# 8.1 Actions Taken Based on the Results of Evaluation of the CO's, PO's and PSO's Attainment

## 8.1.1 Actions Taken Based on the Results of Evaluation of the CO's Attainment – Documentary Evidence

| Provide results of evaluation of each CO | | | | | | | | | | | | | Total CO's Count |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 Admitted Batch | | | | | | | | | | | | | |
| CO -DIRECT & INDIRECT ATTAINMENTS | | | | | | | | | | | | | |
| **S.No** | **COURSE CODE** | **Course Name** | **SEM & YEAR** | **CO's** | **Level** | **Target Value** | **Direct Attainment Value(DA)** | **Indirect Attainment Value(IDA)** | **DA(80%)-DA*0.8** | **IDA(20%)-IDA*0.2** | **Overall CO Attainment (DA+IDA)** | **Gap Analysis (OA-TV)** | **CO Statements** | |
| 1 | 20HS1101 | Communicative English-1 | 1YEAR - 1 SEM | CO1 | **L2** | **1.86** | **2.43** | **2.44** | 1.94 | 0.49 | 2.43 | 0.57 | Understand the concept of LSRW and basic grammar | 1 |
| 1 | 20HS1101 | Communicative English-1 | 1YEAR - 1 SEM | CO2 | **L3** | **1.86** | **2.27** | **2.28** | 1.82 | 0.46 | 2.27 | 0.41 | Apply grammar to various situations | 2 |
| 1 | 20HS1101 | Communicative English-1 | 1YEAR - 1 SEM | CO3 | **L3** | **1.86** | **2.52** | **2.53** | 2.02 | 0.51 | 2.52 | 0.66 | Practice different styles of Reading and Comprehending | 3 |
| 1 | 20HS1101 | Communicative English-1 | 1YEAR - 1 SEM | CO4 | **L4** | **1.86** | **2.50** | **2.59** | 2.00 | 0.52 | 2.52 | 0.66 | Illustrate the text to process the information for various purposes. | 4 |
| 1 | 20HS1101 | Communicative English-1 | 1YEAR - 1 SEM | CO5 | **L4** | **1.86** | **2.40** | **2.48** | 1.92 | 0.50 | 2.42 | 0.56 | Reframe the text for effective communication. | 5 |
| 2 | 20BS1101 | Calculus And Linear Algebra | 1YEAR - 1 SEM | CO1 | **L2** | **1.86** | **2.41** | **2.52** | 1.93 | 0.50 | 2.43 | 0.57 | Understand the basic concepts of calculus and linear algebra. | 6 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 20BS1101 | Calculus And Linear Algebra | 1YEAR - 1 SEM | CO2 | **L3** | **1.86** | **2.4** | **2.61** | 1.92 | 0.52 | 2.44 | 0.58 | Apply the echelon form to obtain the solution of system of linear equations and eigen vectors of a matrix. | 7 |
| 2 | 20BS1101 | Calculus And Linear Algebra | 1YEAR - 1 SEM | CO3 | **L3** | **1.86** | **2.42** | **2.47** | 1.94 | 0.49 | 2.43 | 0.57 | Apply the concepts of calculus to find the series expansion and extremum of a given function ,area enclosed by plane curves and volume of the solids. | 8 |
| 2 | 20BS1101 | Calculus And Linear Algebra | 1YEAR - 1 SEM | CO4 | **L4** | **1.86** | **2.28** | **2.6** | 1.82 | 0.52 | 2.34 | 0.48 | Analyse the solution set of linear system of equations and nature of the quadratic forms. | 9 |
| 2 | 20BS1101 | Calculus And Linear Algebra | 1YEAR - 1 SEM | CO5 | **L4** | **1.86** | **2.17** | **2.52** | 1.74 | 0.50 | 2.24 | 0.38 | Analyse the behaviour of functions using mean value theorems, extremum of the given function and limits of integration. | 10 |
| 2 | 20BS1101 | Calculus And Linear Algebra | 1YEAR - 1 SEM | CO6 | | **1.86** | **3** | **2.53** | 2.40 | 0.51 | 2.91 | 1.05 | Apply the concepts of calculus and linear algebra to the given problem and submit a report | 11 |
| 3 | 20BS1103 | Engineering Physics | 1YEAR - 1 SEM | CO1 | **L2** | **1.86** | **2.35** | **2.35** | 1.88 | 0.47 | 2.35 | 0.49 | Understand the electric, magnetic, optical communication and semiconductor principles in technical aspects. | 12 |
| 3 | 20BS1103 | Engineering Physics | 1YEAR - 1 SEM | CO2 | **L3** | **1.86** | **2.21** | **2.21** | 1.76 | 0.44 | 2.21 | 0.35 | Apply the knowledge of Physics and optical Principles in optoelectronic devices | 13 |
| 3 | 20BS1103 | Engineering Physics | 1YEAR - 1 SEM | CO3 | **L3** | **1.86** | **2.06** | **2.06** | 1.65 | 0.41 | 2.06 | 0.20 | Apply basic laws of electromagnetism and materials for engineering applications. | 14 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 20BS1103 | Engineering Physics | 1YEAR - 1 SEM | CO4 | **L4** | **1.86** | **2.04** | **2.04** | 1.63 | 0.41 | 2.04 | 0.18 | Analyze the theory of solids and deduce different analytical parameters. | 15 |
| 3 | 20BS1103 | Engineering Physics | 1YEAR - 1 SEM | CO5 | **L4** | **1.86** | **2.17** | **2.17** | 1.74 | 0.43 | 2.17 | 0.31 | Examine the mechanism of electromagnetic, in sensors and semiconductor devices. | 16 |
