485714 | 5.657143 | 8.485714 |
| CO3 | 5.657143 | 5.657143 | 2.828571 | 5.657143 | 2.828571 | 5.657143 | 5.657143 | 8.485714 | 5.657143 |
| CO4 | 8.485714 | 2.828571 | 5.657143 | 5.657143 | 8.485714 | 8.485714 | 5.657143 | 8.485714 | 8.485714 |
| CO5 | 5.657143 | 2.828571 | 5.657143 | 5.657143 | 5.657143 | 8.485714 | 8.485714 | 5.657143 | 5.657143 |
| FINAL ATTAINMENT | **2.854945** | **2.847619** | **2.844898** | **2.828571** | **2.849351** | **2.847619** | **2.854945** | **2.838961** | **2.847619** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 8.828571 | 8.828571 | 5.885714 | 2.942857 | 5.885714 |
| C02 | 5.657143 | 5.657143 | 8.485714 | 5.657143 | 5.657143 |
| CO3 | 5.657143 | 2.828571 | 5.657143 | 5.657143 | 5.657143 |
| CO4 | 2.828571 | 5.657143 | 2.828571 | 5.657143 | 8.485714 |
| CO5 | 5.657143 | 2.828571 | 5.657143 | 8.485714 | 5.657143 |
| FINAL ATTAINMENT | **2.862857** | **2.866667** | **2.851429** | **2.84** | **2.849351** |

## SEMESTER- 6

## PAPER-8C2: ADVANCED ORGANIC REACTIONS

## COURSE OUTCOME WEIGHTED AVERAGE: 2.88034188

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Gain a comprehensive understanding of the principles and mechanisms of organic photochemistry. | L-1 (Knowledge) | 1 | 2.965811966 |
| CO 2 | Learn detailed mechanisms of advanced photochemical reactions, including Norrish cleavages and photoreductions | L-2(Understand) L-4(Analyze) | 3 | 2.897435897 |
| CO 3 | Develop proficiency in the use of protecting groups for alcohols, carboxylic acids, and carbonyl compounds | L-2(Understand) L-3(Apply) | 2.5 | 2.914529915 |
| CO 4 | Acquire in-depth knowledge of classical synthetic reactions like the Mannich reaction, Robinson annulation, and the Wittig reaction. | L-4(Analyze) | 4 | 2.863247863 |
| CO 5 | Understand and apply new synthetic reactions such as the Baylis-Hillman reaction, olefin metathesis, and various coupling reactions (Heck, Suzuki, Stille, Sonogashira, Click) | L-5(Evaluate) L-3(Apply) | 4 | 2.863247863 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 0 | 2 | 2 | 3 | 1 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 1 | 2 | 2 | 3 | 3 | 2 | 3 | 3 |
| CO5 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 13 | 6 | 7 | 9 | 11 | 12 | 13 | 11 | 12 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 1 | 2 |
| C02 | 2 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 1 | 2 | 1 | 2 | 3 |
| CO5 | 2 | 1 | 2 | 3 | 2 |
| TOTAL | 10 | 9 | 10 | 10 | 11 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 8.897436 | 2.965812 | 2.965812 | 0 | 5.931624 | 5.931624 | 8.897436 | 2.965812 | 5.931624 |
| C02 | 8.692308 | 2.897436 | 2.897436 | 8.692308 | 8.692308 | 5.794872 | 8.692308 | 5.794872 | 8.692308 |
| CO3 | 5.794872 | 5.794872 | 2.897436 | 5.794872 | 2.897436 | 5.794872 | 5.794872 | 8.692308 | 5.794872 |
| CO4 | 8.692308 | 2.897436 | 5.794872 | 5.794872 | 8.692308 | 8.692308 | 5.794872 | 8.692308 | 8.692308 |
| CO5 | 5.794872 | 2.897436 | 5.794872 | 5.794872 | 5.794872 | 8.692308 | 8.692308 | 5.794872 | 5.794872 |
| FINAL ATTAINMENT | **2.913215** | **2.908832** | **2.907204** | **2.897436** | **2.909868** | **2.908832** | **2.913215** | **2.903652** | **2.908832** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 8.897436 | 8.897436 | 5.931624 | 2.965812 | 5.931624 |
| C02 | 5.794872 | 5.794872 | 8.692308 | 5.794872 | 5.794872 |
| CO3 | 5.794872 | 2.897436 | 5.794872 | 5.794872 | 5.794872 |
| CO4 | 2.897436 | 5.794872 | 2.897436 | 5.794872 | 8.692308 |
| CO5 | 5.794872 | 2.897436 | 5.794872 | 8.692308 | 5.794872 |
| FINAL ATTAINMENT | **2.917949** | **2.920228** | **2.911111** | **2.904274** | **2.909868** |

## SEMESTER- 6

## PAPER-8C3: PHARMACEUTICAL AND MEDICINAL CHEMISTRY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.78703703703704

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Develop a comprehensive understanding of key terms and concepts in pharmaceutical and medicinal chemistry. | L-1 (Knowledge) | 3.5 | 2.787037037 |
| CO 2 | Learn to accurately name and classify drugs based on their chemical structure and therapeutic activity. | L-2(Understand) L-4(Analyze) | 3 | 2.817460317 |
| CO 3 | Gain knowledge of the synthesis and therapeutic activities of various chemotherapeutic, psycho-therapeutic, and pharmacodynamic drugs. | L-2(Understand) L-3(Apply) | 2.5 | 2.847883598 |
| CO 4 | Understand the principles of pharmacodynamics and pharmacokinetics and their application in drug development and therapy. | L-4(Analyze) | 4 | 2.756613757 |
| CO 5 | Acquire knowledge about the immune system's response to HIV, the replication of retroviruses, and the current strategies for the investigation, prevention, and treatment of AIDS. | L-5(Evaluate) L-3(Apply) | 4 | 2.756613757 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 1 | 0 | 2 | 2 | 3 | 1 | 2 |
| C02 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 2 | 3 |
| CO3 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 3 | 2 |
| CO4 | 3 | 1 | 2 | 2 | 3 | 3 | 2 | 3 | 3 |
| CO5 | 2 | 1 | 2 | 2 | 2 | 3 | 3 | 2 | 2 |
| TOTAL | 13 | 6 | 7 | 9 | 11 | 12 | 13 | 11 | 12 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 3 | 2 | 1 | 2 |
| C02 | 2 | 2 | 3 | 2 | 2 |
| CO3 | 2 | 1 | 2 | 2 | 2 |
| CO4 | 1 | 2 | 1 | 2 | 3 |
| CO5 | 2 | 1 | 2 | 3 | 2 |
| TOTAL | 10 | 9 | 10 | 10 | 11 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 8.361111 | 2.787037 | 2.787037 | 0 | 5.574074 | 5.574074 | 8.361111 | 2.787037 | 5.574074 |
| C02 | 8.452381 | 2.81746 | 2.81746 | 8.452381 | 8.452381 | 5.634921 | 8.452381 | 5.634921 | 8.452381 |
| CO3 | 5.634921 | 5.634921 | 2.81746 | 5.634921 | 2.81746 | 5.634921 | 5.634921 | 8.452381 | 5.634921 |
| CO4 | 8.452381 | 2.81746 | 5.634921 | 5.634921 | 8.452381 | 8.452381 | 5.634921 | 8.452381 | 8.452381 |
| CO5 | 5.634921 | 2.81746 | 5.634921 | 5.634921 | 5.634921 | 8.452381 | 8.452381 | 5.634921 | 5.634921 |
| FINAL ATTAINMENT | **2.81044** | **2.81239** | **2.813114** | **2.81746** | **2.811929** | **2.81239** | **2.81044** | **2.814695** | **2.81239** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 8.361111 | 8.361111 | 5.574074 | 2.787037 | 5.574074 |
| C02 | 5.634921 | 5.634921 | 8.452381 | 5.634921 | 5.634921 |
| CO3 | 5.634921 | 2.81746 | 5.634921 | 5.634921 | 5.634921 |
| CO4 | 2.81746 | 5.634921 | 2.81746 | 5.634921 | 8.452381 |
| CO5 | 5.634921 | 2.81746 | 5.634921 | 8.452381 | 5.634921 |
| FINAL ATTAINMENT | **2.808333** | **2.807319** | **2.811376** | **2.814418** | **2.811929** |

# DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

# VISAKHAPATNAM

## DEPARTMENT OF PHYSICS

## CO & PO ATTAINMENT

**2019 – 2020**

# CO – PO ATTAINMENT METHODOLOGY

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\textit{some of the level weitage of all students of a course}}{\textit{total number of students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\textit{Sum of the weigtages of blooms levels mapped}}{\textit{number of levels mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(3 - \boldsymbol{COWA}) \times \left(1 - \frac{\boldsymbol{COLLI}}{3.5}\right)\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PSO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

# Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE

(AUTONOMOUS)

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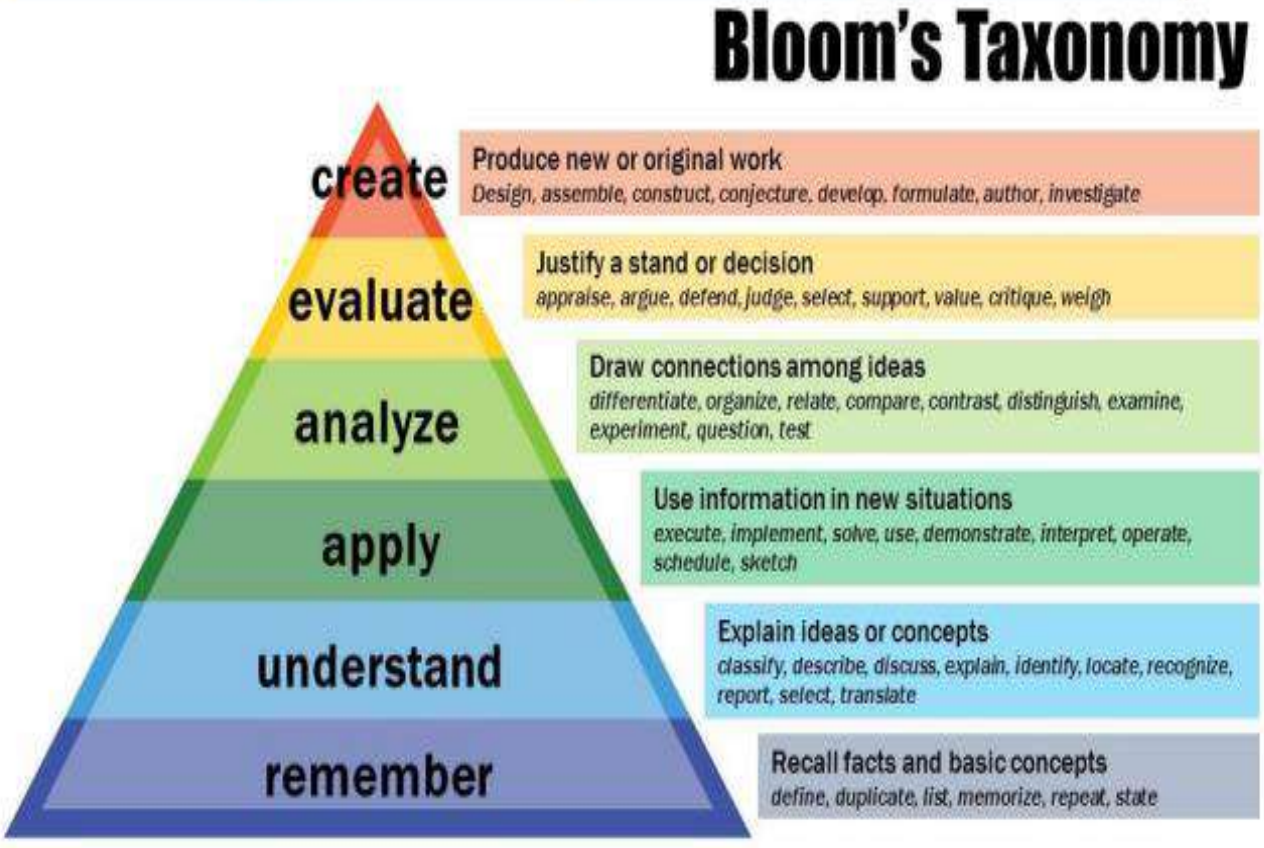
## Levels of Bloom's Taxonomoy

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



| POs | Programme Outcomes |
|---|---|
| PO1 | **Critical Thinking:**<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | **Effective Communication:**<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | **Social Interaction:**<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | **Effective Citizenship:**<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | **Ethics:**<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | **Environment and Sustainability:**<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | **Employability skills:**<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | **Entrepreneurship skills:**<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | **Self-directed and Life-long Learning:**<br><br>Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes. |

# Program Specific Outcomes (PSOs)

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Grasp and analyze fundamental laws and concepts, enabling exploration in advanced branches of science and technology. |
| PSO2 | Perform basic experiments, and competently handle, understand, and design equipment for specific scientific purposes. |
| PSO3 | Develop essential analytical and mathematical skills, providing the advanced competence needed for higher education, research, and industry. |
| PSO4 | Gain qualifications for job opportunities in schools, colleges, and scientific organizations, facilitating career initiation in the scientific field. |
| PSO5 | Expand the boundaries of human knowledge, uncovering new facts and phenomena in the universe. |

## SEMESTER- 1

## PAPER-1: MECHANICAL PROPERTIES OF MATTER

## COURSE OUTCOME WEIGHTED AVERAGE: 2.4647

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand Newton's laws of motion , motion of many particle systems ,laws of conservation of Linear Momentum , work & Energy and also about Collisions | L2 | 2 | 2.3882 |
| CO2 | Apply the rotational kinematic relations, and Conservation of angular Momentum, symmetries of Moment of Inertia for the Combined Rotation Translation Motion | L3 | 3 | 2.3882 |
| CO3 | Comprehend the general characteristics of central forces and the application of Kepler's laws to describe the motion of planets and satellite in circular orbit through the study of law of Gravitation and also about the basic aspects of Elasticity & Fluid Motion | L4 | 4 | 2.2352 |
| CO4 | Get acquainted with the basics of Oscillatory motion and the motion w.r.t. the Non-inertial frames of Reference | L2 | 2 | 2.3882 |
| CO5 | Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence. | L2 L4 | 3 | 2.3117 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 3 | 1 | 0 | 0 | 2 | 2 | 1 |
| C02 | 1 | 2 | 0 | 2 | 1 | 1 | 2 | 0 | 1 |
| CO3 | 2 | 3 | 1 | 0 | 0 | 1 | 3 | 2 | 1 |
| CO4 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 2 | 1 |
| CO5 | 0 | 2 | 3 | 1 | 0 | 1 | 1 | 2 | 2 |
| TOTAL | 6 | 9 | 8 | 5 | 2 | 6 | 9 | 8 | 6 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | 2 |
| C02 | 2 | 3 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 1 | 2 | 2 |
| CO4 | 1 | 1 | 2 | 2 | 3 |
| CO5 | 2 | 2 | 3 | 3 | 1 |
| TOTAL | 9 | 11 | 9 | 11 | 9 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 4.77645 | 0 | 7.1646 | 2.3882 | 0 | 0 | 4.7764 | 4.7764 | 2.3882 |
| CO2 | 2.3882 | 4.7764 | 0 | 4.7764 | 2.3882 | 2.3882 | 4.7764 | 0 | 2.3882 |
| CO3 | 4.4705 | 6.7058 | 2.2352 | 0 | 0 | 2.2352 | 6.7058 | 4.4705 | 2.2352 |
| CO4 | 2.3882 | 4.7764 | 2.3882 | 2.3882 | 2.3882 | 7.1646 | 2.3882 | 4.7764 | 2.3882 |
| CO 5 | 0 | 4.6235 | 6.9352 | 2.3117 | 0 | 2.3117 | 2.3117 | 4.6235 | 4.6235 |
| **FINAL ATTAINMENT** | **2.3372** | **2.3202** | **2.3404** | **2.3729** | **2.3882** | **2.3499** | **2.3287** | **2.3308** | **2.3372** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.1646 | 4.7764 | 2.3882 | 4.7764 | 4.7764 |
| CO2 | 4.7764 | 7.1646 | 4.7764 | 4.7764 | 2.3882 |
| CO3 | 2.2352 | 6.7058 | 2.2352 | 4.4705 | 4.4705 |
| CO4 | 2.3882 | 2.3882 | 4.7764 | 4.7764 | 7.1646 |
| CO 5 | 4.9771 | 4.9771 | 7.4657 | 7.4657 | 2.4885 |
| **FINAL ATTAINMENT** | **2.5453** | **2.4885** | **2.5264** | **2.5195** | **2.5453** |

## SEMESTER – 2

## PAPER- 2 Waves and Oscillations

### COURSE OUTCOME WEIGHTED AVERAGE: 2.497

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | Average Level Weightage |
|---|---|---|---|---|
| CO 1 | Demonstrate Understanding of Simple Harmonic Oscillations. Apply differential equations to describe simple harmonic motion. Analyze physical characteristics of simple harmonic oscillators. | L2 L3 | 2.5 | 2.6407 |
| CO2 | Evaluate Damped and Forced Oscillations. Assess the behavior of damped harmonic oscillators through energy considerations and logarithmic decrement analysis. Compare and contrast damped and undamped oscillators to understand the impact of damping. | L5 | 5 | 2.2814 |
| CO3 | Analyze Complex Vibrations Using Fourier Analysis. Apply Fourier theorem to analyze periodic waveforms, including square, triangular, and sawtooth waves. | L4 | 4 | 2.4251 |
| CO4 | Examine Vibrations of Strings and Bars. Investigate transverse wave propagation along stretched strings and bars. Analyze the modes of vibration of strings clamped at ends, including overtones and harmonics. | L3 L4 | 3.5 | 2.497 |
| CO5 | Applications. Describe the properties of ultrasonic waves and their production methods using piezoelectric and magnetostriction principles. Demonstrate techniques for detecting ultrasonic waves and determining their wavelengths. | L3 L5 | 3.5 | 2.497 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 2 | O | 0 | 2 | 1 | 1 | 1 |
| C02 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 1 | 2 | 1 | 3 | 1 | 2 | 2 |
| CO4 | 3 | 2 | 1 | 1 | 0 | 1 | 2 | 2 | 3 |
| CO5 | 1 | 1 | 2 | 3 | 0 | 0 | 2 | 1 | 2 |
| TOTAL | 11 | 9 | 8 | 7 | 2 | 8 | 7 | 8 | 10 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 1 | 2 | 2 | 1 | 3 |
| C02 | 3 | 2 | 2 | 1 | 1 |
| CO3 | 2 | 1 | 1 | 2 | 3 |
| CO4 | 3 | 2 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 3 | 2 |
| TOTAL | 11 | 8 | 8 | 8 | 10 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.9221 | 2.6407 | 5.2814 | 0 | 0 | 5.2814 | 2.6407 | 2.6407 | 2.6407 |
| C02 | 4.5628 | 6.8442 | 4.5628 | 2.2814 | 2.2814 | 4.5628 | 2.2814 | 4.5628 | 4.5628 |
| CO3 | 4.8502 | 4.8502 | 2.4251 | 4.8502 | 2.4251 | 7.2754 | 2.4251 | 4.8502 | 4.8502 |
| CO4 | 7.491 | 4.994 | 2.497 | 2.497 | 0 | 2.497 | 4.994 | 4.994 | 7.491 |
| CO5 | 2.497 | 2.497 | 4.994 | 7.491 | 0 | 0 | 4.994 | 2.497 | 4.994 |
| **FINAL ATTAINMENT** | **2.4839** | **2.4251** | **2.47** | **2.4456** | **2.3532** | **2.4521** | **2.4764** | **2.4431** | **2.4538** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2.6407 | 5.2814 | 5.2814 | 2.6407 | 7.9221 |
| C02 | 6.8442 | 4.5628 | 4.5628 | 2.2814 | 2.2814 |
| CO3 | 4.8502 | 2.4251 | 2.4251 | 4.8502 | 7.2754 |
| CO4 | 7.491 | 4.994 | 4.994 | 2.497 | 2.497 |
| CO5 | 4.994 | 2.497 | 2.497 | 7.491 | 4.994 |
| **FINAL ATTAINMENT** | **2.4382** | **2.47** | **2.47** | **2.47** | **2.497** |

## SEMESTER- 3

## PAPER-3 : WAVES & OPTICS

## COURSE OUTCOME WEIGHTED AVERAGE: 2.1933

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the basics of the Superposition of Collinear & Perpendicular Harmonic Oscillations and also about the Wave motion. | L2 | 2 | 2.5391 |
| CO2 | Get acquainted with the theory of velocity of waves and also with the superposition of Harmonic Waves | L2 | 2 | 2.53902 |
| CO3 | Explain about the Electromagnetic nature of the Light and the phenomenon of Interference and also about the formation of Interference fringes in thin films as well as about the formation of Newton's rings. | L4 | 4 | 2.07805 |
| CO4 | Describe the construction and the working of the Michelson Interferometer & Fabry-perot Interferometer and also about the Fraunhofer Diffraction patterns due to single slit, Circular aperture as well as diffraction Grating. | L4 | 4 | 2.07805 |

| | | | | |
|---|---|---|---|---|
| CO5 | Apply the basic mathematical principles of Diffraction to Explain Fresnel Diffraction Patterns due to a straight edge, slit and a wire and comprehend the basic principles Holography | L3 L4 | 3.5 | 2.1933 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 1 | 0 | 3 | 1 | 2 | 1 | 1 | 2 |
| C02 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 0 | 2 |
| CO3 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 2 | 1 |
| CO4 | 0 | 2 | 1 | 3 | 1 | 1 | 3 | 2 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| TOTAL | 7 | 8 | 4 | 10 | 4 | 8 | 9 | 7 | 9 |

**CO- PSO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 1 | 1 | 3 |
| C02 | 1 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 3 | 1 | 2 |
| CO4 | 1 | 2 | 2 | 3 | 1 |
| CO5 | 1 | 2 | 2 | 2 | 3 |
| TOTAL | 7 | 10 | 9 | 9 | 11 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.078 | 2.539 | 0 | 7.617 | 2.539 | 5.078 | 2.539 | 2.5391 | 5.0781 |
| CO2 | 2.539 | 5.078 | 2.539 | 2.539 | 2.539 | 5.078 | 7.6171 | 0 | 5.0781 |
| CO3 | 4.1561 | 4.1561 | 2.078 | 2.078 | 0 | 4.1561 | 2.0781 | 4.1561 | 2.0781 |
| CO4 | 0 | 4.1561 | 2.078 | 6.2341 | 2.078 | 2.0781 | 6.2341 | 4.1561 | 4.1561 |
| CO5 | 4.3866 | 2.1933 | 2.1933 | 4.3866 | 2.1933 | 2.1933 | 2.1933 | 4.3866 | 4.3866 |
| **FINAL ATTAINMENT** | **2.3085** | **2.2653** | **2.2221** | **2.2854** | **2.3373** | **2.3229** | **2.2957** | **2.1768** | **2.3085** |

## ATTAINMENT OF PSOs

| MAPPING PROGRAM OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 5.0781 | 5.0781 | 2.539 | 2.539 | 7.6171 |
| CO2 | 2.539 | 5.0781 | 2.539 | 5.0781 | 5.0781 |
| CO3 | 4.1561 | 4.1561 | 6.2341 | 2.0781 | 4.1561 |
| CO4 | 2.0781 | 4.1561 | 4.1561 | 6.2341 | 2.0781 |
| CO5 | 2.1933 | 4.3866 | 4.3866 | 4.3866 | 6.5799 |
| **FINAL ATTAINMENT** | **2.2921** | **2.2854** | **2.2061** | **2.2573** | **2.319** |

## SEMESTER- 4

## PAPER-4 : THERMODYNAMICS AND RADIATION PHYSICS

## COURSE OUTCOME WEIGHTED AVERAGE: 2.26304

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equipartition of energies, mean free path of molecular collisions | L2 | 2 | 2.5788 |
| CO2 | Gain knowledge on the basic concepts of thermodynamics, thefirst and thesecond law of thermodynamics, the basic principles of refrigeration, the concept of entropy ,the thermodynamic potentials and their physical interpretations. | L2 L3 | 2.5 | 2.4736 |
| CO3 | UnderstandtheworkingofCarnot'sidealheatengine,Carnot cycleandits efficiency | L3 | 3 | 2.3683 |
| CO4 | Develop critical understanding of concept of thermodynamic potentials, the formulation of Maxwell's equations and its applications | L6 | 6 | 1.7366 |
| CO5 | Differentiate between principles and methods to produce low temperature and liquefy air and also understand the practical applications of substances at low temperatures. | L4 | 4 | 2.1577 |
| CO6 | Examine the nature of blackbody radiations and the basic theories | L4 | 4 | 2.2226 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 1 | 0 | 3 | 1 | 2 | 1 | 1 | 2 |
| C02 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 0 | 2 |
| CO3 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 2 | 1 |
| CO4 | 0 | 2 | 1 | 3 | 1 | 1 | 3 | 2 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO6 | 2 | 1 | 2 | 1 | 0 | 1 | 1 | 1 | 1 |
| TOTAL | 9 | 9 | 6 | 11 | 4 | 9 | 10 | 8 | 10 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 1 | 1 | 3 |
| C02 | 1 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 3 | 1 | 2 |
| CO4 | 1 | 2 | 2 | 3 | 1 |
| CO5 | 1 | 2 | 2 | 2 | 3 |
| CO6 | 2 | 1 | 3 | 2 | 2 |
| TOTAL | 9 | 11 | 12 | 11 | 13 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO 1 | 5.1577 | 2.5788 | 0 | 7.7366 | 2.5788 | 5.1577 | 2.5788 | 2.5788 | 5.1577 |
| CO2 | 2.4736 | 4.9472 | 2.4736 | 2.4736 | 2.4736 | 4.9472 | 7.4208 | 0 | 4.9472 |
| CO3 | 4.7366 | 4.7366 | 2.3683 | 2.3683 | 0 | 4.7366 | 2.3683 | 4.7366 | 2.3683 |
| CO4 | 0 | 3.4732 | 1.7366 | 5.2099 | 1.7366 | 1.7366 | 5.2099 | 3.4732 | 3.4732 |
| CO5 | 4.3155 | 2.1577 | 2.1577 | 4.3155 | 2.1577 | 2.1577 | 2.1577 | 4.3155 | 4.3155 |
| CO6 | 4.4453 | 2.2226 | 4.4453 | 2.2226 | 0 | 2.2226 | 2.2226 | 2.2226 | 2.2226 |
| **FINAL ATTAINMENT** | **2.3476** | **2.2351** | **2.1969** | **2.2115** | **2.2367** | **2.3287** | **2.1958** | **2.1658** | **2.2484** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO 1 | 5.1577 | 5.1577 | 2.5788 | 2.5788 | 7.7366 |
| CO2 | 2.4736 | 4.9472 | 2.4736 | 4.9472 | 4.9472 |
| CO3 | 4.7366 | 4.7366 | 7.1049 | 2.3683 | 4.7366 |
| CO4 | 1.7366 | 3.4732 | 3.4732 | 5.2099 | 1.7366 |
| CO5 | 2.1577 | 4.3155 | 4.3155 | 4.3155 | 6.4732 |
| CO6 | 4.4453 | 2.2226 | 6.6679 | 4.4453 | 4.4453 |
| **FINAL ATTAINMENT** | **2.3008** | **2.2593** | **2.2178** | **2.1695** | **2.3135** |

## SEMESTER- 5- PAPER-5 : ELECTRICITY,MAGNETISM AND ELECTRONICS

## COURSE OUTCOME WEIGHTED AVERAGE: 3

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant. | L2 | 2 | 3 |
| CO2 | Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances. | L4 | 4 | 3 |
| CO3 | Understand Biot and Savart's law and Ampere's circuital law to describe and explain the generation of magnetic fields by electrical currents. | L2 L4 | 3 | 3 |
| CO4 | Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves. | L2 L6 | 4 | 3 |
| CO5 | Analyze Phenomenon of resonance in LCR AC-circuits, sharpness of resonance, Q- factor, Power factor and the comparative study of series andparallelresonant circuits. | L4 | 4 | 3 |
| CO6 | Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors | L4 | 4 | 3 |
| CO7 | Understand the operation of basic logic gates and universal gates and their truth tables. | L2 | 2 | 3 |

| CO- PO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |
|---|

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 1 | 0 | 3 | 0 | 2 | 1 | 1 | 2 |
| C02 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 1 |
| CO3 | 2 | 1 | 2 | 1 | 1 | 3 | 0 | 1 | 2 |
| CO4 | 2 | 2 | 1 | 1 | 0 | 1 | 3 | 1 | 0 |
| CO5 | 1 | 2 | 1 | 1 | 0 | 2 | 3 | 0 | 1 |
| CO6 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 3 |
| CO7 | 0 | 2 | 2 | 1 | 1 | 2 | 3 | 1 | 2 |
| TOTAL | 9 | 12 | 9 | 10 | 4 | 13 | 14 | 7 | 11 |

| CO- PSO MAPPING<br>1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |
|---|

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 3 | 1 | 2 | 2 |
| C02 | 1 | 2 | 2 | 3 | 1 |
| CO3 | 2 | 2 | 1 | 1 | 2 |
| CO4 | 1 | 1 | 2 | 2 | 1 |
| CO5 | 2 | 2 | 1 | 2 | 1 |
| CO6 | 1 | 1 | 2 | 2 | 1 |
| CO7 | 2 | 2 | 1 | 1 | 2 |
| TOTAL | 11 | 13 | 10 | 13 | 10 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 6 | 3 | 0 | 9 | 0 | 6 | 3 | 3 | 6 |
| C02 | 3 | 6 | 6 | 3 | 3 | 6 | 6 | 3 | 3 |
| CO3 | 6 | 3 | 6 | 3 | 3 | 9 | 0 | 3 | 6 |
| CO4 | 6 | 6 | 3 | 3 | 0 | 3 | 9 | 3 | 0 |
| CO5 | 3 | 6 | 3 | 3 | 0 | 6 | 9 | 0 | 3 |
| CO6 | 3 | 6 | 3 | 6 | 3 | 3 | 6 | 6 | 9 |
| CO7 | 0 | 6 | 6 | 3 | 3 | 6 | 9 | 3 | 6 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 6 | 9 | 3 | 6 | 6 |
| C02 | 3 | 6 | 6 | 9 | 3 |
| CO3 | 6 | 6 | 3 | 3 | 6 |
| CO4 | 3 | 3 | 6 | 6 | 3 |
| CO5 | 6 | 6 | 3 | 6 | 3 |
| CO6 | 3 | 3 | 6 | 6 | 3 |
| CO7 | 6 | 6 | 3 | 3 | 6 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** |

## SEMESTER- 5

## PAPER-6 : MODERN PHYSICS

## COURSE OUTCOME WEIGHTED AVERAGE: 3

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Develop anunderstanding on the concepts of Atomic and Modern Physics,basic elementary quantum mechanics and nuclear physics. | L2 | 2 | 3 |
| CO2 | Develop critical understanding of concept of Matter waves and Uncertainty principle | L2 | 2 | 3 |
| CO3 | Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications. | L2 L3 | 2.5 | 3 |
| CO4 | Examine the basic properties of nuclei,characteristics o fNuclear forces, salient features of Nuclear models and different nuclear radiation detectors. | L4 | 4 | 3 |
| CO5 | Classify Elementary particles based on their mass, charge, spin, half life and interaction | L4 | 4 | 3 |
| CO6 | Get familiarized with the nanomaterials,their unique properties and applications. | L2 | 2 | 3 |
| CO7 | Increase theawareness and appreciation of superconductors and thei rpractical applications. | L3 L4 | 3.5 | 3 |

| CO- PO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 |
| C02 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 |
| CO3 | 0 | 2 | 1 | 1 | 0 | 2 | 1 | 2 | 2 |
| CO4 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 0 |
| CO5 | 1 | 2 | 2 | 1 | 0 | 2 | 1 | 0 | 1 |
| CO6 | 2 | 2 | 1 | 1 | 0 | 2 | 2 | 1 | 1 |
| CO7 | 2 | 1 | 1 | 3 | 1 | 1 | 2 | 2 | 1 |
| TOTAL | 11 | 11 | 11 | 10 | 4 | 12 | 12 | 8 | 8 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 1 | 2 | 3 | 1 |
| C02 | 1 | 3 | 2 | 2 | 1 |
| CO3 | 2 | 1 | 2 | 2 | 1 |
| CO4 | 1 | 2 | 2 | 1 | 2 |
| CO5 | 2 | 2 | 1 | 3 | 1 |
| CO6 | 2 | 3 | 1 | 1 | 2 |
| CO7 | 2 | 1 | 3 | 2 | 2 |
| TOTAL | 12 | 13 | 13 | 14 | 10 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 6 | 3 | 6 | 3 | 3 | 6 | 6 | 3 | 3 |
| C02 | 9 | 6 | 6 | 3 | 3 | 6 | 6 | 3 | 6 |
| CO3 | 0 | 6 | 3 | 3 | 0 | 6 | 3 | 6 | 6 |
| CO4 | 3 | 3 | 6 | 6 | 3 | 3 | 6 | 3 | 0 |
| CO5 | 3 | 6 | 6 | 3 | 0 | 6 | 3 | 0 | 3 |
| CO6 | 6 | 6 | 3 | 3 | 0 | 6 | 6 | 3 | 3 |
| CO7 | 6 | 3 | 3 | 9 | 3 | 3 | 6 | 6 | 3 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 6 | 3 | 6 | 9 | 3 |
| C02 | 3 | 9 | 6 | 6 | 3 |
| CO3 | 6 | 3 | 6 | 6 | 3 |
| CO4 | 3 | 6 | 6 | 3 | 6 |
| CO5 | 6 | 6 | 3 | 9 | 3 |
| CO6 | 6 | 9 | 3 | 3 | 6 |
| CO7 | 6 | 3 | 9 | 6 | 6 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** |

## SEMESTER- 6

## PAPER-7 : Renewable Energy

### COURSE OUTCOME WEIGHTED AVERAGE: 2.1827

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Analyze Fundamental Concepts and Principles of Energy. Define energy and its units, as well as power, and describe various forms of energy. Explain the principles of conservation of energy and the second law of thermodynamics. Construct energy flow diagrams to illustrate energy transfer to the Earth and the origin of fossil fuels. | L4 | 4 | 2.0659 |
| CO2 | Evaluate Environmental Impacts of Energy Production and Utilization. Assess environmental degradation resulting from energy production, including air and water pollution, ozone depletion, and global warming. Analyze the ecological impact of different energy generation methods such as thermal power stations, nuclear power, and hydroelectric power. | L5 | 5 | 1.8324 |
| CO3 | Assess Global Energy Consumption Patterns and Resources. Analyze current energy consumption in various sectors and project future energy demands. Evaluate the exponential increase in energy consumption and its implications for the global economy. Assess the impact of energy resources such as coal, oil, natural gas, nuclear, and hydroelectric power on the environment and economy. | L4 | 4 | 2.0659 |
| CO4 | Examine the Energy Landscape in India. Identify available energy resources in India and analyze urban and rural energy consumption patterns. Evaluate the role of nuclear energy in India's energy mix and its future prospects. Assess the significance of energy as a limiting factor in economic growth and the need for | L4 | 4 | 2.0659 |

| | | | | |
|---|---|---|---|---|
| | diversification into new and renewable energy sources. | | | |
| CO5 | Explore Renewable Energy Technologies and Applications. Analyze solar energy technologies, including flat plate collectors, solar water heating systems, solar cookers, and photovoltaic systems. Examine wind energy conversion principles, components of wind turbines, and the advantages and disadvantages of wind energy. | L5 | 5 | 1.8324 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 1 | 0 | 3 | 1 | 2 | 1 | 1 | 2 |
| C02 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 0 | 2 |
| CO3 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 2 | 1 |
| CO4 | 0 | 2 | 1 | 3 | 1 | 1 | 3 | 2 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| TOTAL | 7 | 8 | 4 | 10 | 4 | 8 | 9 | 7 | 9 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 1 | 1 | 3 |
| C02 | 1 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 3 | 1 | 2 |
| CO4 | 1 | 2 | 2 | 3 | 1 |
| CO5 | 1 | 2 | 2 | 2 | 3 |
| TOTAL | 7 | 10 | 9 | 9 | 11 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 4.1318 | 2.0659 | 0 | 6.1978 | 2.0659 | 4.1318 | 2.0659 | 2.0659 | 4.1318 |
| C02 | 1.8324 | 3.6648 | 1.8324 | 1.8324 | 1.8324 | 3.6648 | 5.4972 | 0 | 3.6648 |
| CO3 | 4.1318 | 4.1318 | 2.0659 | 2.0659 | 0 | 4.1318 | 2.0659 | 4.1318 | 2.0659 |
| CO4 | 0 | 4.1318 | 2.0659 | 6.1978 | 2.0659 | 2.0659 | 6.1978 | 4.1318 | 4.1318 |
| CO5 | 3.6648 | 1.8324 | 1.8324 | 3.6648 | 1.8324 | 1.8324 | 1.8324 | 3.6648 | 3.6648 |
| **FINAL ATTAINMENT** | **1.9658** | **1.9783** | **1.9491** | **1.9958** | **1.9491** | **1.9783** | **1.9621** | **1.9992** | **1.9621** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 4.1318 | 4.1318 | 2.0659 | 2.0659 | 6.1978 |
| C02 | 1.8324 | 3.6648 | 1.8324 | 3.6648 | 3.6648 |
| CO3 | 4.1318 | 4.1318 | 6.1978 | 2.0659 | 4.1318 |
| CO4 | 2.0659 | 4.1318 | 4.1318 | 6.1978 | 2.0659 |
| CO5 | 1.8324 | 3.6648 | 3.6648 | 3.6648 | 5.4972 |
| **FINAL ATTAINMENT** | **1.9992** | **1.9725** | **1.9881** | **1.9621** | **1.9598** |

## SEMESTER- 6

## PAPER-8: Solar Thermal and photovoltaiv aspects

## COURSE OUTCOME WEIGHTED AVERAGE: 2.9763

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Comprehend Solar Radiation Fundamentals and Measurement Techniques. Explain the structure of the Sun and the spectral distribution of extraterrestrial radiation. Analyze solar constants and related concepts such as zenith angle, air mass, and declination. Evaluate different types of solar radiation (direct, diffuse, and total) and methods for measuring solar intensity using instruments like thermoelectric pyranometers and pyrheliometers. | L4 | 4 | 2.9729 |
| CO2 | Analyze Radiative Properties and Characteristics of Materials. Examine the principles of reflection, absorption, and transmission of solar radiation through various materials. Apply Kirchhoff's law to understand the relationship between absorptance, emittance, and reflectance. Evaluate the preparation, characterization, and applications of selective surfaces and anti-reflective coatings. | L4 | 4 | 2.9729 |
| CO3 | Evaluate Design and Performance of Flat Plate Collectors (FPC). Describe the construction and operation of flat plate collectors, including liquid heating types. Apply energy balance equations to analyze the efficiency and temperature distribution of FPCs. Assess the design considerations and performance parameters of evacuated tubular collectors. | L5 | 5 | 2.9661 |

| | | | | |
|---|---|---|---|---|
| CO4 | Assess Concentrating Collectors and Tracking Systems. Classify concentrating collectors and analyze their design and performance parameters. Define key terms such as aperture, concentration ratio, and acceptance angle in the context of concentrating collectors. Evaluate tracking systems and various types of concentrating collectors, including parabolic trough and point focus concentrators. | L4 | 4 | 2.9729 |
| CO5 | 1. Examine Solar Photovoltaic (PV) Technology and Applications. Explain the physics of solar cells, including different types of interfaces and the photovoltaic effect. Analyze the equivalent circuit of solar cells and factors influencing cell efficiency, such as series and shunt resistances. Evaluate various fabrication methods for solar cells, including single crystal silicon and thin-film technologies, and explore emerging concepts like dye-sensitized and quantum dot solar cells. | L4 L5 | 4.5 | 2.9695 |

**CO- PO MAPPING**

**1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 3 | 1 | 0 | 0 | 2 | 2 | 1 |
| C02 | 1 | 2 | 0 | 2 | 1 | 1 | 2 | 0 | 1 |
| CO3 | 2 | 3 | 1 | 0 | 0 | 1 | 3 | 2 | 1 |
| CO4 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | 2 | 1 |
| CO5 | 0 | 2 | 3 | 1 | 0 | 1 | 1 | 2 | 2 |
| TOTAL | 6 | 9 | 8 | 5 | 2 | 6 | 9 | 8 | 6 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 1 | 2 | 2 |
| C02 | 2 | 3 | 2 | 2 | 1 |
| CO3 | 1 | 3 | 1 | 2 | 2 |
| CO4 | 1 | 1 | 2 | 2 | 3 |
| CO5 | 2 | 2 | 3 | 3 | 1 |
| TOTAL | 9 | 11 | 9 | 11 | 9 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 5.9458 | 0 | 8.9187 | 2.9729 | 0 | 0 | 5.9458 | 5.9458 | 2.9729 |
| C02 | 2.9729 | 5.9458 | 0 | 5.9458 | 2.9729 | 2.9729 | 5.9458 | 0 | 2.9729 |
| CO3 | 5.9322 | 8.8984 | 2.9661 | 0 | 0 | 2.9661 | 8.8984 | 5.9322 | 2.9661 |
| CO4 | 2.9729 | 5.9458 | 2.9729 | 2.9729 | 2.9729 | 8.9187 | 2.9729 | 5.9458 | 2.9729 |
| CO5 | 0 | 5.939 | 8.9085 | 2.9695 | 0 | 2.9695 | 2.9695 | 5.9390 | 5.939 |
| **FINAL ATTAINMENT** | **2.9706** | **2.9699** | **2.9707** | **2.9722** | **2.9729** | **2.9712** | **2.9702** | **2.9703** | **2.9706** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 8.9187 | 5.9458 | 2.9729 | 5.9458 | 5.9458 |
| C02 | 5.9458 | 8.9187 | 5.9458 | 5.9458 | 2.9729 |
| CO3 | 2.9661 | 8.8984 | 2.9661 | 5.9322 | 5.9322 |
| CO4 | 2.9729 | 2.9729 | 5.9458 | 5.9458 | 8.9187 |
| CO5 | 5.939 | 5.939 | 8.9085 | 8.9085 | 2.9695 |
| **FINAL ATTAINMENT** | **2.9714** | **2.9704** | **2.971** | **2.97** | **2.971** |

## SEMESTER – 6

## PAPER- 8 Wind hydro and Ocean Energies

## COURSE OUTCOME WEIGHTED AVERAGE: 3

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Demonstrate Understanding of Wind Energy Principles and Systems. Explain the fundamentals of wind energy generation, including wind meteorology and global wind distribution patterns. Analyze the variation of wind speed with height and its statistical characteristics. Describe the principles of wind energy conversion and the characteristics of different types of wind energy conversion systems (WECS). | L2 L4 | 3 | 3 |
| CO2 | Evaluate Techniques for Wind Measurements and Data Collection. Identify eolian features and biological indicators used in wind measurements. Evaluate different types of anemometers and their suitability for wind speed measurement. Analyze wind measurement techniques using rotational anemometers and balloons. | L5 | 5 | 3 |
| CO3 | Analyze Aerodynamic Design Principles and Rotor Characteristics of Wind Turbines. Apply aerodynamic theories to understand the design principles of wind turbines. Evaluate rotor characteristics and factors affecting maximum power coefficient. Analyze the application of Prandtl's tip loss correction in wind turbine aerodynamics. | L4 | 4 | 3 |

| | | | | |
|---|---|---|---|---|
| CO4 | Design and Simulate Wind Turbines. Apply wind turbine design considerations and methodologies. Utilize theoretical simulation methods to predict wind turbine characteristics. Evaluate test methods for validating wind turbine performance and efficiency. | L6 | 6 | 3 |
| CO5 | Examine Applications and Impacts of Wind Energy Systems. Analyze the performance and design concepts of wind pumps. Evaluate the standalone, grid-connected, and hybrid applications of wind energy conversion systems. Assess the economic viability of wind energy utilization and its environmental impacts, with a focus on the Indian context. | L4 L5 | 4.5 | 3 |

| **CO- PO MAPPING** |
|---|
| **1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION** |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 1 | 2 | O | 0 | 2 | 1 | 1 | 1 |
| C02 | 2 | 3 | 2 | 1 | 1 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 1 | 2 | 1 | 3 | 1 | 2 | 2 |
| CO4 | 3 | 2 | 1 | 1 | 0 | 1 | 2 | 2 | 3 |
| CO5 | 1 | 1 | 2 | 3 | 0 | 0 | 2 | 1 | 2 |
| TOTAL | 11 | 9 | 8 | 7 | 2 | 8 | 7 | 8 | 10 |

| CO- PSO MAPPING |
| --- |
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| --- | --- | --- | --- | --- | --- |
| CO1 | 1 | 2 | 2 | 1 | 3 |
| C02 | 3 | 2 | 2 | 1 | 1 |
| CO3 | 2 | 1 | 1 | 2 | 3 |
| CO4 | 3 | 2 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 3 | 2 |
| TOTAL | 11 | 8 | 8 | 8 | 10 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CO1 | 9 | 3 | 6 | 0 | 0 | 6 | 3 | 3 | 3 |
| C02 | 6 | 9 | 6 | 3 | 3 | 6 | 3 | 6 | 6 |
| CO3 | 6 | 6 | 3 | 6 | 3 | 9 | 3 | 6 | 6 |
| CO4 | 9 | 6 | 3 | 3 | 0 | 3 | 6 | 6 | 9 |
| CO5 | 3 | 3 | 6 | 9 | 0 | 0 | 6 | 3 | 6 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 6 | 6 | 3 | 9 |
| C02 | 9 | 6 | 6 | 3 | 3 |
| CO3 | 6 | 3 | 3 | 6 | 9 |
| CO4 | 9 | 6 | 6 | 3 | 3 |
| CO5 | 6 | 3 | 3 | 9 | 6 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** |

## SEMESTER- 6

## PAPER-8 : Energy storage devices

## COURSE OUTCOME WEIGHTED AVERAGE: 3

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO ATTAINMENT |
|---|---|---|---|---|
| CO 1 | Analyze Various Modes of Energy Storage. Evaluate the necessity for energy storage and distinguish between different modes such as flywheel, electrical, magnetic, and chemical storage. Assess the role of hydrogen in energy storage and its potential applications. | L4 L5 | **4.5** | 3 |
| CO2 | Examine Electrochemical Energy Storage Systems. Compare and contrast various types of batteries including primary, secondary, lithium, solid-state, and molten solvent batteries. Analyze the principles and applications of lead-acid batteries, nickel-cadmium batteries, and advanced battery technologies. Evaluate the role of carbon nanotubes in improving electrode performance. | L4 L5 | **4.5** | 3 |
| CO3 | Evaluate Magnetic and Electric Energy Storage Systems. Assess the principles and applications of superconducting magnet energy storage (SMES) systems. Compare and contrast capacitor and battery-based energy storage systems, including supercapacitors (Electrochemical Double Layer Capacitors - EDLC). | L3 L4 L5 | **4** | 3 |
| CO4 | Analyze Fuel Cell Technology and Its Components. Define fuel cells and distinguish them from batteries. Analyze the components, principles, and working mechanisms of fuel cells. Evaluate the performance characteristics, efficiency, and advantages/disadvantages of fuel cells. Assess the design and operation of fuel cell power plants, including fuel processors and power conditioners. | L4 L5 | **4.5** | 3 |

| | | | | |
|---|---|---|---|---|
| CO5 | Examine Different Types of Fuel Cells and Their Applications. Analyze various types of fuel cells including alkaline, polymer electrolyte, phosphoric acid, molten carbonate, and solid oxide fuel cells. Identify challenges associated with fuel cells and explore their applications in different sectors. Evaluate the potential of fuel cells in addressing energy needs and environmental concerns. | L3 L4 L5 | **4** | 3 |

| **CO- PO MAPPING** |
|---|
| **1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION** |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 1 | 0 | 3 | 1 | 2 | 1 | 1 | 2 |
| C02 | 1 | 2 | 1 | 1 | 1 | 2 | 3 | 0 | 2 |
| CO3 | 2 | 2 | 1 | 1 | 0 | 2 | 1 | 2 | 1 |
| CO4 | 0 | 2 | 1 | 3 | 1 | 1 | 3 | 2 | 2 |
| CO5 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| TOTAL | 7 | 8 | 4 | 10 | 4 | 8 | 9 | 7 | 9 |

| CO- PSO MAPPING |
|---|
| 1- LOW, 2- MODERATE, 3- HIGH, 0- NO CORRELATION |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 2 | 2 | 1 | 1 | 3 |
| C02 | 1 | 2 | 1 | 2 | 2 |
| CO3 | 2 | 2 | 3 | 1 | 2 |
| CO4 | 1 | 2 | 2 | 3 | 1 |
| CO5 | 1 | 2 | 2 | 2 | 3 |
| TOTAL | 7 | 10 | 9 | 9 | 11 |

## PROGRAM OUTCOMES ATTAINMENT

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 6 | 3 | 0 | 9 | 3 | 6 | 3 | 3 | 6 |
| C02 | 3 | 6 | 3 | 3 | 3 | 6 | 9 | 0 | 6 |
| CO3 | 6 | 6 | 3 | 3 | 0 | 6 | 3 | 6 | 3 |
| CO4 | 0 | 6 | 3 | 9 | 3 | 3 | 9 | 6 | 6 |
| CO5 | 6 | 3 | 3 | 6 | 3 | 3 | 3 | 6 | 6 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |

## PROGRAM SPECIFIC OUTCOMES ATTAINMENT

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 6 | 6 | 3 | 3 | 9 |
| C02 | 3 | 6 | 3 | 6 | 6 |
| CO3 | 6 | 6 | 9 | 3 | 6 |
| CO4 | 3 | 6 | 6 | 9 | 3 |
| CO5 | 3 | 6 | 6 | 6 | 9 |
| **FINAL ATTAINMENT** | **3** | **3** | **3** | **3** | **3** |

# Dr. V. S. Krishna Govt. Degree College (A)
# Visakhapatnam

## DEPARTMENT OF BIOTECHNOLOGY

## BOARD OF STUDIES 2019-20

## PO CO ATTAINMENT

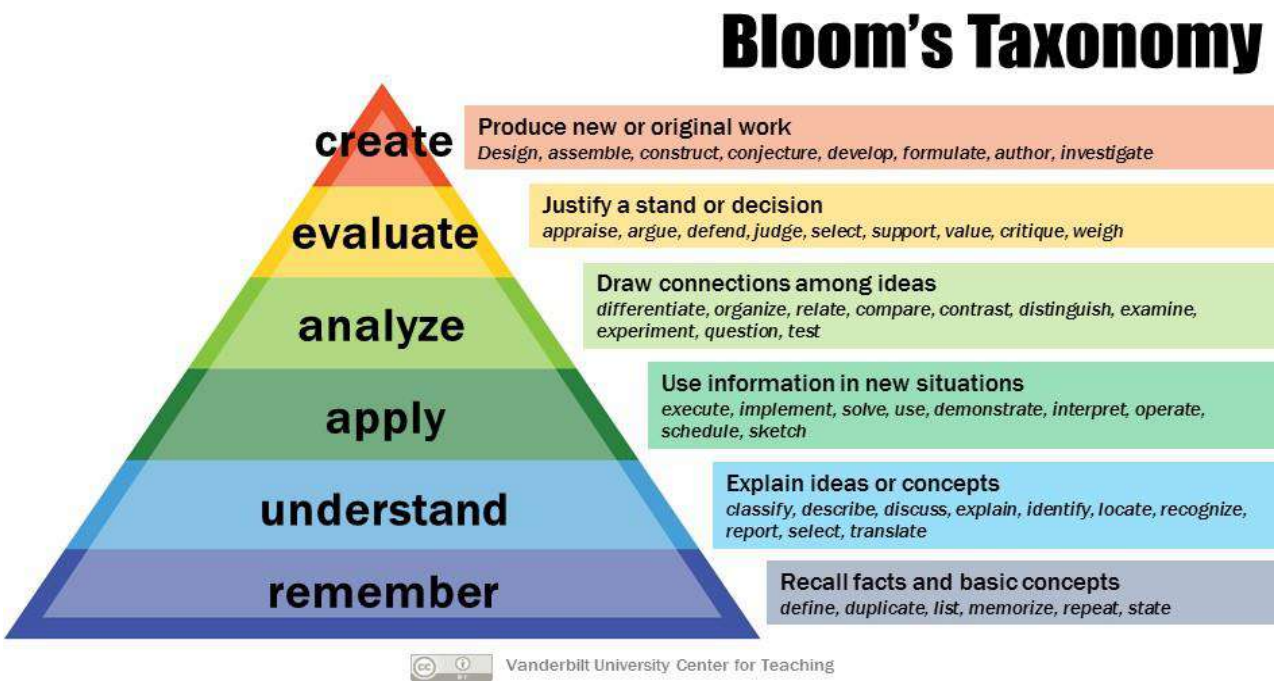
| Department of Biotechnology |
|---|
| Programme Name: **BSc. Biotechnology** |

## Programmeoutcomes

| | |
|---|---|
| **PO1** | **CriticalThinking**: Ability to take informed actions after identifying the assumptions that frame ourthinking and actions, checking out the degree to which these assumptions are accurate andvalid,andlookingatourideasanddecisions(intellectual,organizational,and personal)fromdifferentperspectives. |
| **PO2** | **EffectiveCommunication:** Abilityto speak,read,write,and listenclearlyinpersonandthroughelectronic mediain English and in one Indian language, and make meaning of the world by connectingpeople,ideas,books,media,andtechnology. |
| **PO3** | **SocialInteraction:** Abilitytoelicitviewsofothers,mediatedisagreementsandhelpreachconclusionsingroupsettings. |
| **PO4** | **EffectiveCitizenship:** Abilitytodemonstrateempatheticsocialconcernandequitycentrednationaldevelopment, andtheabilitytoactwithaninformedawarenessofissuesandparticipateinciviclifethrough volunteering. |
| **PO5** | **Ethics:** Abilitytorecognizedifferentvaluesystemsincludingyourown,understandthe moraldimensionsofyourdecisions,andacceptresponsibilityfor them. |
| **PO6** | **EnvironmentandSustainability:** Abilitytounderstandtheissuesofenvironmentalcontextsandsustainable development |
| **PO7** | **Employabilityskills:** Equippinggraduateswiththeessentialabilitiesandknowledgetoexcelintheir chosencareers |
| **PO8** | **Entrepreneurshipskills:** Seekstoempowerstudentswiththecompetenciesneededtobesuccessfulentrepreneurs,enablingthemtolaunch,operate,andinnovateintheirownbusinesses or entrepreneurialventures. |
| **PO9** | **Self-directedandLife-longLearning:** Acquiretheabilitytoengageinindependentandlife-longlearninginthebroadest contextsocio-technologicalchanges |

| Programmespecificoutcomes: | |
|---|---|
| **PSO1** | Astudentshouldbeabletounderstand basic concepts in Biochemistry, Molecular Biology, Microbiology, rDNA technology and Industrial Technology |
| **PSO2** | Astudentshouldbe able to design, execute, record and analyse the results of various expriments conducted during Practicals |
| **PSO3** | A student should be able to enter a workplace with the theory and practical knowledge in pharmaceuticals,environment related techniques and other related multidisciplinary areas. |
| **PSO4** | A Student should gain proficiency in regulations in safe handling of chemicals as well as biosafety issues relating to experiments |
| **PSO5** | Enablingstudentstodevelopaninquisitive attitude towardsBiotechnologyasaninteresting andvaluablesubjectofstudy. |

**Levels of Bloom's Taxonomoy**




| | |
|---|---|
| **Level-1** | **Knowledge/Remember** |
| **Level-2** | **Understand** |
| **Level-3** | **Application** |
| **Level-4** | **Analyze** |
| **Level-5** | **Evaluation** |
| **Level-6** | **Create** |

**CO – PO ATTAINMENT METHODOLOGY**

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

**Dr.V.S.KRISHNA GOVERNMENT DEGREE AND PG**

**COLLEGE(A), VSKP**

**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY SYLLABUS**

**SEMESTER I**

**Course I-MICROBIOLOGY & CELLBIOLOGY**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.1272

| Courseoutcomes - CorelationwithBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. Explain the different types of microscopes withtheir significance and importance. | L-2,L-3 | 2.5 | 2.3766 |
| CO2. Explain basic microbial nutrition requirements and nutritional classification of bacteria and describe microbial growth, control (physical and chemical), maintenance of pure cultures and analyze cultural activity. | L-2,L-4 | 3 | 2.2519 |
| CO3. Compare and contrast, structures and purposes of prokaryotic and eukaryotic cells and list their similarities and differences. | L-1, L-2, L-4 | 2.3 | 2.4264 |
| CO4. Explain and draw the structures of cell organelles and locate their parts along with functions. | L-1,L-2, L-3 | 2 | 2.5013 |
| CO5. Explain overall mechanism of sequential events of cell growth and cell division cycles. | L-2,L-4 | 3 | 2.2519 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO2 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO3 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO4 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO5 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| Total | 11 | 5 | 5 | 5 | 0 | 5 | 5 | 5 | 10 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 1 | 1 | 3 |
| CO2 | 3 | 3 | 1 | 1 | 3 |
| CO3 | 3 | 3 | 1 | 1 | 3 |
| CO4 | 3 | 3 | 1 | 1 | 3 |
| CO5 | 3 | 3 | 1 | 1 | 3 |
| Total | 15 | 15 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.1297 | 2.3766 | 2.3766 | 2.3766 | 0.0000 | 2.3766 | 2.3766 | 2.3766 | 4.7531 |
| CO2 | 4.5038 | 2.2519 | 2.2519 | 2.2519 | 0.0000 | 2.2519 | 2.2519 | 2.2519 | 4.5038 |
| CO3 | 4.8529 | 2.4264 | 2.4264 | 2.4264 | 0.0000 | 2.4264 | 2.4264 | 2.4264 | 4.8529 |
| CO4 | 5.0025 | 2.5013 | 2.5013 | 2.5013 | 0.0000 | 2.5013 | 2.5013 | 2.5013 | 5.0025 |
| CO 5 | 4.5038 | 2.2519 | 2.2519 | 2.2519 | 0.0000 | 2.2519 | 2.2519 | 2.2519 | 4.5038 |
| FINAL ATTAINMENT | **2.3630** | **2.3616** | **2.3616** | **2.3616** | **#DIV/0!** | **2.3616** | **2.3616** | **2.3616** | **2.3616** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.1297 | 7.1297 | 2.3766 | 2.3766 | 7.1297 |
| CO2 | 6.7557 | 6.7557 | 2.2519 | 2.2519 | 6.7557 |
| CO3 | 7.2793 | 7.2793 | 2.4264 | 2.4264 | 7.2793 |
| CO4 | 7.5038 | 7.5038 | 2.5013 | 2.5013 | 7.5038 |
| CO 5 | 6.7557 | 6.7557 | 2.2519 | 2.2519 | 6.7557 |
| FINAL ATTAINMENT | **2.3616** | **2.3616** | **2.3616** | **2.3616** | **2.3616** |

**Dr.V.S.KRISHNA GOVERNMENT DEGREE AND PG COLLEGE(A),**

**VSKP DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY SYLLABUS**

**SEMESTER II**
**CourseII–**
**MACROMOLECULES,ENZYMOLOGY,BIOENERGETICS**

**Course Outcomes:**

**Course Outcome Weighted Average:** 1.886

| Courseoutcomes–Correlation withBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. Explain and classify different types of biomolecules (Amino acids, proteins, carbohydrates, lipids and vitamins)along with their significance | L-1,L-2 | 1.5 | 2.5226 |
| CO2. Illustrate chemical structure of nitrogen bases, DNA and forces stabilizing the DNA | L-3,L-4 | 3.5 | 1.8860 |
| CO3. Differentiate between different forms of DNA | L-1, L-2, L-4 | 2.3 | 2.2679 |
| CO4. Explain enzymes with classification and nomenclature, enzyme kinetics | L-1,L-2, L-3 | 2 | 2.3634 |
| CO5. Explain enzyme inhibition types along with significance. | L-1, L-2, L-3 | 2 | 2.3634 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, ‘- ‘NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO3 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO4 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO5 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| Total | 15 | 5 | 5 | 5 | 0 | 5 | 5 | 5 | 10 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, ‘-‘NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.5677 | 2.5226 | 2.5226 | 2.5226 | 0 | 2.5226 | 2.5226 | 2.5226 | 5.0451 |
| CO2 | 5.6580 | 1.8860 | 1.8860 | 1.8860 | 0 | 1.8860 | 1.8860 | 1.8860 | 3.7720 |
| CO3 | 6.8038 | 2.2679 | 2.2679 | 2.2679 | 0 | 2.2679 | 2.2679 | 2.2679 | 4.5359 |
| CO4 | 7.0903 | 2.3634 | 2.3634 | 2.3634 | 0 | 2.3634 | 2.3634 | 2.3634 | 4.7269 |
| CO 5 | 7.0903 | 2.3634 | 2.3634 | 2.3634 | 0 | 2.3634 | 2.3634 | 2.3634 | 4.7269 |
| FINAL ATTAINMENT | 2.2807 | 2.2807 | 2.2807 | 2.2807 | 0 | 2.2807 | 2.2807 | 2.2807 | 2.2807 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.5677 | 2.5226 | 2.5226 | 2.5226 | 7.5677 |
| CO2 | 5.6580 | 1.8860 | 1.8860 | 1.8860 | 5.6580 |
| CO3 | 6.8038 | 2.2679 | 2.2679 | 2.2679 | 6.8038 |
| CO4 | 7.0903 | 2.3634 | 2.3634 | 2.3634 | 7.0903 |
| CO 5 | 7.0903 | 2.3634 | 2.3634 | 2.3634 | 7.0903 |
| FINAL ATTAINMENT | 2.2807 | 2.2807 | 2.2807 | 2.2807 | 2.2807 |

**Dr.V.S.KRISHNAGOVERNMENTDEGREEANDPGCOLLEGE(A),VSKPDEP**

**ARTMENTOFBIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGYSYLLABUS**

**SEMESTER III**
**CourseIII–BIOPHYSICAL TECHNIQUES**

**Course Outcomes:**
**Course Outcome Weighted Average:** 1.9727

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. Explain the differentiate absorption and emission spectra. | L-2,L-3 | 2.5 | 2.2662 |
| CO2. Illustrate each region of electromagnetic spectrum for spectroscopy | L-2,L-4 | 3 | 2.1195 |
| CO3. Explain and relate the concepts of radioactivity and its applications. | L-1, L-2, L-4 | 2.3 | 2.3249 |
| CO4. Illustrate and differentiate blotting techniques along with their applications and significance | L-1,L-2, L-3 | 2 | 2.4130 |
| CO5. Identify and differentiate working principle, instrumentation and applications of various bio-analytical instruments. | L-2,L-4 | 3 | 2.1195 |

| CO-POMapping<br>1-Low,2-Moderate, 3-High, ‘- ‘NoCorrelation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO2 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO3 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO4 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| CO5 | 3 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 2 |
| Total | 15 | 5 | 5 | 5 | 0 | 5 | 5 | 5 | 10 |

| CO-PSOMapping<br>1-Low,2-Moderate, 3-High, ‘-‘NoCorrelation | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 6.7986 | 2.2662 | 2.2662 | 2.2662 | 0 | 2.2662 | 2.2662 | 2.2662 | 4.5324 |
| CO2 | 6.3584 | 2.1195 | 2.1195 | 2.1195 | 0 | 2.1195 | 2.1195 | 2.1195 | 4.2389 |
| CO3 | 6.9748 | 2.3249 | 2.3249 | 2.3249 | 0 | 2.3249 | 2.3249 | 2.3249 | 4.6498 |
| CO4 | 7.2389 | 2.4130 | 2.4130 | 2.4130 | 0 | 2.4130 | 2.4130 | 2.4130 | 4.8259 |
| CO 5 | 6.3584 | 2.1195 | 2.1195 | 2.1195 | 0 | 2.1195 | 2.1195 | 2.1195 | 4.2389 |
| FINAL ATTAINMENT | 2.2486 | 2.2486 | 2.2486 | 2.2486 | 0 | 2.2486 | 2.2486 | 2.2486 | 2.2486 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 6.7986 | 2.2662 | 2.2662 | 2.2662 | 6.7986 |
| CO2 | 6.3584 | 2.1195 | 2.1195 | 2.1195 | 6.3584 |
| CO3 | 6.9748 | 2.3249 | 2.3249 | 2.3249 | 6.9748 |
| CO4 | 7.2389 | 2.4130 | 2.4130 | 2.4130 | 7.2389 |
| CO 5 | 6.3584 | 2.1195 | 2.1195 | 2.1195 | 6.3584 |
| FINAL ATTAINMENT | 2.2486 | 2.2486 | 2.2486 | 2.2486 | 2.2486 |

**Dr.V.S.KRISHNA GOVERNMENT DEGREE AND PG COLLEGE(A),VSKP**

**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY SYLLABUS**

**SEMESTERIV**

**Course IV– Immunology**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.0058

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO Level Learning Index | CO Attainment |
|---|---|---|---|
| CO1. Define central immunological principles and concepts. | L-2,L-3 | 2.5 | 2.2899 |
| CO2. Illustrate immunological processes and, identify immune responses at a cellular level and molecular level. | L-2,L-4 | 3 | 2.1478 |
| CO3. Describe the roles of the immune system in both maintaining health and contributing to disease and the triggering and regulation of immune responses. | L-1, L-2, L-4 | 2.3 | 2.3467 |
| CO4. Understand the preparation and role of vaccines | L-1,L-2, L-3 | 2 | 2.4319 |
| CO5. Understand the application of different immunological techniques. | L-2,L-4 | 3 | 2.1478 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, ‘- ‘NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |
| CO3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 |
| CO4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 | 1 |
| Total | 6 | 5 | 5 | 5 | 5 | 9 | 5 | 9 | 6 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, ‘-‘NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 2.2899 | 2.2899 | 2.2899 | 2.2899 | 2.2899 | 6.8696 | 2.2899 | 2.2899 | 2.2899 |
| CO2 | 2.1478 | 2.1478 | 2.1478 | 2.1478 | 2.1478 | 2.1478 | 2.1478 | 6.4435 | 2.1478 |
| CO3 | 2.3467 | 2.3467 | 2.3467 | 2.3467 | 2.3467 | 2.3467 | 2.3467 | 7.0400 | 2.3467 |
| CO4 | 4.8638 | 2.4319 | 2.4319 | 2.4319 | 2.4319 | 2.4319 | 2.4319 | 2.4319 | 4.8638 |
| CO 5 | 2.1478 | 2.1478 | 2.1478 | 2.1478 | 2.1478 | 6.4435 | 2.1478 | 2.1478 | 2.1478 |
| FINAL ATTAINMENT | **2.2993** | **2.2728** | **2.2728** | **2.2728** | **2.2728** | **2.2488** | **2.2728** | **2.2615** | **2.2993** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 6.8696 | 2.2899 | 2.2899 | 2.2899 | 6.8696 |
| CO2 | 6.4435 | 2.1478 | 2.1478 | 2.1478 | 6.4435 |
| CO3 | 7.0400 | 2.3467 | 2.3467 | 2.3467 | 7.0400 |
| CO4 | 7.2957 | 2.4319 | 2.4319 | 2.4319 | 7.2957 |
| CO 5 | 6.4435 | 2.1478 | 2.1478 | 2.1478 | 6.4435 |
| FINAL ATTAINMENT | **2.2728** | **2.2728** | **2.2728** | **2.2728** | **2.2728** |

**Dr.V.S.KRISHNA GOVERNMENT DEGREE AND PG COLLEGE(A),**

**VSKP**

**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY**
**SEMESTER V**

**Course V– MOLECULAR BIOLOGY**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.2852

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. Explain the concept of gene and gene architecture. | L-2,L-4 | 3 | 2.3873 |
| CO2. Demonstrate the overview of the central dogma of life and various molecular events. | L-2,L-4 | 3 | 2.3873 |
| CO3. Illustrate molecular events in DNA synthesis, RNA synthesis and the role of different enzymes. | L-1, L-2, L-4 | 2.3 | 2.5303 |
| CO4. Illustrate molecular events in protein synthesis and the role of different enzymes. | L-1,L-2, L-4 | 2.3 | 2.5303 |
| CO5. Explain the regulation of gene expression in prokaryotes using operon concept. | L-2,L-4 | 3 | 2.3873 |

| CO-PO Mapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'No Correlation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 15 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.1619 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 7.1619 |
| CO2 | 7.1619 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 7.1619 |
| CO3 | 7.5908 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 7.5908 |
| CO4 | 7.5908 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 2.5303 | 7.5908 |
| CO 5 | 7.1619 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 2.3873 | 7.1619 |
| FINAL ATTAINMENT | 2.4445 | 2.4445 | 2.4445 | 2.4445 | 2.4445 | 2.4445 | 2.4445 | 2.4445 | 2.4445 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.1619 | 2.3873 | 2.3873 | 2.3873 | 7.1619 |
| CO2 | 7.1619 | 2.3873 | 2.3873 | 2.3873 | 7.1619 |
| CO3 | 7.5908 | 2.5303 | 2.5303 | 2.5303 | 7.5908 |
| CO4 | 7.5908 | 2.5303 | 2.5303 | 2.5303 | 7.5908 |
| CO 5 | 7.1619 | 2.3873 | 2.3873 | 2.3873 | 7.1619 |
| FINAL ATTAINMENT | 2.4445 | 2.4445 | 2.4445 | 2.4445 | 2.4445 |

**Dr.V.S.KRISHNA GOVERNMENT DEGREE AND PG COLLEGE(A), VSKP**

**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY SYLLABUS**

**SEMESTER - V**
**CourseVIA-ELECTIVE 1–rDNA Technology**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.3117

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. To understandthe fundamental principles and techniques of recombinant DNA technology, including gene cloning, vectors, restriction enzymes, and polymerase chain reaction (PCR). | L-2,L-3, L-4 | 3 | 2.4100 |
| CO2. To develop practical laboratory skills in manipulating DNA, such as cloning, transformation, gel electrophoresis, and DNA sequencing | L-2,L-3, L-4 | 3 | 2.4100 |
| CO3. To apply rDNA technology in various fields such as medicine, agriculture, and environmental science. | L-1, L-2, L-4 | 2.3 | 2.5477 |
| CO4. To design experiments, analyze data, and troubleshoot experimental issues. This is essential for conducting independent research and addressing real-world biological problems. | L-1,L-2, L-3 | 2.3 | 2.5477 |
| CO5. Toexplore the ethical, legal, and social implications of rDNA technology. This includes understanding the regulatory frameworks, the potential risks and benefits of genetic engineering, and the importance of ethical considerations in scientific research. | L-2,L-4 | 3 | 2.4100 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |
| CO5 | 3 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 |
| Total | 15 | 5 | 5 | 5 | 5 | 5 | 15 | 5 | 10 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| 7.2301 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 7.2301 | 7.2301 |
| 7.2301 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 7.2301 | 7.2301 |
| 7.6431 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 7.6431 | 7.6431 |
| 7.6431 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 2.5477 | 7.6431 | 7.6431 |
| 7.2301 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 2.4100 | 7.2301 | 7.2301 |
| **2.4651** | **2.4651** | **2.4651** | **2.4651** | **2.4651** | **2.4651** | **2.4651** | **2.4651** | **2.4651** | **2.4651** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.2301 | 2.4100 | 2.4100 | 2.4100 | 7.2301 |
| CO2 | 7.2301 | 2.4100 | 2.4100 | 2.4100 | 7.2301 |
| CO3 | 7.6431 | 2.5477 | 2.5477 | 2.5477 | 7.6431 |
| CO4 | 7.6431 | 2.5477 | 2.5477 | 2.5477 | 7.6431 |
| CO 5 | 7.2301 | 2.4100 | 2.4100 | 2.4100 | 7.2301 |
| **FINAL ATTAINMENT** | **2.4651** | **2.4651** | **2.4651** | **2.4651** | **2.4651** |

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**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY**

**SEMESTER - V**
**CourseVIB-ELECTIVE 2–GENETICS**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.46

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. Explain the structure and functions of genes and chromosomes | L-2,L-3 | 2.5 | 2.6143 |
| CO2. Understand the laws and concepts of Mendelian inheritance, deviation from Mendel laws, concepts of linkage, autosomal and allosomal inheritance, and sex determination in different organisms | L-2,L-4 | 3 | 2.5371 |
| CO3. Perform Karyotyping of different chromosome sets | L-1, L-2, L-4 | 2.3 | 2.6451 |
| CO4. Understand the mechanism of different transposable elements and their roles. | L-1,L-2 | 1.5 | 2.7686 |
| CO5. Explain the concept of DNA damage and Repair | L-2,L-4 | 3 | 2.5371 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 15 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.8429 | 2.6143 | 2.6143 | 2.6143 | 2.6143 | 2.6143 | 2.6143 | 2.6143 | 7.8429 |
| CO2 | 7.6114 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 7.6114 |
| CO3 | 7.9354 | 2.6451 | 2.6451 | 2.6451 | 2.6451 | 2.6451 | 2.6451 | 2.6451 | 7.9354 |
| CO4 | 8.3057 | 2.7686 | 2.7686 | 2.7686 | 2.7686 | 2.7686 | 2.7686 | 2.7686 | 8.3057 |
| CO 5 | 7.6114 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 2.5371 | 7.6114 |
| FINAL ATTAINMENT | 2.6205 | 2.6205 | 2.6205 | 2.6205 | 2.6205 | 2.6205 | 2.6205 | 2.6205 | 2.6205 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.8429 | 2.6143 | 2.6143 | 2.6143 | 7.8429 |
| CO2 | 7.6114 | 2.5371 | 2.5371 | 2.5371 | 7.6114 |
| CO3 | 7.9354 | 2.6451 | 2.6451 | 2.6451 | 7.9354 |
| CO4 | 8.3057 | 2.7686 | 2.7686 | 2.7686 | 8.3057 |
| CO 5 | 7.6114 | 2.5371 | 2.5371 | 2.5371 | 7.6114 |
| FINAL ATTAINMENT | 2.6205 | 2.6205 | 2.6205 | 2.6205 | 2.6205 |

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**B.Sc BIOTECHNOLOGYSYLLABUS**

**SEMESTER - VI**

**CourseVII–PLANT AND ANIMAL BIOTECHNOLOGY**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.782

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. Understand the key developments in the sphere of Plant biotechnology. | L-2,L-3 | 2.5 | 2.8443 |
| CO2. Illustrate the in vitro propagation of plants and their maintenance. | L-2,L-4 | 3 | 2.8131 |
| CO3. Understand Tissue culture technique | L-1, L-2, L-4 | 2.3 | 2.8567 |
| CO4. Understand the principles of intellectual property in the context of industrial biotechnology. | L-1,L-2, L-3 | 2 | 2.8754 |
| CO5. Understand the ethics, biosafety measures concerned with biotechnology. | L-2,L-4 | 3 | 2.8131 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| CO2 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| CO3 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| CO5 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 1 |
| Total | 5 | 5 | 5 | 5 | 5 | 5 | 15 | 5 | 5 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 2.8443 | 2.8443 | 2.8443 | 2.8443 | 2.8443 | 2.8443 | 8.5329 | 2.8443 | 2.8443 |
| CO2 | 2.8131 | 2.8131 | 2.8131 | 2.8131 | 2.8131 | 2.8131 | 8.4394 | 2.8131 | 2.8131 |
| CO3 | 2.8567 | 2.8567 | 2.8567 | 2.8567 | 2.8567 | 2.8567 | 8.5702 | 2.8567 | 2.8567 |
| CO4 | 2.8754 | 2.8754 | 2.8754 | 2.8754 | 2.8754 | 2.8754 | 8.6263 | 2.8754 | 2.8754 |
| CO 5 | 2.8131 | 2.8131 | 2.8131 | 2.8131 | 2.8131 | 2.8131 | 8.4394 | 2.8131 | 2.8131 |
| FINAL ATTAINMENT | **2.8405** | **2.8405** | **2.8405** | **2.8405** | **2.8405** | **2.8405** | **2.8405** | **2.8405** | **2.8405** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.5329 | 2.8443 | 2.8443 | 2.8443 | 8.5329 |
| CO2 | 8.4394 | 2.8131 | 2.8131 | 2.8131 | 8.4394 |
| CO3 | 8.5702 | 2.8567 | 2.8567 | 2.8567 | 8.5702 |
| CO4 | 8.6263 | 2.8754 | 2.8754 | 2.8754 | 8.6263 |
| CO 5 | 8.4394 | 2.8131 | 2.8131 | 2.8131 | 8.4394 |
| FINAL ATTAINMENT | **2.8405** | **2.8405** | **2.8405** | **2.8405** | **2.8405** |

**Dr.V.S.KRISHNA GOVERNMENT DEGREEAND PG COLLEGE(A) ,VSKP**

**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY SYLLABUS**

**SEMESTER - VI**

**PAPERVIII CLUSTER-8-A1:CELL BIOLOGY**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.7666

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1. Understand the ultra structures and purposes of prokaryotic and eukaryotic cells . | L-1,L-2 | 1.5 | 2.9000 |
| CO2. Compare and contrastprokaryotic and eukaryotic cells . | L-1,L-2 | 1.5 | 2.9000 |
| CO3. Explain and draw the structures of cell organelles and locate their parts along with functions. | L-1, L-2, L-4 | 2.3 | 2.8466 |
| CO4. Explain overall mechanism of sequential events of cell growth and cell division cycles. | L-1,L-2, L-3 | 2 | 2.8666 |
| CO5. Explain the structure, types and functions of genes and chromosomes | L-2,L-4 | 3 | 2.7999 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

| PO Attainment | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 1 |
| CO2 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 1 |
| CO3 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 1 |
| CO4 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 1 |
| CO5 | 3 | 1 | 1 | 1 | 3 | 3 | 1 | 1 | 1 |
| Total Attainment | 15 | 5 | 5 | 5 | 15 | 15 | 5 | 5 | 5 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.6999 | 2.9000 | 2.9000 | 2.9000 | 8.6999 | 2.9000 | 8.6999 | 2.9000 | 2.9000 |
| CO2 | 8.6999 | 2.9000 | 2.9000 | 2.9000 | 8.6999 | 2.9000 | 8.6999 | 2.9000 | 2.9000 |
| CO3 | 8.5399 | 2.8466 | 2.8466 | 2.8466 | 8.5399 | 2.8466 | 8.5399 | 2.8466 | 2.8466 |
| CO4 | 8.5999 | 2.8666 | 2.8666 | 2.8666 | 8.5999 | 2.8666 | 8.5999 | 2.8666 | 2.8666 |
| CO 5 | 8.3998 | 2.7999 | 2.7999 | 2.7999 | 8.3998 | 2.7999 | 8.3998 | 2.7999 | 2.7999 |
| FINAL ATTAINMENT | **2.8626** | **2.8626** | **2.8626** | **2.8626** | **2.8626** | **2.8626** | **2.8626** | **2.8626** | **2.8626** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.6999 | 2.9000 | 2.9000 | 2.9000 | 8.6999 |
| CO2 | 8.6999 | 2.9000 | 2.9000 | 2.9000 | 8.6999 |
| CO3 | 8.5399 | 2.8466 | 2.8466 | 2.8466 | 8.5399 |
| CO4 | 8.5999 | 2.8666 | 2.8666 | 2.8666 | 8.5999 |
| CO 5 | 8.3998 | 2.7999 | 2.7999 | 2.7999 | 8.3998 |
| FINAL ATTAINMENT | **2.8626** | **2.8626** | **2.8626** | **2.8626** | **2.8626** |

**Dr.V.S.KRISHNA GOVERNMENT DEGREE AND PG COLLEGE(A),VSKP**

**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGYSYLLABUS**

**SEMESTER - VI**

**PAPERVIII CLUSTER-8-A2: GENE BIOTECHNOLOGY**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.7746

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | Average level Weightage | CO Attainment |
|---|---|---|---|
| CO1. Explain the structure and functions of genes and chromosomes | L-2,L-3 | 2.5 | 2.8319 |
| CO2. Understand the laws and concepts of Mendelian inheritance, deviation from Mendel laws, concepts of linkage, autosomal and allosomal inheritance, and sex determination in different organisms | L-2,L-4 | 3 | 2.7982 |
| CO3. Perform Karyotyping of different chromosome sets | L-1, L-2, L-4 | 2.3 | 2.8453 |
| CO4. Understand the mechanism of different transposable elements and their roles | L-1,L-2 | 1.5 | 2.8991 |
| CO5. Explain the concept of DNA damage and Repair | L-2,L-4 | 3 | 2.7982 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 15 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.4956 | 2.8319 | 2.8319 | 2.8319 | 8.4956 | 2.8319 | 8.4956 | 2.8319 | 2.8319 |
| CO2 | 8.3947 | 2.7982 | 2.7982 | 2.7982 | 8.3947 | 2.7982 | 8.3947 | 2.7982 | 2.7982 |
| CO3 | 8.5359 | 2.8453 | 2.8453 | 2.8453 | 8.5359 | 2.8453 | 8.5359 | 2.8453 | 2.8453 |
| CO4 | 8.6973 | 2.8991 | 2.8991 | 2.8991 | 8.6973 | 2.8991 | 8.6973 | 2.8991 | 2.8991 |
| CO 5 | 8.3947 | 2.7982 | 2.7982 | 2.7982 | 8.3947 | 2.7982 | 8.3947 | 2.7982 | 2.7982 |
| FINAL ATTAINMENT | **2.8345** | **2.8345** | **2.8345** | **2.8345** | **2.8345** | **2.8345** | **2.8345** | **2.8345** | **2.8345** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.4956 | 2.8319 | 2.8319 | 2.8319 | 8.4956 |
| CO2 | 8.3947 | 2.7982 | 2.7982 | 2.7982 | 8.3947 |
| CO3 | 8.5359 | 2.8453 | 2.8453 | 2.8453 | 8.5359 |
| CO4 | 8.6973 | 2.8991 | 2.8991 | 2.8991 | 8.6973 |
| CO 5 | 8.3947 | 2.7982 | 2.7982 | 2.7982 | 8.3947 |
| FINAL ATTAINMENT | **2.8345** | **2.8345** | **2.8345** | **2.8345** | **2.8345** |

**Dr.V.S.KRISHNA GOVERNMENT DEGREE AND PG COLLEGE(A), VSKP**

**DEPARTMENT OF BIOTECHNOLOGY**

**B.Sc BIOTECHNOLOGY SYLLABUS**

**SEMESTER - VI, PAPERVIII**
**CLUSTER-8-A3: BIOSTATISTICS AND BIOINFORMATICS**

**Course Outcomes:**

**Course Outcome Weighted Average:** 2.7484

| Courseoutcomes–MappingwithBloomsTaxonomy levels | | CO LearningLevel Index | CO Attainment |
|---|---|---|---|
| CO1. To become familiar with a variety of currently available genomic and proteomic databases. | L-2,L-3 | 2.5 | 2.8203 |
| CO2. To be able to search and retrieve information from genomic and proteomic databases (e.g. GenBank, Swiss-Prot) | L-2,L-4 | 3 | 2.7843 |
| CO3. To analyze their search results using software available on the internet (e.g. BLAST, ClustalW). | L-1, L-2, L-4 | 2.3 | 2.8347 |
| CO4. To compare and analyze biological sequences and how to interpret the results of their analyses. | L-1,L-2, L-3 | 2 | 2.8562 |
| CO5. Explain and draw the structures of cell organelles and locate their parts along with functions. | L-2,L-4 | 3 | 2.7843 |

| CO-POMapping | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '- 'NoCorrelation | | | | | | | | | |
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 15 |

| CO-PSOMapping | | | | | |
|---|---|---|---|---|---|
| 1-Low,2-Moderate, 3-High, '-'NoCorrelation | | | | | |
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 1 | 3 |
| CO2 | 3 | 1 | 1 | 1 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 3 |
| CO4 | 3 | 1 | 1 | 1 | 3 |
| CO5 | 3 | 1 | 1 | 1 | 3 |
| Total | 15 | 5 | 5 | 5 | 15 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.4609 | 2.8203 | 2.8203 | 2.8203 | 2.8203 | 2.8203 | 2.8203 | 2.8203 | 8.4609 |
| CO2 | 8.3530 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 8.3530 |
| CO3 | 8.5040 | 2.8347 | 2.8347 | 2.8347 | 2.8347 | 2.8347 | 2.8347 | 2.8347 | 8.5040 |
| CO4 | 8.5687 | 2.8562 | 2.8562 | 2.8562 | 2.8562 | 2.8562 | 2.8562 | 2.8562 | 8.5687 |
| CO 5 | 8.3530 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 2.7843 | 8.3530 |
| FINAL ATTAINMENT | **2.8160** | **2.8160** | **2.8160** | **2.8160** | **2.8160** | **2.8160** | **2.8160** | **2.8160** | **2.8160** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.4609 | 2.8203 | 2.8203 | 2.8203 | 8.4609 |
| CO2 | 8.3530 | 2.7843 | 2.7843 | 2.7843 | 8.3530 |
| CO3 | 8.5040 | 2.8347 | 2.8347 | 2.8347 | 8.5040 |
| CO4 | 8.5687 | 2.8562 | 2.8562 | 2.8562 | 8.5687 |
| CO 5 | 8.3530 | 2.7843 | 2.7843 | 2.7843 | 8.3530 |
| FINAL ATTAINMENT | **2.8160** | **2.8160** | **2.8160** | **2.8160** | **2.8160** |

# DR. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

# VISAKHAPATNAM

# DEPARTMENT OF ECONOMICS

## 2019 – 2020

## CO – PO AND PSO ATTAINMENT

## B.A. HEP (History, Economics and Political Science)

# CO – PO ATTAINMENT METHODOLOGY

- Step 1

**Calculation of Course Outcome Weighted Average (COWA)**

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\textit{some of the level weitage of all students of a course}}{\textit{total number of students}}$$

- Step 2:

**Calculation of Course outcome level index (COLLI):**

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\textit{Sum of the weigtages of blooms levels mapped}}{\textit{number of levels mapped}}$$

- Step 3:

**CO-PO mapping and CO-PSO mapping**

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(3 - \boldsymbol{COWA}) \times \left(1 - \frac{\boldsymbol{COLLI}}{3.5}\right)\right\}$$

(Blooms Level Weighted Average value = 3.5)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PSO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

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# DEPARTMENT OF ECONOMICS

## 2019-2020

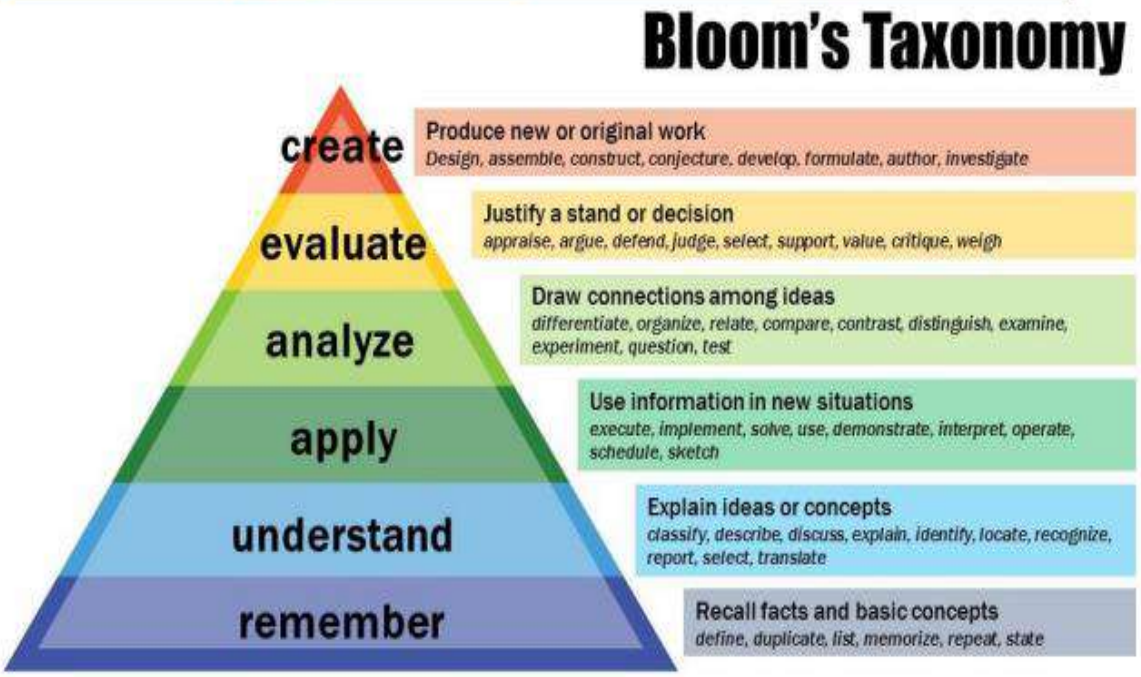
## POs & COs ATTAINMENT

## DEPARTMENT OF ECONOMICS

## PROGRAMME NAME: B.A. HEP

**Levels of Bloom's Taxonomoy**

| | |
|---|---|
| Level-1 | Knowlede/Remember |
| Level-2 | Understand |
| Level-3 | Application |
| Level-4 | Analyze |
| Level-5 | Evaluation |
| Level-6 | Create |



| POs | Programme Outcomes |
|---|---|
| PO1 | Critical Thinking:<br><br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| PO2 | Effective Communication:<br><br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology |
| PO3 | Social Interaction:<br><br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| PO4 | Effective Citizenship:<br><br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| PO5 | Ethics:<br><br>Ability to recognize different value systems including our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| PO6 | Environment and Sustainability:<br><br>Ability to understand the issues of environmental contexts and sustainable Development. |
| PO7 | Employability skills:<br><br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| PO8 | Entrepreneurship skills:<br><br>Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| PO9 | Self-directed and Life-long Learning:<br><br>Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes. |

# Program Specific Outcomes (PSOs) HEP

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Understand the basic concepts like GDP, Poverty, Employment, International trade, Fiscal and Monetary policies, Economic conditions of various Historic periods, the development of Trade and Commerce from the ancient period to modern period and their role in administration, for formulating relevant policies for effective utilisation of resources and tackling. Evaluate the contemporary economic conditions with the economic theories and principles. |
| PSO2 | To analyze the concept of political science processes, institutions and the Welfare State and Urban governance of Mauryan administration, Local Self-Government of Chola administration and all Democratic practices of modern British administration. |
| PSO3 | Demonstrate proficiency in Historical knowledge of India and modern world.To understand the impact of economic prosperity that attracted the foreign invaders towards India, resulting in changed administration and economy in due course. |
| PSO4 | To provide life skills required for gainful employment by using domain knowledge such as Economics,History and Political Science at various levels. I play the equator knowledge to solve problems in relevant fields. |
| PSO5 | To promote values such as sustainable development, Optimum utilisation of resources, patriotism, respecting the ideals of freedom struggle and responsible citizenship, political participation and socialisation |

# MICRO ECONOMICS-CONSUMER BEHAVIOR

## COURSE OUTCOME WEIGHTED AVERAGE:2.17

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Remembers various laws and principles of microeconomic theory under consumption | Level 1<br>Level 2 | 1.5 | 2.644285714 |
| CO 2 | Explains (understanding) various terms and concepts relating to microeconomic analysis with the help of examples of real life | Level 3<br>Level 1 | 2 | 2.525714286 |
| CO 3 | Critically examines using data and figures (analysis and evaluation) | Level 3<br>Level 5 | 4 | 2.051428571 |
| CO 4 | Draws critical diagrams and graphs to explain and examine the application of various laws and principles of microeconomic analysis | Level 6<br>Level 1 | 3.5 | 2.17 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO 1 | 3 | 3 | 1 | 1 | 1 | 0 | 3 | 3 | 3 |
| CO 2 | 3 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 3 |
| CO 3 | 3 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 3 |
| CO 4 | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| Total | 11 | 7 | 4 | 3 | 3 | 1 | 11 | 9 | 11 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | 2 | 3 | 2 |
| CO 2 | 3 | 2 | 2 | 3 | 2 |
| CO3 | 3 | 1 | 1 | 3 | 2 |
| CO4 | 3 | 2 | 2 | 3 | 2 |
| Total | 12 | 7 | 7 | 12 | 8 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.932857 | 7.932857 | 2.644286 | 2.64428 | 2.64428 | 0 | 7.9328 | 7.93285 | 7.932857 |
| CO2 | 7.577143 | 5.051429 | 7.577143 | 5.05142 | 5.05142 | 2.525714 | 7.5771 | 5.05142 | 7.577143 |
| CO3 | 6.154286 | 2.051429 | 0 | 0 | 0 | 0 | 6.1542 | 4.10285 | 6.154286 |
| CO4 | 4.34 | 2.17 | 0 | 0 | 0 | 0 | 4.34 | 4.34 | 4.34 |
| **FINAL ATTAINMENT** | **2.364026** | **2.457959** | **2.555357** | **2.56523** | **2.56523** | **2.525714** | **2.3640** | **2.38079** | **2.364026** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.932857 | 5.288571 | 5.288571 | 7.932857 | 5.288571 |
| CO2 | 7.577143 | 5.051429 | 5.051429 | 7.577143 | 5.051429 |
| CO3 | 6.154286 | 2.051429 | 2.051429 | 6.154286 | 4.102857 |
| CO4 | 6.51 | 4.34 | 4.34 | 6.51 | 4.34 |
| **FINAL ATTAINMENT** | **2.347857** | **2.390204** | **2.390204** | **2.347857** | **2.347857** |

MICRO ECONOMICS-PRODUCTION AND PRICE THEORY

## COURSE OUTCOME WEIGHTED AVERAGE:2.38

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Remembers various laws and principles of microeconomic theory under production, exchange and distribution. | Level 1<br>Level 2 | 1.5 | 2.734285714 |
| CO 2 | Explains (understanding) various terms and concepts relating to different market structures with the help of examples of real life | Level 3<br>Level 1 | 2 | 2.645714286 |
| CO 3 | Critically examines using data and figures (analysis and evaluation) various laws and principles of microeconomic analysis and market conditions | Level 3<br>Level 5 | 4 | 2.291428571 |
| CO 4 | Draws critical diagrams and graphs to explain and examine the application of various laws and principles of microeconomic analysis | Level 6<br>Level 1 | 3.5 | 2.38 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 3 | 1 | 1 | 1 | 0 | 3 | 3 | 3 |
| CO 2 | 3 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 3 |
| CO3 | 3 | 1 | 0 | 0 | 0 | 0 | 3 | 2 | 3 |
| CO4 | 3 | 1 | 1 | 2 | 1 | 0 | 3 | 2 | 3 |
| Total | 12 | 7 | 5 | 5 | 4 | 1 | 12 | 9 | 12 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | 2 | 3 | 2 |
| CO 2 | 3 | 2 | 2 | 3 | 2 |
| CO3 | 3 | 1 | 1 | 3 | 2 |
| CO4 | 3 | 2 | 2 | 3 | 2 |
| Total | 12 | 7 | 7 | 12 | 8 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.202857 | 8.202857 | 2.734286 | 2.73428 | 2.73428 | 0 | 8.2028 | 8.20285 | 8.202857 |
| CO2 | 7.937143 | 5.291429 | 7.937143 | 5.29142 | 5.29142 | 2.645714 | 7.9371 | 5.29142 | 7.937143 |
| CO3 | 6.874286 | 2.291429 | 0 | 0 | 0 | 0 | 6.8742 | 4.58285 | 6.874286 |
| CO4 | 7.14 | 2.38 | 2.38 | 4.76 | 2.38 | 0 | 7.14 | 4.76 | 7.14 |
| **FINAL ATTAINMENT** | **2.512857** | **2.595102** | **2.610286** | **2.55714** | **2.60142** | **2.645714** | **2.5128** | **2.53746** | **2.512857** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.202857 | 5.468571 | 5.468571 | 8.202857 | 5.468571 |
| CO2 | 7.937143 | 5.291429 | 5.291429 | 7.937143 | 5.291429 |
| CO3 | 6.874286 | 2.291429 | 2.291429 | 6.874286 | 4.582857 |
| CO4 | 7.14 | 4.76 | 4.76 | 7.14 | 4.76 |
| **FINAL ATTAINMENT** | **2.512857** | **2.54449** | **2.54449** | **2.512857** | **2.512857** |

# MACRO ECONOMICS-NATIONAL INCOME, EMPLOYMENT AND MONEY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.22

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attain ment |
|---|---|---|---|---|
| CO 1 | Remembers Various concepts, definitions, laws and principles of macroeconomic theory with reference to income, employment, money. | Level 1<br>Level 3 | 2 | 2.554285714 |
| CO 2 | Explains (understanding) the difference between various concepts and components of national income with illustrations and methods of measuring national income | Level 3<br>Level 1 | 2 | 2.554285714 |
| CO 3 | Critically examines using data and figures (analysis and evaluation) the theories of macroeconomics with reference to their assumptions, implications and applicability | Level 3<br>Level 5 | 4 | 2.108571429 |
| CO 4 | Draws critical formulae, diagrams and graphs about consumption and investment functions; concepts of multiplier and accelerator | Level 6<br>Level 1 | 3.5 | 2.22 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 3 | 3 |
| CO 2 | 3 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 0 | 3 | 2 | 3 |
| CO4 | 3 | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 3 |
| Total | 12 | 4 | 4 | 6 | 6 | 5 | 12 | 9 | 12 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | 2 | 3 | 2 |
| CO 2 | 3 | 2 | 2 | 3 | 2 |
| CO3 | 3 | 1 | 1 | 3 | 1 |
| CO4 | 3 | 1 | 2 | 2 | 1 |
| Total | 12 | 6 | 7 | 11 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.202857 | 5.468571 | 2.734286 | 8.20285 | 5.46857 | 8.202857 | 8.2028 | 8.20285 | 8.202857 |
| CO2 | 7.937143 | 2.645714 | 5.291429 | 5.29142 | 5.29142 | 2.645714 | 7.9371 | 5.29142 | 7.937143 |
| CO3 | 6.874286 | 2.291429 | 2.291429 | 2.29142 | 2.29142 | 0 | 6.8742 | 4.58285 | 6.874286 |
| CO4 | 7.14 | 0 | 0 | 0 | 2.38 | 2.38 | 7.14 | 4.76 | 7.14 |
| **FINAL ATTAINMENT** | **2.512857** | **2.601429** | **2.579286** | **2.63095** | **2.57190** | **2.645714** | **2.5128** | **2.53746** | **2.512857** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.202857 | 5.468571 | 5.468571 | 8.202857 | 5.468571 |
| CO2 | 7.937143 | 5.291429 | 5.291429 | 7.937143 | 5.291429 |
| CO3 | 6.874286 | 2.291429 | 2.291429 | 6.874286 | 2.291429 |
| CO4 | 7.14 | 2.38 | 4.76 | 4.76 | 2.38 |
| **FINAL ATTAINMENT** | **2.512857** | **2.571905** | **2.54449** | **2.524935** | **2.571905** |

# MACRO ECONOMICS-BANKING AND INTERNATIONAL TRADE

## COURSE OUTCOME WEIGHTED AVERAGE: 2.36

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Remembers Various concepts definitions, laws and principles of macroeconomic theory with reference to trade cycles, Inflation, banking and finance | Level 1<br>Level 3 | 2 | 2.634285714 |
| CO 2 | Explains (understanding) various terms, concepts, laws and principles, theories relating to price-level and phases of trade cycles and Inflation. | Level 3<br>Level 1 | 2 | 2.634285714 |
| CO 3 | understanding Balance of Payment and Balance of Trade and Exchange Rate Policies | Level 3<br>Level 5 | 4 | 2.268571429 |
| CO 4 | Draws critical formulae, diagrams and graphs relating price indices, inflation and trade cycles | Level 6<br>Level 1 | 3.5 | 2.36 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 3 | 3 |
| CO 2 | 3 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 3 |
| CO3 | 3 | 1 | 1 | 1 | 1 | 0 | 3 | 2 | 3 |
| CO4 | 3 | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 3 |
| Total | 12 | 4 | 4 | 6 | 6 | 5 | 12 | 9 | 12 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |

| | | | | | |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 3 | 2 |
| CO 2 | 3 | 2 | 2 | 3 | 2 |
| CO3 | 3 | 1 | 1 | 3 | 1 |
| CO4 | 3 | 1 | 2 | 2 | 1 |
| Total | 12 | 6 | 7 | 11 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 7.902857 | 5.268571 | 2.634286 | 7.90285 | 5.26857 | 7.902857 | 7.9028 | 7.90285 | 7.902857 |
| CO2 | 7.902857 | 2.634286 | 5.268571 | 5.26857 | 5.26857 | 2.634286 | 7.9028 | 5.26857 | 7.902857 |
| CO3 | 6.805714 | 2.268571 | 2.268571 | 2.26857 | 2.26857 | 0 | 6.8057 | 4.53714 | 6.805714 |
| CO4 | 7.08 | 0 | 0 | 0 | 2.36 | 2.36 | 7.08 | 4.72 | 7.08 |
| **FINAL ATTAINMENT** | **2.474286** | **2.542857** | **2.542857** | **2.57333** | **2.52761** | **2.579429** | **2.4742** | **2.49206** | **2.474286** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.902857 | 5.268571 | 5.268571 | 7.902857 | 5.268571 |
| CO2 | 7.902857 | 5.268571 | 5.268571 | 7.902857 | 5.268571 |
| CO3 | 6.805714 | 2.268571 | 2.268571 | 6.805714 | 2.268571 |
| CO4 | 7.08 | 2.36 | 4.72 | 4.72 | 2.36 |
| **FINAL ATTAINMENT** | **2.474286** | **2.527619** | **2.503673** | **2.484675** | **2.527619** |

# ECONOMIC DEVELOPMENT AND INDIAN ECONOMY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.44

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Remembers and states in a systematic way (Knowledge) Various concepts and definitions and indicators relating to economic growth and Development including recent developments | Level 1<br>Level 2 | 1.5 | 2.76 |
| CO 2 | Explains (understanding) Characteristics of developing economies with special reference to India. | Level 2<br>Level 3 | 2.5 | 2.6 |
| CO 3 | critically examines various reasons and remedial measures to economics problems of India such as poverty, unemployment and income inequalities. | Level 2<br>Level 4 | 3 | 2.52 |
| CO 4 | Draws critical diagrams and graphs. to explain the models and strategies and to highlight empirical evidences to support the strategies | Level 4<br>Level 6 | 5 | 2.2 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 1 | 1 | 3 | 2 | 1 | 3 | 2 | 3 |
| CO 2 | 3 | 1 | 3 | 3 | 3 | 1 | 3 | 1 | 3 |
| CO3 | 3 | 1 | 3 | 3 | 3 | 0 | 3 | 2 | 3 |
| CO4 | 3 | 0 | 1 | 3 | 1 | 0 | 3 | 2 | 3 |
| Total | 12 | 3 | 8 | 12 | 9 | 2 | 12 | 7 | 12 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | 2 | 3 | 2 |

| | | | | | |
|---|---|---|---|---|---|
| CO 2 | 3 | 2 | 2 | 3 | 2 |
| CO3 | 3 | 2 | 2 | 3 | 1 |
| CO4 | 3 | 1 | 3 | 3 | 1 |
| Total | 12 | 7 | 9 | 12 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.28 | 2.76 | 2.76 | 8.28 | 5.52 | 2.76 | 8.28 | 5.52 | 8.28 |
| CO2 | 7.8 | 2.6 | 7.8 | 7.8 | 7.8 | 2.6 | 7.8 | 2.6 | 7.8 |
| CO3 | 7.56 | 2.52 | 7.56 | 7.56 | 7.56 | 0 | 7.56 | 5.04 | 7.56 |
| CO4 | 6.6 | 0 | 2.2 | 6.6 | 2.2 | 0 | 6.6 | 4.4 | 6.6 |
| **FINAL ATTAINMENT** | **2.52** | **2.626667** | **2.54** | **2.52** | **2.56444** | **2.68** | **2.52** | **2.50857** | **2.52** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.28 | 5.52 | 5.52 | 8.28 | 5.52 |
| CO2 | 7.8 | 5.2 | 5.2 | 7.8 | 5.2 |
| CO3 | 7.56 | 5.04 | 5.04 | 7.56 | 2.52 |
| CO4 | 6.6 | 2.2 | 6.6 | 6.6 | 2.2 |
| **FINAL ATTAINMENT** | **2.52** | **2.565714** | **2.484444** | **2.52** | **2.573333** |

# INDIAN AND ANDHRA PRADESH ECONOMY

## COURSE OUTCOME WEIGHTED AVERAGE: 2.34

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Remembers leading issues of Indian economic development with reference to potential for growth, obstacles and policy responses | Level 1<br>Level 2 | 1.5 | 2.717142857 |
| CO 2 | Explains (understanding) Sector specific problems, remedial policies and their effectiveness relating to Agriculture and Industrial Sectors of Indian and AP economy and infrastructure issues of AP economy | Level 2<br>Level 3 | 2.5 | 2.528571429 |
| CO 3 | Critically examines using data and figures (analysis and evaluation) about Leading issues of current importance relating to India and AP economy, major policies and programmes | Level 3<br>Level 5 | 4 | 2.245714286 |
| CO 4 | Uses official statistical data and reports including tables and graphs a. To explain the achievements of Indian economy with reference to the objectives of planning and policy and make critical evaluation | Level 6<br>Level 1 | 3.5 | 2.34 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 1 | 1 | 3 | 2 | 1 | 3 | 2 | 3 |
| CO 2 | 3 | 1 | 3 | 3 | 3 | 1 | 3 | 1 | 3 |
| CO3 | 3 | 1 | 3 | 3 | 3 | 0 | 3 | 2 | 3 |
| CO 4 | 3 | 0 | 1 | 3 | 1 | 0 | 3 | 2 | 3 |
| Total | 12 | 3 | 8 | 12 | 9 | 2 | 12 | 7 | 12 |

| MAPPING PROGRAM SPECIFIC OUTCOMES |
|---|

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 3 | 2 |
| CO 2 | 3 | 2 | 2 | 3 | 2 |
| CO3 | 3 | 2 | 2 | 3 | 1 |
| CO 4 | 3 | 1 | 3 | 3 | 1 |
| Total | 12 | 7 | 9 | 12 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.151429 | 2.717143 | 2.717143 | 8.15142 | 5.43428 | 2.717143 | 8.1514 | 5.43428 | 8.151429 |
| CO2 | 7.585714 | 2.528571 | 7.585714 | 7.58571 | 7.58571 | 2.528571 | 7.5857 | 2.52857 | 7.585714 |
| CO3 | 6.737143 | 2.245714 | 6.737143 | 6.73714 | 6.73714 | 0 | 6.7371 | 4.49142 | 6.737143 |
| CO4 | 7.02 | 0 | 2.34 | 7.02 | 2.34 | 0 | 7.02 | 4.68 | 7.02 |
| FINAL ATTAINMENT | 2.457857 | 2.497143 | 2.4225 | 2.45785 | 2.45523 | 2.622857 | 2.4578 | 2.44775 | 2.457857 |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.151429 | 5.434286 | 5.434286 | 8.151429 | 5.434286 |
| CO2 | 7.585714 | 5.057143 | 5.057143 | 7.585714 | 5.057143 |
| CO3 | 6.737143 | 4.491429 | 4.491429 | 6.737143 | 2.245714 |
| CO4 | 7.02 | 2.34 | 7.02 | 7.02 | 2.34 |
| FINAL ATTAINMENT | 2.457857 | 2.474694 | 2.444762 | 2.457857 | 2.512857 |

## VII(D) RURAL ECONOMICS AND SOCIAL CHANGE

## COURSE OUTCOME WEIGHTED AVERAGE: 2.42

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Gain a comprehensive understanding of the nature and scope of the rural economy. | Level1<br>Level 2 | 1.5 | 2.751428571 |
| CO 2 | Analyze the causes and effects of fragmentation and sub-division of agricultural holdings in rural areas. | Level 2<br>Level 3 | 2.5 | 2.585714286 |
| CO 3 | Explore the structure and dynamics of rural society, including the social organization of villages and the continuum of rural-urban relationships. | Level 4<br>Level 6 | 5 | 2.171428571 |
| CO 4 | Examine the role of rural social institutions such as family, caste, and local governance structures in shaping rural life. | Level5<br>Level 6 | 5.5 | 2.088571429 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 1 | 1 | 3 | 2 | 1 | 3 | 2 | 3 |
| CO 2 | 3 | 1 | 3 | 3 | 3 | 1 | 3 | 1 | 3 |
| CO3 | 3 | 1 | 3 | 3 | 3 | 0 | 3 | 2 | 3 |
| CO4 | 3 | 0 | 1 | 3 | 1 | 0 | 3 | 2 | 3 |
| Total | 12 | 3 | 8 | 12 | 9 | 2 | 12 | 7 | 12 |

| MAPPING PROGRAM SPECIFIC OUTCOMES |
|---|
| |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | 3 | 2 | 2 | 3 | 2 |
| CO 2 | 3 | 2 | 2 | 3 | 2 |
| CO3 | 3 | 2 | 2 | 3 | 1 |
| CO4 | 3 | 1 | 3 | 3 | 1 |
| Total | 12 | 7 | 9 | 12 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.254286 | 2.751429 | 2.751429 | 8.25428 | 5.50285 | 2.751429 | 8.2542 | 5.50285 | 8.254286 |
| CO2 | 7.757143 | 2.585714 | 7.757143 | 7.75714 | 7.75714 | 2.585714 | 7.7571 | 2.58571 | 7.757143 |
| CO3 | 6.514286 | 2.171429 | 6.514286 | 6.51428 | 6.51428 | 0 | 6.5142 | 4.34285 | 6.514286 |
| CO4 | 6.265714 | 0 | 2.088571 | 6.26571 | 2.08857 | 0 | 6.2657 | 4.17714 | 6.265714 |
| **FINAL ATTAINMENT** | **2.399286** | **2.502857** | **2.388929** | **2.39928** | **2.42920** | **2.668571** | **2.3992** | **2.37265** | **2.399286** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.254286 | 5.502857 | 5.502857 | 8.254286 | 5.502857 |
| CO2 | 7.757143 | 5.171429 | 5.171429 | 7.757143 | 5.171429 |
| CO3 | 6.514286 | 4.342857 | 4.342857 | 6.514286 | 2.171429 |
| CO4 | 6.265714 | 2.088571 | 6.265714 | 6.265714 | 2.088571 |

| | | | | | |
|---|---|---|---|---|---|
| FINAL ATTAINMENT | 2.399286 | 2.443673 | 2.364762 | 2.399286 | 2.489048 |

## VIII-D - Cluster Elective –D1: Rural Economy

## COURSE OUTCOME WEIGHTED AVERAGE: 2.2771

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Develop a comprehensive understanding of the concept and nature of rural economy, including its defining characteristics and its significance. | Level 1<br>Level 2 | 1.5 | 2.690185714 |
| CO 2 | Analyze the basic needs of rural economy, to comprehend the foundational requirements for sustainable rural development. | Level 2<br>Level 3 | 2.5 | 2.483642857 |
| CO 3 | Evaluate the importance of rural technology, including its role in improving livelihoods. | Level 4<br>Level 6 | 5 | 1.967285714 |
| CO 4 | Examine the critical role of rural infrastructure, in facilitating rural development. | Level 5<br>Level 6 | 5.5 | 1.864014286 |
| CO 5 | Investigate the importance of rural communication networks and educational initiatives in promoting inclusive development | Level 5<br>Level 6 | 5.5 | 1.864014286 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 0 | 3 |
| CO 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 3 |
| CO3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 3 |
| CO 5 | 2 | 2 | 0 | 2 | 1 | 1 | 2 | 1 | 2 |
| Total | 12 | 8 | 9 | 12 | 9 | 8 | 9 | 5 | 14 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 2 | 3 | 2 |
| CO 2 | 3 | 3 | 1 | 3 | 1 |
| CO3 | 3 | 1 | 2 | 1 | 1 |
| CO4 | 3 | 0 | 1 | 1 | 0 |
| CO 5 | 3 | 3 | 3 | 3 | 2 |
| Total | 15 | 10 | 9 | 11 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.070557 | 5.380371 | 8.070557 | 8.07055 | 8.07055 | 2.690186 | 5.3803 | 0 | 8.070557 |
| CO2 | 4.967286 | 2.483643 | 4.967286 | 7.45092 | 4.96728 | 4.967286 | 4.9672 | 2.48364 | 7.450929 |
| CO3 | 3.934571 | 3.934571 | 3.934571 | 3.93457 | 3.93457 | 5.901857 | 3.9345 | 3.93457 | 5.901857 |
| CO4 | 5.592043 | 1.864014 | 3.728029 | 3.72802 | 1.86401 | 1.864014 | 1.8640 | 1.86401 | 5.592043 |
| CO5 | 3.728029 | 3.728029 | 0 | 3.72802 | 1.86401 | 1.864014 | 3.7280 | 1.86401 | 3.728029 |
| **FINAL ATTAINMENT** | **2.19104** | **2.173829** | **2.300049** | **2.24267** | **2.3000** | **2.16092** | **2.2082** | **2.02924** | **2.195958** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.070557 | 8.070557 | 5.380371 | 8.070557 | 5.380371 |
| CO2 | 7.450929 | 7.450929 | 2.483643 | 7.450929 | 2.483643 |
| CO3 | 5.901857 | 1.967286 | 3.934571 | 1.967286 | 1.967286 |
| CO4 | 5.592043 | 0 | 1.864014 | 1.864014 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| CO5 | 5.592043 | 5.592043 | 5.592043 | 5.592043 | 3.728029 |
| FINAL ATTAINMENT | 2.173829 | 2.308081 | 2.139405 | 2.267712 | 2.259888 |

## Paper VIII-D-2: Rural Industrialization

## COURSE OUTCOME WEIGHTED AVERAGE: 2.4559

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attain ment |
|---|---|---|---|---|
| CO 1 | Gain an understanding of the importance of rural industrialization, and challenges associated with rural industrialization in Andhra Pradesh. | Level 1 Level 2 | 1.5 | 2.766814286 |
| CO 2 | Evaluate the policies and programs implemented for rural industrial development during the planning era | Level 2 Level 3 | 2.5 | 2.611357143 |
| CO 3 | Analyze the rural environment in Andhra Pradesh, including water and soil resourcesand explore strategies for rejuvenating the rural environment. | Level 4 Level 6 | 5 | 2.222714286 |
| CO 4 | Examine the industrial development landscape in Andhra Pradesh, including agro-based and agro-processing industries | Level 5 Level 6 | 5.5 | 2.144985714 |
| CO 5 | Explore the characteristics of rural employment in Andhra Pradesh, and assess the need for education and training. | Level 5 Level 6 | 5.5 | 2.144985714 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 0 | 3 |
| CO 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 3 |
| CO3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 3 |
| CO 5 | 2 | 2 | 0 | 2 | 1 | 1 | 2 | 1 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Total | 12 | 8 | 9 | 12 | 9 | 8 | 9 | 5 | 14 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 2 | 3 | 2 |
| CO 2 | 3 | 3 | 1 | 3 | 1 |
| CO3 | 3 | 1 | 2 | 1 | 1 |
| CO4 | 3 | 0 | 1 | 1 | 0 |
| CO 5 | 3 | 3 | 3 | 3 | 2 |
| Total | 15 | 10 | 9 | 11 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.070557 | 5.380371 | 8.070557 | 8.07055 | 8.07055 | 2.690186 | 5.3803 | 0 | 8.070557 |
| CO2 | 4.967286 | 2.483643 | 4.967286 | 7.45092 | 4.96728 | 4.967286 | 4.9672 | 2.48364 | 7.450929 |
| CO3 | 3.934571 | 3.934571 | 3.934571 | 3.93457 | 3.93457 | 5.901857 | 3.9345 | 3.93457 | 5.901857 |
| CO4 | 5.592043 | 1.864014 | 3.728029 | 3.72802 | 1.86401 | 1.864014 | 1.8640 | 1.86401 | 5.592043 |
| CO5 | 3.728029 | 3.728029 | 0 | 3.72802 | 1.86401 | 1.864014 | 3.7280 | 1.86401 | 3.728029 |
| **FINAL ATTAINMENT** | **2.19104** | **2.173829** | **2.300049** | **2.24267** | **2.30004** | **2.16092** | **2.2082** | **2.02924** | **2.195958** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.070557 | 8.070557 | 5.380371 | 8.070557 | 5.380371 |
| CO2 | 7.450929 | 7.450929 | 2.483643 | 7.450929 | 2.483643 |
| CO3 | 5.901857 | 1.967286 | 3.934571 | 1.967286 | 1.967286 |

| | | | | | |
|---|---|---|---|---|---|
| CO4 | 5.592043 | 0 | 1.864014 | 1.864014 | 0 |
| CO5 | 5.592043 | 5.592043 | 5.592043 | 5.592043 | 3.728029 |
| FINAL ATTAINMENT | 2.173829 | 2.308081 | 2.139405 | 2.267712 | 2.259888 |

## Paper VIII-D-3: Rural Marketing

## COURSE OUTCOME WEIGHTED AVERAGE: 2.5343

| CO Code | Course Outcome | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO 1 | Develop a comprehensive understanding of rural marketing, along with an exploration of the need for rural marketing. | Level 1<br>Level 2 | 1.5 | 2.800414286 |
| CO 2 | Analyze the various marketing functions essential for rural marketing,and examining the factors affecting demand and supply for farm products. | Level 2<br>Level 3 | 2.5 | 2.667357143 |
| CO 3 | Evaluate the role of government intervention in rural marketing, particularly focusing on the characteristics of traditional marketing systems and the regulatory mechanisms | Level 4<br>Level 6 | 5 | 2.334714286 |
| CO 4 | Examine the concept and functions of cooperative marketing, tracing its history, types, structure, and membership | Level 5<br>Level 6 | 5.5 | 2.268185714 |
| CO 5 | Explore the various data sources in agricultural marketing, including coverage, agencies, and publications of market statistics | Level 5<br>Level 6 | 5.5 | 2.268185714 |

| MAPPING PROGRAM OUTCOMES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 |
| CO1 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 0 | 3 |
| CO 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 |
| CO4 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 3 |
| CO 5 | 2 | 2 | 0 | 2 | 1 | 1 | 2 | 1 | 2 |
| Total | 12 | 8 | 9 | 12 | 9 | 8 | 9 | 5 | 14 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 2 | 3 | 2 |
| CO 2 | 3 | 3 | 1 | 3 | 1 |
| CO3 | 3 | 1 | 2 | 1 | 1 |
| CO4 | 3 | 0 | 1 | 1 | 0 |
| CO 5 | 3 | 3 | 3 | 3 | 2 |
| Total | 15 | 10 | 9 | 11 | 6 |

## ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.401243 | 5.600829 | 8.401243 | 8.40124 | 8.40124 | 2.800414 | 5.6008 | 0 | 7.65 |
| CO2 | 5.334714 | 2.667357 | 5.334714 | 8.00207 | 5.33471 | 5.334714 | 5.3347 | 2.66735 | 7.2 |
| CO3 | 4.669429 | 4.669429 | 4.669429 | 4.66942 | 4.66942 | 7.004143 | 4.6694 | 4.66942 | 5.4 |
| CO4 | 6.804557 | 2.268186 | 4.536371 | 4.53637 | 2.26818 | 2.268186 | 2.2681 | 2.26818 | 3.9 |
| CO5 | 4.536371 | 4.536371 | 0 | 4.53637 | 2.26818 | 2.268186 | 4.5363 | 2.26818 | |
| **FINAL ATTAINMENT** | **2.47886** | **2.467771** | **2.549084** | **2.51212** | **2.54908** | **2.459455** | **2.4899** | **2.37463** | **2.195455** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.401243 | 8.401243 | 5.600829 | 8.401243 | 5.600829 |
| CO2 | 8.002071 | 8.002071 | 2.667357 | 8.002071 | 2.667357 |
| CO3 | 7.004143 | 2.334714 | 4.669429 | 2.334714 | 2.334714 |
| CO4 | 6.804557 | 0 | 2.268186 | 2.268186 | 0 |
| CO5 | 6.804557 | 6.804557 | 6.804557 | 6.804557 | 4.536371 |
| FINAL ATTAINMENT | **2.467771** | **2.554259** | **2.445595** | **2.528252** | **2.523212** |

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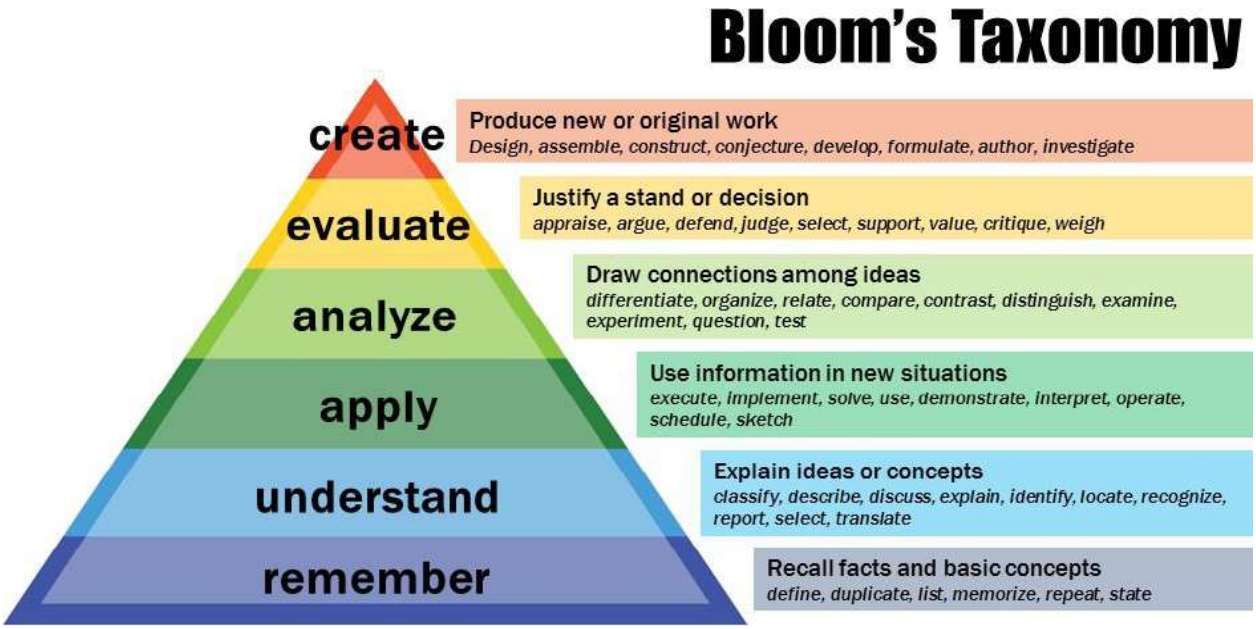
# DEPARTMENT OF BOTANY

## 2019-2020
## POs & COs MAPPING

| Department of Botany- |
|---|
| Programme Name: **BSc. CBZ** |

**Levels of Bloom's Taxonomoy**

| | |
|---|---|
| **Level-1** | **Knowlede/Remember** |
| **Level-2** | **Understand** |
| **Level-3** | **Application** |
| **Level-4** | **Analyze** |
| **Level-5** | **Evaluation** |
| **Level-6** | **Create** |



| POs | Programme Outcomes |
|---|---|
| **PO1** | **Critical Thinking:**<br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| **PO2** | **Effective Communication:**<br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology. |
| **PO3** | **Social Interaction:**<br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| **PO4** | **Effective Citizenship:**<br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| **PO5** | **Ethics:**<br>Ability to recognize different value systems includingy our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| **PO6** | **Environment and Sustainability:**<br>Ability to understand the issues of environmental contexts and sustainable Development. |
| **PO7** | **Employabilityskills:**<br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| **PO8** | **Entrepreneurships kills:**<br>Seeks to empower students with the competencies needed to be successful entrepreneours, enabling themto launch, operate,and innovate in their own businesses or entrepreneurial ventures. |
| **PO9** | **Self-directed and Life-long Learning:**<br>Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes. |

## Program Specific Outcomes (PSOs)

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| **PSO1** | Analyze the relationships among animals, plants and microbes |
| **PSO2.** | Understand the nature and basic concepts of anatomy, embryology And Plant Ecology. |
| **PSO3** | Understand structure of Cell and functions of cell organelles. Plant breeding ; Biochemistry , Plant Physiology and Plant Biotechnology; EconomicBotany. |
| **PSO4** | Undertand the concept of gene, Heridity and Hybridization |
| **PSO5** | Know and understand different Physiological functions and Biochemical pathways in Plants and cell. |
| **PSO6** | Understand, identify and utilize different Economically useful Plants in life. |
| **PSO7** | Perform procedures as per laboratory standards in the areas of plant Anatomy, Embryology, Ecology, CellBiology, Plant Breeding, Plant Physiology and Plant Biotechnology. |

## CO – PO ATTAINMENT METHODOLOGY

- Step 1

### Calculation of Course Outcome Weighted Average (COWA)

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

### Calculation of Course outcome level index (COLLI):

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

### CO-PO mapping and CO-PSO mapping

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

## SEMESTER – I
## Paper – I : Microbial Diversity, Algae and Fungi

CO1: The structure in relation to function of cells the fundamental unit of life, are concerned in this course along with molecular present in cells and the flow they make the basic framework of cells and their continuity
CO2: awareness created on diversity on Algae, Fungi
CO3: knowledge created on microbial diversity
Co4: they can differentiate the plant viral diseases and bacterial diseases
Cos5: analyse the economic importance of microbes

| **Learning Outcomes: On Completion of the course, the students will be able to** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO1:The structure in relation to function of cells the fundamental unit of life, are concerned in this course along with molecular present in cells and the flow they make the basic framework of cells and their continuity** | Level1(Knowledge)<br>Level2(Understanding) | **1.5** |
| **CO2:Awareness created on diversity on Algae Fungi& lichens** | Level1(Knowledge )<br>Level3(Application) | **2** |
| **CO3: knowledge created on microbial diversity** | Level1(Knowledge)<br>Level2(Understanding)<br>Level4(Analysing) | **3.5** |
| **CO4: compare and anlyse the difference between Eubacteria, archi bacteria and cyano bacteria** | Level3(Application)<br>Level4(Analysing)<br>Level5(Evaluation) | **4** |
| **CO5: the students get knowledge about economic importance of microbes** | Level1(Understanding)<br>Level3(Applying)<br>Level4(Analysing)<br>Level5(Evaluation) | **4.2** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **0** | **1** | **1** | **0** | **2** | **1** | **1** | **3** |
| CO2 | **0** | **0** | **0** | **1** | **0** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **0** | **2** | **2** | **0** | **0** | **0** | **2** |
| CO4 | **1** | **1** | **0** | **1** | **1** | **2** | **1** | **0** | **2** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **1** | **2** | **1** | **1** |
| CO3 | **2** | **2** | **1** | **3** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **1** | **1** | **1** |
| CO5 | **2** | **2** | **1** | **1** | **1** | **3** |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| **CO 1** | 5.305714 | 0 | 2.652857 | 2.652857 | 0 | 5.305714 | 2.652857 | 2.652857 | 7.958571 |
| **CO2** | 0 | 0 | 0 | 2.537143 | 0 | 5.074286 | 2.537143 | 5.074286 | 2.537143 |
| **CO3** | 2.19 | 2.19 | 0 | 4.38 | 4.38 | 0 | 0 | 0 | 4.38 |
| **CO4** | 2.074286 | 2.074286 | 0 | 2.074286 | 2.074286 | 4.148571 | 2.074286 | 0 | 4.148571 |
| **CO 5** | 6.084 | 4.056 | 4.056 | 4.056 | 4.056 | 4.056 | 6.084 | 4.056 | 4.056 |
| **FINAL ATTAINMENT** | **2.236286** | **2.080071** | **2.236286** | **2.242898** | **2.102057** | **2.323071** | **2.224714** | **2.356629** | **2.308029** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | **PSO1** | **PSO2** | **PSO3** | **PSO4** | **PSO5** |
| CO 1 | 7.958571 | 7.958571 | 2.652857 | 5.305714 | 5.305714 |
| CO2 | 2.537143 | 5.074286 | 2.537143 | 5.074286 | 2.537143 |
| CO3 | 4.38 | 4.38 | 2.19 | 6.57 | 2.19 |
| CO4 | 2.074286 | 2.074286 | 2.074286 | 2.074286 | 2.074286 |
| CO 5 | 4.056 | 4.056 | 2.028 | 2.028 | 2.028 |
| **FINAL ATTAINMENT** | **2.334** | **2.354314** | **2.296457** | **2.339143** | **2.355857** |

**I B.Sc., -Botany-I/ I Semester**
**MICROBIAL DIVERSITY, ALGAE AND FUNGI**

**UNIT-I: MICROBIAL WORLD (Origin and Evolution of Life, Microbial diversity**

1. Discovery of microorganisms, origin of life, spontaneous, biogenesis, Pasteur experiments, germ theory of disease.
2. Classification of microorganisms – R.H. Whittaker's five kingdom concept.
3. Brief account of special groups of bacteria- Archaebacteria, Mycoplasma, Chlamydia, Actinomycetes and Cyanobacteria.

**UNIT-II: VIRUSES**

1. Viruses- Discovery, general account, structure& replication of –T4 Phage (Lytic, Lysogenic) and TMV, Viroid's.
2. Plant diseases caused by viruses – Symptoms, transmission and control measures (Brief account only).
3. Study of Tobacco Mosaic, Bhendi Vein clearing and Papaya leaf curl diseases.

**UNIT-III: BACTERIA**

1. Bacteria: Discovery, General characteristics, cell structure and nutrition
2. Reproduction- Asexual and bacterial recombination (Conjugation, Transformation, Transduction).
3. Economic importance of Bacteria.

**UNIT-IV: Algae**

1. General account - thallus organization and reproduction in Algae.
2. Fritsch classification of Algae (up to classes only) and economic importance.
3. Structure, reproduction and life history of *Oedogonium, Ectocarpus* and Polysiphonia.

**UNIT-V: FUNGI**

1. General characteristics and outline classification (Ainsworth).
2. Structure, reproduction and life history of *Rhizopus* (Zygomycota), *Pencillium* (Ascomycota), and *Puccinia* (Basidiomycota).
3. Lichens-Structure and reproduction; ecological and economic importance.

## SEMESTER – 2
## DIVERSITY OF ARCHAEGONIATES & PLANT ANATOMY

CO1: Diversified plant groups in vascular cryptogams
CO2: Deals with flowering seeded plants with economic importance
CO3: Analyze the tissue systems and their structural and functional role
CO4: deals with secondary growth of some important plants
Co5: undertsabd about the economic importance of gymnosperms

| Learning Outcomes: On Completion of the course, the students will be able to | Knowledge level (Bloom's Taxonomy) | Average level weightage |
|---|---|---|
| **CO1: Diversified plant groups in vascular plants** | Level1(Knowledge)<br>Level2(Understanding) | **1.5** |
| **Co2 : Deals with flowering seeded classification and Nomen clture** | Level1(Knowledge)<br>Level2(Understanding)<br>Level3(Application) | **2** |
| **Create knowledge about important families like ASTERACEAE&POACEAE** | Level1(Knowledge)<br>Level2(Understanding)<br>Level3(Application) | **2** |
| **CO4: Create knowledge about the plant groups& eco types** | Level3(Application)<br>Level4(Analysing)<br>Level6(create) | **4.3** |
| **CO5: The students will understand about the phytogeographical zones** | Level 2(Understanding)<br>Level 3(Applying)<br>Level 4(Analysing)<br>Level 5(Evaluation) | **4.5** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 0 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 0 | 2 | 1 | 2 | 3 | 2 | 2 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 3 | 1 |
| CO2 | 1 | 2 | 1 | 1 | 1 | 1 |
| CO3 | 2 | 1 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.051278 | 0 | 2.525639 | 2.525639 | 0 | 5.051278 | 2.525639 | 2.525639 | 7.576917 |
| CO2 | 0 | 0 | 0 | 0 | 0 | 4.735038 | 2.367519 | 4.735038 | 2.367519 |
| CO3 | 2.367519 | 4.735038 | 0 | 4.735038 | 4.735038 | 0 | 0 | 0 | 4.735038 |
| CO4 | 1.640165 | 1.640165 | 0 | 1.640165 | 0 | 3.280331 | 1.640165 | 0 | 3.280331 |
| CO 5 | 4.730752 | 3.153835 | 0 | 3.153835 | 1.576917 | 3.153835 | 4.730752 | 3.153835 | 3.153835 |
| FINAL ATTAINMENT | **1.969959** | **1.905808** | **2.525639** | **2.009113** | **2.103985** | **2.02756** | **1.877346** | **2.082902** | **2.111364** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.576917 | 7.576917 | 2.525639 | 5.051278 | 7.576917 |
| CO2 | 2.367519 | 4.735038 | 2.367519 | 2.367519 | 2.367519 |
| CO3 | 4.735038 | 2.367519 | 2.367519 | 7.102556 | 2.367519 |
| CO4 | 1.640165 | 1.640165 | 1.640165 | 3.280331 | 1.640165 |
| CO 5 | 3.153835 | 1.576917 | 1.576917 | 1.576917 | 1.576917 |
| FINAL ATTAINMENT | **2.163719** | **2.23707** | **2.095552** | **2.153178** | **2.218434** |

**I B.Sc., -Botany-II/ II Semester**

**DIVERSITY OF ARCHAEGONIATES & PLANT ANATOMY**

**UNIT – I: BRYOPHYTES**

1. General characters, Classification (up to classes)
2. Structure, reproduction and Life history of *Marchantia,* and *Funaria.*
3. Evolution of Sporophyte in Bryophytes.

**UNIT - II: PTERIDOPHYTES**

1. General characters, classification (up to Classes)
2. Structure, reproduction and life history of *Lycopodium,* and *Marsilea.*
3. Heterospory and seed habit.
4. Stelar evaluation in Pteridophytes.

**UNIT – III: GYMNOSPERMS**

1. General characters, classification (up to classes)
2. Morphology, anatomy**,** reproduction and life history of *Pinus and Gnetum*
3. Economic importance.

**UNIT –IV: Tissues and Tissue systems**

1. Meristems - Root and Shoot apical meristems and their histological organization.
2. Tissues – Meristematic and permanent tissues (simple, complex, secretory)
3. Tissue systems**–**Epidermal, ground and vascular.

**UNIT – V: Secondary growth**

1. Anomalous secondary growth in *Achyranthes, Boerhaavia* and *Dracaena.*
2. Study of local timbers of economic Importance-Teak, Rosewood, Arjuna (Tellamaddi) Red sander.

**SEMESTER-3**

**III Paper-III : Plant Taxonomy and Embryology**

CO1: fundamental components of taxonomical study

CO2: Nomenclature of flowering plants and their distribution

CO3: Complete knowledge about important families like Cucurbitaceae, Rutaceae, etc.

CO4: Total awareness gained from plant embryology

Co5: they analyse the differences between monocots and Monoclamydae

| **Learning Outcomes:On Completion of the course, the students will be able to** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| CO1: fundamental components of taxonomical study | Level1(Knowledge )<br>Level2(Understanding) | **1.5** |
| CO2: Nomenclature of flowering plants and their distribution | Level1(Knowledge )<br>Level2(Understanding)<br>Level3(Application) | **2** |
| CO3: Complete knowledge about important families like Cucurbitaceae, Rutaceae, etc | Level1(Knowledge), Level2(Understanding)<br>Level3(Application) | **2** |
| CO4: Total awareness gained from plant embryology | Level3(Application), Level4(Analysing)<br>Level5(Evaluation) | **4** |
| Co5: They analyse the differences between monocots and Monochlamydae | Level2(Understanding)<br>Level3(Applying)<br>Level4(Analysing)<br>Level5(Evaluation) | **3.5** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **1** | **1** | **1** | **0** | **2** | **1** | **1** | **3** |
| CO2 | **0** | **0** | **1** | **1** | **0** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **0** | **2** | **2** | **1** | **0** | **1** | **1** |
| CO4 | **1** | **1** | **0** | **1** | **0** | **2** | **1** | **0** | **2** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **1** | **2** | **1** | **1** |
| CO3 | **2** | **2** | **1** | **3** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **2** | **1** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **1** | **3** |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.313158 | 2.656579 | 2.656579 | 2.656579 | 0 | 5.313158 | 2.656579 | 2.656579 | 7.969737 |
| CO2 | 0 | 0 | 2.542105 | 2.542105 | 0 | 5.084211 | 2.542105 | 5.084211 | 2.542105 |
| CO3 | 2.542105 | 2.542105 | 0 | 5.084211 | 5.084211 | 2.542105 | 0 | 2.542105 | 2.542105 |
| CO4 | 2.084211 | 2.084211 | 0 | 2.084211 | 0 | 4.168421 | 2.084211 | 0 | 4.168421 |
| CO 5 | 6.596053 | 4.397368 | 4.397368 | 4.397368 | 4.397368 | 4.397368 | 6.596053 | 4.397368 | 4.397368 |
| **FINAL ATTAINMENT** | **2.362218** | **2.336053** | **2.399013** | **2.394925** | **2.370395** | **2.389474** | **2.313158** | **2.446711** | **2.402193** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.969737 | 7.969737 | 2.656579 | 5.313158 | 5.313158 |
| CO2 | 2.542105 | 5.084211 | 2.542105 | 5.084211 | 2.542105 |
| CO3 | 5.084211 | 5.084211 | 2.542105 | 7.626316 | 2.542105 |
| CO4 | 2.084211 | 2.084211 | 2.084211 | 4.168421 | 2.084211 |
| CO 5 | 4.397368 | 2.198684 | 2.198684 | 2.198684 | 2.198684 |
| **FINAL ATTAINMENT** | **2.197333** | **2.253333** | **2.1264** | **2.1768** | **2.188** |

**II B. Sc - SEMESTER –III: BOTANY THEORY PAPER –**
**III Paper-III : Plant Taxonomy and Embryology)**

## UNIT – I: INTRODUCTION TO PLANT TAXONOMY

1.Fundamental components of taxonomy (identification, nomenclature,classification)

2. Taxonomic resources: Herbarium- functions& importantherbaria, Botanical gardens, Flora, Keys- single access andmulti-access.

3.Botanical Nomenclature- Principles and rules of ICBN (ranks and names; principleof priority, binomial system; type method, author citation,valid-publication).

## UNIT –II:CLASSIFICATION

1. Types of classification- Artificial, Natural andPhylogenetic.

2. Bentham & Hooker's system of classification- merits and demerits.

3. Engler&Prantle's system of classification- merits anddemerits

4. Phylogeny – origin and evolution ofAngiosperms

## UNIT –III: SYSTEMATIC TAXONOMY-I

**1.** Systematic study and economic importance of the following families: Annonaceae, Brassicaceae, Rutaceae, Curcurbitaceae, and Apiaceae.

## UNIT –IV:SYSTEMATIC TAXONOMY-II

1. Systematic study and economic importance of plants belonging to the following families: Asteraceae, Asclepiadaceae, Lamiaceae, Ephorbiaceae,Arecaceae,andPoaceae.

## UNIT –V:EMBRYOLOGY

**1.** Anther structure, microsporogenesis and development of malegametophyte.

**2.** Ovule structure and types; Megasporogenesis, development of Monosporic, Bisporicand Tetrasporic types (*Peperomia ,Drusa, Adoxa*) of embryosacs.

**3.** Pollination and Fertilization (out lines) Endosperm development andtypes.

**4.** Development of Dicot and Monocot embryos,Polyembryony.

**SEMESTER – 4**

**Paper IV : Plant Physiology and Metabolism**

CO1: knowledge about the metabolism of plant

CO2: The students can understand about the mechanism of absorption of water in plants

CO3: aware with the mechanism of photosynthesis, respiration in plants

CO4: knowledge developed about phytoharmonal regulations and photo periodism

CO5 ; The students can differentiate co2 fixation in c3&c4 cycles

| **Learning Outcomes: On Completion of the course, the students will be able to** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO1: knowledge about the metabolism of plant** | Level1(Knowledge )<br>Level2(Understanding)<br>Level5(Evaluation) | **2.6** |
| **CO2: The students can understand about the mechanism of absorption of water in plants** | Level1(Knowledge )<br>Level2(Understanding)<br>Level3(Application) | **2** |
| **CO3: aware with the mechanism of photosynthesis, respiration in plants** | Level1(Knowledge),<br>Level2(Understanding)<br>Level4(Analysing) | **2.3** |
| **CO4: knowledge developed about phyto-harmonal regulations and photo periodism** | Level3(Application),<br>Level4(Analysing)<br>Level5(Evaluation) | **4** |
| **CO5 ; The students can differentiate co2 fixation in c3&c4 cycles** | Level2(Understanding)<br>Level4(Analysing)<br>Level5(Evaluation) | **3.6** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **0** | **1** | **1** | **1** | **2** | **1** | **1** | **3** |
| CO2 | **1** | **0** | **1** | **1** | **0** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **0** | **2** | **2** | **0** | **0** | **0** | **2** |
| CO4 | **1** | **1** | **0** | **1** | **2** | **2** | **1** | **0** | **2** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **1** | **2** | **2** | **1** |
| CO3 | **2** | **1** | **1** | **3** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **1** | **1** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **1** | **3** |

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 4.818857 | 0 | 2.409429 | 2.409429 | 2.409429 | 4.818857 | 2.409429 | 2.409429 | 7.228286 |
| CO2 | 2.545714 | 0 | 2.545714 | 2.545714 | 0 | 5.091429 | 2.545714 | 5.091429 | 2.545714 |
| CO3 | 2.477571 | 2.477571 | 0 | 4.955143 | 4.955143 | 0 | 0 | 0 | 4.955143 |
| CO4 | 2.091429 | 2.091429 | 0 | 2.091429 | 4.182857 | 4.182857 | 2.091429 | 0 | 4.182857 |
| CO 5 | 6.546857 | 4.364571 | 4.364571 | 4.364571 | 4.364571 | 4.364571 | 6.546857 | 4.364571 | 4.364571 |
| FINAL ATTAINMENT | **2.310054** | **2.233393** | **2.329929** | **2.338041** | **2.273143** | **2.307214** | **2.265571** | **2.373086** | **2.327657** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 7.228286 | 7.228286 | 2.409429 | 4.818857 | 4.818857 |
| CO2 | 2.545714 | 5.091429 | 2.545714 | 5.091429 | 5.091429 |
| CO3 | 4.955143 | 2.477571 | 2.477571 | 7.432714 | 2.477571 |
| CO4 | 2.091429 | 2.091429 | 2.091429 | 2.091429 | 2.091429 |
| CO 5 | 4.364571 | 2.182286 | 2.182286 | 2.182286 | 2.182286 |
| FINAL ATTAINMENT | **2.353905** | **2.383875** | **2.341286** | **2.401857** | **2.380224** |

## II B.Sc. BOTANY, SEMESTER- IV, Paper-IV: THEORY

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**SYLLABUS PAPER –IV: Plant Physiology and Metabolism**

### UNIT – I: Plant –Water relations

1. Physical properties of water, Importance of water to plant life.
2. Diffusion, imbibition and osmosis; concept & components of Waterpotential.
3. Absorption and transport of water and ascent ofsap.
4. Transpiration –Definition, types of transpiration, structure and openingand closing mechanism ofstomata.

### UNIT –II: Mineral nutrition&Enzymes

1. Mineral Nutrition**:** Essential elements (macro and micronutrients) and their rolein plant metabolism, deficiencysymptoms.
2. Mineral ion uptake (active and passivetransport).
3. Nitrogen metabolism- biological nitrogen fixation in *Rhizobium*, outlines ofprotein synthesis (transcription and translation).
4. Enzymes**:** General characteristics, mechanism of enzyme actionand factors regulating enzymeaction.

### UNIT–III:PHOTOSYNTHESIS

1. Photosynthesis: Photosynthetic pigments, photosynthetic light reactions, photo- phosphorylation, carbon assimilation pathways: C3, C4, and CAM (briefaccount)
2. Photorespiration and itssignificance.
3. Translocation of organic solutes: mechanism of phloem transport,source- sinkrelationships.

### UNIT – IV:RESPERATION&LIPIDMETABOLISM

1. Respiration: Glycolysis, anaerobic respiration, TCA cycle, electrontransport system. Mechanism of oxidativephosphorylation.
2. Lipid Metabolism**:** Types of lipids,Beta-oxidation.

### UNIT –V: GROWTH AND DEVELOPMENT

1. Growth and development: definition, phases and kinetics ofgrowth.
2. Physiological effects of phytohormones - Auxins, Gibberellins,Cytokinins, ABA, Ethylene andBrassinosteroids.
3. Physiology of flowering -photoperiodism, role of phytochromein flowering;Vernalization.
4. Physiology of Scenescence andAgeing.

## SEMESTER -5 paper-V

### Paper-V: Cell Biology, Genetics and Plant Breeding

CO1: detailed study about ultra-structure of cell is possible
CO2: thestudent will understand the structure of DNA &RNA
CO3: detailed study about ultra-structure of cell is possible

CO4: plant genome study in structural and functional aspect is possible

Co5: the students can analyse the significance of mutations in molecular breeding.

| **Learning Outcomes:On Completion of the course, the students will be able to** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO1: detailed study about ultra-structure of cell is possible** | Level1(Knowledge )<br>Level2(Understanding) | **1.5** |
| **CO2: the student will understand the structure of DNA &RNA** | Level1(Knowledge )<br>Level2(Understanding)<br>Level4(Analysing) | **2.3** |
| **CO3: detailed study about ultra structure of the cell** | Level1(Knowledge),<br>Level2(Understanding)<br>Level4(Analysing) | **2.3** |
| **CO4: plant genome study in structural and functional aspect is possible** | Level3(Application),<br>Level4(Analysing)<br>Level5(Evaluation) | **4** |
| **Co5: the students can analyse the significance of mutations in molecular breeding** | Level2(Understanding)<br>Level3(Application),<br>Level4(Analysing)<br>Level5(Evaluation) | **3.5** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **1** | **1** | **1** | **0** | **2** | **1** | **1** | **3** |
| CO2 | **0** | **0** | **1** | **1** | **1** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **0** | **2** | **2** | **0** | **1** | **0** | **2** |
| CO4 | **1** | **1** | **1** | **1** | **0** | **2** | **1** | **0** | **2** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **1** | **2** | **1** | **2** |
| CO3 | **2** | **1** | **1** | **3** | **2** | **1** |
| CO4 | **1** | **1** | **2** | **2** | **1** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **1** | **3** |

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.636975 | 2.818487 | 2.818487 | 2.818487 | 0 | 5.636975 | 2.818487 | 2.818487 | 8.455462 |
| CO2 | 0 | 0 | 2.721681 | 2.721681 | 2.721681 | 5.443361 | 2.721681 | 5.443361 | 2.721681 |
| CO3 | 2.721681 | 2.721681 | 0 | 5.443361 | 5.443361 | 0 | 2.721681 | 0 | 5.443361 |
| CO4 | 2.515966 | 2.515966 | 2.515966 | 2.515966 | 0 | 5.031933 | 2.515966 | 0 | 5.031933 |
| CO 5 | 7.729412 | 5.152941 | 5.152941 | 5.152941 | 5.152941 | 5.152941 | 7.729412 | 5.152941 | 5.152941 |
| **FINAL ATTAINMENT** | **2.657719** | **2.641815** | **2.641815** | **2.664634** | **2.663597** | **2.658151** | **2.64389** | **2.682958** | **2.680538** |

## ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.455462 | 5.636975 | 2.818487 | 5.636975 | 5.636975 |
| CO2 | 2.721681 | 5.443361 | 2.721681 | 5.443361 | 2.721681 |
| CO3 | 5.443361 | 2.721681 | 2.721681 | 8.165042 | 5.443361 |
| CO4 | 2.515966 | 2.515966 | 5.031933 | 5.031933 | 2.515966 |
| CO 5 | 5.152941 | 2.576471 | 2.576471 | 2.576471 | 2.576471 |
| **FINAL ATTAINMENT** | **2.698824** | **2.699208** | **2.645042** | **2.685378** | **2.699208** |

## III B. Sc - SEMESTER- V: BOTANY SYLLABUS
## THEORY PAPE–V
### Paper-V: Cell Biology, Genetics and Plant Breeding

**UNIT – ICellBiology:**

1. Cell, the unit of life- Cell theory, Prokaryotic and eukaryotic cells;Eukaryotic cellcomponents.
2. Ultra structure and functions of cell wall and cellmembranes.
3. Chromosomes**:** morphology, organization of DNA in achromosome (nucleosome model), Euchromatin andheterochromatin.

**UNIT – II GeneticMaterial:**

DNA as the genetic material: Griffith's and Avery'stransformation experiment, Hershey – Chase bacteriophageexperiment.

1. DNA structure (Watson & Crick model) and replication of DNA(semi-conservative)
2. Different forms of DNA (A-DNA, B-DNA,Z-DNA)
3. Types of RNA (mRNA, tRNA, rRNA), their structure andfunction.

**UNIT – IIIMendelianInheritance:**

1. Mendel's laws of Inheritance (Mono- and Di- hybrid crosses); backcrossand testcross.
2. Chromosome theory ofInheritance.
3. Linkage: concept, complete and incomplete linkage, coupling and repulsion; linkage mapsbased on two and three factorcrosses.
4. Crossing Over: concept &significance.

**UNIT – IVPlantBreeding:**

1. Introduction and Objectives of plantbreeding.
2. Methods of crop improvement: Procedure, advantages andlimitations of Introduction, Selection, and Hybridization (outlinesonly).

**UNIT – V Breeding, Crop ImprovementandBiotechnology:**

1. Role of mutations in cropimprovement.
2. Role of somaclonal variations in cropimprovement.
3. Molecular breeding – use of DNA markers in plant breeding and cropimprovement (RAPD,RFLP).

## SEMESTER-V

## PAPER-VI: PLANT ECOLOGY& PHYTOGEOGRAPHY

CO1: knowledge created about ecological plant species, ecotypes
CO2: awareness created about geographical distribution of plant species
CO3 :Analyse the bio geo chemical cycles.
Co4 They can learn about the concepts of population ecology
Co5: they can understand about the bio diversity conservation methods

| Learning Outcomes: On Completion of the course, the students will be able to | Knowledge level (Bloom's Taxonomy) | Average level weightage |
|---|---|---|
| **CO1: knowledge created about ecological plant species, ecotypes** | Level1(Knowledge )<br>Level2(Understanding) | **1.5** |
| **CO2: Gets knowledge and Understanding on Ecosystem, Plant Succession and importance** | Level1(Knowledge )<br>Level2(Understanding)<br>Level3(Application), | **2** |
| **CO3 :Analyse the bio geo chemical cycles.** | Level1(Knowledge),<br>Level2(Understanding)<br>Level4(Analysing) | **2.3** |
| **Co4 They can learn about the concepts of population ecology** | Level4(Analysing)<br>Level5(Evaluation) | **4.5** |
| **Co5: they can understand about the bio diversity and conservation methods** | Level2(Understanding)<br>Level3(Application),<br>Level4(Analysing)<br>Level5(Evaluation) | **3.5** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **0** | **1** | **1** | **1** | **2** | **1** | **1** | **3** |
| CO2 | **1** | **0** | **1** | **0** | **0** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **2** | **2** | **2** | **0** | **0** | **1** | **2** |
| CO4 | **1** | **1** | **1** | **1** | **2** | **2** | **1** | **0** | **3** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **1** | **1** | **1** | **1** |
| CO3 | **2** | **1** | **2** | **3** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **2** | **1** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **2** | **3** |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.636975 | 0 | 2.818487 | 2.818487 | 2.818487 | 5.636975 | 2.818487 | 2.818487 | 8.455462 |
| CO2 | 2.757983 | 0 | 2.757983 | 0 | 0 | 5.515966 | 2.757983 | 5.515966 | 2.757983 |
| CO3 | 2.721681 | 2.721681 | 5.443361 | 5.443361 | 5.443361 | 0 | 0 | 2.721681 | 5.443361 |
| CO4 | 2.455462 | 2.455462 | 2.455462 | 2.455462 | 4.910924 | 4.910924 | 2.455462 | 0 | 7.366387 |
| CO 5 | 7.729412 | 5.152941 | 5.152941 | 5.152941 | 5.152941 | 5.152941 | 7.729412 | 5.152941 | 5.152941 |
| **FINAL ATTAINMENT** | **2.662689** | **2.582521** | **2.661176** | **2.645042** | **2.617959** | **2.652101** | **2.626891** | **2.701513** | **2.652376** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.455462 | 8.455462 | 2.818487 | 5.636975 | 5.636975 |
| CO2 | 2.757983 | 5.515966 | 2.757983 | 2.757983 | 2.757983 |
| CO3 | 5.443361 | 2.721681 | 5.443361 | 8.165042 | 2.721681 |
| CO4 | 2.455462 | 2.455462 | 2.455462 | 4.910924 | 2.455462 |
| CO 5 | 5.152941 | 2.576471 | 2.576471 | 2.576471 | 5.152941 |
| **FINAL ATTAINMENT** | **2.696134** | **2.71563** | **2.675294** | **2.671933** | **2.675006** |

## III B. Sc - SEMESTER- V: BOTANY THEORY SYLLABUS PAPER-VI: PLANT ECOLOGY& PHYTOGEOGRAPHY

### UNIT – I. ElementsofEcology

Climatic Factors: Light, Temperature,precipitation.

1. Edaphic Factor: Origin, formation, composition and soil profile.
2. Biotic Factor: Interactions between plants andanimals.

### UNIT– II.EcosystemEcology

1. Ecosystem: Concept and components, energy flow, Food chain, Food web, Ecologicalpyramids.
2. Productivity of ecosystem-Primary, Secondary and Net productivity.
3. Biogeochemical cycles- Carbon, Nitrogen andPhosphorous.

### UNIT – II Population&CommunityEcology

1. Population -definition, characteristics and importance, outlines–ecotypes.
2. Plant communities- characters of a community, outlines – Frequency,density, cover, life forms,competition.
3. Interaction between plants growing in acommunity.

### UNIT –IV Phytogeography

Principles of Phytogeography, Distribution (wides, endemic, discontinuousspecies)

1. Phytogeographic regions ofIndia.
2. Phytogeographic regions ofWorld.
3. Endemism – types andcauses

### UNIT- V: Plant Biodiversity andits importance

1. Definition, levels of biodiversity-genetic, species andecosystem.
2. Biodiversity hotspots- Criteria, Biodiversity hotspots ofIndia.
3. Loss of biodiversity – causes and conservation (*In-situ* and *ex-situ*methods).
4. Seed banks - conservation of genetic resources and theirimpor

**SEMESTER – 6**

**Paper VII-(B): Nursery, Gardening and Floriculture.**

CO1: students understand different vegetative propagagtive methods
CO2: they develop skill towars floriculture
CO3: they learn about Nursery management methods
CO4: Ornamental plants study is possible
Co5: different land scapeing methods.

| **Learning Outcomes:On Completion of the course, the students will be able to** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO1: students understand different vegetative propagagtive methods** | Level1(Knowledge )<br>Level2(Understanding)<br>Level3(Application), | **2** |
| **CO2: they develop skill towards floriculture** | Level1(Knowledge )<br>Level2(Understanding)<br>Level3(Application),<br>Level4(Analysing) | **2.5** |
| **CO3: they learn about Nursery Management Methods** | Level1(Knowledge),<br>Level2(Understanding)<br>Level4(Analysing) | **2.3** |
| **CO4: Ornamental plants study is possible** | Level4(Analysing)<br>Level5(Evaluation) | **4.5** |
| **Co5: different land scapeing methods** | Level2(Understanding)<br>**Level3(Application),**<br>Level4(Analysing)<br>Level5(Evaluation)<br>Level6 (create) | **4.2** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘-‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **1** | **1** | **1** | **0** | **2** | **1** | **1** | **3** |
| CO2 | **1** | **0** | **0** | **1** | **1** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **1** | **2** | **2** | **1** | **0** | **0** | **2** |
| CO4 | **1** | **1** | **0** | **1** | **1** | **2** | **1** | **0** | **2** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘-‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **1** | **1** | **1** | **1** |
| CO3 | **2** | **1** | **1** | **3** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **2** | **3** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **1** | **3** |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.708571 | 2.854286 | 2.854286 | 2.854286 | 0 | 5.708571 | 2.854286 | 2.854286 | 8.562857 |
| CO2 | 2.817857 | 0 | 0 | 2.817857 | 2.817857 | 5.635714 | 2.817857 | 5.635714 | 2.817857 |
| CO3 | 2.832429 | 2.832429 | 2.832429 | 5.664857 | 5.664857 | 2.832429 | 0 | 0 | 5.664857 |
| CO4 | 2.672143 | 2.672143 | 0 | 2.672143 | 2.672143 | 5.344286 | 2.672143 | 0 | 5.344286 |
| CO 5 | 8.082 | 5.388 | 5.388 | 5.388 | 5.388 | 5.388 | 8.082 | 5.388 | 5.388 |
| FINAL ATTAINMENT | **2.764125** | **2.749371** | **2.768679** | **2.77102** | **2.757143** | **2.767667** | **2.737714** | **2.7756** | **2.777786** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.562857 | 8.562857 | 2.854286 | 5.708571 | 5.708571 |
| CO2 | 2.817857 | 5.635714 | 2.817857 | 2.817857 | 2.817857 |
| CO3 | 5.664857 | 2.832429 | 2.832429 | 8.497286 | 2.832429 |
| CO4 | 2.672143 | 2.672143 | 2.672143 | 5.344286 | 8.016429 |
| CO 5 | 5.388 | 2.694 | 2.694 | 2.694 | 2.694 |
| FINAL ATTAINMENT | **2.789524** | **2.799643** | **2.774143** | **2.784667** | **2.758661** |

## B. Sc - BOTANY SYLLABUS SEMESTER- VI PAPER – VII – ELECTIVE

### Paper VII-(B): Nursery, Gardening and Floriculture.

UnitI: Nursery**:**

Definition, objectives, scope and building up of infrastructure for nursery.

1. Planning and seasonal activities - Planting - direct seeding andtransplants.
2. Nursery Management and Routine GardenOperations.

UnitIII:Gardening

1. Definition, objectives and scope - different types ofgardening.
2. Landscape and home gardening - parks and its components, plantmaterials and design.Computer applications inlandscaping and design..
3. Gardening operations: soil laying, manuring,watering.
4. Landscaping Places of Public Importance: Landscaping highways and Educational Institutions)
5. Some Famous gardens of India.

Unit III: Propagation methods

1.seedlings, transplanting of seedlings.
2. layering, cutting, selection of cutting ,propagule collecting season,
3.cutting rooting medium and planting of cuttings – Hardeningofplants.
4. Propagation of ornamental plants by rhizomes, corms tubers, bulbs andbulbils.
5. Green house - mist chamber, shed root, shade house and Glasshouse for propagation.

UnitIV:Floriculture:

1.Ornamental Plants: Flowering annuals; herbaceous, perennials; Divinevines; Shade and ornamentaltrees.

1. Ornamental bulbous and foliage plants; Cacti andsucculents.

2. Ornamentals-palms.

3. Cultivation of plants in pots; Indoor gardening;Bonsai.

Unit V:CommercialFloriculture

1. Factors affecting flower production; Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life of flowers

3. Cultivation of Important cut flowers (Carnation, Aster,Dahlia, Gerbera, Anthuriams, Gladiolous, Marigold, Rose,Lilium)

4. Management of pests, diseases and harvesting.

## Semester-VI Paper VIII, CLUSTER ELECTIVE, Cluster-A,

## Paper VIII-A-1 : PLANT DIVERSITY AND HUMAN WELFARE

CO1:understand the significance of plants in human welfare
CO2: learn about bio diversity conservation
Co3:anlyse the commercial importance of wood
Co4 understad the sustainable methods and their significance
Co5: anlyse the concept of ecological foot print

| Learning Outcomes:On Completion of the course, the students will be able to | Knowledge level (Bloom's Taxonomy) | Average level weightage |
|---|---|---|
| **CO1:understand the significance of plants in human welfare** | Level1(Knowledge )<br>Level2(Understanding)<br>Level3(Application), | **2** |
| **CO2: learn about bio diversity conservation** | Level1(Knowledge )<br>Level2(Understanding)<br>Level4(Analysing)<br>Level5(Evaluation) | **3** |
| **Co3:anlyse the commercial importance of wood** | Level1(Knowledge),<br>Level2(Understanding)<br>Level4(Analysing) | **2.3** |
| **Co4 understad the sustainable methods and their significance** | Level3(Application),<br>Level4(Analysing)<br>Level5(Evaluation) | **4** |
| **Co5: anlyse the concept of ecological foot print** | Level2(Understanding)<br>**Level3(Application),**<br>Level4(Analysing)<br>Level5(Evaluation)<br>Level6 (create) | **4** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **1** | **1** | **1** | **0** | **2** | **1** | **1** | **3** |
| CO2 | **0** | **2** | **1** | **1** | **0** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **1** | **2** | **2** | **0** | **0** | **3** | **2** |
| CO4 | **1** | **1** | **0** | **1** | **1** | **2** | **1** | **0** | **2** |
| CO5 | **3** | **1** | **2** | **1** | **2** | **1** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **1** | **1** | **2** | **1** | **1** |
| CO3 | **2** | **2** | **1** | **2** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **2** | **1** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **2** | **3** |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.828571 | 2.914286 | 2.914286 | 2.914286 | 0 | 5.828571 | 2.914286 | 2.914286 | 8.742857 |
| CO2 | 0 | 5.742857 | 2.871429 | 2.871429 | 0 | 5.742857 | 2.871429 | 5.742857 | 2.871429 |
| CO3 | 2.901429 | 2.901429 | 2.901429 | 5.802857 | 5.802857 | 0 | 0 | 8.704286 | 5.802857 |
| CO4 | 2.828571 | 2.828571 | 0 | 2.828571 | 2.828571 | 5.657143 | 2.828571 | 0 | 5.657143 |
| CO 5 | 8.485714 | 2.828571 | 5.657143 | 2.828571 | 5.657143 | 2.828571 | 8.485714 | 5.657143 | 5.657143 |
| FINAL ATTAINMENT | **2.863469** | **2.869286** | **2.868857** | **2.874286** | **2.857714** | **2.865306** | **2.85** | **2.877321** | **2.873143** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.742857 | 8.742857 | 2.914286 | 5.828571 | 5.828571 |
| CO2 | 2.871429 | 2.871429 | 2.871429 | 5.742857 | 2.871429 |
| CO3 | 5.802857 | 5.802857 | 2.901429 | 5.802857 | 2.901429 |
| CO4 | 2.828571 | 2.828571 | 2.828571 | 5.657143 | 2.828571 |
| CO 5 | 5.657143 | 2.828571 | 2.828571 | 2.828571 | 5.657143 |
| FINAL ATTAINMENT | **2.878095** | **2.884286** | **2.868857** | **2.873333** | **2.869592** |

CLUSTERELECTIVES

III B.Sc.: BOTANY SYLLABUS SEMESTER- VI

**Paper VIII, CLUSTER ELECTIVE, Cluster-A,**
**Paper VIII-A-1 : PLANT DIVERSITY AND HUMAN WELFARE**

**Unit- I: Plant diversity and its scope**:

i. Genetic diversity, Species diversity, Plant diversity at the level ecosystem Agro biodiversity and cultivated plant taxa, wildtaxa.

a) Values and uses of biodiversity: Ethical andaesthetic

ii. values, Methodologies for valuation, Uses ofplants.

**Unit -II: Loss of biodiversity**:

i. Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro biodiversity, projectedscenario for biodiversity loss

ii. Management of plant biodiversity: Organizations associated withbiodiversity management-Methodology for execution-IUCN, UNEP, UNESCO, WWF,NBPGR;

Biodiversity legislation and conservations, Biodiversity information management and communication.

**Unit-III: Contemporary practices inresource management**:

i. Environmental Impact Assessment (EIA), GeographicalInformation System GIS, Participatory resourceappraisal, Ecologicalfootprint with emphasis on carbonfootprint,Resourceaccounting;

ii. Solid and liquid wastemanagement

**Unit -IV: Conservation ofbiodiversity**

i. Conservation of genetic diversity, species diversity and ecosystem diversity, *In situ* and *ex situ*conservation,

ii. Social approaches to conservation,Biodiversity awareness programmes, Sustainabledevelopment.

**Unit- V: Role of plants in relation toHuman Welfare**

Importance of forestry, their utilization and commercialaspects-

a)Avenue trees, b) ornamental plants of India.

c) Alcoholicbeverages through ages.

i. Fruits and nuts: Important fruit crops their commercial importance. Wood, fiber and their uses.

## Semester-VI cluster-A2

Paper VIII-A-2 : ETHNOBOTANY AND MEDICINAL BOTANY

CO1:understand the significance ofMedicinal plants
CO2: learn about the concepts of Ayurveda sidda traditional medicinal practice syatems
Co3:understand about different medicinal plants and their significance
Co4 understad the conept of Ttraditional knowledge and IPR
Co5: analyse the importance of botanical garden in bio diversity conservation

| **Learning Outcomes:On Completion of the course, the students will be able to** | **Knowledge level (Bloom's Taxonomy)** | **Average level weightage** |
|---|---|---|
| **CO1:understand the significance of Medicinal plants** | Level1(Knowledge )<br>Level2(Understanding)<br>Level3(Application), | **2** |
| **CO2: learn about the concepts of Ayurveda sidda** | Level1(Knowledge )<br>Level2(Understanding)<br>Level4(Analysing)<br>Level5(Evaluation) | **3** |
| **Co3:understand about different medicinal plants and their significance** | Level1(Knowledge),<br>Level2(Understang)<br>Level3(Application),<br>Level4(Analysing) | **2.5** |
| **Co4 understad the conept of Ttraditional knowledge and IPR** | Level3(Application),<br>Level4(Analysing)<br>Level5(Evaluation) | **4** |
| **Co5: analyse the importance of botanical garden in bio diversity conservation** | Level2(Understanding)<br>**Level3(Application),**<br>Level4(Analysing)<br>Level5(Evaluation)<br>Level6 (create) | **4** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **0** | **1** | **1** | **1** | **2** | **1** | **1** | **3** |
| CO2 | **1** | **0** | **0** | **1** | **0** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **1** | **2** | **2** | **0** | **0** | **1** | **2** |
| CO4 | **1** | **1** | **0** | **1** | **0** | **2** | **1** | **1** | **2** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **2** | **1** | **1** | **1** |
| CO3 | **2** | **2** | **1** | **3** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **1** | **1** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **1** | **3** |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.752782 | 0 | 2.876391 | 2.876391 | 2.876391 | 5.752782 | 2.876391 | 2.876391 | 8.629173 |
| CO2 | 2.814586 | 0 | 0 | 2.814586 | 0 | 5.629173 | 2.814586 | 5.629173 | 2.814586 |
| CO3 | 2.845489 | 2.845489 | 2.845489 | 5.690977 | 5.690977 | 0 | 0 | 2.845489 | 5.690977 |
| CO4 | 2.752782 | 2.752782 | 0 | 2.752782 | 0 | 5.505564 | 2.752782 | 2.752782 | 5.505564 |
| CO 5 | 8.258346 | 5.505564 | 5.505564 | 5.505564 | 5.505564 | 5.505564 | 8.258346 | 5.505564 | 5.505564 |
| FINAL ATTAINMENT | **2.802998** | **2.775959** | **2.806861** | **2.805757** | **2.814586** | **2.799135** | **2.783684** | **2.801343** | **2.814586** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.629173 | 8.629173 | 2.876391 | 5.752782 | 5.752782 |
| CO2 | 2.814586 | 5.629173 | 5.629173 | 2.814586 | 2.814586 |
| CO3 | 5.690977 | 5.690977 | 2.845489 | 8.536466 | 2.845489 |
| CO4 | 2.752782 | 2.752782 | 2.752782 | 2.752782 | 2.752782 |
| CO 5 | 5.505564 | 2.752782 | 2.752782 | 2.752782 | 2.752782 |
| FINAL ATTAINMENT | **2.821454** | **2.828321** | **2.809436** | **2.826175** | **2.819737** |

**III B. Sc - BOTANY SYLLABUS SEMESTER- VIII :**
**CLUSTER ELECTIVE -A**

## Paper VIII-A-2 : ETHNOBOTANY AND MEDICINAL BOTANY

**Unit –I:Ethnobotany**

i. Introduction, concept, scope and objectives; Ethnobotany as an interdisciplinary science. The relevance of ethnobotany inthe present context

ii. Major and minor ethnic groups or Tribals of India, and their lifestyles.

iii. Plants used by the tribal populations: a) Food plants, b) intoxicants and beverages, c) Resins and oils and miscellaneoususes.

**Unit -II**: **Role of ethnobotany inmodern Medicine**:

i. Role of ethnobotany in modern medicine with special example

*Rauvolfiasepentina, Trichopuszeylanicus, Artemisia annua, Withaniasomnifera.*

ii. Medico-ethnobotanical sources in India

iii. Significance of the following plants in ethnobotanical practices (along with their habitat andmorphology)

a) *Azadirachtaindica*, b*) Ocimum sanctum*, c) *Vitexnegundo*, d)*Gloriosasuperba*, e) *Tribulusterrestris*,f)*Phyllanthusniruri* ,g)*Cassauriculata*, h) *Indigoferatinctoria* , i) *Sennauriculata*j).*Curcuma longa*

iv. Role of ethnic groups in the conservation of plant genetic resource

**Unit-III: Ethnobotany as a tool to protect interests of ethnic**

i. Sharing of wealth concept with few examples fromIndia.

Biopiracy, Intellectual Property Rights and TraditionalKnowledge.

**Unit -IV: History, Scope and Importance of Medicinal Plants. indigenousMedicinalSciences**

i. Definition and Scope-**Ayurveda**: History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedictreatments.

ii. **Siddha**: Origin of Siddha medicinal systems, Basisof Siddha system, plants used in Siddhamedicine.

iii. **Unani**: History, concept: Umoor-e- tabiya, tumors treatments/ therapy, polyherbal formulations (inbrief).

**Unit -V: Conservation of endangered and endemic medicinal plants**:

i. Definition: endemic and endangered medicinalplants,

ii. Red listcriteria

iii. *In situ* conservation: Biosphere reserves,sacred groves, NationalParks

iv. *Ex situ* conservation: BotanicalGardens.

## Semester-VI cluster-A3

### Paper VIII-A-3: Pharmacognosy and Phytochemistry

CO1:understand the significance of secondary metabolites
CO2: learn about the Drug evalution methods
Co3:understand about different medicinal plants and their significance
Co4 : learn about Different groups of Alkaloids, biosynthesis, bioactivity.
Co5: analyse the Pharmacological action of plant drugs – tumor inhibitors,PAF antagonists, antioxidants

| Learning Outcomes:On Completion of the course, the students will be able to | Knowledge level (Bloom's Taxonomy) | Average level weightage |
|---|---|---|
| **CO1:understand the significance of secondary metabolites** | Level1(Knowledge )<br>Level2(Understanding) | **1.5** |
| **CO2: learn about the Drug evalution methods** | Level1(Knowledge )<br>Level2(Understanding)<br>Level4(Analysing)<br>Level5(Evaluation) | **3** |
| **Co3:understand about different medicinal plants and their significance** | Level2(Understang)<br>Level3(Application),<br>Level4(Analysing) | **3** |
| **Co4 : learn about Different groups of Alkaloids, biosynthesis, bioactivity.** | Level3(Application),<br>Level4(Analysing)<br>Level5(Evaluation) | **4** |
| **Co5: analyse the Pharmacological action of plant drugs – tumor inhibitors,PAF antagonists, antioxidants** | Level2(Understanding)<br>**Level3(Application),**<br>Level4(Analysing)<br>Level5(Evaluation)<br>Level6 (create) | **4** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **0** | **1** | **1** | **1** | **2** | **1** | **1** | **3** |
| CO2 | **0** | **1** | **2** | **1** | **0** | **2** | **1** | **2** | **1** |
| CO3 | **1** | **1** | **0** | **2** | **2** | **0** | **0** | **1** | **2** |
| CO4 | **1** | **1** | **2** | **1** | **1** | **2** | **1** | **0** | **2** |
| CO5 | **3** | **2** | **2** | **2** | **2** | **2** | **3** | **2** | **2** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **2** | **2** | **1** |
| CO2 | **1** | **2** | **1** | **2** | **2** | **1** |
| CO3 | **2** | **1** | **1** | **3** | **1** | **1** |
| CO4 | **1** | **1** | **1** | **3** | **1** | **1** |
| CO5 | **2** | **1** | **1** | **1** | **2** | **3** |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.691429 | 0 | 2.845714 | 2.845714 | 2.845714 | 5.691429 | 2.845714 | 2.845714 | 8.537143 |
| CO2 | 0 | 2.691429 | 5.382857 | 2.691429 | 0 | 5.382857 | 2.691429 | 5.382857 | 2.691429 |
| CO3 | 2.691429 | 2.691429 | 0 | 5.382857 | 5.382857 | 0 | 0 | 2.691429 | 5.382857 |
| CO4 | 2.588571 | 2.588571 | 5.177143 | 2.588571 | 2.588571 | 5.177143 | 2.588571 | 0 | 5.177143 |
| CO 5 | 7.765714 | 5.177143 | 5.177143 | 5.177143 | 5.177143 | 5.177143 | 7.765714 | 5.177143 | 5.177143 |
| FINAL ATTAINMENT | 2.676735 | 2.629714 | 2.654694 | 2.669388 | 2.665714 | 2.678571 | 2.648571 | 2.682857 | 2.696571 |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.537143 | 8.537143 | 2.845714 | 5.691429 | 5.691429 |
| CO2 | 2.691429 | 5.382857 | 2.691429 | 5.382857 | 5.382857 |
| CO3 | 5.382857 | 2.691429 | 2.691429 | 8.074286 | 2.691429 |
| CO4 | 2.588571 | 2.588571 | 2.588571 | 7.765714 | 2.588571 |
| CO 5 | 5.177143 | 2.588571 | 2.588571 | 2.588571 | 5.177143 |
| FINAL ATTAINMENT | 2.708571 | 2.723571 | 2.681143 | 2.682078 | 2.691429 |

## III B. Sc - BOTANY SYLLABUS
## SEMESTER- VIII CLUSTER
## ELECTIVE, Paper VIII-A-3

**Paper VIII-A-3: Pharmacognosy and Phytochemistry**

**Unit-I:Pharmacognosy**

Definition, Importance, Classification of drugs - Chemical and Pharmacological, Drug evaluation methods

**Unit –II: Organoleptic andmicroscopicstudies:**

Organoleptic and microscopic studies with reference to nature of active principles and common adulterants

*Adhatodavasica*(leaf),*Strychnosnuxvomica*(seed),R*auwolfiaserpentina*(root) and

*Zinziberofficinalis* C*atharanth us roseus.*

**Unit-III:SecondaryMetabolites:**

i. Definition of primary and secondary metabolites and their differences, majortypes - terpenes, phenolics, alkaloids, terpenoids, steroids.

ii. A brief idea about extraction of alkaloids.Origin of secondary metabolites – detailed account of acetate pathway, mevalonate pathway, shikimatepathway.

**UNIT-IV:Phytochemistry:**

Biosynthesis and sources of drugs:

(i) Phenols and phenolic glycosides : structural types, biosynthesis, importanceof simple phenolic compounds, tannins, anthraquinones, coumarins and furanocoumarins, flavones and related flavonoid glycosides, anthocyanins, betacyanins, stilbenes, lignins andlignans).

(ii) Steroids, sterols, saponins, withanolides, ecdysones,cucurbitacins:

(iii) Alkaloids: Different groups, biosynthesis, bioactivity.

(v) Volatile oils,aromatherapy.

**UNIT-V: Enzymes, proteins and amino acidsasdrugs**:

i. Vaccines, toxins and toxoids, antitoxins, immune globulins,antiserums,

ii. Vitamins, Antibiotics – chemical nature, mode ofaction.

iii. Pharmacological action of plant drugs – tumor inhibitors,PAF antagonists, antioxidants, phytoestrogen andothers.

iv. Role of different enzymeinhibitors.

# Dr. V. S. KRISHNA GOVT. DEGREE COLLEGE (A)

## VISAKHAPATNAM

## DEPARTMENT OF COMMERCE

## 2019-2020

# CO – PO MAPPING AND ATTAINMENT

## Dr.V.S.Krishna Govt. Degree College (Autonomous)

**(Accredited with 'A' Grade by NAAC)**

**Visakhapatnam**

**530013, ANDHRA PRADESH**

## CO – PO ATTAINMENT METHODOLOGY

- Step 1

### Calculation of Course Outcome Weighted Average (COWA)

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

### Calculation of Course outcome level index (COLLI):

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

### CO-PO mapping and CO-PSO mapping

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(\mathbf{3} - \boldsymbol{COWA}) \times \left(\mathbf{1} - \frac{\boldsymbol{COLLI}}{\mathbf{3.5}}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\boldsymbol{\Sigma(CO\ attainment)(PSO\ level\ mapped\ with\ CO)}}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

# Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE (A)

## VISAKHAPATNAM

## DEPARTMENT OF COMMERCE

**PROPOSED SYLLABUS FOR B.Com COMMERCE**
**IN UNDERGRADUATE DEGREE PROGRAMME**
**UNDER AUTONOMY**

## 2019-2020

**BOARD OF STUDIES**
**IN**
**B.Com COMMERCE**

**SYLLABUS FOR B.Com GENERAL**

**Approved in B.O.S for the Academic Year 2019-2020**

**(Date: 12 - 07 – 2019)**



## Dr.V.S.Krishna Govt. Degree College (Autonomous),

**(Accredited with 'A' Grade by NAAC)**
**Visakhapatnam**
**530013, ANDHRA PRADESH**

# Dr.V.S.Krishna Govt. Degree College (Autonomous), Visakhapatnam
# Resolutions/Minutes of the 5th Board of Studies-March 2018

**Subject: Commerce** **Department: Commerce**

In pursuance of conferment of Autonomous status to Dr.V.S.Krishna Govt. Degree College(A), Visakhapatnam by the UGC vide letter No.F22-1/2011(AC) dated 20.07.2011 from Dr. Manju Singh, Joint Secretary, UGC, New Delhi and Proceedings No. C-II (CDC) /Dr.VSK.Govt.College/BOS/2018 dt. 27-07-2018 of The Vice-Chancellor, Andhra University, Visakhapatnam, the **5th Board of Studies in Commerce** Subject is conducted on 10-10-2018 at 10:00 AM with the following members. The Changes will be implemented from 2019-20 academic year onwards.

| MEMBER | NAME & DESIGNATION | SIGNATURE |
|---|---|---|
| Head of the Department (Chairman) | **Dr.K.Ravikumar** | |
| Faculty Members | **List Of Lecturers of the Department**<br>**1.Sri.R.Ramarao**<br>**2.Dr.Ch.Vishnu Murthy**<br>**3.Dr.V.Chittabai**<br>**4.Sri.B.Ramachandra Rao**<br>**5.Sri V.S.J.R.C.Murthy** | |
| Subject Expert (University Nominee) | Prof P.Viswanadham | |
| Subject Experts (from outside the parent university) | Smt Y.Lakshmi<br>Lecturer In Commerce<br>GDC Srikakulam | |
| | Sri. L. Krishna Rao,(HOD)<br>Lecturer In Commerce<br>GDC Srikakulam | |
| Representative Member From Industry / Corporate / Allied Area relating to placement | Smt.P.V.Lakshmi, MBA ,BL, Divisional Office LIC Visakhapatnam | |
| Member from Alumni | Sri.C.V.S.Ravendra Nadh , Lecturer In English Dr.V.S.K GDC VSP. | |
| Coordinator, Academic Council | Dr.Sravan Kumar (HOD) Physics Dr.V.S.K.GDC Vsp | |
| Chairperson, Academic Council | Dr.V.Chandra Sekhar Principal | |

## Dr V.S.KRISHNA GOVT.DEGREE COLLEGE(A),VISAKHAPATNAM
## ALLOCATION OF CREDITS FOR B.COM PROGRAMME FOR THE YEAR
## SUBJECT: COMMERCE

| S.No. | Subject | Sem-1 | Sem-2 | Sem-3 | Sem-4 | Sem-5 | Sem-6 | Total | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 1 | English | 3 | 3 | 3 | 3 | | | 12 | |
| 2 | Telugu/ Hindi/ Sanskrit | 3 | 3 | 3 | 3 | | | 12 | |
| 3 | HVPE | 1 | | | | | | 1 | |
| 4 | Environmental Studies | 1 | | | | | | 1 | |
| 5 | ICT- I | | 1 | | | | | 1 | |
| 6 | CSS - I | | 1 | | | | | 1 | |
| 7 | ICT- II | | | 1 | | | | 1 | |
| 8 | CSS - II | | | 1 | | | | 1 | |
| 9 | Analytical Skills | | | | 1 | | | 1 | |
| 10 | Entreprenuership | | | | 1 | | | 1 | |
| 11 | Fundamentals of Accounting- I | 5 | | | | | | 5 | |
| 12 | Business Organization | 5 | | | | | | 5 | |
| 13 | Business Economics- I | 5 | | | | | | 5 | |
| 14 | Fundamentals of Accounting- II | | 5 | | | | | 5 | |
| 15 | Business Environment | | 5 | | | | | 5 | |
| 16 | Business Economics- II | | 5 | | | | | 5 | |
| 17 | Corperate Accounting | | | 5 | | | | 5 | |
| 18 | Business Statistics | | | 5 | | | | 5 | |
| 19 | Banking Theory & Practice | | | 5 | | | | 5 | |
| 20 | Accounting for Service Organisation | | | | 5 | | | 5 | |
| 21 | Business Law | | | | 5 | | | 5 | |
| 22 | Income Tax | | | | 5 | | | 5 | |
| 23 | Cost Accounting + Retailing | | | | | 5+5 | | 10 | |
| 24 | Indirect Taxes + Banking & Financial Services | | | | | 5+5 | | 10 | |
| 25 | Commercial Geography + Taxation | | | | | 5+5 | | 10 | |
| 26 | Marketing + Retailing | | | | | | 5+5 | 10 | |
| 27 | Auditing + Banking & Financial Services | | | | | | 5+5 | 10 | |
| 28 | Management Accounting + Taxation | | | | | | 5+5 | 10 | |
| 29 | Community Services & Extra Curricular | | 1 | | 1 | | 1 | 3 | |
| 30 | PROJECT WORK | | | | | | 1 | 1 | |
| | Total | 23 | 24 | 23 | 24 | 30 | 32 | 156 | |

Dr. V.S. KRISHNA GOVT. DEGREE COLLEGE
(AUTONOMOUS)
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NODAL RESOURCE CENTRE & AU CENTRE FOR RESEARCH
Maddilapalem, Visakhapatnam - 530 013. Andhra Pradesh.
0891-2553202, https://www.drvskrishnagdc.edu.in

# POS & COS MAPING

## 2019-2020

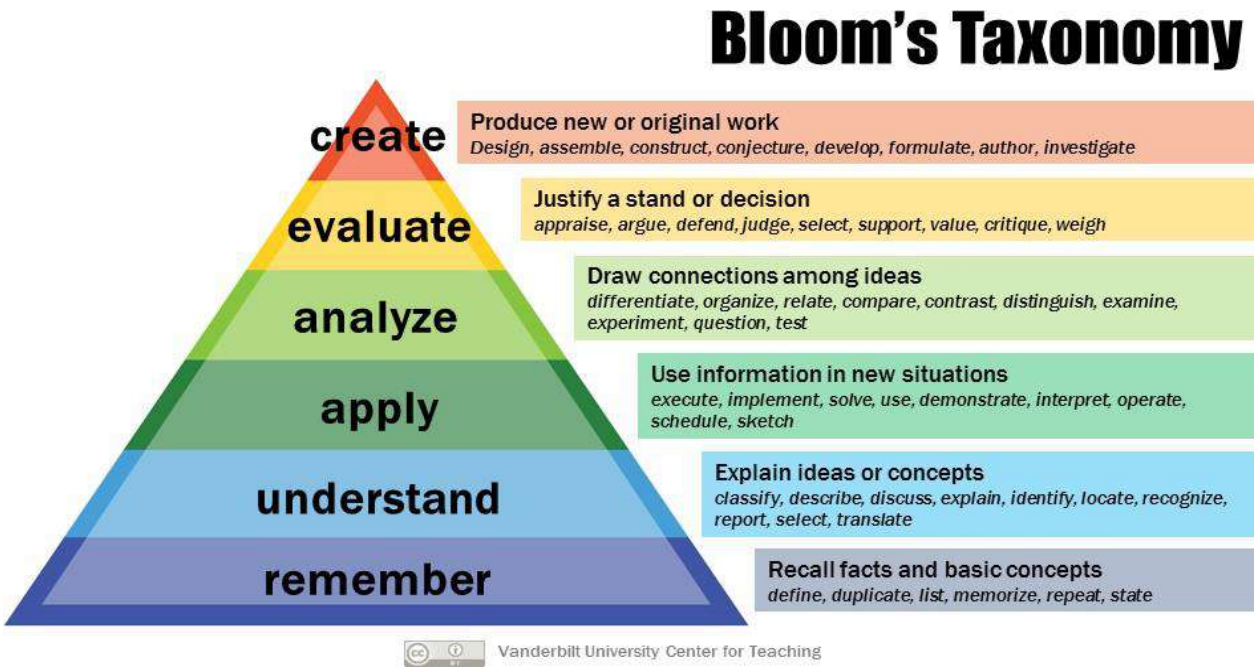
## DEPARTMENT OF COMMERCE

**2019-2020**

| DepartmentofCommerce |
|---|
| ProgrammeName:**B.Com** |

**Levelsof Bloom'sTaxonomoy**

| | |
|---|---|
| **Level-1** | **Knowledge/Remember** |
| **Level-2** | **Understand** |
| **Level-3** | **Application** |
| **Level-4** | **Analyze** |
| **Level-5** | **Evaluation** |
| **Level-6** | **Create** |



| POs | ProgrammeOutcomes |
|---|---|
| **PO1** | **CriticalThinking:** Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate andvalid,andlookingatourideasanddecisions(intellectual,organizational,and personal) from different perspectives. |
| **PO2** | **EffectiveCommunication:** Ability to speak, read, writes, and listens clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology. |
| **PO3** | **SocialInteraction:** Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| **PO4** | **EffectiveCitizenship:** Ability todemonstrateempatheticsocialconcernandequity centered national development, and the abilitytoactwithaninformedawarenessofissuesand participate in civic life through volunteering. |
| **PO5** | **Ethics:** Abilitytorecognizedifferentvaluesystemsincludingyourown,understandthe moral dimensions of your decisions, and accept responsibility for them. |
| **PO6** | **EnvironmentandSustainability:** AbilitytounderstandtheissuesofenvironmentalcontextsandsustainableDevelopment. |
| **PO7** | **Employabilityskills:** Equippinggraduateswiththeessentialabilitiesandknowledgetoexcelintheirchosen careers. |
| **PO8** | **Entrepreneurshipskills:** Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |
| **PO9** | **Self-directedandLife-long Learning:** Acquiretheabilitytoengageinindependentandlife-longlearninginthebroadest context socio-technological changes. |

## PROGRAM SPECIFIC OUTCOMES(PS0s)

| PSOs | ProgramSpecificOutcomes(PSO) |
|---|---|
| **PSO1** | Understand application of knowledge of commerce in business service sector, industry, marketing, finance, entrepreneurship development etc. |
| **PSO2.** | Develop communication skills and computer awareness and practical application of income tax |
| **PSO3** | Designed to equip the students for a career in financial analysis, personal financial advisor, consultants etc. |
| **PSO4** | Opens scope for graduates to pursue courses such as CA, M.Com, MBA, CMA, CS, CPA etc. |
| **PSO5** | Empower knowledge and decision making to excel as entrepreneurs and managers. |
| **PSO6** | Applying both quantitative and qualitative knowledge in their careers. |

**I B.Com. -General-I/ I Semester End**

## FUNDAMENTALS OF ACCOUNTING-I

### COURSE OUTCOMES

CO1: Exemplify to prepare and analyze the financial statements.
CO2: Acquire the basic concept of accounting terms.
CO3: Journalize the ability to rectify the errors in bank reconciliation statement.
CO4: Demonstrate insight into single and double entry system of accounting.
Co5: Determine the basics concepts of financial accounting

**Unit-I – Introduction to Accounting**

Need for Accounting – Definition – Objectives, Advantages – Book keeping and Accounting– Accounting concepts and conventions - Accounting Cycle - Classification of Accounts and its rules - Double Entry Book-keeping - Journalization - Posting to Ledgers, Balancing of ledger Accounts (problems).

**Unit –II: Subsidiary Books:**

Types of Subsidiary Books - Cash Book, Three-column Cash Book- Petty cash Book (Problems).

**Unit-III: Bills of Exchange**

Meaning of Bill –Features of bill – Parties in the Bill – Discounting of Bill – Renewal of Bill – Entries in the books of Drawer and Drawer (Problems).

**Unit-IV- Bank Reconciliation Statement:**

Need for bank reconciliation - Reasons for difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement- Problems on both favorable and unfavorable balances.

**Unit -V: Trail balance - Preparation of trail balance & Final Accounts:**

Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – Final Accounts with adjustments (Problems).

| CO-POMapping |
|---|
| 1-Low,2-Moderate,3-High, ‘-‘ NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low,2-Moderate,3-High,‘-‘NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.231137 | 0 | 2.615568 | 2.615568 | 0 | 5.231137 | 2.615568 | 2.615568 | 7.846705 |
| C02 | 5.231137 | 0 | 0 | 0 | 2.615568 | 5.231137 | 2.615568 | 5.231137 | 2.615568 |
| CO3 | 2.487425 | 2.487425 | 0 | 4.974849 | 4.974849 | 2.487425 | 2.487425 | 0 | 4.974849 |
| CO4 | 1.974849 | 1.974849 | 0 | 1.974849 | 1.974849 | 3.949698 | 1.974849 | 0 | 3.949698 |
| CO5 | 6.308979 | 4.205986 | 4.205986 | 4.205986 | 4.205986 | 4.205986 | 6.308979 | 4.205986 | 4.205986 |
| **FINAL ATTAINMENT** | **2.359281** | **2.167065** | **2.273852** | **2.295209** | **2.295209** | **2.345043** | **2.286056** | **2.410538** | **2.359281** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.846705 | 7.846705 | 2.615568 | 5.231137 | 5.231137 |
| C02 | 2.615568 | 5.231137 | 2.615568 | 5.231137 | 2.615568 |
| CO3 | 4.974849 | 4.974849 | 2.487425 | 7.462274 | 2.487425 |
| CO4 | 1.974849 | 1.974849 | 1.974849 | 3.949698 | 1.974849 |
| CO5 | 4.205986 | 2.102993 | 2.102993 | 2.102993 | 2.102993 |
| **FINAL ATTAINMENT** | **2.401995** | **2.458948** | **2.359281** | **2.397724** | **2.401995** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.102993077

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | CO1: Exemplify to prepare and analyze the financial statements. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.615568462 |
| CO2 | CO2: Acquire the basic concept of accounting terms. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.615568462 |
| CO3 | CO3: Journalize the ability to rectify the errors in bank reconciliation statement. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.487424616 |
| CO4 | CO-4: Demonstrate insight into single and double entry system of accounting. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 1.974849231 |
| CO5 | CO-5: Determine the basics concepts of financial accounting | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.102993077 |

**I B.Com. -General-I/ I Semester End**

# BUSINESS ORGANIZATION

## COURSE OUTCOMES

CO1: Examine the dynamics of the most suitable form of business organization in different situations.
CO2: Evaluate the various elements affecting the business environment.
CO3: Analyze business models for different organizations.
CO4: Record and report emerging issues and challenges of business organizations.
Co5: Evaluate changes in the working pattern of modern organizations

**Unit-I – Introduction**

Concepts of Business, Trade, Industry and Commerce – Features of Business -Trade Classification - Aids to Trade – Industry – Classification – Relationship of Trade, Industry and Commerce.

**Unit II- Business Functions and Entrepreneurship**

Functions of Business and their relationship - Factors influencing the choice of suitable form of organization – Meaning of Entrepreneurship – Characteristics of a good entrepreneur - Types – Functions of Entrepreneurship.

**Unit –III – Forms of Business Organizations**

Sole Proprietorship – Meaning – Characteristics – Advantages and Disadvantages – Partnership - Meaning – Characteristics- Kinds of partners – Advantages and Disadvantages – Partnership Deed.

**Unit-IV- Joint Stock Company**

Joint Stock Company – Meaning – Characteristics –Advantages – Kinds of Companies - Differences between Private Ltd and Public Ltd Companies.

**Unit-V- Company Incorporation**

Preparation of important Documents for incorporation of Company – Memorandum of Association – Articles of Association – Differences Between Memorandum of Association and Articles of Association - Prospectus and its contents.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.635163 | 0 | 2.817582 | 2.817582 | 0 | 5.635163 | 2.817582 | 2.817582 | 8.452745 |
| C02 | 5.635163 | 0 | 0 | 0 | 2.817582 | 5.635163 | 2.817582 | 5.635163 | 2.817582 |
| CO3 | 2.756775 | 2.756775 | 0 | 5.513551 | 5.513551 | 2.756775 | 2.756775 | 0 | 5.513551 |
| CO4 | 2.513551 | 2.513551 | 0 | 2.513551 | 2.513551 | 5.027102 | 2.513551 | 0 | 5.027102 |
| CO5 | 7.723071 | 5.148714 | 5.148714 | 5.148714 | 5.148714 | 5.148714 | 7.723071 | 5.148714 | 5.148714 |
| **FINAL ATTAINMENT** | **2.695969** | **2.60476** | **2.655432** | **2.665566** | **2.665566** | **2.689213** | **2.661223** | **2.720292** | **2.695969** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.452745 | 8.452745 | 2.817582 | 5.635163 | 5.635163 |
| C02 | 2.817582 | 5.635163 | 2.817582 | 5.635163 | 2.817582 |
| CO3 | 5.513551 | 5.513551 | 2.756775 | 8.270326 | 2.756775 |
| CO4 | 2.513551 | 2.513551 | 2.513551 | 5.027102 | 2.513551 |
| CO5 | 5.148714 | 2.574357 | 2.574357 | 2.574357 | 2.574357 |
| **FINAL ATTAINMENT** | **2.716238** | **2.743263** | **2.695969** | **2.714211** | **2.716238** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.574357124

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | CO1: Examine the dynamics of the most suitable form of business organisation in different situations. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.817581625 |
| CO2 | CO2: Evaluate the various elements affecting the business environment. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.817581625 |
| CO3 | CO3: Analyse business models for different organisations. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.7567755 |
| CO4 | CO-4: Record and report emerging issues and challenges of business organisations. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.513550999 |
| CO5 | CO-5: Evaluate changes in the working pattern of modern organisations | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.574357124 |

**I B.Com. -General-I/ I Semester End**

## BUSINESS ECONOMICS– I

## COURSE OUTCOMES

CO1: Students will be able to understand and identify the economic variables in general business atmosphere.

CO2: Students will perceive the knowledge about Economics at Micro level and various economic concepts such as Opportunity cost, Marginal Concepts and Demand Function

CO3: Learners will comprehend the relationship between various policies of business.

CO4: Describe how changes in demand and supply affect markets and Explain relationships between production and costs

Co5: Describe the different types of Cost and its behaviour and Evaluate the Break-Even Analysis

### Unit-I- Introduction

Meaning and Definitions of Business Economics - Nature and scope of Business Economics- Micro and Macro Economics and their differences.

### Unit-II- Demand Analysis

Meaning and Definition of Demand - Determinants of Demand -- Demand function – Law of demand- Demand Curve - Exceptions to Law of Demand.

### Unit –III- Elasticity of Demand

Meaning and Definition of Elasticity of Demand – Types of Elasticity of Demand – Measurements of Price elasticity of demand – Total outlay Method – Point Method – Arc Method.

### Unit – IV- Cost and Revenue Analysis

Classification of Costs – Total - Average – Marginal and Cost function – Long-run – Short-run – Total Revenue - Average revenue – Marginal Revenue.

### Unit-V- Break-Even Analysis

Type of Costs – Fixed Cost – Semi-variable Cost – Variable Cost– Cost behaviour - Breakeven Analysis - Its Uses and limitations.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.430609 | 0 | 2.715304 | 2.715304 | 0 | 5.430609 | 2.715304 | 2.715304 | 8.145913 |
| C02 | 5.430609 | 0 | 0 | 0 | 2.715304 | 5.430609 | 2.715304 | 5.430609 | 2.715304 |
| CO3 | 2.620406 | 2.620406 | 0 | 5.240811 | 5.240811 | 2.620406 | 2.620406 | 0 | 5.240811 |
| CO4 | 2.240811 | 2.240811 | 0 | 2.240811 | 2.240811 | 4.481623 | 2.240811 | 0 | 4.481623 |
| CO5 | 7.00713 | 4.67142 | 4.67142 | 4.67142 | 4.67142 | 4.67142 | 7.00713 | 4.67142 | 4.67142 |
| **FINAL ATTAINMENT** | **2.525507** | **2.383159** | **2.462241** | **2.478058** | **2.478058** | **2.514963** | **2.471279** | **2.563467** | **2.525507** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.145913 | 8.145913 | 2.715304 | 5.430609 | 5.430609 |
| C02 | 2.715304 | 5.430609 | 2.715304 | 5.430609 | 2.715304 |
| CO3 | 5.240811 | 5.240811 | 2.620406 | 7.861217 | 2.620406 |
| CO4 | 2.240811 | 2.240811 | 2.240811 | 4.481623 | 2.240811 |
| CO5 | 4.67142 | 2.33571 | 2.33571 | 2.33571 | 2.33571 |
| **FINAL ATTAINMENT** | **2.55714** | **2.599317** | **2.525507** | **2.553977** | **2.55714** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.078060828

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | CO1: Students will be able to understand and identify the economic variables in general business atmosphere. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.604883212 |
| CO2 | CO2: Students will perceive the knowledge about Economics at Micro level and various economic concepts such as Opportunity cost, Marginal Concepts, Demand Function and Law of Variable Proportion | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.604883212 |
| CO3 | CO3: Learners will comprehend the relationship between various policies of business. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.473177616 |
| CO4 | CO-4: Describe how changes in demand and supply affect markets and Explainrelationships between production and costs | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 1.946355232 |
| CO5 | CO-5: Describe the different types of Cost and its behaviour and Evaluate the Break-Even Analysis | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.078060828 |

**SEMESTER – II**

**I B.Com General/ II Semester**

**FUNDAMENTALS OF ACCOUNTING – II**

**COURSE OUTCOMES**

CO1: Understand the concept of consignment and learn the accounting treatment of the various aspects of consignment.

CO2: Analyze the accounting process and preparation of accounts in consignment and joint venture.

CO3: Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture

CO4: Determine the useful life and value of the depreciable assets and maintenance of Reserves in business entities.

CO5: Design an accounting system for different models of businesses at his own using the principles of existing accounting system.

**Unit-I: Trail Balance and Rectification of Errors:**

Preparation of Trail balance - Errors – Meaning – Types of Errors – Rectification of Errors (Problems)

**Unit-II**: **Depreciation**

Meaning of Depreciation - Methods of Depreciation: Straight line - Written Down Value – Sum of the Years' Digits - Annuity and Depletion (Problems).

**Unit-III**: **Provisions and Reserves**

Meaning – Provision vs. Reserve – Preparation of Bad debts Account – Provision for Bad and doubtful debts – Provision for Discount on Debtors – Provision for discount on creditors - Repairs and Renewals Reserve A/c (Problems).

**Unit-IV**: **Consignment Accounts**

Consignment - Features - Proforma invoice - Account sales – Del-credre Commission - Accounting treatment in the books of consigner and consignee - Valuation of closing stock - Normal and Abnormal losses (Problems).

**Unit-V**: **Joint Venture Accounts**

Joint venture - Features - Differences between Joint-venture and consignment – Accounting procedure - Methods of keeping records (Problems).

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.496433 | 0 | 2.748217 | 2.748217 | 0 | 5.496433 | 2.748217 | 2.748217 | 8.24465 |
| C02 | 5.496433 | 0 | 0 | 0 | 2.748217 | 5.496433 | 2.748217 | 5.496433 | 2.748217 |
| CO3 | 2.664289 | 2.664289 | 0 | 5.328577 | 5.328577 | 2.664289 | 2.664289 | 0 | 5.328577 |
| CO4 | 2.328577 | 2.328577 | 0 | 2.328577 | 2.328577 | 4.657155 | 2.328577 | 0 | 4.657155 |
| CO5 | 7.237516 | 4.825011 | 4.825011 | 4.825011 | 4.825011 | 4.825011 | 7.237516 | 4.825011 | 4.825011 |
| **FINAL ATTAINMENT** | **2.580361** | **2.454469** | **2.524409** | **2.538397** | **2.538397** | **2.571036** | **2.532402** | **2.613932** | **2.580361** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.24465 | 8.24465 | 2.748217 | 5.496433 | 5.496433 |
| C02 | 2.748217 | 5.496433 | 2.748217 | 5.496433 | 2.748217 |
| CO3 | 5.328577 | 5.328577 | 2.664289 | 7.992866 | 2.664289 |
| CO4 | 2.328577 | 2.328577 | 2.328577 | 4.657155 | 2.328577 |
| CO5 | 4.825011 | 2.412505 | 2.412505 | 2.412505 | 2.412505 |
| **FINAL ATTAINMENT** | **2.608337** | **2.645638** | **2.580361** | **2.605539** | **2.608337** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.412505272

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | CO1: Understand the concept of consignment and learn the accounting treatment of the various aspects of consignment. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.748216545 |
| CO2 | CO2: Analyze the accounting process and preparation of accounts in consignment and joint venture. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.748216545 |
| CO3 | CO3: Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.664288727 |
| CO4 | CO-4: Determine the useful life and value of the depreciable assets and maintenance of Reserves in business entities. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.328577454 |
| CO5 | CO-5: Design an accounting system for different models of businesses at his own using the principles of existing accounting system. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.412505272 |

**I B.Com General/ II Semester**

# BUSINESS ENVIRONMENT

## COURSE OUTCOMES

CO1: Understand the concept of business environment.
CO2: Define Internal and External elements affecting business environment.
CO3: Explain the economic trends and its effect on Government policies.
CO4: Critically examine the recent developments in economic and business policies of the Government.
CO5: Evaluate and judge the best business policies in Indian business environment.

**Unit – I: Overview of Business Environment**

Business Environment – Meaning – Macro and Micro Dimensions of Business Environment – Economic – Political – Social – Technological – Legal – Ecological – Cultural – Demographic – Changing Scenario and implications – Indian Perspective – Global perspective.

**Unit – II: Economic Growth**

Meaning of Economic growth – Factors Influencing Development – Balanced Regional Development.

**Unit – III - Development and Planning**

Rostow's stages of economic development - Meaning – Types of plans – Main objects of planning in India – NITI Ayog and National Development Council – Five year plans.

**Unit – IV : Economic Policies**

Economic Reforms and New Economic Policy – New Industrial Policy – Competition Law – Fiscal Policy – Objectives and Limitations – Union budget – Structure and importance of Union budget – Monetary policy and RBI.

**Unit – V -Social, Political and Legal Environment**

Concept of Social Justice - Schemes - Political Stability - Leal Changes.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.121872 | 0 | 2.560936 | 2.560936 | 0 | 5.121872 | 2.560936 | 2.560936 | 7.682808 |
| C02 | 5.121872 | 0 | 0 | 0 | 2.560936 | 5.121872 | 2.560936 | 5.121872 | 2.560936 |
| CO3 | 2.414581 | 2.414581 | 0 | 4.829163 | 4.829163 | 2.414581 | 2.414581 | 0 | 4.829163 |
| CO4 | 1.829163 | 1.829163 | 0 | 1.829163 | 1.829163 | 3.658325 | 1.829163 | 0 | 3.658325 |
| CO5 | 5.926552 | 3.951035 | 3.951035 | 3.951035 | 3.951035 | 3.951035 | 5.926552 | 3.951035 | 3.951035 |
| **FINAL ATTAINMENT** | **2.268227** | **2.048695** | **2.170657** | **2.195049** | **2.195049** | **2.251965** | **2.184595** | **2.326769** | **2.268227** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.682808 | 7.682808 | 2.560936 | 5.121872 | 5.121872 |
| C02 | 2.560936 | 5.121872 | 2.560936 | 5.121872 | 2.560936 |
| CO3 | 4.829163 | 4.829163 | 2.414581 | 7.243744 | 2.414581 |
| CO4 | 1.829163 | 1.829163 | 1.829163 | 3.658325 | 1.829163 |
| CO5 | 3.951035 | 1.975517 | 1.975517 | 1.975517 | 1.975517 |
| **FINAL ATTAINMENT** | **2.317012** | **2.382058** | **2.268227** | **2.312133** | **2.317012** |

## COURSE OUTCOME WEIGHTED AVERAGE: 1.975517321

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | CO1: Understand the concept of business environment. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.560935995 |
| CO2 | CO2: Define Internal and External elements affecting business environment. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.560935995 |
| CO3 | CO3: Explain the economic trends and its effect on Government policies. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.414581326 |
| CO4 | CO-4: Critically examine the recent developments in economic and business policies of the Government. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 1.829162652 |
| CO5 | CO-5: Evaluate and judge the best business policies in Indian business environment. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 1.975517321 |

**I B.Com General/ II Semester**

**BUSINESS ECONOMICS – II**

**COURSE OUTCOMES**

CO1: Identifying the relationship between production and costs and Economies of scale.

CO2: Understanding the features of perfect competition and price determination, price determination in monopoly.

CO3: To know the characteristics of monopolistic competition and price determination.

CO4: Describe the concepts of National Income and methods of measuring National Income.

CO5: Identifying the structural reforms i.e., LPG and its impact on Indian Economy.

**Unit-I: Production and Costs**: Techniques of Maximization of output, Minimization of costs andMaximization of profit - Scale of production - Economies and Dis-economies of Scale - Costs of Production – Cobb-Douglas Production Function.

**Unit-II: Market Structure-I**: Concept of Market - Market structure - Characteristics - Perfectcompetition - characteristics equilibrium price - profit maximizing output in the short and long run Monopoly-characteristics - Profit maximizing out-put in the short and long run - Defects of Monopoly – Distinction between Perfect competition and Monopoly.

**Unit-III Market Structure-II**: Monopolistic Competition - Characteristics - Productdifferentiation - Profit maximization - Price and output in the short and long - run – Oligopoly - characteristics - Price rigidity - Kinked Demand Curve - Distribution - Concepts - Marginal Productivity - Theory of Distribution.

**Unit-IV National Income And Economic Systems**: National Income - Definition Measurement -GDP - Meaning Fiscal deficit - Economic systems - Socialism - Mixed Economic System - Free Market economy.

**Unit-V Structural Reforms**: Concepts of Economic liberalization, Privatization, Globalization -WTO Objectives Agreements - Functions - Trade cycles - Meaning - Phases - Benefits of International Trade - Balance of Trade and Balance of payments.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.560719 | 0 | 2.780359 | 2.780359 | 0 | 5.560719 | 2.780359 | 2.780359 | 8.341078 |
| C02 | 5.560719 | 0 | 0 | 0 | 2.780359 | 5.560719 | 2.780359 | 5.560719 | 2.780359 |
| CO3 | 2.707146 | 2.707146 | 0 | 5.414292 | 5.414292 | 2.707146 | 2.707146 | 0 | 5.414292 |
| CO4 | 2.414292 | 2.414292 | 0 | 2.414292 | 2.414292 | 4.828583 | 2.414292 | 0 | 4.828583 |
| CO5 | 7.462516 | 4.975011 | 4.975011 | 4.975011 | 4.975011 | 4.975011 | 7.462516 | 4.975011 | 4.975011 |
| **FINAL ATTAINMENT** | **2.633932** | **2.524112** | **2.585123** | **2.597326** | **2.597326** | **2.625798** | **2.592096** | **2.663218** | **2.633932** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.341078 | 8.341078 | 2.780359 | 5.560719 | 5.560719 |
| C02 | 2.780359 | 5.560719 | 2.780359 | 5.560719 | 2.780359 |
| CO3 | 5.414292 | 5.414292 | 2.707146 | 8.121438 | 2.707146 |
| CO4 | 2.414292 | 2.414292 | 2.414292 | 4.828583 | 2.414292 |
| CO5 | 4.975011 | 2.487505 | 2.487505 | 2.487505 | 2.487505 |
| **FINAL ATTAINMENT** | **2.658337** | **2.690876** | **2.633932** | **2.655896** | **2.658337** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.487505272

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | CO1: Identifying the relationship between production and costs and Economies of scale. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.780359402 |
| CO2 | CO2: Understanding the features of perfect competition and price determination, price determination in monopoly. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.780359402 |
| CO3 | CO3: To know the characteristics of monopolistic competition and price determination. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.70714587 |
| CO4 | CO-4: Describe the concepts of National Income and methods of measuring National Income. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.41429174 |
| CO5 | CO-5: Identifying the structural reforms i.e., LPG and its impact on Indian Economy. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.487505272 |

**SEMESTER-III**

## II B.Com - SEMESTER –III
## CORPORATE ACCOUNTING

### COURSE OUTCOMES

CO1: Students will understand the characteristics of the joint stock company and issue, forfeiture and re-issue of shares.

CO2: Students will learn the procedure of issue of debentures, redemptions of debentures through sinking fund.

CO3: The leaner able to be understand the valuation of goodwill in normal profit method, super profit method, capitalization method and annuity method

CO4: The student will know various methods of valuation of shares such as market value, intrinsic value, fair value and yield value methods etc.

CO5: The learner will understand the company act procedures in preparing the final accounts.

**Unit-I: Accounting for Share Capital:**

Issue, forfeiture and reissue of forfeited shares- concept & process of book building - Issue of rights and bonus shares - Buyback of shares (preparation of Journal and Ledger).

**Unit-II: Issue and Redemption of Debentures:**

Employee Stock Options – Accounting Treatment for Convertible and Non-Convertible debentures (preparation of Journal and Ledger).

**Unit –III: Valuation of Goodwill:**

Need and methods - Normal Profit Method, Super Profits Method – Capitalization Method.

**Unit –IV:Valuation of shares:**

Need for Valuation - Methods of Valuation - Net assets method, Yield basis method, Fair value method (including problems).

**UNIT – V: Company Final Accounts &Provisions of the Companies Act, 2013:**

Preparation of Final Accounts – Adjustments relating to preparation of final accounts – Profit and loss account and balance sheet.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.658821 | 0 | 2.82941 | 2.82941 | 0 | 5.658821 | 2.82941 | 2.82941 | 8.488231 |
| C02 | 5.658821 | 0 | 0 | 0 | 2.82941 | 5.658821 | 2.82941 | 5.658821 | 2.82941 |
| CO3 | 2.772547 | 2.772547 | 0 | 5.545094 | 5.545094 | 2.772547 | 2.772547 | 0 | 5.545094 |
| CO4 | 2.545094 | 2.545094 | 0 | 2.545094 | 2.545094 | 5.090188 | 2.545094 | 0 | 5.090188 |
| CO5 | 7.805872 | 5.203915 | 5.203915 | 5.203915 | 5.203915 | 5.203915 | 7.805872 | 5.203915 | 5.203915 |
| **FINAL ATTAINMENT** | **2.715684** | **2.630389** | **2.677775** | **2.687252** | **2.687252** | **2.709366** | **2.683191** | **2.738429** | **2.715684** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.488231 | 8.488231 | 2.82941 | 5.658821 | 5.658821 |
| C02 | 2.82941 | 5.658821 | 2.82941 | 5.658821 | 2.82941 |
| CO3 | 5.545094 | 5.545094 | 2.772547 | 8.317641 | 2.772547 |
| CO4 | 2.545094 | 2.545094 | 2.545094 | 5.090188 | 2.545094 |
| CO5 | 5.203915 | 2.601957 | 2.601957 | 2.601957 | 2.601957 |
| **FINAL ATTAINMENT** | **2.734638** | **2.759911** | **2.715684** | **2.732743** | **2.734638** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.601957327

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Students will understand the characteristics of the joint stock company and issue, forfeiture and re-issue of shares. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.829410283 |
| CO2 | Students will learn the procedure of issue of debentures, redemptions of debentures through sinking fund. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.829410283 |
| CO3 | The leaner able to be understand the valuation of goodwill in normal profit method, super profit method, capitalization method and annuity method | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.772547044 |
| CO4 | The student will know various methods of valuation of shares such as market value, intrinsic value, fair value and yield value methods etc. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.545094088 |
| CO5 | The learner will understand the company act procedures in preparing the final accounts. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.601957327 |

**II B.Com - SEMESTER –III**

**BUSINESS STATISTICS**

**COURSE OUTCOMES**

CO1: Understand the importance of Statistics in real life

CO2: Formulate complete, concise, and correct mathematical proofs.

CO3: Frame problems using multiple mathematical and statistical tools, measuring relationships by using standard techniques.

CO4: Build and assess data-based models.

CO5: Learn and apply the statistical tools in day life.

**Unit 1: Introduction to Statistics:**

Definition, importance and limitations of statistics - Collection of data - Schedule and questionnaire – Frequency distribution – Tabulation -Diagrammatic and graphic presentation of data using Computers (Excel).

**Unit 2: Measures of Central Tendency:**

Characteristics of measures of Central Tendency-Types of Averages – Arithmetic Mean, Geometric Mean, Harmonic Mean, Median, Mode, Deciles, Percentiles, Properties of averages and their applications.

**Unit 3: Measures of dispersion and Skewness:**

Properties of dispersion-Range-Quartile Deviation –Mean Deviation-Standard Deviation- Coefficient of Variation-Skewness definition-Karl Pearson's and Bowley's Measures of skewness-Normal Distribution.

**Unit 4: Measures of Relation:**

Meaning and use of correlation – Types of correlation-Karlpearson's correlation coefficient – Spearman's Rank correlation-probable error-Calculation of Correlation by Using Computers.

Regression analysis comparison between correlation and Regression – Regression Equations-Interpretation of Regression Co-efficient.

**Unit 5: Analysis of Time Series & Index Numbers:**

Components of Time series- Measurement of trend and Seasonal Variations – Index Numbers-Methods of Construction of Index Numbers – Price Index Numbers – Quantity Index Numbers –Tests of Adequacy of Index Numbers – Cost of Index Numbers-Limitations of Index Numbers – Use of Computer Software.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.45184 | 0 | 2.72592 | 2.72592 | 0 | 5.45184 | 2.72592 | 2.72592 | 8.17776 |
| C02 | 5.45184 | 0 | 0 | 0 | 2.72592 | 5.45184 | 2.72592 | 5.45184 | 2.72592 |
| CO3 | 2.63456 | 2.63456 | 0 | 5.26912 | 5.26912 | 2.63456 | 2.63456 | 0 | 5.26912 |
| CO4 | 2.26912 | 2.26912 | 0 | 2.26912 | 2.26912 | 4.53824 | 2.26912 | 0 | 4.53824 |
| CO5 | 7.08144 | 4.72096 | 4.72096 | 4.72096 | 4.72096 | 4.72096 | 7.08144 | 4.72096 | 4.72096 |
| **FINAL ATTAINMENT** | **2.5432** | **2.40616** | **2.482293** | **2.49752** | **2.49752** | **2.533049** | **2.490994** | **2.579744** | **2.5432** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.17776 | 8.17776 | 2.72592 | 5.45184 | 5.45184 |
| C02 | 2.72592 | 5.45184 | 2.72592 | 5.45184 | 2.72592 |
| CO3 | 5.26912 | 5.26912 | 2.63456 | 7.90368 | 2.63456 |
| CO4 | 2.26912 | 2.26912 | 2.26912 | 4.53824 | 2.26912 |
| CO5 | 4.72096 | 2.36048 | 2.36048 | 2.36048 | 2.36048 |
| **FINAL ATTAINMENT** | **2.573653** | **2.614258** | **2.5432** | **2.570608** | **2.573653** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.360479956

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the importance of Statistics in real life | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.725919981 |
| CO2 | Formulate complete, concise, and correct mathematical proofs | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.725919981 |
| CO3 | Frame problems using multiple mathematical and statistical tools, measuring relationships by using standard techniques. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.634559975 |
| CO4 | Build and assess data-based models. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.26911995 |
| CO5 | Learn and apply the statistical tools in day life. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.360479956 |

**II B.Com - SEMESTER –III**

**BANKING THEORY & PRACTICE**

**COURSE OUTCOMES**

CO1: Understand the basic concepts of banks and functions of commercial banks.

CO2: Demonstrate an awareness of law and practice in a banking context.

CO3: Engage in critical analysis of the practice of banking law.

CO4: Organize information as it relates to the regulation of banking products and services.

CO5: Critically examine the current scenario of Indian Banking system.

**Unit-I: Introduction**

Meaning & Definition of Bank – Functions of Commercial Banks – Kinds of Banks - Central Banking Vs. Commercial Banking.

**Unit-II: Banking Systems**

Unit Banking , Branch Banking, Investment Banking- Innovations in banking – E banking - Online and Offshore Banking , Internet Banking - Anywhere Banking - ATMs - RTGS.

**Unit-III: Banking Development**

Indigenous Banking - Cooperative Banks, Regional Rural banks, SIDBI, NABARD - EXIM Bank.

**Unit-IV:**Banker and Customer **–**

Meaning and Definition of Banker and customer – Types of Customers - General Relationship and Special Relationship between Banker and Customer - KYC Norms.

**Unit-V: Collecting Banker and Paying Banker**

Concepts - Duties & Responsibilities of Collecting Banker – Holder for Value – Holder in Due Course – Statutory Protection to Collecting Banker - Responsibilities of Paying Banker - Payment Gateways.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.45184 | 0 | 2.72592 | 2.72592 | 0 | 5.45184 | 2.72592 | 2.72592 | 8.17776 |
| C02 | 5.45184 | 0 | 0 | 0 | 2.72592 | 5.45184 | 2.72592 | 5.45184 | 2.72592 |
| CO3 | 2.63456 | 2.63456 | 0 | 5.26912 | 5.26912 | 2.63456 | 2.63456 | 0 | 5.26912 |
| CO4 | 2.26912 | 2.26912 | 0 | 2.26912 | 2.26912 | 4.53824 | 2.26912 | 0 | 4.53824 |
| CO5 | 7.08144 | 4.72096 | 4.72096 | 4.72096 | 4.72096 | 4.72096 | 7.08144 | 4.72096 | 4.72096 |
| **FINAL ATTAINMENT** | **2.5432** | **2.40616** | **2.482293** | **2.49752** | **2.49752** | **2.533049** | **2.490994** | **2.579744** | **2.5432** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.17776 | 8.17776 | 2.72592 | 5.45184 | 5.45184 |
| C02 | 2.72592 | 5.45184 | 2.72592 | 5.45184 | 2.72592 |
| CO3 | 5.26912 | 5.26912 | 2.63456 | 7.90368 | 2.63456 |
| CO4 | 2.26912 | 2.26912 | 2.26912 | 4.53824 | 2.26912 |
| CO5 | 4.72096 | 2.36048 | 2.36048 | 2.36048 | 2.36048 |
| **FINAL ATTAINMENT** | **2.573653** | **2.614258** | **2.5432** | **2.570608** | **2.573653** |

**COURSE OUTCOME WEIGHTED AVERAGE: 2.254150842**

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understand the basic concepts of banks and functions of commercial banks. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.680350361 |
| CO2 | Demonstrate an awareness of law and practice in a banking context. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.680350361 |
| CO3 | Engage in critical analysis of the practice of banking law. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.573800481 |
| CO4 | Organize information as it relates to the regulation of banking products and services. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.147600962 |
| CO5 | Critically examine the current scenario of Indian Banking system. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.254150842 |

**SEMESTER – IV**

II B.Com - SEMESTER –IV

## ACCOUNTING FOR SERVICE ORGANIZATIONS

### COURSE OUTCOMES

CO1: To know the objectives and preparation of accounts of non-trading concerns.

CO2: To observe the way of presenting balance sheet in Double Accounting System (electricity concerns).

CO3: To learn the bank accounting system, Audit of Accounts, Filling of Accounts, Publication of Accounts, Voucher system, voucher summary sheets, daily trial balance continuous checks, control accounts, Double Voucher System, etc.

CO4: To understand the Life Insurance companies, preparation of financial statements etc.,

CO5:To understand the difference between Life Insurance and general insurance, its accounting procedures

**Unit-I: Non-Trading/ Service Organizations:**

Concept - Types of Service Organizations – Section (8) and other Provisions of Companies Act, 2013.

**Unit – II Electricity Supply Companies:**

Accounts of Electricity supply companies: Double Accounting system – Revenue Account – Net Revenue Account – Capital Account – General Balance Sheet (including problems).

**Unit – III - Bank Accounts**

Bank Accounts – Books and Registers to be maintained by Banks – Banking Regulation Act, 1969 - Legal Provisions Relating to preparation of Final Accounts (including problems).

**Unit-IV: Insurance Companies & General Insurance**

Life Insurance Companies –Preparation of Revenue Account, Profit and Loss Account, Balance Sheet (including problems) – LIC Act, 1956

**Unit-V: General Insurance**

Principles– Preparation of final accounts – with special reference to fire and marine insurance (including problems) – GIC Act, 1972.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.816397 | 0 | 2.908198 | 2.908198 | 0 | 5.816397 | 2.908198 | 2.908198 | 8.724595 |
| C02 | 5.816397 | 0 | 0 | 0 | 2.908198 | 5.816397 | 2.908198 | 5.816397 | 2.908198 |
| CO3 | 2.877598 | 2.877598 | 0 | 5.755196 | 5.755196 | 2.877598 | 2.877598 | 0 | 5.755196 |
| CO4 | 2.755196 | 2.755196 | 0 | 2.755196 | 2.755196 | 5.510392 | 2.755196 | 0 | 5.510392 |
| CO5 | 8.357389 | 5.571593 | 5.571593 | 5.571593 | 5.571593 | 5.571593 | 8.357389 | 5.571593 | 5.571593 |
| **FINAL ATTAINMENT** | **2.846997** | **2.801097** | **2.826597** | **2.831697** | **2.831697** | **2.843597** | **2.829511** | **2.859238** | **2.846997** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.724595 | 8.724595 | 2.908198 | 5.816397 | 5.816397 |
| C02 | 2.908198 | 5.816397 | 2.908198 | 5.816397 | 2.908198 |
| CO3 | 5.755196 | 5.755196 | 2.877598 | 8.632794 | 2.877598 |
| CO4 | 2.755196 | 2.755196 | 2.755196 | 5.510392 | 2.755196 |
| CO5 | 5.571593 | 2.785796 | 2.785796 | 2.785796 | 2.785796 |
| **FINAL ATTAINMENT** | **2.857198** | **2.870798** | **2.846997** | **2.856178** | **2.857198** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.78579641164442

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | To know the objectives and preparation of accounts of non-trading concerns. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.908198462 |
| CO2 | To observe the way of presenting balance sheet in Double Accounting System (electricity concerns). | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.908198462 |
| CO3 | To learn the bank accounting system, Audit of Accounts, Filling of Accounts, Publication of Accounts, Voucher system, voucher summary sheets, daily trial balance continuous checks, control accounts, Double Voucher System, etc. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.87759795 |
| CO4 | To understand the Life Insurance companies, preparation of financial statements etc., | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.755195899 |
| CO5 | To understand the difference between Life Insurance and general insurance, its accounting procedures | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.785796412 |

II B.Com - SEMESTER –IV

# BUSINESS LAWS

## COURSE OUTCOMES

CO1: To understand the relevance of business law to individuals and businesses and the role of law in an economic, political and social context.

CO2: To identify the fundamental legal principles behind contractual agreements.

CO3: To examine how businesses can be held liable in tort for the actions of their employees.

CO4: To understand the legal and fiscal structure of different forms of business organizations and their responsibilities as an employer.

CO5:To understand the importance of cyber law act 2000

### Unit-1: Contract

Meaning and Definition of Contract-Essential elements of valid Contract -Valid, Void and Voidable Contracts - Indian Contract Act, 1872.

### Unit-2: Offer and Acceptance

Definition of Valid Offer, Acceptance and Consideration -Essential elements of a Valid Offer, Acceptance and Consideration.

### Unit-3: Capacity of the Parties and Contingent Contract

Rules regarding to Minors contracts - Rules relating to contingent contracts - Different modes of discharge of contracts-Rules relating to remedies to breach of contract.

### Unit-4: Sale of Goods Act 1930

Contract of sale – Sale and agreement to sell – Implied conditions and warranties – Rights of unpaid vendor.

### Unit-5:Cyber Law

Cyber Law and Contract Procedures - Digital Signature - Safety Mechanisms.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.77117 | 0 | 2.885585 | 2.885585 | 0 | 5.77117 | 2.885585 | 2.885585 | 8.656755 |
| C02 | 5.77117 | 0 | 0 | 0 | 2.885585 | 5.77117 | 2.885585 | 5.77117 | 2.885585 |
| CO3 | 2.847447 | 2.847447 | 0 | 5.694893 | 5.694893 | 2.847447 | 2.847447 | 0 | 5.694893 |
| CO4 | 2.694893 | 2.694893 | 0 | 2.694893 | 2.694893 | 5.389786 | 2.694893 | 0 | 5.389786 |
| CO5 | 8.199095 | 5.466063 | 5.466063 | 5.466063 | 5.466063 | 5.466063 | 8.199095 | 5.466063 | 5.466063 |
| **FINAL ATTAINMENT** | **2.809308** | **2.752101** | **2.783883** | **2.790239** | **2.790239** | **2.805071** | **2.787515** | **2.824564** | **2.809308** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.656755 | 8.656755 | 2.885585 | 5.77117 | 5.77117 |
| C02 | 2.885585 | 5.77117 | 2.885585 | 5.77117 | 2.885585 |
| CO3 | 5.694893 | 5.694893 | 2.847447 | 8.54234 | 2.847447 |
| CO4 | 2.694893 | 2.694893 | 2.694893 | 5.389786 | 2.694893 |
| CO5 | 5.466063 | 2.733032 | 2.733032 | 2.733032 | 2.733032 |
| **FINAL ATTAINMENT** | **2.822021** | **2.838971** | **2.809308** | **2.82075** | **2.822021** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.733031588

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand the relevance of business law to individuals and businesses and the role of law in an economic, political and social context. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.646984049 |
| CO2 | To identify the fundamental legal principles behind contractual agreements. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.646984049 |
| CO3 | To examine how businesses can be held liable in tort for the actions of their employees. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.529312065 |
| CO4 | To understand the legal and fiscal structure of different forms of business organizations and their responsibilities as an employer. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.05862413 |
| CO5 | To understand the importance of cyber law act 2000 | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.176296114 |

II B.Com - SEMESTER –IV

# INCOME TAX

## COURSE OUTCOMES

CO1: Acquire the complete knowledge of the tax evasion, tax avoidance and tax planning.
CO2: Understand the provisions and compute income tax for various sources.
CO3: Grasp amendments made from time to time in Finance Act.
CO4: Compute total income and define tax complications and structure
CO5:Prepare and File IT returns of individual at his own.

**Unit-I**

**Introduction**: Income Tax Law – Basic concepts: Income, Person, Assesse, Assessment year, Agricultural Income, Capital and revenue, Residential status, Income exempt from tax (theory only).

**Unit-II**

**Income from salary**: Allowances, perquisites, profits in lieu of salary, deductions from salary income, computation of salary income and qualified savings eligible for deduction u/s 80C (including problems).

**Unit-III**

**Income from House Property**: Annual value, let-out/self-occupied/deemed to be let-out house, deductions from annual value - computation of income from house property (including problems).

**Unit-IV**

**Income from Capital Gains – Income from other sources – (**from Individual point of view) - chargeability – and assessment (including problems).

**Unit-V:**

**Computation of total income of an individual** – Deductions under section - 80 (including problems).

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.306398 | 0 | 2.653199 | 2.653199 | 0 | 5.306398 | 2.653199 | 2.653199 | 7.959597 |
| C02 | 5.306398 | 0 | 0 | 0 | 2.653199 | 5.306398 | 2.653199 | 5.306398 | 2.653199 |
| CO3 | 2.537599 | 2.537599 | 0 | 5.075198 | 5.075198 | 2.537599 | 2.537599 | 0 | 5.075198 |
| CO4 | 2.075198 | 2.075198 | 0 | 2.075198 | 2.075198 | 4.150395 | 2.075198 | 0 | 4.150395 |
| CO5 | 6.572394 | 4.381596 | 4.381596 | 4.381596 | 4.381596 | 4.381596 | 6.572394 | 4.381596 | 4.381596 |
| **FINAL ATTAINMENT** | **2.421999** | **2.248598** | **2.344932** | **2.364198** | **2.364198** | **2.409154** | **2.355941** | **2.468239** | **2.421999** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.959597 | 7.959597 | 2.653199 | 5.306398 | 5.306398 |
| C02 | 2.653199 | 5.306398 | 2.653199 | 5.306398 | 2.653199 |
| CO3 | 5.075198 | 5.075198 | 2.537599 | 7.612796 | 2.537599 |
| CO4 | 2.075198 | 2.075198 | 2.075198 | 4.150395 | 2.075198 |
| CO5 | 4.381596 | 2.190798 | 2.190798 | 2.190798 | 2.190798 |
| **FINAL ATTAINMENT** | **2.460532** | **2.51191** | **2.421999** | **2.456679** | **2.460532** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.190797955

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Acquire the complete knowledge of the tax evasion, tax avoidance and tax planning. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.653199124 |
| CO2 | Understand the provisions and compute income tax for various sources. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.653199124 |
| CO3 | Grasp amendments made from time to time in Finance Act. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.537598832 |
| CO4 | Compute total income and define tax complications and structure | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.075197663 |
| CO5 | Prepare and File IT returns of individual at his own. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.190797955 |

**SEMESTER – V**

III B.Com - SEMESTER –V

## COST ACCOUNTING

### COURSE OUTCOMES

CO1: Describe how cost accounting is used for decision making and performance evaluation.

CO2: Differentiate methods of **schedule, Costs** per Unit of production and analyze the basic cost flow model and be able to assign costs in a job cost system**.**

CO3: Demonstrate how Materials and Labor Costs are added to a product at each stage of the production cycle.

CO4: Understand the meaning of a contract and other terms used in Contract Costing.

CO5:Asses how Cost-Volume-Profit is related and use of CVP and BEP analysis as a planning and decision making aid.

**Unit-I:Introduction:**Distinguish between Financial Accounting, Cost Accounting and management accounting - Cost Concepts and Classification – Cost Centre and Cost Unit – Preparation of Cost Sheet.

**Unit-II: Elements of Cost:**Materials: Material control – Selective control, ABC technique – Methods of pricing issues – FIFO, LIFO, Weighted average, Base stock methods, choice of method (including problems).

**Unit-III: Labour and Overheads:** Labour: Control of labor costs – time keeping and time booking – Idle time –Methods of remuneration – labour incentives schemes - Overheads: Allocation and apportionment of overheads – Machine hour rate.

**Unit-IV: Methods of Costing:** Job costing – Process costs - treatment of normal and abnormal process losses – preparation of process cost accounts – treatment of waste and scrap, joint products and by products (including problems).

**Unit -V: Costing Techniques:** Marginal Costing – Standard costing – Variance Analysis (including problems).

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.41929 | 0 | 2.709645 | 2.709645 | 0 | 5.41929 | 2.709645 | 2.709645 | 8.128935 |
| C02 | 5.41929 | 0 | 0 | 0 | 2.709645 | 5.41929 | 2.709645 | 5.41929 | 2.709645 |
| CO3 | 2.61286 | 2.61286 | 0 | 5.22572 | 5.22572 | 2.61286 | 2.61286 | 0 | 5.22572 |
| CO4 | 2.22572 | 2.22572 | 0 | 2.22572 | 2.22572 | 4.451441 | 2.22572 | 0 | 4.451441 |
| CO5 | 6.967516 | 4.645011 | 4.645011 | 4.645011 | 4.645011 | 4.645011 | 6.967516 | 4.645011 | 4.645011 |
| **FINAL ATTAINMENT** | **2.516075** | **2.370898** | **2.451552** | **2.467683** | **2.467683** | **2.505321** | **2.46077** | **2.554789** | **2.516075** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.128935 | 8.128935 | 2.709645 | 5.41929 | 5.41929 |
| C02 | 2.709645 | 5.41929 | 2.709645 | 5.41929 | 2.709645 |
| CO3 | 5.22572 | 5.22572 | 2.61286 | 7.83858 | 2.61286 |
| CO4 | 2.22572 | 2.22572 | 2.22572 | 4.451441 | 2.22572 |
| CO5 | 4.645011 | 2.322505 | 2.322505 | 2.322505 | 2.322505 |
| **FINAL ATTAINMENT** | **2.548337** | **2.591352** | **2.516075** | **2.545111** | **2.548337** |

## OURSE OUTCOME WEIGHTED AVERAGE: 2.322505272

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Describe how cost accounting is used for decision making and performance evaluation. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.709645117 |
| CO2 | Differentiate methods of schedule, Costs per Unit of production and analyze the basic cost flow model and be able to assign costs in a job cost system. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.709645117 |
| CO3 | Demonstrate how Materials and Labor Costs are added to a product at each stage of the production cycle. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.612860156 |
| CO4 | Understand the meaning of a contract and other terms used in Contract Costing. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.225720311 |
| CO5 | Asses how Cost-Volume-Profit is related and use of CVP and BEP analysis as a planning and decision making aid. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.322505272 |

III B.Com - SEMESTER –V

## COMMERCIAL GEOGRAPHY

### COURSE OUTCOMES

CO1: To understand the scope and content of Commercial Geography in relation to spatial distribution of agriculture, forest resources and industrial production
CO2: To acquaint the students about dynamic aspects of Commercial Geography
CO3: To acquaint the students about dynamic nature of Industrial field in India
CO4: To make the students of commerce aware about the relationship between the geographical factors and economic activities.
CO5:To understand the water resources and rivers in India

**Unit –I: The Earth:** Internal structure of the Earth – Latitude – Longitude – Realms of the Earth – Evolution of the Earth – Environmental pollution - Global Warming - Measures to be taken to protect the Earth.

**Unit -II: India – Agriculture:** Land Use - Soils - Major crops – Food and Non-food Crops – Importance of Agriculture – Problems in Agriculture – Agriculture Development.

**Unit -III: India – Forestry:** Forests – Status of Forests in Andhra Pradesh – Forest (Conservation) Act, 1980 – Compensatory Afforestation Fund (CAF) Bill, 2015 - Forest Rights Act,2006 and its Relevance – Need for protection of Forestry.

**Unit -IV: India – Minerals and Mining:** Minerals – Renewable and non-Renewable – Use of Minerals – Mines – Coal, Barites, etc. – SingareniCoal mines and MangampetaBarites - District-wise Profile.

**Unit-V: India – Water Resources – Rivers:** Water resources - Rationality and equitable use of water – Protection measures - Rivers - Perennial and peninsular Rivers - Interlinking of Rivers - Experience of India and Andhra Pradesh.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.604433 | 0 | 2.802217 | 2.802217 | 0 | 5.604433 | 2.802217 | 2.802217 | 8.40665 |
| C02 | 5.604433 | 0 | 0 | 0 | 2.802217 | 5.604433 | 2.802217 | 5.604433 | 2.802217 |
| CO3 | 2.736289 | 2.736289 | 0 | 5.472577 | 5.472577 | 2.736289 | 2.736289 | 0 | 5.472577 |
| CO4 | 2.472577 | 2.472577 | 0 | 2.472577 | 2.472577 | 4.945155 | 2.472577 | 0 | 4.945155 |
| CO5 | 7.615516 | 5.077011 | 5.077011 | 5.077011 | 5.077011 | 5.077011 | 7.615516 | 5.077011 | 5.077011 |
| **FINAL ATTAINMENT** | **2.670361** | **2.571469** | **2.626409** | **2.637397** | **2.637397** | **2.663036** | **2.632688** | **2.696732** | **2.670361** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.40665 | 8.40665 | 2.802217 | 5.604433 | 5.604433 |
| C02 | 2.802217 | 5.604433 | 2.802217 | 5.604433 | 2.802217 |
| CO3 | 5.472577 | 5.472577 | 2.736289 | 8.208866 | 2.736289 |
| CO4 | 2.472577 | 2.472577 | 2.472577 | 4.945155 | 2.472577 |
| CO5 | 5.077011 | 2.538505 | 2.538505 | 2.538505 | 2.538505 |
| **FINAL ATTAINMENT** | **2.692337** | **2.721638** | **2.670361** | **2.690139** | **2.692337** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.538505272

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | To understand the scope and content of Commercial Geography in relation to spatial distribution of agriculture, forest resources and industrial production | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.802216545 |
| CO2 | To acquaint the students about dynamic aspects of Commercial Geography | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.802216545 |
| CO3 | To acquaint the students about dynamic nature of Industrial field in India | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.736288727 |
| CO4 | To make the students of commerce aware about the relationship between the geographical factors and economic activities. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.472577454 |
| CO5 | To understand the water resources and rivers in India | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.538505272 |

III B.Com - SEMESTER –V

**BANKING AND FINANCIAL SERVICES**

**CENTRAL BANKING**

**COURSE OUTCOMES**

CO1: Describe the evaluation and the functions of central bank and changes in central bank functions.
CO2: Understand the constitution and governance and recent developments in RBI Act.
CO3: Explain monitory control techniques and credit control measures under taken by RBI.
CO4: Analyze inflation and price control measures initiated by RBI.
CO5: Elucidate super vision and regulation of banking system by RBI.

**Unit-I:Introduction**: Evolution and Functions of Central Bank - Development of Central Banks in Developed and Developing countries - Trends in Central Bank Functions.

**Unit-II: Central banking in India**: Reserve Bank of India - Constitution and Governance, Recent Developments, RBI Act. -Interface between RBI and Banks.

**Unit-III:Monetary and Credit Policies**:Monetary policy statements of RBI - CRR - SLR - Repo Rates - Reverse Repo Rates - Currency in circulation - Credit control measures.

**Unit-IV: Inflationand price control by BRI:** Intervention mechanisms - Exchange rate stability - Rupee value - Controlling measures.

**Unit-V**: **Supervision and Regulation**: Supervision of Banks - Basle Norms, Prudential Norms, Effect of liberalization and Globalization -Checking of money laundering and frauds.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.604433 | 0 | 2.802217 | 2.802217 | 0 | 5.604433 | 2.802217 | 2.802217 | 8.40665 |
| C02 | 5.604433 | 0 | 0 | 0 | 2.802217 | 5.604433 | 2.802217 | 5.604433 | 2.802217 |
| CO3 | 2.736289 | 2.736289 | 0 | 5.472577 | 5.472577 | 2.736289 | 2.736289 | 0 | 5.472577 |
| CO4 | 2.472577 | 2.472577 | 0 | 2.472577 | 2.472577 | 4.945155 | 2.472577 | 0 | 4.945155 |
| CO5 | 7.615516 | 5.077011 | 5.077011 | 5.077011 | 5.077011 | 5.077011 | 7.615516 | 5.077011 | 5.077011 |
| **FINAL ATTAINMENT** | **2.670361** | **2.571469** | **2.626409** | **2.637397** | **2.637397** | **2.663036** | **2.632688** | **2.696732** | **2.670361** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.40665 | 8.40665 | 2.802217 | 5.604433 | 5.604433 |
| C02 | 2.802217 | 5.604433 | 2.802217 | 5.604433 | 2.802217 |
| CO3 | 5.472577 | 5.472577 | 2.736289 | 8.208866 | 2.736289 |
| CO4 | 2.472577 | 2.472577 | 2.472577 | 4.945155 | 2.472577 |
| CO5 | 5.077011 | 2.538505 | 2.538505 | 2.538505 | 2.538505 |
| **FINAL ATTAINMENT** | **2.692337** | **2.721638** | **2.670361** | **2.690139** | **2.692337** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.541751973

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Describe the evaluation and the functions of central bank and changes in central bank functions. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.803607988 |
| CO2 | Understand the constitution and governance and recent developments in RBI Act. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.803607988 |
| CO3 | Explain monitory control techniques and credit control measures under taken by RBI. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.738143984 |
| CO4 | Analyze inflation and price control measures initiated by RBI. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.476287969 |
| CO5 | Elucidate super vision and regulation of banking system by RBI. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.541751973 |

IIIB.Com - SEMESTER –V

## INDIRECT TAXES

### COURSE OUTCOMES

CO1: To Understand various concepts of Goods & Service Tax act
CO2: To Understand various concepts of Customs Act
CO3: To Understand various concepts of Central Excise Procedures
CO4: To Understand various concepts of Service Tax-Levy and Collection
CO5: Tounderstand various concepts of Calculation of VAT Liability including input Tax Credits

**Unit-I: Central Sales Tax/G.S.T (Goods and Services Tax):** Objectives of CST Act, Dealer Business-Sales-Goods-Declared goods. Turnover - Sale Price Sales Exempt from Central Sales Tax, Interstate and Intra state sale, sales in the course of imports and exports, registration under CST Act.

**Unit- II: Customs Act**: Types of Custom Duties Valuation for Customs Duty Tariff Value- Customs Value-Methods of Valuation for Customs - Problems on Custom Duty Assessment.

**Unit -III: Central Excise**: Procedures relating to Levy, Valuation and Collection of Duty. Types of Excise Duties- Cenvat Credit- Classification of Excisable Goods- Valuation of Excisable Goods- Central Excise Procedures (including problems).

**Unit-IV: Service Tax**: Features of Service Tax-Levy and Collection = Service Tax Administration-Exemptions from Service Tax - Taxable Services Determination of Service Tax Liability (including problems)

**Unit -V: VAT**: Concept and Principles - Calculation of VAT Liability including input Tax Credits, Small Dealers and Composition Scheme, VAT Procedures.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.656668 | 0 | 2.828334 | 2.828334 | 0 | 5.656668 | 2.828334 | 2.828334 | 8.485002 |
| C02 | 5.656668 | 0 | 0 | 0 | 2.828334 | 5.656668 | 2.828334 | 5.656668 | 2.828334 |
| CO3 | 2.771112 | 2.771112 | 0 | 5.542224 | 5.542224 | 2.771112 | 2.771112 | 0 | 5.542224 |
| CO4 | 2.542224 | 2.542224 | 0 | 2.542224 | 2.542224 | 5.084449 | 2.542224 | 0 | 5.084449 |
| CO5 | 7.798339 | 5.198893 | 5.198893 | 5.198893 | 5.198893 | 5.198893 | 7.798339 | 5.198893 | 5.198893 |
| **FINAL ATTAINMENT** | **2.71389** | **2.628057** | **2.675742** | **2.685279** | **2.685279** | **2.707532** | **2.681192** | **2.736779** | **2.71389** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.485002 | 8.485002 | 2.828334 | 5.656668 | 5.656668 |
| C02 | 2.828334 | 5.656668 | 2.828334 | 5.656668 | 2.828334 |
| CO3 | 5.542224 | 5.542224 | 2.771112 | 8.313337 | 2.771112 |
| CO4 | 2.542224 | 2.542224 | 2.542224 | 5.084449 | 2.542224 |
| CO5 | 5.198893 | 2.599446 | 2.599446 | 2.599446 | 2.599446 |
| **FINAL ATTAINMENT** | **2.732964** | **2.758396** | **2.71389** | **2.731057** | **2.732964** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.599446297

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | To Understand various concepts of Goods & Service Tax act | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.828334127 |
| CO2 | To Understand various concepts of Customs Act | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.828334127 |
| CO3 | To Understand various concepts of Central Excise Procedures | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.77111217 |
| CO4 | To Understand various concepts of Service Tax-Levy and Collection | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.542224339 |
| CO5 | To understand various concepts of Calculation of VAT Liability including input Tax Credits | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.599446297 |

IIIB.Com - SEMESTER –V

**RETAILING**

**PURCHASE MANAGEMENT**

**COURSE OUTCOMES**

CO1: Demonstrate how procurement strategy can impact performance of the organization
CO2: Differentiate the strategic vs. tactical functions of procurement
CO3: Understand best practices in procurement organizations.
CO4: Understand techniques used to select and evaluate suppliers
CO5:Understand typical procurement process used in both manufacturing and service organizations.

**Unit-I: Introduction:** Purchase Function - Supply Management -- Sources of Purchase: Local vs. Global - Negotiation & Bargaining - Purchasing Methods - e-Procurement --DGS & D.

**Unit-II: Purchasing Function**: Right Quantity - Economic Order Quantity - Re-order ABC Analysis - Right Price, Time - Tendering: Single, Limited, Open, Global tenders. Levels -

**Unit-III: Vendor Analysis**: Identification of vendor -- Selection - Criteria and Methodology evaluation Vendor Rating - Maintenance of Vendor relations.

**Unit-IV: Buyer-Supplier Relationships**: Transformation of buyer-supplier relationships - Developing and managing collaborative and alliance relationships - joint problem solving, Information sharing.

**Unit-V: Supply Chain Management**: JIT in the supply management - Cross-Functional Teams: Cross-functional teams and supply management - challenges of cross-functional teams, prerequisites to success.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 7.7521 | 2.5840 | 5.1681 | 0 | 0 | 5.1681 | 2.5841 | 2.5841 | 2.5841 |
| C02 | 4.3362 | 6.5043 | 4.3362 | 2.1681 | 2.1681 | 4.3362 | 2.1681 | 4.3362 | 4.3362 |
| CO3 | 4.6689 | 4.6689 | 2.3344 | 4.6689 | 2.3344 | 7.0034 | 2.3344 | 4.6689 | 4.6689 |
| CO4 | 7.2530 | 4.8353 | 2.4176 | 2.4176 | 0 | 2.4176 | 4.8353 | 4.8353 | 7.25304 |
| CO5 | 2.4176 | 2.4176 | 4.8353 | 7.253 | 0 | 0 | 4.8353 | 2.4176 | 4.8353 |
| **FINAL ATTAINMENT** | **2.4025** | **2.3344** | **2.3864** | **2.3582** | **2.2513** | **2.3656** | **2.3939** | **2.3552** | **2.3677** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.940952 | 7.940952 | 2.646984 | 5.293968 | 5.293968 |
| C02 | 2.646984 | 5.293968 | 2.646984 | 5.293968 | 2.646984 |
| CO3 | 5.058624 | 5.058624 | 2.529312 | 7.587936 | 2.529312 |
| CO4 | 2.058624 | 2.058624 | 2.058624 | 4.117248 | 2.058624 |
| CO5 | 4.352592 | 2.176296 | 2.176296 | 2.176296 | 2.176296 |
| **FINAL ATTAINMENT** | **2.450864** | **2.503163** | **2.41164** | **2.446942** | **2.450864** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.176296114

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Demonstrate how procurement strategy can impact performance of the organization | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.646984049 |
| CO2 | Differentiate the strategic vs. tactical functions of procurement | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.646984049 |
| CO3 | Understand best practices in procurement organizations. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.529312065 |
| CO4 | Understand techniques used to select and evaluate suppliers | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.05862413 |
| CO5 | Understand typical procurement process used in both manufacturing and service organizations. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.176296114 |

IIIB.Com - SEMESTER –V

# TAXATION

## COURSE OUTCOMES

CO1: Students would identify the technical terms related to Income Tax.
CO2: Students would identify the technical terms related to Income Tax.
CO3: Students would compute income from salaries, house property, business/profession, capital gains and income from other sources.
CO4: Students would discuss the various benefits/ deductions under Chapter VI-A of the Income tax act, 1961.
CO5:Students would compute the net total income of an individual, HUF and Partnership

**Unit-I: Deductions u/s 80**: Basic rules of deductions, deductions in computing total income.

**Unit-II: Set off and Carry forward of Losses**: Set off of loss from one source against income from another source, carry forward and set off of losses - brought forward of losses.

**Unit-III: Assessment of Individuals**: Computation of Total income of Individuals and Tax liability Rates of Income tax. College

**Unit-IV: Assessment of Tax of HUF:** Computation of Gross Total Income and Total Income of a Hindu Undivided Family - Rates of Income tax.

**Unit-V: Assessment of Tax of Partnership**Computation of Gross Total Income and Total Income of Partnership Firm – Deductions U/S 80.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.425397 | 0 | 2.712698 | 2.712698 | 0 | 5.425397 | 2.712698 | 2.712698 | 8.138095 |
| C02 | 5.425397 | 0 | 0 | 0 | 2.712698 | 5.425397 | 2.712698 | 5.425397 | 2.712698 |
| CO3 | 2.616931 | 2.616931 | 0 | 5.233862 | 5.233862 | 2.616931 | 2.616931 | 0 | 5.233862 |
| CO4 | 2.233862 | 2.233862 | 0 | 2.233862 | 2.233862 | 4.467724 | 2.233862 | 0 | 4.467724 |
| CO5 | 6.988888 | 4.659259 | 4.659259 | 4.659259 | 4.659259 | 4.659259 | 6.988888 | 4.659259 | 4.659259 |
| **FINAL ATTAINMENT** | **2.521164** | **2.377513** | **2.457319** | **2.47328** | **2.47328** | **2.510523** | **2.46644** | **2.559471** | **2.521164** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.138095 | 8.138095 | 2.712698 | 5.425397 | 5.425397 |
| C02 | 2.712698 | 5.425397 | 2.712698 | 5.425397 | 2.712698 |
| CO3 | 5.233862 | 5.233862 | 2.616931 | 7.850793 | 2.616931 |
| CO4 | 2.233862 | 2.233862 | 2.233862 | 4.467724 | 2.233862 |
| CO5 | 4.659259 | 2.329629 | 2.329629 | 2.329629 | 2.329629 |
| **FINAL ATTAINMENT** | **2.553086** | **2.59565** | **2.521164** | **2.549894** | **2.553086** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.329629447

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Students would identify the technical terms related to Income Tax. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.712698335 |
| CO2 | Students would identify the technical terms related to Income Tax. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.712698335 |
| CO3 | Students would compute income from salaries, house property, business/profession, capital gains and income from other sources. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.616931113 |
| CO4 | Students would discuss the various benefits/ deductions under Chapter VI-A of the Income tax act, 1961. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.233862225 |
| CO5 | Students would compute the net total income of an individual, HUF and Partnership | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.329629447 |

**SEMESTER – VI**

IIIB.Com - SEMESTER –VI

**MARKETING**

**COURSE OUTCOMES**

CO1: To examine the marketing concepts, advantages, scope and evolution of marketing
CO2: To discuss about the micro and macro business environment and importance of marketing research, MIS and also about importance and factors affecting Consumer Behavior.
CO3: To investigate the marketing mix, Product mix, Product Lifecycle, Branding – Packaging, Promotion.
CO4: To explain concepts of segmentation, e-marketing, internet marketing and various trends of marketing.
CO5:Toexplain the concepts of Direct marketing and Distribution Channels

**Unit-I**: **Introduction:** Concepts of Marketing: Product Concept – Selling Concept - Societal Marketing Concept – Marketing Mix-4 P's of Marketing – Marketing Environment.

**Unit-II**: **Consumer Markets and Buyer Behaviour:** Buying Decision Process – Stages – Buying Behaviour – Market Segmentation – Selecting Segments– Advantages of Segmentation.

**Unit-III: Product Management:** Product Life Cycle- New products, Product mix and Product line decisions - Design, Branding, Packaging and Labeling.

**Unit-IV: PricingDecision:**Factors influencing price determination, Pricing strategies: Skimming and Penetration pricing.

**Unit-V: Promotion and Distribution:** Promotion Mix - Advertising - Publicity – Public relations -Personal selling and Direct marketing -Distribution Channels – Online marketing- Global marketing.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.604979 | 0 | 2.80249 | 2.80249 | 0 | 5.604979 | 2.80249 | 2.80249 | 8.407469 |
| C02 | 5.604979 | 0 | 0 | 0 | 2.80249 | 5.604979 | 2.80249 | 5.604979 | 2.80249 |
| CO3 | 2.736653 | 2.736653 | 0 | 5.473306 | 5.473306 | 2.736653 | 2.736653 | 0 | 5.473306 |
| CO4 | 2.473306 | 2.473306 | 0 | 2.473306 | 2.473306 | 4.946612 | 2.473306 | 0 | 4.946612 |
| CO5 | 7.617428 | 5.078285 | 5.078285 | 5.078285 | 5.078285 | 5.078285 | 7.617428 | 5.078285 | 5.078285 |
| **FINAL ATTAINMENT** | **2.670816** | **2.572061** | **2.626925** | **2.637898** | **2.637898** | **2.663501** | **2.633195** | **2.697151** | **2.670816** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.407469 | 8.407469 | 2.80249 | 5.604979 | 5.604979 |
| C02 | 2.80249 | 5.604979 | 2.80249 | 5.604979 | 2.80249 |
| CO3 | 5.473306 | 5.473306 | 2.736653 | 8.209959 | 2.736653 |
| CO4 | 2.473306 | 2.473306 | 2.473306 | 4.946612 | 2.473306 |
| CO5 | 5.078285 | 2.539143 | 2.539143 | 2.539143 | 2.539143 |
| **FINAL ATTAINMENT** | **2.692762** | **2.722022** | **2.670816** | **2.690567** | **2.692762** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.539142556

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | To examine the marketing concepts, advantages, scope and evolution of marketing | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.802489667 |
| CO2 | To discuss about the micro and macro business environment and importance of marketing research, MIS and also about importance and factors affecting Consumer Behavior. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.802489667 |
| CO3 | To investigate the marketing mix, Product mix, Product Lifecycle, Branding – Packaging, Promotion. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.736652889 |
| CO4 | To explain concepts of segmentation, e-marketing, internet marketing and various trends of marketing. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.473305778 |
| CO5 | To explain the concepts of Direct marketing and Distribution Channels | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.539142556 |

IIIB.Com - SEMESTER –VI

# AUDITING

## COURSE OUTCOMES

CO1: Understanding the meaning and necessity of audit in modern era
CO2: Comprehend the role of auditor in avoiding the corporate frauds
CO3: Identify the steps involved in performing audit process
CO4: Determine the appropriate audit report for a given audit situation
CO5: Apply auditing practices to different types of business entities

**Unit-I: Auditing:** Meaning – Objectives – Importance of Auditing – Auditing as a Vigil Mechanism – Role of Auditor in checking corporate frauds.

**Unit-II: Types of Audit:** Based on Ownership and time -Independent, Financial, Internal, Cost, Tax, Government, Secretarial audits.

**Unit-III: Planning of Audit:** Steps to be taken at the commencement of a new audit - Audit programme - Audit note book - Internal check, internal audit and internal control.

**Unit-IV: Vouching and Investigation:** Vouching of cash and trading transactions - Investigation, Auditing vs. Investigation

**Unit-V: Company Audit and Auditors Report:** Auditor'sQualifications– Appointment and Reappointment – Rights, duties, liabilities and disqualifications - Audit report: Contents – Preparation - Relevant Provisions of Companies Act, 2013.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.604979 | 0 | 2.80249 | 2.80249 | 0 | 5.604979 | 2.80249 | 2.80249 | 8.407469 |
| C02 | 5.604979 | 0 | 0 | 0 | 2.80249 | 5.604979 | 2.80249 | 5.604979 | 2.80249 |
| CO3 | 2.736653 | 2.736653 | 0 | 5.473306 | 5.473306 | 2.736653 | 2.736653 | 0 | 5.473306 |
| CO4 | 2.473306 | 2.473306 | 0 | 2.473306 | 2.473306 | 4.946612 | 2.473306 | 0 | 4.946612 |
| CO5 | 7.617428 | 5.078285 | 5.078285 | 5.078285 | 5.078285 | 5.078285 | 7.617428 | 5.078285 | 5.078285 |
| **FINAL ATTAINMENT** | **2.670816** | **2.572061** | **2.626925** | **2.637898** | **2.637898** | **2.663501** | **2.633195** | **2.697151** | **2.670816** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.407469 | 8.407469 | 2.80249 | 5.604979 | 5.604979 |
| C02 | 2.80249 | 5.604979 | 2.80249 | 5.604979 | 2.80249 |
| CO3 | 5.473306 | 5.473306 | 2.736653 | 8.209959 | 2.736653 |
| CO4 | 2.473306 | 2.473306 | 2.473306 | 4.946612 | 2.473306 |
| CO5 | 5.078285 | 2.539143 | 2.539143 | 2.539143 | 2.539143 |
| **FINAL ATTAINMENT** | **2.692762** | **2.722022** | **2.670816** | **2.690567** | **2.692762** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.472505272

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Understanding the meaning and necessity of audit in modern era | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.773930831 |
| CO2 | Comprehend the role of auditor in avoiding the corporate frauds | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.773930831 |
| CO3 | Identify the steps involved in performing audit process | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.698574441 |
| CO4 | Determine the appropriate audit report for a given audit situation | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.397148883 |
| CO5 | Apply auditing practices to different types of business entities | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.472505272 |

IIIB.Com - SEMESTER –VI

# MANAGEMENT ACCOUNTING

## COURSE OUTCOMES

CO1: Distinguish Financial Accounting, Cost Accounting and Management Accounting and describe the scope, limitations, functions and importance of Management Accounting.

CO2: Analysis and interpretation comparative, common size and trend analysis financial statements.

CO3: Analysis and interpretation of accounting ratios.

CO4: Understanding the importance of fund and learner can prepare the funds flow statement.

CO5:Understanding the movement of cash and preparation of cash flow statement

**Unit–I: Management Accounting:** Interface with Financial Accounting and Cost Accounting - Financial Statement analysis and interpretation: Comparative analysis – Common size analysis and trend analysis (including problems).

**Unit–II:Ratio Analysis:** Classification, Importance and limitations -Analysis and interpretation of Accounting ratios - Liquidity, profitability, activity and solvency ratios (including problems).

**Unit–III:Fund Flow Statement:** Concept of fund: Preparation of funds flow statement. Uses and limitations of funds flow analysis (including problems).

**Unit–IV:CashFlow Statement:** Concept of cash flow – Preparation of cash flow statement - Uses and limitations of cash flow analysis (including problems).

**Unit–V:Break-EvenAnalysis and Decision Making:**Calculation of Break-even point - Uses and limitations - Margin of safety – Make/Buy Decision - Lease/own Decision (including Problems).

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 4.843428 | 0 | 2.421714 | 2.421714 | 0 | 4.843428 | 2.421714 | 2.421714 | 7.265142 |
| C02 | 4.843428 | 0 | 0 | 0 | 2.421714 | 4.843428 | 2.421714 | 4.843428 | 2.421714 |
| CO3 | 2.228952 | 2.228952 | 0 | 4.457904 | 4.457904 | 2.228952 | 2.228952 | 0 | 4.457904 |
| CO4 | 1.457904 | 1.457904 | 0 | 1.457904 | 1.457904 | 2.915808 | 1.457904 | 0 | 2.915808 |
| CO5 | 4.951997 | 3.301332 | 3.301332 | 3.301332 | 3.301332 | 3.301332 | 4.951997 | 3.301332 | 3.301332 |
| **FINAL ATTAINMENT** | **2.03619** | **1.747047** | **1.907682** | **1.939809** | **1.939809** | **2.014772** | **1.92604** | **2.113295** | **2.03619** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 7.265142 | 7.265142 | 2.421714 | 4.843428 | 4.843428 |
| C02 | 2.421714 | 4.843428 | 2.421714 | 4.843428 | 2.421714 |
| CO3 | 4.457904 | 4.457904 | 2.228952 | 6.686856 | 2.228952 |
| CO4 | 1.457904 | 1.457904 | 1.457904 | 2.915808 | 1.457904 |
| CO5 | 3.301332 | 1.650666 | 1.650666 | 1.650666 | 1.650666 |
| **FINAL ATTAINMENT** | **2.100444** | **2.186116** | **2.03619** | **2.094018** | **2.100444** |

## COURSE OUTCOME WEIGHTED AVERAGE: 1.65066579

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Distinguish Financial Accounting, Cost Accounting and Management Accounting and describe the scope, limitations, functions and importance of Management Accounting. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.42171391 |
| CO2 | Analysis and interpretation comparative, common size and trend analysis financial statements. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.42171391 |
| CO3 | Analysis and interpretation of accounting ratios. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.22895188 |
| CO4 | Understanding the importance of fund and learner can prepare the funds flow statement. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 1.45790376 |
| CO5 | Understanding the movement of cash and preparation of cash flow statement | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 1.65066579 |

IIIB.Com - SEMESTER –VI

# TAXATION

## SERVICE TAX and VAT

### COURSE OUTCOMES

CO1: Student will be equipped with the knowledge of basic concepts of Service Tax Systems
CO2: Student will learn the basic procedures of registration and revaluation of service tax
CO3: Student will be equipped with the knowledge of central sales tax.
CO4: Students will also learn about VAT and its procedural aspects and computation.
CO5:To understand the importance of assessment of service tax and filing of e-returns

**Unit-I: Service Tax**: Charge of Service Tax - Service Tax Systems: Central and State - Taxable Services, Valuation of taxable services - Collection and Payment of Service Tax.

**Unit-II: Provisions**: Registration Procedure, Service Receiver liability - Computation of Service Tax Revaluation of service tax.

**Unit-III: Central Sales Tax**: Tax on Inter- State Trade and Exports Registration-Rates of Tax, Assessment and Refunds - GST Act and Rules.

**Unit-IV: Value Added Tax**: Concept of VAT, Declared Goods, Registration and Procedural Aspects, Rate and Computation of VAT liability - Collection and Payment of VAT.

**Unit-V: Assessment Procedure & Appeals**: Assessment of Service Tax - Filing of e-Return - Service Tax Appeals - Service Tax Appellate Tribunal - Refund and penalties.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.425397 | 0 | 2.712698 | 2.712698 | 0 | 5.425397 | 2.712698 | 2.712698 | 8.138095 |
| C02 | 5.425397 | 0 | 0 | 0 | 2.712698 | 5.425397 | 2.712698 | 5.425397 | 2.712698 |
| CO3 | 2.616931 | 2.616931 | 0 | 5.233862 | 5.233862 | 2.616931 | 2.616931 | 0 | 5.233862 |
| CO4 | 2.233862 | 2.233862 | 0 | 2.233862 | 2.233862 | 4.467724 | 2.233862 | 0 | 4.467724 |
| CO5 | 6.988888 | 4.659259 | 4.659259 | 4.659259 | 4.659259 | 4.659259 | 6.988888 | 4.659259 | 4.659259 |
| **FINAL ATTAINMENT** | **2.521164** | **2.377513** | **2.457319** | **2.47328** | **2.47328** | **2.510523** | **2.46644** | **2.559471** | **2.521164** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.138095 | 8.138095 | 2.712698 | 5.425397 | 5.425397 |
| C02 | 2.712698 | 5.425397 | 2.712698 | 5.425397 | 2.712698 |
| CO3 | 5.233862 | 5.233862 | 2.616931 | 7.850793 | 2.616931 |
| CO4 | 2.233862 | 2.233862 | 2.233862 | 4.467724 | 2.233862 |
| CO5 | 4.659259 | 2.329629 | 2.329629 | 2.329629 | 2.329629 |
| **FINAL ATTAINMENT** | **2.553086** | **2.59565** | **2.521164** | **2.549894** | **2.553086** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.329629447

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Student will be equipped with the knowledge of basic concepts of Service Tax Systems | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.712698335 |
| CO2 | Student will learn the basic procedures of registration and revaluation of service tax | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.712698335 |
| CO3 | Student will be equipped with the knowledge of central sales tax. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.616931113 |
| CO4 | Students will also learn about VAT and its procedural aspects and computation. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.233862225 |
| CO5 | To understand the importance of assessment of service tax and filing of e-returns | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.329629447 |

IIIB.Com - SEMESTER –VI

**BANKING & FINANCIAL SERVICES**

**FINANCIAL SERVICES**

**COURSE OUTCOMES**

CO1: Differentiate activities of Banking and Non Banking companies.
CO2: Understanding the scope and importance of Merchant Banks and services rendered by Merchant Banks.
CO3: Describe the procedure of leasing and Hire purchasing.
CO4: Identify the credit rating agencies and its purpose.
CO5:Understanding factors and forfeiting services rendered by financial institutions.

**Unit-I: Financial Services**: Role of Financial Services - Banking and Non Banking Companies - Activities of Non Banking Finance Companies- Fund Based Activities - Fee Based Activities.

**Unit-II: Merchant Banking Services**: Scope and importance of merchant banking services - Venture Capital - Securitization - Demat services - Commercial Paper.

**Unit-III: Leasing and Hire-Purchase**: Types of Lease, Documentation and Legal aspects -Fixation of Rentals and Evaluation - Hire Purchasing- Securitization of debts - House Finance.

**Unit-IV: Credit Rating:** Purpose - Types Credit Rating Symbols- Agencies: CRISIL andCARE Equity Assessment vs. Grading -- Mutual funds.

**Unit-V: Other Financial Services**: Factoring and Forfeiting - Procedural and financial aspects Installment System - Credit Cards - Central Depository Systems NSDL CSDL.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.516825 | 0 | 2.758413 | 2.758413 | 0 | 5.516825 | 2.758413 | 2.758413 | 8.275238 |
| C02 | 5.516825 | 0 | 0 | 0 | 2.758413 | 5.516825 | 2.758413 | 5.516825 | 2.758413 |
| CO3 | 2.677883 | 2.677883 | 0 | 5.355767 | 5.355767 | 2.677883 | 2.677883 | 0 | 5.355767 |
| CO4 | 2.355767 | 2.355767 | 0 | 2.355767 | 2.355767 | 4.711534 | 2.355767 | 0 | 4.711534 |
| CO5 | 7.308888 | 4.872592 | 4.872592 | 4.872592 | 4.872592 | 4.872592 | 7.308888 | 4.872592 | 4.872592 |
| **FINAL ATTAINMENT** | **2.597354** | **2.476561** | **2.543668** | **2.55709** | **2.55709** | **2.588407** | **2.551338** | **2.629566** | **2.597354** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.275238 | 8.275238 | 2.758413 | 5.516825 | 5.516825 |
| C02 | 2.758413 | 5.516825 | 2.758413 | 5.516825 | 2.758413 |
| CO3 | 5.355767 | 5.355767 | 2.677883 | 8.03365 | 2.677883 |
| CO4 | 2.355767 | 2.355767 | 2.355767 | 4.711534 | 2.355767 |
| CO5 | 4.872592 | 2.436296 | 2.436296 | 2.436296 | 2.436296 |
| **FINAL ATTAINMENT** | **2.624197** | **2.659988** | **2.597354** | **2.621513** | **2.624197** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.436296114

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | Differentiate activities of Banking and Non Banking companies. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.75841262 |
| CO2 | Understanding the scope and importance of Merchant Banks and services rendered by Merchant Banks. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.75841262 |
| CO3 | Describe the procedure of leasing and Hire purchasing. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.677883494 |
| CO4 | Identify the credit rating agencies and its purpose. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.355766987 |
| CO5 | Understanding factors and forfeiting services rendered by financial institutions. | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.436296114 |

IIIB.Com - SEMESTER –VI

**RETAILING**

**AGRICULTURAL AND RURAL MARKETING**

**COURSE OUTCOMES**

CO1: To impart practical and value education and transformation of knowledge from class room to rural life.
CO2: To give input on inclusive growth and reduce regional imbalances and income inequalities.
CO3: Inculcate critical thinking to carry out strategies for agriculture and rural development.
CO4: Equip the student with skills to analyse problems and challenges of Agricultural Marketing.
CO5:To understand the role and importance of Govt and Non Govt agencies in the development of rural and agricultural marketing

**Unit-I Concept of Rural Market**: Rural market Characteristics - Rural markets and Environmental factors - Agricultural Market Yards.

**Unit-II Rural Consumer Behavior**: Rural vs. Urban Consumer - Relevance of Marketing mix for rural market/Consumers - Problems in rural market - Life Style Marketing - Rural market Segmentation.

**Unit-III: Agricultural Marketing**: Problems and Challenges in Agriculture Marketing Market Yards - Support prices - Rural Warehousing. College

**Unit-IV: Agriculture Support Mechanism**: Role of CCI, Tobacco Board, Spices Board, Coffee Board, Tea Board - Agriculture Price Commission.

**Unit-V: Export potential forAgro-products**: Role of Government and Non-Government, Agencies in the development of rural and agricultural Marketing – Strategies for supply of Seed, Fertilizers, Pesticides, Farm Equipment.

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 1 | 3 |
| CO2 | 2 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 1 |
| CO3 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 2 |
| CO4 | 1 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 2 |
| CO5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |

| CO-POS Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, '-' NoCorrelation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
|---|---|---|---|---|---|---|
| CO1 | 3 | 3 | 1 | 2 | 2 | 1 |
| CO2 | 1 | 2 | 1 | 2 | 1 | 1 |
| CO3 | 2 | 2 | 1 | 3 | 1 | 1 |
| CO4 | 1 | 1 | 1 | 2 | 1 | 1 |
| CO5 | 2 | 1 | 1 | 1 | 1 | 3 |

# ATTAINMENT OF POs

| PROGRAMOUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO1 | 5.68254 | 0 | 2.84127 | 2.84127 | 0 | 5.68254 | 2.84127 | 2.84127 | 8.523809 |
| C02 | 5.68254 | 0 | 0 | 0 | 2.84127 | 5.68254 | 2.84127 | 5.68254 | 2.84127 |
| CO3 | 2.78836 | 2.78836 | 0 | 5.576719 | 5.576719 | 2.78836 | 2.78836 | 0 | 5.576719 |
| CO4 | 2.576719 | 2.576719 | 0 | 2.576719 | 2.576719 | 5.153439 | 2.576719 | 0 | 5.153439 |
| CO5 | 7.888888 | 5.25925 9 | 5.259259 | 5.259259 | 5.259259 | 5.259259 | 7.888888 | 5.259259 | 5.25925 9 |
| **FINAL ATTAINMENT** | **2.73545** | **2.656084** | **2.700176** | **2.708995** | **2.708995** | **2.729571** | **2.705215** | **2.756614** | **2.73545** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 8.523809 | 8.523809 | 2.84127 | 5.68254 | 5.68254 |
| C02 | 2.84127 | 5.68254 | 2.84127 | 5.68254 | 2.84127 |
| CO3 | 5.576719 | 5.576719 | 2.78836 | 8.365079 | 2.78836 |
| CO4 | 2.576719 | 2.576719 | 2.576719 | 5.153439 | 2.576719 |
| CO5 | 5.259259 | 2.629629 | 2.629629 | 2.629629 | 2.629629 |
| **FINAL ATTAINMENT** | **2.753086** | **2.776602** | **2.73545** | **2.751323** | **2.753086** |

## COURSE OUTCOME WEIGHTED AVERAGE: 2.882962781

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning LevelIndex | CO Attainment |
|---|---|---|---|---|
| CO 1 | To impart practical and value education and transformation of knowledge from class room to rural life | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.841269763 |
| CO2 | To give input on inclusive growth and reduce regional imbalances and income inequalities. | Level1(Knowledge ) Level2(Understanding) | 1.5 | 2.841269763 |
| CO3 | Inculcate critical thinking to carry out strategies for agriculture and rural development. | Level1(Knowledge) Level2(Understanding) Level3(Application) | 2 | 2.788359684 |
| CO4 | Equip the student with skills to analyse problems and challenges of Agricultural Marketing. | Level3(Application) Level4(Analysing) Level5(Evaluation) | 4 | 2.576719368 |
| CO5 | To understand the role and importance of Govt and Non Govt agencies in the development of rural and agricultural marketing | Level2(Understanding) Level3(Applying) Level4(Analysing) Level5(Evaluation) | 3.5 | 2.629629447 |

## CO – PO ATTAINMENT METHODOLOGY

- Step 1

### Calculation of Course Outcome Weighted Average (COWA)

The performance of the students assessed by two methods

(a) Direct Assessment: The weightage for internal exams is 30% and for semester end exams is 60%
(b) Indirect assessment: 5% weightage for exit survey and 5% for extracurricular activities

The performance of the student is categorised in four levels

| S,No | Percentage obtained by the student in DA and IDA | Level weightage |
|---|---|---|
| 1 | Less than 35% | 0 |
| 2 | Between 35% and 50% | 1 |
| 3 | Between 51% and 70% | 2 |
| 4 | Above 70% | 3 |

The average level of all students for a particular course is found. It is called as course outcome weighted average (COWA).

$$\mathbf{COWA} = \frac{\boldsymbol{some\ of\ the\ level\ weitage\ of\ all\ students\ of\ a\ course}}{\boldsymbol{total\ number\ of\ students}}$$

- Step 2:

### Calculation of Course outcome level index (COLLI):

To Map the course outcomes (COs) of a course with Blooms levels (1 to 6) by using action verbs used in CO' s. A course outcome may be mapped to multiple Blooms levels; hence we need to calculate the average Blooms level weightage (ABLW).

$$\mathbf{COLLI} = \frac{\boldsymbol{Sum\ of\ the\ weigtages\ of\ \ blooms\ levels\ mapped}}{\boldsymbol{number\ of\ levels\ mapped}}$$

- Step 3:

### CO-PO mapping and CO-PSO mapping

Map each course outcome with POs and PSOs in levels 0,1,2,3. A CO may be mapped to multiple POs or PSOs with different levels 1,2,3. The weighted average of each PO is to be calculated.

- Step 4:

**Calculation of CO attainment:**

The formula for Course Outcome Attainment (CO Attainment) can be calculated by using below formula

$$\textbf{CO attainment} = \textbf{COWA} + \left\{(3 - \boldsymbol{COWA}) \times \left(1 - \frac{\boldsymbol{COLLI}}{3.5}\right)\right\}$$

(Blooms Level Weighted Average value $= 3.5$)

- Step 5:

Calculation of PO attainment:

The formula for Programme Outcome Attainment (PO Attainment) can be calculated by using below formula

$$\textbf{PO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PO\ levels\ mapped\ with\ CO}}$$

**PSO attainment:**

The formula for Programme Specific Outcome Attainment (PSO Attainment) can be calculated by using below formula

$$\textbf{PSO Attainment} = \frac{\Sigma(\boldsymbol{CO\ attainment})(\boldsymbol{PSO\ level\ mapped\ with\ CO})}{\boldsymbol{Sum\ of\ the\ PSO\ levels\ mapped\ with\ CO}}$$

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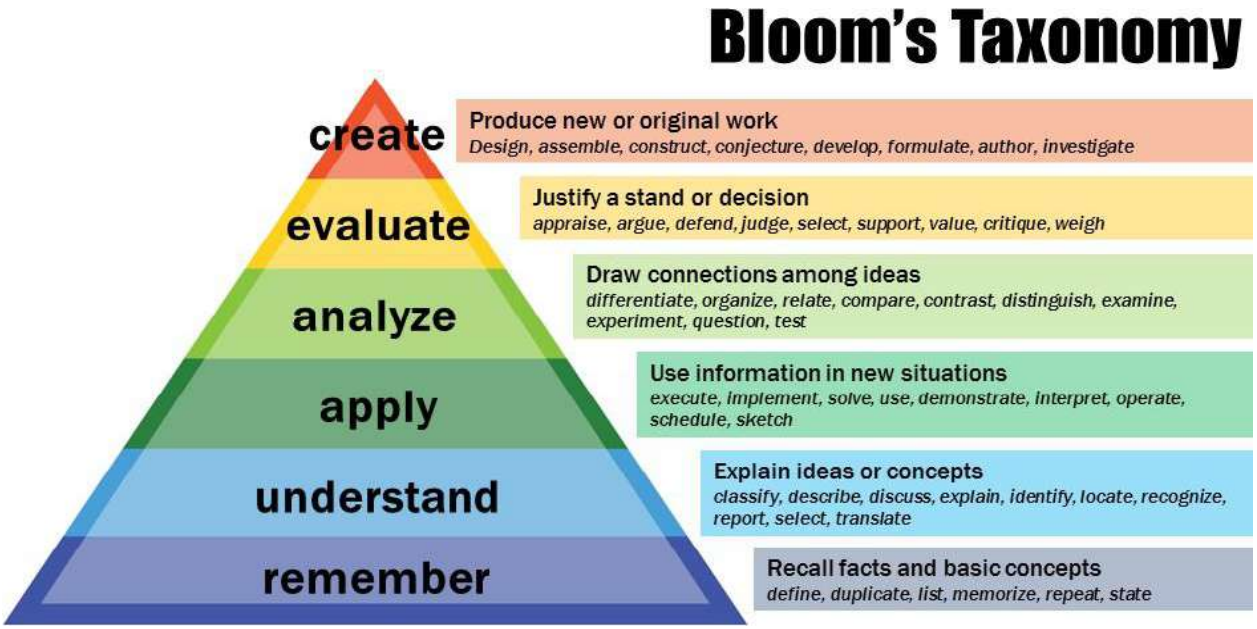
# DEPARTMENT OF ZOOLOGY
# 2019-2020
# POs & COs MAPPING

| Department of Zoology |
|---|
| Programme Name: **BSc. CBZ** |

**Levels of Bloom's Taxonomoy**

| | |
|---|---|
| **Level-1** | **Knowlede/Remember** |
| **Level-2** | **Understand** |
| **Level-3** | **Application** |
| **Level-4** | **Analyze** |
| **Level-5** | **Evaluation** |
| **Level-6** | **Create** |



| POs | Programme Outcomes |
|---|---|
| **PO1** | **Critical Thinking:**<br>Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid,and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| **PO2** | **Effective Communication:**<br>Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology. |
| **PO3** | **Social Interaction:**<br>Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| **PO4** | **Effective Citizenship:**<br>Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| **PO5** | **Ethics:**<br>Ability to recognize different value systems includingy our own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| **PO6** | **Environment and Sustainability:**<br>Ability to understand the issues of environmental contexts and sustainable Development. |
| **PO7** | **Employabilityskills:**<br>Equipping graduates with the essential abilities and knowledge to excel in their choosen careers. |
| **PO8** | **Entrepreneurships kills:**<br>Seeks to empower students with the competencies needed to be successful entrepreneours, enabling themto launch, operate,and innovate in their own businesses or entrepreneurial ventures. |
| **PO9** | **Self0directed and Life0long Learning:**<br>Acquire the ability to engage in independent and life0long learning in the broadest context socio0technological changes. |

# Program Specific Outcomes (PSOs)

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| **PSO1** | Ability to apply the knowledge of Chemistry, Botany and Zoology in addressing the real0time problems of the world |
| **PSO2** | Understanding the key aspects of structure, physiology, reproduction and developmental aspects of plant and animal communities and Show empathy towards animals and consider them as his/her fellow0beings |
| **PSO3** | A step forward for the sustainable development of the nation by understanding the values embedded in studying the environment and ecology |
| **PSO4** | Life-long learning in the broadest context of technological advancements in various fields of biology. |
| **PSO5** | Understand the concepts of biology to create start-ups and apply the knowledge to get self-employed |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**
(w.e.f. 2019-20)
**ZOOLOGY SYLLABUS FOR I SEMESTER**
**ZOOLOGY - PAPER -I**
**ANIMAL DIVERSITY – BIOLOGY OF NON-CHORDATES**
**Periods: 60** **Max. Marks: 100**

## COURSE OUTCOME WEIGHTED AVERAGE: 2.0828

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1: Understand different levels of biological diversity through the systematic classification of invertebrate fauna | Level 1 (Knowledge)<br>Level 2<br>(Understanding) | 1.5 | **2.6069** |
| CO2: Familiarize the student with the distinguishing characters of various phyla of Non0chordates by type studies and the study of specialized systems like canal system, water vascular system, torsion etc. | Level 1 (Knowledge )<br>Level 3 (Application) | 2 | **2.4759** |
| CO3: Understand the evolutionary relationships of different Invertebrate phyla with the study of connecting links like *Peripatus*, *Balanoglossus* and larval forms | Level 1 (Knowledge)<br>Level 2<br>(Understanding)<br>Level 4 (Analysing) | 2.7 | **2.2924** |
| CO4: Knowledge on the economic importance of sponges, corals, coral reefs, pearl oysters etc. | Level 3 (Application)<br>Level 5 (Evaluation) | 4 | **1.9518** |
| CO5: Application of knowledge for the preservation of animals and taxa – level identification of invertebrates | Level 1 (Understanding)<br>Level 3 (Applying)<br>Level 4 (Analysing)<br>Level 5 (Evaluation) | 3.25 | **2.1483** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **0** | **0** | **0** | **1** | **2** | **2** | **2** | **3** |
| CO2 | **2** | **1** | **0** | **0** | **2** | **3** | **1** | **0** | **3** |
| CO3 | **3** | **1** | **0** | **0** | **2** | **2** | **1** | **0** | **3** |
| CO4 | **0** | **1** | **0** | **0** | **3** | **3** | **3** | **3** | **3** |
| CO5 | **2** | **0** | **0** | **0** | **3** | **2** | **2** | **2** | **3** |
| | 9 | 3 | 0 | 0 | 11 | 12 | 9 | 7 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **1** | **3** | **1** | **3** | **0** |
| CO2 | **1** | **3** | **2** | **3** | **1** |
| CO3 | **1** | **3** | **3** | **3** | **0** |
| CO4 | **3** | **3** | **3** | **3** | **3** |
| CO5 | **1** | **3** | **3** | **2** | **2** |
| | 7 | 15 | 12 | 14 | 6 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.2138 | 0.0000 | 0.0000 | 0.0000 | 2.6069 | 5.2138 | 5.2138 | 5.2138 | 7.8207 |
| CO2 | 4.9518 | 2.4759 | 0.0000 | 0.0000 | 4.9518 | 7.4277 | 2.4759 | 0.0000 | 7.4277 |
| CO3 | 6.8773 | 2.2924 | 0.0000 | 0.0000 | 4.5849 | 4.5849 | 2.2924 | 0.0000 | 6.8773 |
| CO4 | 0.0000 | 1.9518 | 0.0000 | 0.0000 | 5.8553 | 5.8553 | 5.8553 | 5.8553 | 5.8553 |
| CO 5 | 4.2966 | 0.0000 | 0.0000 | 0.0000 | 6.4449 | 4.2966 | 4.2966 | 4.2966 | 6.4449 |
| FINAL ATTAINMENT | 5.2138 | 0.0000 | 0.0000 | 0.0000 | 2.6069 | 5.2138 | 5.2138 | 5.2138 | 7.8207 |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 2.6069 | 7.8207 | 2.6069 | 7.8207 | 0.0000 |
| CO2 | 2.4759 | 7.4277 | 4.9518 | 7.4277 | 2.4759 |
| CO3 | 2.2924 | 6.8773 | 6.8773 | 6.8773 | 0.0000 |
| CO4 | 5.8553 | 5.8553 | 5.8553 | 5.8553 | 5.8553 |
| CO 5 | 2.1483 | 6.4449 | 6.4449 | 4.2966 | 4.2966 |
| FINAL ATTAINMENT | **2.1970** | **2.2951** | **2.2280** | **2.3055** | **2.1046** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**
(w.e.f. 2019-20)
**ZOOLOGY SYLLABUS FOR II SEMESTER**
**ZOOLOGY - PAPER – II**

# ANIMAL DIVERSITY II – BIOLOGY OF CHORDATES

**Periods:60** **Max. Marks: 100**

## COURSE OUTCOME WEIGHTED AVERAGE: 2.2082

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1: | Acquire in - depth knowledge on the diversity of chordates and their systematic position. | Level 1 (Knowledge)<br>Level 2 (Understanding) | 1.5 | **2.6607** |
| CO2: | Understand the characteristics and evolutionary importance of Prochordates | Level 1 (Knowledge)<br>Level 2 (Understanding)<br>Level 4 (Analyzing) | 3.5 | **2.2082** |
| CO3: | Understanding the external features, internal anatomy and physiology of various classes of chordates by type studies | Level 1 (Knowledge)<br>Level 2 (Understanding)<br>Level 3 (Application) | 2 | **2.5475** |
| CO4: | Study and analyze the specialized features of various chordates such as types of scales and migration in fishes, identification of snakes, flight adaptations and migration in birds, Dentition in mammals etc. | Level 3 (Understanding)<br>Level 4 (Analyzing) | 3.5 | **2.2082** |
| CO5: | Taxonomic identification of chordates by observing preserved and taxidermic specimens of chordates | Level 2 (Understanding)<br>Level 3 (Applying)<br>Level 5 (Evaluation) | **3.3** | **2.2534** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **2** | **0** | **0** | **0** | **1** | **2** | **2** | **2** | **3** |
| CO2 | **3** | **1** | **0** | **0** | **2** | **2** | **1** | **0** | **3** |
| CO3 | **2** | **1** | **0** | **0** | **2** | **3** | **1** | **0** | **3** |
| CO4 | **3** | **3** | **0** | **2** | **3** | **1** | **1** | **1** | **3** |
| CO5 | **2** | **0** | **0** | **0** | **3** | **2** | **2** | **2** | **3** |
| | 12 | 5 | 0 | 2 | 11 | 10 | 7 | 5 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **1** | **2** | **3** | **0** | **0** |
| CO2 | **1** | **2** | **3** | **0** | **0** |
| CO3 | **1** | **2** | **3** | **0** | **1** |
| CO4 | **3** | **3** | **3** | **0** | **1** |
| CO5 | **1** | **3** | **3** | **0** | **2** |
| | 7 | 12 | 15 | 0 | 4 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 5.3213 | 0.0000 | 0.0000 | 0.0000 | 2.6607 | 5.3213 | 5.3213 | 5.3213 | 7.9820 |
| CO2 | 6.6246 | 2.2082 | 0.0000 | 0.0000 | 4.4164 | 4.4164 | 2.2082 | 0.0000 | 6.6246 |
| CO3 | 5.0951 | 2.5475 | 0.0000 | 0.0000 | 5.0951 | 7.6426 | 2.5475 | 0.0000 | 7.6426 |
| CO4 | 6.6246 | 6.6246 | 0.0000 | 4.4164 | 6.6246 | 2.2082 | 2.2082 | 2.2082 | 6.6246 |
| CO 5 | 4.5069 | 0.0000 | 0.0000 | 0.0000 | 6.7603 | 4.5069 | 4.5069 | 4.5069 | 6.7603 |
| **FINAL ATTAINMENT** | **2.3477** | **2.2761** | **O** | **0** | **2.3234** | **2.4095** | **2.3989** | **2.4073** | **2.3756** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 2.6607 | 5.3213 | 7.9820 | 0.0000 | 0.0000 |
| CO2 | 2.2082 | 4.4164 | 6.6246 | 0.0000 | 0.0000 |
| CO3 | 2.5475 | 5.0951 | 7.6426 | 0.0000 | 2.5475 |
| CO4 | 6.6246 | 6.6246 | 6.6246 | 0.0000 | 2.2082 |
| CO 5 | 2.2534 | 6.7603 | 6.7603 | 0.0000 | 4.5069 |
| **FINAL ATTAINMENT** | **2.3278** | **2.3515** | **2.3756** | **0.000** | **2.3157** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**

(w.e.f. 2019-20)

**ZOOLOGY SYLLABUS FOR III SEMESTER**

**ZOOLOGY - PAPER -III**

# CYTOLOGY, GENETICS AND EVOLUTION

**Periods:60** **Max. Marks:100**

## COURSE OUTCOME WEIGHTED AVERAGE: 2.65

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1: | Understand the importance of cell as a structural and functional unit of life, differences between prokaryotic and eukaryotic cells and Viruses as connecting links between life and non0life | Level 1 (Knowledge ) Level 2 (Understanding) | 1.5 | **2.8500** |
| CO2: | Thorough understanding of the structure and functions of various cell organelles and the role of nucleus and chromosomes in heredity | Level 1 (Knowledge ) Level 2 (Understanding) | 1.5 | **2.8500** |
| CO3: | Understanding the origin and evolution of the concept of heredity & variations by Mendelian experiments and Non0Mendelian principles of gene interactions | Level 1 (Knowledge), Level 2 (Understanding) Level 3 (Application) | 2 | **2.8000** |
| CO4: | Study and analyze the importance of linkage and crossing over in bringing about variations and the role of cytoplasm and sex in inheritance | Level 3 (Application), Level 4 (Analysing) | 3.5 | **2.6500** |
| CO5: | Understand and acquire knowledge on the origin of life and critical evaluation of various theories of evolution, forces of evolution and Origin of new species | Level 2 (Understanding) Level 4 (Analysing) Level 5 (Evaluation) | **3.7** | **2.6300** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **0** | **0** | **1** | **1** | **2** | **0** | **3** |
| CO2 | **3** | **3** | **0** | **0** | **1** | **0** | **2** | **0** | **3** |
| CO3 | **3** | **3** | **2** | **1** | **2** | **1** | **2** | **2** | **3** |
| CO4 | **3** | **3** | **2** | **1** | **3** | **1** | **3** | **1** | **3** |
| CO5 | **3** | **3** | **2** | **1** | **3** | **3** | **3** | **1** | **3** |
| | 15 | 15 | 6 | 3 | 10 | 6 | 12 | 4 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **3** | **3** | **0** | **3** |
| CO2 | **3** | **3** | **3** | **1** | **3** |
| CO3 | **3** | **3** | **3** | **1** | **3** |
| CO4 | **3** | **3** | **3** | **1** | **3** |
| CO5 | **3** | **3** | **3** | **1** | **3** |
| | 15 | 15 | 15 | 4 | 15 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.5500 | 8.5500 | 0.0000 | 0.0000 | 2.8500 | 2.8500 | 5.7000 | 0.0000 | 8.5500 |
| CO2 | 8.5500 | 8.5500 | 0.0000 | 0.0000 | 2.8500 | 0.0000 | 5.7000 | 0.0000 | 8.5500 |
| CO3 | 8.4000 | 8.4000 | 5.6000 | 2.8000 | 5.6000 | 2.8000 | 5.6000 | 5.6000 | 8.4000 |
| CO4 | 7.9500 | 7.9500 | 5.3000 | 2.6500 | 7.9500 | 2.6500 | 7.9500 | 2.6500 | 7.9500 |
| CO 5 | 7.8900 | 7.8900 | 5.2600 | 2.6300 | 7.8900 | 7.8900 | 7.8900 | 2.6300 | 7.8900 |
| FINAL ATTAINMENT | 2.7560 | 2.7560 | O | 0 | 2.7140 | 2.6983 | 2.7367 | 2.7200 | 2.7560 |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.2346 | 8.2346 | 8.2346 | 0.0000 | 8.2346 |
| CO2 | 8.2346 | 8.2346 | 8.2346 | 2.7449 | 8.2346 |
| CO3 | 7.9795 | 7.9795 | 7.9795 | 2.6598 | 7.9795 |
| CO4 | 7.2141 | 7.2141 | 7.2141 | 2.4047 | 7.2141 |
| CO 5 | 7.1120 | 7.1120 | 7.1120 | 2.3707 | 7.1120 |
| FINAL ATTAINMENT | 2.5850 | 2.5850 | 2.5850 | 2.5450 | 2.5850 |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**

(w.e.f. 2019-20)

**ZOOLOGY SYLLABUS FOR IV SEMESTER**

**ZOOLOGY – PAPER – IV**

# EMBRYOLOGY, PHYSIOLOGY AND ECOLOGY

**Periods: 60** **Max. Marks: 100**

## COURSE OUTCOME WEIGHTED AVERAGE: 3.0

| Learning Outcomes: On Completion of the course, the students will be able to | | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|---|
| CO1: | Understanding the key events in embryonic development from gametes to gastrulation | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 4 (Analyzing) | **3.5** | **3.0000** |
| CO2: | Acquisition of knowledge on functioning of various physiological aspects of the body | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 3 (Application) | **2** | **3.0000** |
| CO3: | Critical analysis of various endocrine glands and associated disorders and role of hormones in controlling the reproduction in mammals | Level 1 (Knowledge)<br>Level 2 (Understanding)<br>Level 4 (Analysing) | **2.3** | **3.0000** |
| CO4: | Understand and evaluate the key concepts in ecology with emphasis on role of biotic and abiotic factors, interactions among different species, concept of ecosystem, food chain and food web and community interactions and application of the concepts for a sustainable environment | Level 1 (Knowledge)<br>Level 4 (Analysing)<br>Level 5 (Evaluation) | **3.3** | **3.0000** |
| CO5: | Critical study and evaluation of the underlying concept of distribution of animals on earth | Level 1 (Knowledge)<br>Level 4 (Analysing)<br>Level 5 (Evaluation) | 3.3 | **3.0000** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **0** | **0** | **3** | **1** | **2** | **0** | **3** |
| CO2 | **3** | **1** | **0** | **0** | **2** | **3** | **1** | **0** | **3** |
| CO3 | **3** | **3** | **2** | **0** | **3** | **1** | **3** | **2** | **3** |
| CO4 | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** | **3** |
| CO5 | **3** | **0** | **0** | **0** | **2** | **3** | **3** | **3** | **3** |
| | 15 | 10 | 5 | 3 | 13 | 11 | 12 | 8 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **3** | **3** | **0** | **2** |
| CO2 | **2** | **2** | **3** | **0** | **3** |
| CO3 | **3** | **3** | **3** | **1** | **3** |
| CO4 | **3** | **3** | **3** | **3** | **3** |
| CO5 | **3** | **3** | **3** | **0** | **2** |
| | 14 | 14 | 15 | 4 | 13 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 9.0000 | 9.0000 | 0.0000 | 0.0000 | 9.0000 | 3.0000 | 6.0000 | 0.0000 | 9.0000 |
| CO2 | 9.0000 | 3.0000 | 0.0000 | 0.0000 | 6.0000 | 9.0000 | 3.0000 | 0.0000 | 9.0000 |
| CO3 | 9.0000 | 9.0000 | 6.0000 | 0.0000 | 9.0000 | 3.0000 | 9.0000 | 6.0000 | 9.0000 |
| CO4 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO 5 | 9.0000 | 0.0000 | 0.0000 | 0.0000 | 6.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| **FINAL ATTAINMENT** | **3.0000** | **3.0000** | **O** | **0.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 9.0000 | 9.0000 | 9.0000 | 0.0000 | 6.0000 |
| CO2 | 6.0000 | 6.0000 | 9.0000 | 0.0000 | 9.0000 |
| CO3 | 9.0000 | 9.0000 | 9.0000 | 3.0000 | 9.0000 |
| CO4 | 9.0000 | 9.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO 5 | 9.0000 | 9.0000 | 9.0000 | 0.0000 | 6.0000 |
| **FINAL ATTAINMENT** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**
**ZOOLOGY SYLLABUS FOR V SEMESTER**
(w.e.f. 2019-20)

**ZOOLOGY - PAPER - V**

# ANIMAL BIOTECHNOLOGY

**Periods:60** **Max. Marks:100**

## COURSE OUTCOME WEIGHTED AVERAGE: 3.0

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1: Understand the Principles of Cloning strategies, gain knowledge on enzymes and cloning vectors and their uses in gene cloning technologies | Level 1 (Knowledge )<br>Level 2 (Understanding) | 1.5 | **3.0000** |
| CO2: Understand the gene delivery mechanisms, to acquire skills in PCR, Sanger's sequencing methods, blotting techniques | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 4 (Analysing) | 2.3 | **3.0000** |
| CO3: To acquaint students with latest biotechnology techniques like cell culture, tissue culture, stem cell technology and hyridoma technology to foster a spirit of inquiry and orientation to research | Level 1 (Knowledge)<br>Level 2 (Understanding)<br>Level 4 (Analysing) | 2.3 | **3.0000** |
| CO4: Understanding the assistive reproductive technologies and production of transgenic animals | Level 3 (Application)<br>Level 4 (Analysing)<br>Level 5 (Evaluation) | 4 | **3.0000** |
| CO5: Understanding the applications of bio0technology in fields of Industry and Agriculture including animal cell and tissue culture. | Level 2 (Knowledge)<br>Level 3 (Application)<br>Level 4 (Analysing)<br>Level 5 (Evaluation) | **3.5** | **3.0000** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **1** | **3** | **2** | **3** | **2** | **3** |
| CO2 | **3** | **3** | **1** | **1** | **3** | **2** | **3** | **2** | **3** |
| CO3 | **3** | **3** | **1** | **1** | **3** | **2** | **3** | **2** | **3** |
| CO4 | **3** | **3** | **1** | **1** | **3** | **2** | **3** | **2** | **3** |
| CO5 | **3** | **3** | **1** | **1** | **3** | **2** | **3** | **2** | **3** |
| | 15 | 15 | 5 | 5 | 15 | 10 | 15 | 10 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **3** | **2** | **1** | **3** |
| CO2 | **3** | **3** | **0** | **1** | **3** |
| CO3 | **3** | **3** | **3** | **1** | **3** |
| CO4 | **3** | **3** | **3** | **1** | **3** |
| CO5 | **3** | **3** | **3** | **1** | **3** |
| | 15 | 15 | 11 | 5 | 15 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 9.0000 | 9.0000 | 3.0000 | 3.0000 | 9.0000 | 6.0000 | 9.0000 | 6.0000 | 9.0000 |
| CO2 | 9.0000 | 9.0000 | 3.0000 | 3.0000 | 9.0000 | 6.0000 | 9.0000 | 6.0000 | 9.0000 |
| CO3 | 9.0000 | 9.0000 | 3.0000 | 3.0000 | 9.0000 | 6.0000 | 9.0000 | 6.0000 | 9.0000 |
| CO4 | 9.0000 | 9.0000 | 3.0000 | 3.0000 | 9.0000 | 6.0000 | 9.0000 | 6.0000 | 9.0000 |
| CO 5 | 9.0000 | 9.0000 | 3.0000 | 3.0000 | 9.0000 | 6.0000 | 9.0000 | 6.0000 | 9.0000 |
| **FINAL ATTAINMENT** | **3.0000** | **3.0000** | **O** | **0.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 9.0000 | 9.0000 | 6.0000 | 3.0000 | 9.0000 |
| CO2 | 9.0000 | 9.0000 | 0.0000 | 3.0000 | 9.0000 |
| CO3 | 9.0000 | 9.0000 | 9.0000 | 3.0000 | 9.0000 |
| CO4 | 9.0000 | 9.0000 | 9.0000 | 3.0000 | 9.0000 |
| CO 5 | 9.0000 | 9.0000 | 9.0000 | 3.0000 | 9.0000 |
| **FINAL ATTAINMENT** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**
**ZOOLOGY SYLLABUS FOR V SEMESTER**
(w.e.f. 2019-20)
**ZOOLOGY - PAPER - VI**

# ANIMAL HUSBANDRY

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## COURSE OUTCOME WEIGHTED AVERAGE: 3.0

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1: Understanding the key concepts of poultry farming with reference to poultry housing and management of poultry chicken which makes the student self0employable | Level 1 (Knowledge)<br>Level 2 (Understanding) | 1.5 | **3.0000** |
| CO2: Knowledge on poultry feed and poultry diseases which helps the student to take up a start0up with a minimum investment for producing and supplying poultry feed | Level 1 (Knowledge)<br>Level 2 (Understanding)<br>Level 3 (Application)<br>Level 4 (Analysing) | 2.5 | **3.0000** |
| CO3: Knowledge on hatching, selection, testing of poultry eggs and sexing of chicken | Level 1 (Knowledge)<br>Level 2 (Understanding) | 2.3 | **3.0000** |
| CO4: Empower the student with the principles of dairy farming in terms of selection of site, dairy housing, identification of breeds and techniques involved in breeding so that he/she can get an employment in dairy industry | Level 4 (Analysing)<br>Level 5 (Evaluation) | 4.5 | **3.0000** |
| CO5: Understand and acquire knowledge on the care and management of dairy animals | Level 2 (Understanding)<br>Level 3 (Application)<br>Level 4 (Analysing)<br>**Level 5 (Evaluation)** | **3.5** | **3.0000** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | **2** | **2** | **3** | **1** | **3** | **3** | **3** |
| CO2 | **3** | **2** | **2** | **2** | **3** | **1** | **3** | **3** | **3** |
| CO3 | **3** | **2** | **2** | **2** | **3** | **1** | **3** | **3** | **3** |
| CO4 | **3** | **2** | **2** | **2** | **3** | **1** | **3** | **3** | **3** |
| CO5 | **3** | **2** | **2** | **2** | **3** | **1** | **3** | **3** | **3** |
| | 15 | 10 | 10 | 10 | 15 | 5 | 15 | 15 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **2** | **1** | **3** | **3** |
| CO2 | **3** | **2** | **1** | **3** | **3** |
| CO3 | **3** | **2** | **1** | **3** | **3** |
| CO4 | **3** | **2** | **1** | **3** | **3** |
| CO5 | **3** | **2** | **1** | **3** | **3** |
| | 15 | 10 | 5 | 15 | 15 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 9.0000 | 6.0000 | 6.0000 | 6.0000 | 9.0000 | 3.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO2 | 9.0000 | 6.0000 | 6.0000 | 6.0000 | 9.0000 | 3.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO3 | 9.0000 | 6.0000 | 6.0000 | 6.0000 | 9.0000 | 3.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO4 | 9.0000 | 6.0000 | 6.0000 | 6.0000 | 9.0000 | 3.0000 | 9.0000 | 9.0000 | 9.0000 |
| CO 5 | 9.0000 | 6.0000 | 6.0000 | 6.0000 | 9.0000 | 3.0000 | 9.0000 | 9.0000 | 9.0000 |
| **FINAL ATTAINMENT** | **3.0000** | **3.0000** | **O** | **0.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 9.0000 | 6.0000 | 3.0000 | 9.0000 | 9.0000 |
| CO2 | 9.0000 | 6.0000 | 3.0000 | 9.0000 | 9.0000 |
| CO3 | 9.0000 | 6.0000 | 3.0000 | 9.0000 | 9.0000 |
| CO4 | 9.0000 | 6.0000 | 3.0000 | 9.0000 | 9.0000 |
| CO 5 | 9.0000 | 6.0000 | 3.0000 | 9.0000 | 9.0000 |
| **FINAL ATTAINMENT** | **3.0000** | **3.0000** | **3.0000** | **3.0000** | **3.0000** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**
**ZOOLOGY SYLLABUS FOR VI SEMESTER**
(w.e.f. 2019-20)
**ZOOLOGY –ELECTIVE PAPER:VII-(A)**

# IMMUNOLOGY

**Periods: 60** **Max. Marks: 100**

## COURSE OUTCOME WEIGHTED AVERAGE: 2.49

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1: Overview of the immune system including organs, cells and types of Immunity | Level 1 (Knowledge ) Level 2 (Understanding) | 1.5 | **2.7814** |
| CO2: Understand the concept of foreignness of antigen and receptors and factors associated with immunogenicity | Level 1 (Knowledge ) Level 2 (Understanding) Level 3 (Application) | 1.5 | **2.7814** |
| CO3: Understanding the role of antibodies (immunoglobulins) in immunity and applications of monoclonal antibodies | Level 1 (Knowledge) Level 2 (Understanding) Level 3 (Application) | 2.0 | **2.7086** |
| CO4: Understand and analyze the role of Major histocompatibility complexes and cytokines in controlling the growth and activity of other immune system cells and blood cells | Level 2 (Understanding) Level 4 (Analyzing) | 3.0 | **2.5629** |
| CO5: Knowledge on the key concepts of immune disorders associated with autoimmunity and hypersensitivity, apply the knowledge in combating various diseases through vaccines and evaluate the health benefits thereof | **Level 1 (Knowledge)** Level 3 (Application) Level 5 (Evaluation) | 3.0 | **2.5629** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | **0** | **1** | **2** | **1** | **0** | **0** | **3** |
| CO2 | **3** | **2** | **0** | **0** | **2** | **1** | **0** | **0** | **3** |
| CO3 | **3** | **2** | **0** | **0** | **2** | **1** | **0** | **0** | **3** |
| CO4 | **3** | **2** | **0** | **0** | **2** | **1** | **0** | **0** | **3** |
| CO5 | **3** | **2** | **3** | **1** | **2** | **1** | **1** | **1** | **3** |
| | 15 | 10 | 3 | 2 | 10 | 5 | 1 | 1 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **3** | **1** | **1** | **3** |
| CO2 | **3** | **3** | **1** | **1** | **3** |
| CO3 | **3** | **3** | **1** | **1** | **3** |
| CO4 | **3** | **3** | **0** | **1** | **3** |
| CO5 | **3** | **3** | **1** | **1** | **3** |
| | 15 | 15 | 4 | 5 | 15 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.3443 | 5.5629 | 0.0000 | 2.7814 | 5.5629 | 2.7814 | 0.0000 | 0.0000 | 8.3443 |
| CO2 | 8.3443 | 5.5629 | 0.0000 | 0.0000 | 5.5629 | 2.7814 | 0.0000 | 0.0000 | 8.3443 |
| CO3 | 8.1257 | 5.4171 | 0.0000 | 0.0000 | 5.4171 | 2.7086 | 0.0000 | 0.0000 | 8.1257 |
| CO4 | 7.6886 | 5.1257 | 0.0000 | 0.0000 | 5.1257 | 2.5629 | 0.0000 | 0.0000 | 7.6886 |
| CO 5 | 7.6886 | 5.1257 | 7.6886 | 2.5629 | 5.1257 | 2.5629 | 2.5629 | 2.5629 | 7.6886 |
| **FINAL ATTAINMENT** | **2.6794** | **2.6794** | **O** | **0.0000** | **2.6794** | **2.6794** | **2.5629** | **2.5629** | **2.6794** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.3443 | 8.3443 | 2.7814 | 2.7814 | 8.3443 |
| CO2 | 8.3443 | 8.3443 | 2.7814 | 2.7814 | 8.3443 |
| CO3 | 8.1257 | 8.1257 | 2.7086 | 2.7086 | 8.1257 |
| CO4 | 7.6886 | 7.6886 | 0.0000 | 2.5629 | 7.6886 |
| CO 5 | 7.6886 | 7.6886 | 2.5629 | 2.5629 | 7.6886 |
| **FINAL ATTAINMENT** | **2.6794** | **2.6794** | **2.7086** | **2.6794** | **2.6794** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**

**ZOOLOGY SYLLABUS FOR CLUSTER ELECTIVE VIII-B: VI SEMESTER**

(w.e.f. 2019-20)

# AQUACULTURE

## Cluster Elective Paper: VIII-B-1

## PRINCIPLES OF AQUACULTURE

**Periods: 60** **Max. Marks: 100**

**COURSE OUTCOME WEIGHTED AVERAGE: 2.4875**

| Learning Outcomes:On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1: Understanding the basics and history of aquaculture, identification of cultivable species and selection of site for aquaculture practices | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 3 (Application) | 2.0 | **2.7071** |
| CO2: Application of the knowledge of different types of aquaculture in various culture systems and practices | Level 1 (Knowledge)<br>Level 2 (Understanding)<br>Level 3 (Application) | 2.0 | **2.7071** |
| CO3: Create knowledge ecosystem in designing, construction and maintenance of aquafarms and appreciate the seed resources and nutritional requirements | Level 2 (Understanding)<br>Level 3 (Application) | 2.5 | **2.6339** |
| CO4: Understand the culture of carps and shrimps and application of the knowledge in starting bio start0ups and make students self0employable | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 3 (Application)<br>Level 6 (Create) | 3.0 | **2.5607** |
| CO5: Application of culture aspects in cultivating sea weeds, shrimps, pearl oysters and ornamental fishes for aesthetic and economical purposes | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 3 (Application)<br>Level 6 (Create) | 3.0 | **2.5607** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **1** | **0** | **0** | **1** | **3** | **3** | **3** | **3** |
| CO2 | **3** | **1** | **0** | **0** | **1** | **3** | **3** | **3** | **3** |
| CO3 | **3** | **1** | **0** | **0** | **1** | **3** | **3** | **3** | **3** |
| CO4 | **3** | **1** | **0** | **0** | **1** | **3** | **3** | **3** | **3** |
| CO5 | **3** | **1** | **0** | **0** | **1** | **3** | **3** | **3** | **3** |
| | 15 | 5 | 0 | 0 | 5 | 15 | 15 | 15 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **1** | **1** | **0** | **3** |
| CO2 | **3** | **1** | **0** | **0** | **3** |
| CO3 | **3** | **1** | **0** | **2** | **3** |
| CO4 | **3** | **1** | **1** | **0** | **3** |
| CO5 | **3** | **1** | **1** | **0** | **3** |
| | 15 | 5 | 3 | 2 | 15 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.1214 | 2.7071 | 0.0000 | 0.0000 | 2.7071 | 8.1214 | 8.1214 | 8.1214 | 8.1214 |
| CO2 | 8.1214 | 2.7071 | 0.0000 | 0.0000 | 2.7071 | 8.1214 | 8.1214 | 8.1214 | 8.1214 |
| CO3 | 7.9018 | 2.6339 | 0.0000 | 0.0000 | 2.6339 | 7.9018 | 7.9018 | 7.9018 | 7.9018 |
| CO4 | 7.6821 | 2.5607 | 0.0000 | 0.0000 | 2.5607 | 7.6821 | 7.6821 | 7.6821 | 7.6821 |
| CO 5 | 7.6821 | 2.5607 | 0.0000 | 0.0000 | 2.5607 | 7.6821 | 7.6821 | 7.6821 | 7.6821 |
| **FINAL ATTAINMENT** | **2.6339** | **2.6339** | **O** | **0.0000** | **2.6339** | **2.6339** | **2.6339** | **2.6339** | **2.6339** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.1214 | 2.7071 | 2.7071 | 0.0000 | 8.1214 |
| CO2 | 8.1214 | 2.7071 | 0.0000 | 0.0000 | 8.1214 |
| CO3 | 7.9018 | 2.6339 | 0.0000 | 5.2679 | 7.9018 |
| CO4 | 7.6821 | 2.5607 | 2.5607 | 0.0000 | 7.6821 |
| CO 5 | 7.6821 | 2.5607 | 2.5607 | 0.0000 | 7.6821 |
| **FINAL ATTAINMENT** | **2.6339** | **2.6339** | **2.6095** | **2.6339** | **2.6339** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**

**ZOOLOGY SYLLABUS FOR CLUSTER ELECTIVE VIII-B: VI SEMESTER**

(w.e.f. 2019-20)

# AQUACULTURE

## Cluster Elective Paper: VIII-B-2

## AQUACULTURE MANAGEMENT

**Periods: 60** **Max. Marks: 100**

### COURSE OUTCOME WEIGHTED AVERAGE: 2.475

| Learning Outcomes:On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1: Understanding the concept of breeding of shrimps and management of shrimp hatchery | Level 1 (Knowledge ) Level 2 (Understanding) | 1.5 | **2.7750** |
| CO2: Understanding the importance of water quality and soil quality in culture ponds and application of aeration and liming principles for improving the quality respectively | Level 1 (Knowledge) Level 2 (Understanding) Level 3 (Application) | 2.0 | **2.7000** |
| CO3: Knowledge on Live feeds used in aquafarms and application of the knowledge in feed formulation and preparation | Level 2 (Understanding) Level 3 (Application) | 2.5 | **2.6250** |
| CO4: Understanding the health management of aqua farms, immunization and vaccination | Level 1 (Knowledge ) Level 2 (Understanding) Level 3 (Application) | 2.0 | **2.7000** |
| CO5: Understanding economics, extension and marketing aspects of aquaculture application of genetics to fish reproduction and preservation of gametes | Level 1 (Knowledge ) Level 2 (Understanding) Level 3 (Application) | **2.0** | **2.7000** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **2** | **1** | **3** | **3** | **3** | **3** | **3** | **3** |
| CO2 | **3** | **1** | **1** | **2** | **2** | **3** | **3** | **3** | **3** |
| CO3 | **3** | **1** | **1** | **0** | **2** | **2** | **3** | **3** | **3** |
| CO4 | **3** | **1** | **1** | **1** | **2** | **2** | **3** | **3** | **3** |
| CO5 | **3** | **1** | **1** | **1** | **1** | **1** | **3** | **3** | **3** |
| | 15 | 6 | 5 | 7 | 10 | 11 | 15 | 15 | 15 |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **2** | **1** | **3** | **3** |
| CO2 | **3** | **2** | **1** | **3** | **3** |
| CO3 | **3** | **2** | **1** | **3** | **3** |
| CO4 | **3** | **2** | **1** | **3** | **3** |
| CO5 | **3** | **2** | **1** | **3** | **3** |
| | 15 | 10 | 5 | 15 | 15 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.3250 | 5.5500 | 2.7750 | 8.3250 | 8.3250 | 8.3250 | 8.3250 | 8.3250 | 8.3250 |
| CO2 | 8.1000 | 2.7000 | 2.7000 | 5.4000 | 5.4000 | 8.1000 | 8.1000 | 8.1000 | 8.1000 |
| CO3 | 7.8750 | 2.6250 | 2.6250 | 0.0000 | 5.2500 | 5.2500 | 7.8750 | 7.8750 | 7.8750 |
| CO4 | 8.1000 | 2.7000 | 2.7000 | 2.7000 | 5.4000 | 5.4000 | 8.1000 | 8.1000 | 8.1000 |
| CO 5 | 8.1000 | 2.7000 | 2.7000 | 2.7000 | 2.7000 | 2.7000 | 8.1000 | 8.1000 | 8.1000 |
| **FINAL ATTAINMENT** | **2.7000** | **2.7125** | **O** | **0.0000** | **2.7075** | **2.7068** | **2.7000** | **2.7000** | **2.7000** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.3250 | 5.5500 | 2.7750 | 8.3250 | 8.3250 |
| CO2 | 8.1000 | 5.4000 | 2.7000 | 8.1000 | 8.1000 |
| CO3 | 7.8750 | 5.2500 | 2.6250 | 7.8750 | 7.8750 |
| CO4 | 8.1000 | 5.4000 | 2.7000 | 8.1000 | 8.1000 |
| CO 5 | 8.1000 | 5.4000 | 2.7000 | 8.1000 | 8.1000 |
| **FINAL ATTAINMENT** | **2.7000** | **2.7000** | **2.7000** | **2.7000** | **2.7000** |

**Dr. V.S. KRISHNA GOVERNMENT DEGREE COLLEGE (A)**

**ZOOLOGY SYLLABUS FOR CLUSTER ELECTIVE VIII-B: VI SEMESTER**

(w.e.f. 2019-20)

# AQUACULTURE

## Cluster Elective Paper: VIII-B-3

## POST HARVEST TECHNOLOGY

**Periods: 60** **Max. Marks: 100**

### COURSE OUTCOME WEIGHTED AVERAGE: 2.3142

| Learning Outcomes: On Completion of the course, the students will be able to | Correlation with Bloom's Taxonomy Learning Levels | CO Learning Level Index | CO Attainment |
|---|---|---|---|
| CO1: Understanding the importance of handling, temperature, radiation and spoilage in fish preservation | Level 1 (Knowledge)<br>Level 2 (Understanding) | 1.5 | **2.7061** |
| CO2: Understanding the different types of traditional and advanced methods of fish preservation and application of the technology for self0employment | Level 1 (Knowledge)<br>Level 2 (Understanding)<br>Level 3 (Application) | 2.0 | **2.6081** |
| CO3: Application of the knowledge on the consumptive, economic and therapeutic value of fish products, fish byproducts and sea weed products | Level 2 (Understanding)<br>Level 3 (Application)<br>Level 5 (Evaluation) | 3.3 | **2.3534** |
| CO4: Understanding the significance of sanitation at personal and industry level and quality control of fishery products | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 5 (Evaluation) | 2.7 | **2.4710** |
| CO5: Evaluation of processing industries based on national and international standards and understanding the maintenance of quality in industries | Level 1 (Knowledge )<br>Level 2 (Understanding)<br>Level 5 (Evaluation) | **2.7** | **2.4710** |

| CO-PO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | **3** | **1** | **1** | **0** | **3** | **3** | **3** | **3** | **3** |
| CO2 | **3** | **1** | **1** | **0** | **3** | **3** | **3** | **3** | **3** |
| CO3 | **3** | **1** | **1** | **0** | **3** | **3** | **3** | **3** | **3** |
| CO4 | **3** | **1** | **1** | **0** | **3** | **3** | **3** | **3** | **3** |
| CO5 | **3** | **1** | **1** | **0** | **3** | **3** | **3** | **3** | **3** |
| | **3** | **1** | **1** | **0** | **3** | **3** | **3** | **3** | **3** |

| CO-PSO Mapping |
|---|
| 1-Low, 2-Moderate, 3-High, ‘0‘ No Correlation |

| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|---|
| CO1 | **3** | **1** | **1** | **0** | **2** |
| CO2 | **3** | **1** | **2** | **1** | **2** |
| CO3 | **3** | **1** | **1** | **0** | **2** |
| CO4 | **3** | **1** | **0** | **1** | **2** |
| CO5 | **3** | **1** | **0** | **1** | **2** |
| | 15 | 5 | 4 | 3 | 10 |

# ATTAINMENT OF POs

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| CO 1 | 8.1183 | 2.7061 | 2.7061 | 0.0000 | 8.1183 | 8.1183 | 8.1183 | 8.1183 | 8.1183 |
| CO2 | 7.8243 | 2.6081 | 2.6081 | 0.0000 | 7.8243 | 7.8243 | 7.8243 | 7.8243 | 7.8243 |
| CO3 | 7.0602 | 2.3534 | 2.3534 | 0.0000 | 7.0602 | 7.0602 | 7.0602 | 7.0602 | 7.0602 |
| CO4 | 7.4129 | 2.4710 | 2.4710 | 0.0000 | 7.4129 | 7.4129 | 7.4129 | 7.4129 | 7.4129 |
| CO 5 | 7.4129 | 2.4710 | 2.4710 | 0.0000 | 7.4129 | 7.4129 | 7.4129 | 7.4129 | 7.4129 |
| **FINAL ATTAINMENT** | **2.5219** | **2.5219** | **O** | **0.0000** | **2.5219** | **2.5219** | **2.5219** | **2.5219** | **2.5219** |

# ATTAINMENT OF PSOs

| PROGRAM SPECIFIC OUTCOMES ATTAINMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO 1 | 8.1183 | 2.7061 | 2.7061 | 0.0000 | 8.1183 |
| CO2 | 7.8243 | 2.6081 | 2.6081 | 0.0000 | 7.8243 |
| CO3 | 7.0602 | 2.3534 | 2.3534 | 0.0000 | 7.0602 |
| CO4 | 7.4129 | 2.4710 | 2.4710 | 0.0000 | 7.4129 |
| CO 5 | 7.4129 | 2.4710 | 2.4710 | 0.0000 | 7.4129 |
| **FINAL ATTAINMENT** | **2.5219** | **2.5219** | **O** | **0.0000** | **2.5219** |

Dr.V.S.KRISHNA GOVT. DEGREE COLLEGE
(AUTONOMOUS)
NODAL RESOURCE CENTRE & AU CENTRE FOR RESEARCH
Maddilapalem, Visakhapatnam – 530013, Andhra Pradesh.
0891-2553262, https://www.drvskrishnagdc.edu.in

# Department of History

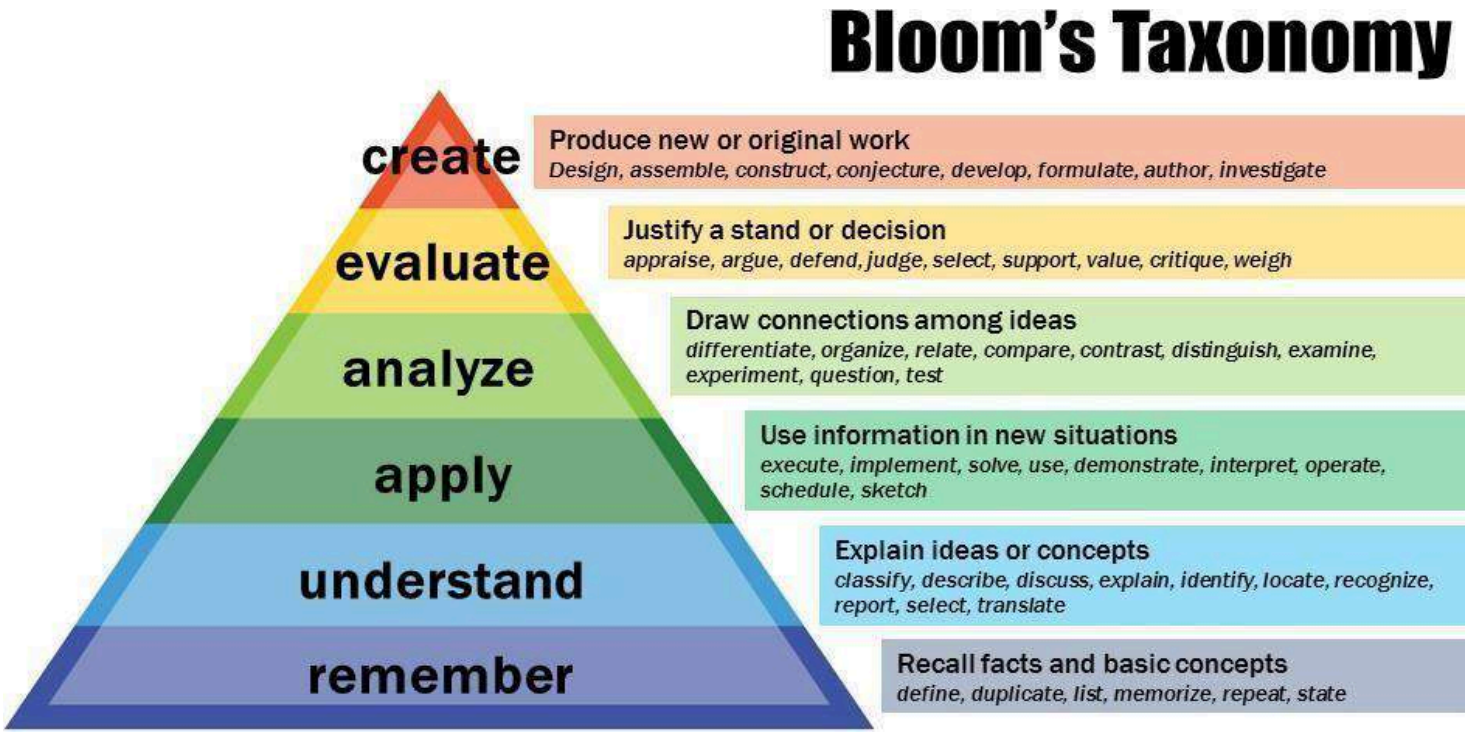
## 2019-2020

## POs & COs

## ATTAINMENT

## BOARD OF STUDIES IN B.A HISTORY 2019-2020

**Dr.V.S.Krishna Govt. Degree College (Autonomous),**
**(Accredited with 'A' Grade by NAAC ) Visakhapatnam 530013,**
**ANDHRA PRADESH**




Levels in Bloom's Taxonomy

| | |
|---|---|
| **Level-1** | **Knowledge / Remember** |
| **Level-2** | **Understand** |
| **Level-3** | **Application** |
| **Level-4** | **Analyze** |
| **Level-5** | **Evaluation** |
| **Level-6** | **Create** |

## Program Outcomes

**Students graduating with a B.SC /B.A /B.Com should be able to**

| | Programme Outcome |
|---|---|
| **PO 1** | **Critical Thinking**: Ability to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. |
| **PO 2** | **Effective Communication:** Ability to speak, read, write, and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media, and technology. |
| **PO 3** | **Social Interaction:** Ability to elicit views of others, mediate disagreements and help reach conclusions in group settings. |
| **PO 4** | **Effective Citizenship:** Ability to demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering. |
| **PO 5** | **Ethics:** Ability to recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them. |
| **PO 6** | **Environment and Sustainability:** Ability to understand the issues of environmental contexts and sustainable development |
| **PO 7** | **Employability skills:** Equipping graduates with the essential abilities and knowledge to excel in their chosen careers |
| **PO 8** | **Entrepreneurship skills:** Seeks to empower students with the competencies needed to be successful entrepreneurs, enabling them to launch, operate, and innovate in their own businesses or entrepreneurial ventures. |

| | |
|---|---|
| **PO 9** | **Self-directed and Life-long Learning:**<br>Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes |

## Program Specific Outcomes (PSOs) B.A. HEP

| PSOs | Program Specific Outcomes (PSOs) |
|---|---|
| PSO1 | Understand the basic concepts like GDP, Poverty, Employment, International trade, Fiscal and Monetary policies, Economic conditions of various Historic periods, the development of Trade and Commerce from the ancient period to modern period and their role in administration, for formulating relevant policies for effective utilisation of resources and tackling. Evaluate the contemporary economic conditions with the economic theories and principles. |
| PSO2 | To analyze the concept of political science processes, institutions and the Welfare State and Urban governance of Mauryan administration, Local Self-Government of Chola administration and all Democratic practices of modern British administration. |
| PSO3 | Demonstrate proficiency in Historical knowledge of India and modern world.To understand the impact of economic prosperity that attracted the foreign invaders towards India, resulting in changed administration and economy in due course. |
| PSO4 | To provide life skills required for gainful employment by using domain knowledge such as Economics,History and Political Science at various levels. I play the equator knowledge to solve problems in relevant fields. |
| PSO5 | To promote values such as sustainable development, Optimum utilisation of resources, patriotism, respecting the ideals of freedom struggle and responsible citizenship, political participation and socialisation |

## Semester I

## ANCIENT INDIAN HISTORY & CULTURE (from earliest times to 600A.D)

### Course code - N-1101

Unit – 1

Survey of Sources: Literary & Archaeological Sources; Influence of Geography on History; Unity in Diversity; Traces of Stone Age Cultures (Circa 3,50,000 B. C to 3,000 B. C); Indus Valley Civilization (Circa 3000 B. C to 1,500 B. C): Origin, Extent, Salient Features.

Unit – II

Vedic Age & Religious Reform Movements (Circa 1500 B. C to 600 B. C): Society, Polity, Economy, Culture during early and later Vedic period; Jainism and Buddhism: Causes, Doctrines, Spread, Importance and Impact

Unit - III

Transition from Territorial States to Emergence of Empires (Circa 600to Century to 300 B. C): Rise of Mahajanapadas – Causes for Magadha's Success; Persian and Macedonian Invasions; Mauryan Empire: State, Imperial Administration, Economy, Ashoka'sDhamma, Art & Architecture, Significance & Downfall

Unit - IV

Conditions during 200 B. C to 300 A. D.: Central Asian Contacts – Kushanas – Aspects of polity, society, Economy, Religion, Art& Architecture; The Age of Satavahanas: Pattern of Administration – Social, Economic, Religious & Cultural Developments; Sangam Age: The Three Early Kingdoms (Chola, Chera& Pandya) – Society, Language & Literature.

Unit – V

India between 300 A. D & 600 A. D.: The Rise and Growth of Guptas: Administration, Society,

Economy, Religion, Art, Literature and Science & Technology – Decline.

## COURSE OUTCOMES(COs)

**On completion of the course the student will be able to**

| | |
|---|---|
| **CO 1:** | Learn about the Survey of Sources and ancient civilisations |
| **CO 2:** | Understand the Vedic Age & Religious Reform Movements |
| **CO 3:** | Compare theTransition from Territorial States to Emergence of Empires |
| **CO 4:** | Appraise the Conditions during 200 B. C to 300 A. D and describe the conditions of south |
| **CO 5:** | Support the concept of golden age during the conditions of India under the Guptas. |

**Average level weightage COWA: 2.287481036**

| Sl.no | Course outcomes | Knowledge level (Bloom's Taxonomy) | Average level weightage | CO Attainment |
|---|---|---|---|---|
| **CO 1:** | Learn about the Survey of Sources and ancient civilisations | Remember and understand | 1.5 | 2.69463473 |
| **CO 2:** | Understand the Vedic Age & Religious Reform Movements | Understand and evaluate | 3.5 | 2.287481036 |
| **CO 3:** | Compare theTransition from Territorial States to Emergence of Empires | Analyze | 4 | 2.185692613 |
| **CO 4:** | Appraise the Conditions during 200 B. C to 300 A. D and describe the conditions of south India. | Analyze and Understand | 3 | 2.185692613 |

| | | | | |
|---|---|---|---|---|
| **CO 5:** | Support the concept of golden age during the conditions of India under the Guptas. | Evaluate | 5 | **1.982115766** |

## CO-PO Mapping

1. Low, 2- Moderate, 3- High, '-' No Correlatio

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | - | 3 | 1 | - | - | - | - | - |
| CO:2 | 2 | - | 2 | 2 | 3 | 1 | - | - | - |
| CO:3 | 1 | - | 2 | - | 2 | 1 | - | - | - |
| CO:4 | 1 | - | - | 1 | - | 2 | - | 2 | - |
| CO:5 | 2 | - | 2 | 1 | - | - | - | - | - |

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| 5.38926946 | 2.69463473 | 8.0839042 | 2.69463473 | 0 | 0 | 0 | 0 | 3 |
| 4.57496207 | 2.287481036 | 4.5749621 | 4.57496207 | 6.8624431 | 2.287481036 | 0 | 0 | 0 |
| 2.18569261 | 2.185692613 | 4.3713852 | 0 | 4.3713852 | 2.185692613 | 0 | 0 | 0 |
| 2.18569261 | 2.185692613 | 0 | 2.18569261 | 0 | 4.371385225 | 0 | 4.371385225 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3.96423153 | 1.982115766 | 3.9642315 | 1.9821157 | 0 | 0 | 0 | 0 | 0 |
| 2.28748104 | 2.267123351 | 2.3327203 | 2.2874810 4 | 2.2467657 | 2.21113971 9 | #DIV/0! | 2.18569261 3 | #DIV/0 ! |

## CO-PSO Mapping

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 3 | - | 3 | - | - |
| CO:2 | 2 | - | - | 2 | - |
| CO:3 | 2 | - | - | 3 | - |
| CO:4 | 2 | 2 | - | 3 | 2 |
| CO:5 | 2 | 2 | - | 2 | 2 |

| PROGRAM SPECIFIC OUTCOMES ATTAIMENT | | | | | |
|---|---|---|---|---|---|
| | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO:1 | 8.083904189 | 0 | 8.083904189 | 0 | 0 |
| CO:2 | 4.574962072 | 0 | 0 | 4.574962072 | 0 |

| | | | | | |
|---|---|---|---|---|---|
| CO:3 | 4.371385225 | 0 | 0 | 6.557077838 | 0 |
| CO:4 | 4.371385225 | 4.371385225 | 0 | 6.557077838 | 4.371385225 |
| CO:5 | 3.964231532 | 3.964231532 | 0 | 3.964231532 | 3.964231532 |
| | 2.305988022 | 2.083904189 | 2.69463473 | 2.165334928 | 2.083904189 |

# Semester – II

## Paper – II (Core Paper)

### EARLY MEDIEVAL INDIAN HISTORY & CULTURE (600 A.D to 1526 A. D.)

Unit-I

Harsha & His Times: Administration, Religion – Hiuen Tsang -Polity, Society, Economy and Culture from 7th to 11th Century A. D. under Chalukyas of Badami & Eastern Chalukyas of Vengi.

Unit-II

Age of later Pallavas during 7th& 8th Centuries A. D.: Contribution to Cultural Development & Art & Architecture; The Chola Empire from 9th to 12 Century A. D.: Rise of the Empire, Administration and Cultural Life

Unit-III

Conditions in India on the eve of Turkish Invasions; Early Invasions: Traces of Arab Invasion, Ghazni&Ghori; Delhi Sultanate (1206 to 1290 A.D.) under Slave Dynasty

Unit-IV

Delhi Sultanate (1290 to 1526 A.D.): Khaljis: Expansion & Consolidation, Administrative & Economic Reforms - The Tughlaqs - Decline & Disintegration of the Delhi Sultanate; Administration, Society, Economy, Technology, Religion, Art & Architecture under the Sultanate.

Unit-V

Cultural Development in India between 13th& 15th Centuries A. D.: Impact of Islam on Indian Society and Culture – Bhakti and Sufi Movements – Emergence of Composite Culture

## COURSE OUTCOMES(COs)

**On completion of the course the student will be able to**

| | |
|---|---|
| **CO 1:** | Describe the conditions of India from 7th to 11th Century A. D. |
| **CO 2:** | Appraise the Contribution of the Pallavas to Cultural Development and compare the local self government of the Cholas with modern democracy. |
| **CO 3:** | Examine the Conditions in India on the eve of Turkish Invasions and explain Delhi Sultanate (1206 to 1290 A.D.) under Slave Dynasty |
| **CO 4:** | Compare the Conditions during the Delhi Sultanate to earlier times(1290 to 1526 A.D.) |
| **CO 5:** | Analyze the Cultural Development in India between 13th& 15th Centuries A. D |

## COURSE OUTCOME WEIGHTED AVERAGE - COWA – 2.290262092

**Average level weightage**

| Sl.no | Course outcomes | Knowledge level (Bloom's Taxonomy) | Average level weightage | CO Attainment |
|---|---|---|---|---|
| **CO 1:** | Describe the conditions of India from 7th to 11th Century A. D. | understand | 2 | 2.594435481 |
| **CO 2:** | Appraise the Contribution of the Pallavas to Cultural Development and compare the local | Evaluate and Analyze | 4.5 | 2.087479833 |

## CO-PO Mapping

2. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | | - | - | 1 | 2 | - | - | - | 2 |
| CO:2 | 1 | - | 2 | - | 3 | 1 | - | 2 | - |
| CO:3 | 2 | 1 | 2 | - | 2 | 1 | - | - | - |
| CO:4 | - | - | - | 1 | - | - | 1 | 2 | - |
| CO:5 | 2 | - | 2 | - | - | - | - | - | - |

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| 2.59443548 | 0 | 0 | 2.59443548 | 5.188871 | 2.594435481 | 2.594435 | 0 | 5.188871 |
| 2.08747983 | 2.087479833 | 4.174959 7 | 2.08747983 | 6.2624395 | 2.087479833 | 2.08748 | 4.174959666 | 0 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4.78330644 | 2.391653222 | 4.7833064 | 0 | 4.7833064 | 2.391653222 | 0 | 0 | 0 |
| 2.18887096 | 2.188870963 | 0 | 2.18887096 | 0 | 0 | 2.188871 | 4.377741926 | 0 |
| 4.37774193 | 0 | 4.3777419 | 0 | 2.188871 | 2.188870963 | 2.188871 | 0 | 0 |
| **2.29026209** | **2.222668006** | **2.222668** | **2.29026209** | **2.302936** | **2.315609875** | **2.264914** | **2.138175398** | **2.594435** |

## CO-PSO Mapping

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 3 | - | 3 | - | - |
| CO:2 | 2 | - | - | 2 | - |
| CO:3 | 2 | - | - | 3 | - |
| CO:4 | 2 | 2 | - | 3 | 2 |
| CO:5 | 2 | 2 | - | 2 | 2 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | |
|---|---|---|---|---|
| PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| 7.783306 | 0 | 7.78330644 | 2.594435 | 0 |
| 4.17496 | 0 | 2.08747983 | 4.17496 | 0 |

| | | | | |
|---|---|---|---|---|
| 4.783306 | 2.391653 | 2.39165322 | 7.17496 | 0 |
| 4.377742 | 4.377742 | 0 | 6.566613 | 4.377742 |
| 4.377742 | 4.377742 | 0 | 4.377742 | 4.377742 |
| **2.317914** | **2.229427** | **2.4524879** | **2.26261** | **2.188871** |

# Semester – III

## Paper – III (Core Paper)

### LATE MEDIEVAL & COLONIAL HISTORY OF INDIA (1526 to 1857 A. D.)

Unit – 1

India from 1526 to 1707 A. D.: Emergence of Mughal Empire - Sources, Conditions in India on the eve of Babur's invasion, Brief Summary of Mughal Polity – Sher Shah & Sur Interregnum – Expansion & Consolidation of Mughal Empire – Rise of Marathas &Peshwas.

Unit – II

Administration, Economy, Society and Cultural Developments under the Mughals – Disintegration of Mughal Empire.

Unit - III

India under Colonial Hegemony : Beginning of European Settlements – Anglo-French Struggle – Policies of Expansion - Subsidiary Alliance & Doctrine of Lapse - Consolidation of British Empire in India up to 1857 A. D.

Unit - IV

Economic Policies of the British (1757-1857): Land Revenue Settlements – Commercialization of Agriculture – Impact of Industrial Revolution on Indian Industry ; Administration of the

Company – Regulating Charter Acts; Cultural & Social Policies: Humanitarian Measures & Spread of Modern Education

Unit – V

Anti-Colonial Upsurge –Peasant & Tribal Revolts - 1857 Revolt – Causes, Nature & Consequence

## COURSE OUTCOMES (COs) - Average level weightage

## COURSE OUTCOME WEIGHTED AVERAGE 2.301578822

**On completion of the course the student will be able to**

| **Sl.no** | **Course outcomes** | Knowledge level (Bloom's Taxonomy | **Average level weightage** | **CO Attainment** |
|---|---|---|---|---|
| **CO 1:** | Explain the Emergence of Mughal Empire and support Rise of Marathas | Understand and Evaluate | 3.5 | **2.301578822** |
| **CO 2:** | Designs a new agriculture policy | Create | 6 | **1.802706553** |
| **CO 3:** | Examine the Consolidation of the British Empire in India up to 1857 | Analyze | 4 | **2.201804368** |
| **CO 4:** | Compare the Economic Policies of the British with present policies | Analyze | 4 | **2.201804368** |
| **CO 5:** | Analyze the Peasant & Tribal Revolts - 1857 Revolt | Analyze | 4 | **2.201804368** |

## CO-PO Mapping

3. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 2 |
| CO:2 | 1 | 1 | 0 | 0 | 3 | 1 | 0 | 2 | 1 |
| CO:3 | 2 | 1 | 2 | 0 | 2 | 1 | 0 | 0 | 0 |
| CO:4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 0 |
| CO:5 | 2 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 1 |

**PROGRAM OUTCOMES ATTAINMENT**

| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|
| 2.59443548 | 0 | 2.5944355 | 2.59443548 | 5.188871 | 2.594435481 | 2.594435 | 0 | 5.188871 |
| 2.08747983 | 2.087479833 | 0 | 0 | 6.262439 5 | 2.087479833 | 0 | 4.174959666 | 2.08748 |
| 4.78330644 | 2.391653222 | 4.7833064 | 0 | 4.783306 4 | 2.391653222 | 0 | 0 | 0 |
| 4.37774193 | 2.188870963 | 2.188871 | 2.18887096 | 2.188871 | 2.188870963 | 2.188871 | 4.377741926 | 0 |
| 4.37774193 | 0 | 4.3777419 | 2.18887096 | 2.188871 | 0 | 0 | 0 | 2.188871 |
| **2.2775882** | **2.222668006** | **2.3240591** | **2.32405914** | **2.290262 1** | **2.315609875** | **2.391653** | **2.138175398** | **2.366305** |

## CO-PSO Mapping

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 3 | 1 | 3 | 0 | 1 |
| CO:2 | 2 | 1 | 1 | 2 | 1 |
| CO:3 | 2 | 0 | 1 | 3 | 0 |
| CO:4 | 2 | 2 | 0 | 3 | 2 |
| CO:5 | 2 | 2 | 2 | 2 | 2 |

| MAPPING PROGRAM SPECIFIC OUTCOMES | | | | |
|---|---|---|---|---|
| PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| 7.783306 | 2.594435 | 7.78330644 | 0 | 2.594435 |

| | | | | |
|---|---|---|---|---|
| 4.17496 | 2.08748 | 2.08747983 | 4.17496 | 2.08748 |
| 4.783306 | 0 | 2.39165322 | 7.17496 | 0 |
| 4.377742 | 4.377742 | 0 | 6.566613 | 4.377742 |
| 4.377742 | 4.377742 | 4.37774193 | 4.377742 | 4.377742 |
| **2.317914** | **2.239567** | **2.37716878** | **2.229427** | **2.239567** |

## Semester – IV

## Paper – IV (Core Paper)

## SOCIAL REFORM MOVEMENT & FREEDOM STRUGGLE (1820 to 1947 A.D.)

Unit – 1

Social, Religious & Self-Respect Movements: Social & Cultural Awakening – Brahma Samaj, Arya Samaj, Theosophical Society, Ramakrishna Mission, Aligarh Movement – Emancipation of Women – Struggle Against Caste: JyotibaPhule, Narayana Guru, Periyar, Dr. B. R. Ambedkar.

Unit – II

Growth of Nationalism in the 2nd Half of 19th Century – Impact of British Colonial Policies under Viceroys' Rule and the Genesis of Freedom Movement – Birth of Indian National Congress.

Unit - III

Freedom Struggle from 1885 to 1920: Moderate Phase — Partition of Bengal - Emergence of Militant Nationalism –Swadeshi & Boycott Movement – Home Rule Movement.

Unit - IV

Freedom Struggle from 1920 to 1947: Gandhiji's Role in the National Movement – Revolutionary Movement –Subhas Chandra Bose.

Unit – V

Muslim League & the Growth of Communalism – Partition of India – Advent of Freedom - Integration of Princely States into Indian Union – SardarVallabhai Patel.

## COURSE OUTCOMES(COs)

**On completion of the course the student will be able to**

| | |
|---|---|
| **CO 1:** | Explain the Emergence of Mughal Empire and sketch the causes for the Rise of Marathas |
| **CO 2:** | Designs a new agriculture policy |
| **CO 3:** | Examine the Consolidation of the British Empire in India up to 1857 |
| **CO 4:** | Compare the Economic Policies of the British with present policies |
| **CO 5:** | Analyze the Peasant & Tribal Revolts - 1857 Revolt |

**Average level weightage**

**COURSE OUTCOME WEIGHTED AVERAGE COWA - 1.982326899**

| **Sl.no** | **Course outcomes** | Knowledge level (Bloom's Taxonomy) | **Average level weightage** | **CO Attainment** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| **CO 1:** | Explain the Emergence of Mughal Empire and sketch the causes for Rise of Marathas | Understand and Apply | 2.5 | **2.273090642** |
| **CO 2:** | Designs a new agriculture policy | Create | 6 | **1.25541754** |
| **CO 3:** | Examine the Consolidation of the British Empire in India up to 1857 | Analyze | 4 | **1.836945027** |
| **CO 4:** | Compare the Economic Policies of the British with present policies | Analyze | 4 | **1.836945027** |
| **CO 5:** | Analyze the Peasant & Tribal Revolts - 1857 Revolt | Analyze | 4 | **1.836945027** |

## CO-PO Mapping

4. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 1 | 0 | 2 | 1 | 2 | 1 | 0 | 0 | 2 |
| CO:2 | 1 | 1 | 2 | 1 | 3 | 1 | 0 | 2 | 1 |
| CO:3 | 2 | 1 | 2 | 1 | 2 | 1 | 0 | 0 | 0 |
| CO:4 | 2 | 0 | 2 | 1 | 0 | 0 | 2 | 2 | 0 |
| CO:5 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |

**PROGRAM OUTCOMES ATTAINMENT**

| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|
| 2.27309064 | 0 | 4.5461813 | 2.27309064 | 4.5461813 | 2.273090642 | 0 | 0 | 4.546181 |
| 1.25541754 | 1.25541754 | 2.5108351 | 1.25541754 | 3.7662526 | 1.25541754 | 0 | 2.510835081 | 1.255418 |
| 3.67389005 | 1.836945027 | 3.6738901 | 1.8369453 | 3.6738901 | 1.836945027 | 0 | 0 | 0 |
| 3.67389005 | 0 | 3.6738901 | 1.8369453 | 0 | 0 | 3.67389 | 3.673890054 | 0 |
| 3.67389005 | 0 | 3.6738901 | 0 | 0 | 0 | 0 | 0 | 0 |
| **1.81877229** | **1.546181284** | **1.8078687** | **1.8005995 6** | **1.712332** | **1.788484403** | **1.836945** | **1.546181284** | **1.933866** |

## CO-PSO Mapping

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 3 | 0 | 3 | 0 | 1 |
| CO:2 | 2 | 0 | 0 | 2 | 1 |
| CO:3 | 2 | 1 | 1 | 3 | 1 |
| CO:4 | 2 | 2 | 1 | 3 | 2 |
| CO:5 | 2 | 2 | 1 | 2 | 2 |

**MAPPING PROGRAM SPECIFIC OUTCOMES**

| PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|
| 6.819272 | 0 | 6.81927193 | 0 | 2.273091 |
| 2.510835 | 0 | 0 | 2.510835 | 1.255418 |
| 3.67389 | 1.836945 | 1.83694503 | 5.510835 | 1.836945 |
| 3.67389 | 3.67389 | 1.83694503 | 5.510835 | 3.67389 |
| 3.67389 | 3.67389 | 1.83694503 | 3.67389 | 3.67389 |
| **1.850162** | **1.836945** | **2.05501783** | **1.72064** | **1.816176** |

## Semester – V

## Paper – V (Core Paper)

## AGE OF RATIONALISM AND HUMANISM

## (The World Between 15th& 18th Centuries)

Unit – 1

Feudalism -Geographical Discoveries: Causes – Compass & Maps – Portugal Leads and Western World Follows – Consequences;

Unit – II

The Renaissance Movement: Factors for the Growth of Renaissance – Characteristic Features - Transformation from Medieval to Modern World; Reformation & Counter Reformation Movements: The Background – Protestantism – Spread of the Movement– Counter Reformation– Effects of Reformation

Unit - III

Emergence of Nation States: Contributory Factors - England and other Nation States – Impact due to the Emergence of Nation States.;Age of Revolutions: The Glorious Revolution (1688) – Origin of Parliament – Constitutional Settlement – Bill of Rights – Results.

Unit - IV

Age of Revolutions: The American Revolution (1776) – Opening of New World – Causes – Course – Declaration of Independence, 1776 – Bill of Rights, 1791 – Significance.

Unit – V

Age of Revolutions: The French Revolution (1789) – Causes - Teachings of Philosophers - Course of the Revolution – Results.

## COURSE OUTCOMES(COs)

**On completion of the course the student will be able to**

| | |
|---|---|
| **CO 1:** | Explain the Geographical Discoveries and the Consequences |
| **CO 2:** | Describe the Factors for the Growth of Renaissance and differentiate between Reformation & Counter Reformation |
| **CO 3:** | Judge the results of Glorious Revolution |
| **CO 4:** | Interpret the effect of results of The American Revolution |
| **CO 5:** | Analyze the causes and results of French Revolution (1789) |

**Average level weightage**

**COURSE OUTCOME WEIGHTED AVERAGE COWA- 2.248073976**

| Sl.no | Course outcomes | Knowledge level (Bloom's Taxonomy) | Average level weightage | CO Attainment |
|---|---|---|---|---|
| CO 1: | Explain the Geographical Discoveries and the Consequences | Understand | 2 | 2.570327986 |
| CO 2: | Describe the Factors for the Growth of Renaissance and differentiate between Reformation & Counter Reformation | Understand and Analyse | 3 | 2.35549198 |
| CO 3: | Judge the results of Glorious Revolution | Evaluate | 5 | 1.925819966 |
| CO 4: | Interpret the effect of results of The American Revolution | Apply | 3 | 2.35549198 |
| CO 5: | Analyze the causes and results of French Revolution (1789) | Analyze | 4 | 2.140655973 |

## CO-PO Mapping

5. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| CO:2 | 1 | 0 | 2 | - | 3 | 1 | 0 | 2 | 1 |
| CO:3 | 2 | 1 | 2 | 3 | 2 | 1 | 0 | 0 | 0 |
| CO:4 | 2 | 0 | 2 | 2 | 2 | 1 | 2 | 2 | 0 |
| CO:5 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 0 | 1 |

**PROGRAM OUTCOMES ATTAINMENT**

| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|
| 2.570328 | 2.570328 | 5.140656 | 2.570328 | 5.140656 | 5.140656 | 5.1406 6 | 5.140656 | 5.1406 6 |
| 2.355492 | 0 | 4.710984 | 0 | 7.066476 | 2.355492 | 0 | 4.710984 | 2.3554 9 |
| 3.85164 | 1.92582 | 3.85164 | 5.77746 | 3.85164 | 1.92582 | 0 | 0 | 0 |
| 4.710984 | 0 | 4.710984 | 4.710984 | 4.710984 | 2.355492 | 4.7109 8 | 4.710984 | 0 |
| 4.281312 | 4.281312 | 4.281312 | 6.421968 | 4.281312 | 2.140656 | 2.1406 6 | 0 | 2.1406 6 |
| **2.221219** | **2.194365** | **2.269558** | **2.164527** | **2.27737** | **2.319686** | **2.39846** | **2.427104** | **2.4092** |

## CO-PSO Mapping

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 3 | 1 | 2 | 0 | 2 |
| CO:2 | 2 | 0 | 2 | 2 | 1 |
| CO:3 | 2 | 1 | 0 | 3 | 0 |
| CO:4 | 2 | 2 | 1 | 3 | 2 |
| CO:5 | 2 | 2 | 0 | 2 | 2 |

| MAPPING PROGRAM OUTCOMES | | | | |
|---|---|---|---|---|
| PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| 7.710983959 | 2.570327986 | 5.140655973 | 0 | 5.140655973 |

| | | | | |
|---|---|---|---|---|
| 4.710983959 | 0 | 4.710983959 | 4.710983959 | 2.35549198 |
| 3.851639932 | 1.925819966 | 0 | 5.777459898 | 0 |
| 4.710983959 | 4.710983959 | 2.35549198 | 7.066475939 | 4.710983959 |
| 4.281311945 | 4.281311945 | 0 | 4.281311945 | 4.281311945 |
| **2.296900341** | **2.248073976** | **2.441426382** | **2.183623174** | **2.35549198** |

## Semester – V

## Paper – VI (Core Paper)

## HISTORY & CULTURE OF ANDHRA DESA (from 12th to 19th Century A.D.)

Unit – 1

Andhra during 12th& 13th Centuries A.D.: Kakatiyas – Origin & its Antecedents – Administration – Social & Economic Life – Industries & Trade - Promotion of Literature and Culture – Architecture & Sculpture – Decline; The Age of Reddy Kingdoms: Patronage to Literature – Trade & Commerce.

Unit – II

Andhra between 14th & 16th Centuries A.D.: Vijayanagara Empire: Polity, Administration, Society & Economy – Sri Krishna Devaraya and his contribution to Andhra Culture – Development of Literature & Architecture – Decline and Downfall.

Unit - III

Andhra through 16th& 17th Centuries A.D.: Evolution of Composite Culture - The QutbShahis of Golconda – Origin & Decline – Administration, Society & Economy – Literature & Architecture.

Unit - IV

The 18th& 19th Centuries in Andhra: East India Company's Authority over Andhra – Three Carnatic Wars – Occupation of Northern Circars and Ceeded Districts –Early Uprisings – Peasants and Tribal Revolts.

Unit – V

The 18th& 19th Centuries in Andhra: Impact of Company Rule on Andhra – Administration – Land Revenue Settlements – Society – Education - Religion – Impact of Industrial Revolution on Economy – Peasantry & Famines – Contribution of Sir Thomas Munroe, C. P. Brown & Sir Arthur Cotton – Impact of 1857 Revolt in Andhra

## COURSE OUTCOMES(COs)

**On completion of the course the student will be able to**

| | |
|---|---|
| **CO 1:** | Explain the conditions of Andhra during 12th& 13th Centuries |
| **CO 2:** | Appraise the contribution of Sri Krishna Devaraya to Andhra Culture |
| **CO 3:** | Examine the Evolution of Composite Culture |
| **CO 4:** | Sketch the causes for Peasants and Tribal Revolts in Andhra |
| **CO 5:** | Designs a new revenue policy |

## Average level weightage

## COURSE OUTCOME WEIGHTED AVERAGE - COWA - 2.320646997

| **Sl.no** | **Course outcomes** | Knowledge level (Bloom's | **Average level** | **CO Attainment** |
|---|---|---|---|---|

| | | Taxonomy) | **weightage** | |
|---|---|---|---|---|
| **CO 1:** | Explain the conditions of Andhra during 12th& 13th Centuries | Understand | 2 | **2.714006731** |
| **CO 2:** | Appraise the contribution of Sri Krishna Devaraya to Andhra Culture | Evaluation | 5 | **2.285016829** |
| **CO 3:** | Examine the Evolution of Composite Culture | Analyse | 4 | **2.428013463** |
| **CO 4:** | Sketch the causes for Peasants and Tribal Revolts in Andhra | Apply | 3 | **2.571010097** |
| **CO 5:** | Designs a new revenue policy | Create | 6 | **2.142020194** |

## CO-PO Mapping

6. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| CO:2 | 1 | 0 | 2 | 1 | 3 | 0 | 1 | 2 | 1 |
| CO:3 | 2 | 1 | 2 | 3 | 2 | 1 | 0 | 0 | 0 |
| CO:4 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |
| CO:5 | 2 | 0 | 2 | 3 | 2 | 1 | 0 | 1 | 1 |

## PROGRAM OUTCOMES ATTAINMENT

| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
|---|---|---|---|---|---|---|---|---|
| 2.71400 | 2.7140 | 5.428013 | 2.714006 | 5.428013 | 5.4280 | 5.428013 | 5.428013 | 5.428013 |
| 2.28501 | 0 | 4.570033 | 2.285016 | 6.855050486 | 0 | 2.285016829 | 4.570033657 | 2.285016829 |
| 4.85602 | 2.42801 | 4.85602 | 7.28404 | 4.85602 | 2.42801 | 0 | 0 | 0 |
| 5.14202 | 2.57101 | 5.14202 | 5.14202 | 5.14202 | 5.14202 | 5.14202 | 5.14202 | 0 |
| 4.28404 | 0 | 4.28404 | 6.42606 | 4.28404 | 2.14202 | 0 | 2.14202 | 2.14202 |
| **2.41013** | **2.57101** | **2.42801** | **2.38511** | **2.41501** | **2.52334** | **2.57101** | **2.46886** | **2.46376** |

## CO-PSO Mapping

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 2 | 0 | 2 | 0 | 2 |
| CO:2 | 3 | 1 | 2 | 2 | 0 |
| CO:3 | 2 | 0 | 1 | 3 | 0 |
| CO:4 | 1 | 2 | 0 | 3 | 2 |
| CO:5 | 2 | 2 | 1 | 2 | 2 |

## MAPPING PROGRAM SPECIFIC OUTCOMES

| PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|
| 5.428013463 | 0 | 5.428013463 | 0 | 5.428013463 |
| 6.855050486 | 2.285016829 | 4.570033657 | 4.570033657 | 0 |
| 4.856026926 | 0 | 2.428013463 | 7.284040389 | 0 |
| 2.571010097 | 5.142020194 | 0 | 7.713030292 | 5.142020194 |
| 4.284040389 | 4.284040389 | 2.142020194 | 4.284040389 | 4.284040389 |
| **2.399414136** | **2.342215482** | **2.428013463** | **2.385114473** | **2.475679008** |

## Semester – VI

## Paper – VII-(A):: (Elective Paper)

## HISTORY OF MODERN EUROPE (from 19th Century to 1945 A. D.)

Unit – 1

Industrial Revolution: Origin, Nature and Impact.

Unit – II

Unification Movements in Italy & Germany and their Impact.

Unit - III

Communist Revolution in Russia – Causes, Course and Results – Impact on World Order.

Unit - IV

World War I: Age of Rivalry in Europe Between 1870 and 1914 – Results of the War – Paris Peace Conference - League of Nations.

Unit – V

World War II: Causes, Fascism & Nazism – Results; The United Nations Organization: Structure, Functions and Challenges.

## COURSE OUTCOMES(COs)

**On completion of the course the student will be able to**

| | |
|---|---|
| **CO 1:** | Examine the Impact of Industrial Revolution |
| **CO 2:** | Appraise the Unification Movements in Europe |
| **CO 3:** | Examine Impact of Communist Revolution on World Order. |
| **CO 4:** | Sketch the causes for World War - I |
| **CO 5:** | Designs a new foreign policy |

**Average level weightage**

**COURSE OUTCOME WEIGHTED AVERAGE COWA- 2.512371338**

| **Sl.no** | **Course outcomes** | Knowledge level (Bloom's | **Average** | **CO** |
|---|---|---|---|---|

| | | Taxonomy) | **level weightage** | **Attainment** |
|---|---|---|---|---|
| **CO 1:** | Examine the Impact of Industrial Revolution | Analyse | 4 | **2.428013463** |
| **CO 2:** | Appraise the Unification Movements in Europe | Evaluation | 5 | **2.285016829** |
| **CO 3:** | Explain the Impact of Communist Revolution on the World Order. | Understand | 2 | **2.714006731** |
| **CO 4:** | Sketch the causes for World War - I | Apply | 3 | **2.571010097** |
| **CO 5:** | Designs a new foreign policy | Create | 6 | **2.142020194** |

## CO-PO Mapping

7. Low, 2- Moderate, 3- High, '-' No Correlation

| | PO:1 Critical Thinking | PO:2 Effective Communication | PO:3 Social Interaction | PO:4 Effective Citizenship | PO:5 Ethics | PO:6 Environment and Sustainability | PO:7 Employa-bility skills | PO:8 Entrepreneur-ship skills | PO:9 Self-directed and Life-long Learning |
|---|---|---|---|---|---|---|---|---|---|
| CO:1 | 2 | 0 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| CO:2 | 1 | 1 | 2 | 1 | 3 | 0 | 0 | 2 | 1 |
| CO:3 | 1 | 1 | 2 | 3 | 2 | 1 | 1 | 0 | 0 |
| CO:4 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 2 | 0 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO:5 | 1 | 1 | 2 | 3 | 2 | 2 | 0 | 1 | 0 |

| PROGRAM OUTCOMES ATTAINMENT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 |
| 5.428013 | 0 | 5.428013 | 2.71401 | 5.42801 | 5.42801 | 5.42801 | 5.42801 | 5.42801 |
| 2.285017 | 2.28502 | 4.570034 | 2.28502 | 6.85505 | 0 | 0 | 4.57003 | 2.28502 |
| 2.428013 | 2.42801 | 4.856027 | 7.28404 | 4.85603 | 2.42801 | 2.42801 | 0 | 0 |
| 5.14202 | 0 | 5.14202 | 5.14202 | 5.14202 | 5.14202 | 5.14202 | 5.14202 | 0 |
| 2.14202 | 2.14202 | 4.28404 | 6.42606 | 4.28404 | 4.28404 | 0 | 2.14202 | 0 |
| **2.489298** | **2.28502** | **2.428013** | **2.38511** | **2.41501** | **2.46887** | **2.59961** | **2.46887** | **2.57101** |

## CO-PSO Mapping

1.Low, 2- Moderate, 3- High, '-' No Correlation

| | PSO:1 | PSO:2 | PSO:3 | PSO:4 | PSO:5 |
|---|---|---|---|---|---|
| CO:1 | 3 | 1 | 1 | 0 | 2 |
| CO:2 | 2 | 0 | 2 | 2 | 0 |
| CO:3 | 3 | 1 | 0 | 3 | 1 |
| CO:4 | 1 | 2 | 0 | 3 | 2 |
| CO:5 | 2 | 2 | 0 | 2 | 2 |

## MAPPING PROGRAM SPECIFIC OUTCOMES

| PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
|---|---|---|---|---|
| 8.142020194 | 2.714006731 | 2.714006731 | 0 | 5.428013463 |
| 4.570033657 | 0 | 4.570033657 | 4.570033657 | 0 |
| 7.284040389 | 2.428013463 | 0 | 7.284040389 | 2.428013463 |
| 2.571010097 | 5.142020194 | 0 | 7.713030292 | 5.142020194 |
| 4.284040389 | 4.284040389 | 0 | 4.284040389 | 4.284040389 |
| **2.441013157** | **2.428013463** | **2.428013463** | **2.385114473** | **2.468869644** |