| 3 | 20BS1103 | Engineering Physics | 1YEAR - 1 SEM | CO6 | | **1.86** | **2.86** | **2.86** | 2.29 | 0.57 | 2.86 | 1.00 | Ability to understand the concepts of optical fibers, the theory of solids, laws of electromagnetism, principles of semiconductor devices and submit a report. | 17 |
| 4 | 20ES1101 | Basic Electrical & Electronics Engineering | 1YEAR - 1 SEM | CO1 | **L2** | **1.86** | **2.20** | **2.44** | 1.76 | 0.49 | 2.25 | 0.39 | Understand the basic concepts of DC circuits, Electrical Machines, Concepts of Electronic Devices and Circuits and realize the Applications of Electrical & Electronics in Interdisciplinary Engineering Domains. Domains | 18 |
| 4 | 20ES1101 | Basic Electrical & Electronics Engineering | 1YEAR - 1 SEM | CO2 | **L3** | **1.86** | **1.97** | **2.43** | 1.58 | 0.49 | 2.06 | 0.20 | Apply the basic knowledge of mathematics, science and electrical engineering to obtain the desired parameters of Electric circuits and Machines. | 19 |
| 4 | 20ES1101 | Basic Electrical & Electronics Engineering | 1YEAR - 1 SEM | CO3 | **L4** | **1.86** | **1.87** | **2.43** | 1.50 | 0.49 | 1.98 | 0.12 | Analyse the behaviour of Electric circuits, transformers and Electrical machines. | 20 |
| 4 | 20ES1101 | Basic Electrical & Electronics Engineering | 1YEAR - 1 SEM | CO4 | **L3** | **1.86** | **2.28** | **2.45** | 1.82 | 0.49 | 2.31 | 0.45 | Apply the basic principles of Electronics to solve Analog Circuits. | 21 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 20ES1101 | Basic Electrical & Electronics Engineering | 1YEAR - 1 SEM | CO5 | **L4** | **1.86** | **1.99** | **2.45** | 1.59 | 0.49 | 2.08 | 0.22 | Analyse the characteristics/ performance parameters of Electronic Circuits. | 22 |
| 4 | 20ES1101 | Basic Electrical & Electronics Engineering | 1YEAR - 1 SEM | CO6 | | **1.86** | **3.00** | **2.44** | 2.40 | 0.49 | 2.89 | 1.03 | Ability to investigate various problems in DC circuits, Electrical Machines and Electronic Devices and Circuits and submit a report. | 23 |
| 5 | 20ES1103 | Problem Solving Techniques | 1YEAR - 1 SEM | CO1 | **L2** | **1.86** | **2.15** | **2.45** | 1.72 | 0.49 | 2.21 | 0.35 | Understand the fundamental concepts of computers, algorithms, flowcharts and problem solving techniques. | 24 |
| 5 | 20ES1103 | Problem Solving Techniques | 1YEAR - 1 SEM | CO2 | **L3** | **1.86** | **2.02** | **2.42** | 1.61 | 0.48 | 2.10 | 0.24 | Apply the basic knowledge of mathematical factoring methods to model an algorithm, flowchart for a given problem. | 25 |
| 5 | 20ES1103 | Problem Solving Techniques | 1YEAR - 1 SEM | CO3 | **L3** | **1.86** | **2.12** | **2.43** | 1.69 | 0.49 | 2.18 | 0.32 | Apply merging, sorting, searching, text processing techniques to develop algorithms. | 26 |
| 5 | 20ES1103 | Problem Solving Techniques | 1YEAR - 1 SEM | CO4 | **L4** | **1.86** | **2.11** | **2.42** | 1.69 | 0.48 | 2.17 | 0.31 | Analyze the given problem, use appropriate array technique and write an effective report. | 27 |
| 6 | 20HS1151 | Communicative English-1 Lab | 1YEAR - 1 SEM | CO1 | **L3** | **1.92** | **2.74** | **2.52** | 2.19 | 0.50 | 2.70 | 0.78 | Acquire communication skills through various language learning activities | 28 |
| 6 | 20HS1151 | Communicative English-1 Lab | 1YEAR - 1 SEM | CO2 | **L3** | **1.92** | **2.72** | **2.54** | 2.18 | 0.51 | 2.68 | 0.76 | Construct meaningful sentences and Paragraphs | 29 |
| 6 | 20HS1151 | Communicative English-1 Lab | 1YEAR - 1 SEM | CO3 | **L4** | **1.92** | **2.73** | **2.49** | 2.18 | 0.50 | 2.68 | 0.76 | Analyze the text to develop comprehensive ability | 30 |

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| 6 | 20HS1151 | Communicative English-1 Lab | 1YEAR - 1 SEM | CO4 | **L4** | **1.92** | **2.74** | **2.48** | 2.19 | 0.50 | 2.69 | 0.77 | Preparation of report based on the activity | 31 |
| 7 | 20BS1152 | Engineering Physics Lab | 1YEAR - 1 SEM | CO1 | **L3** | **1.92** | **2.15** | **2.77** | 1.72 | 0.55 | 2.27 | 0.35 | Demonstrate the importance of dielectric material and measure magnetic parameters. | 32 |
| 7 | 20BS1152 | Engineering Physics Lab | 1YEAR - 1 SEM | CO2 | **L3** | **1.92** | **2.16** | **2.87** | 1.73 | 0.57 | 2.30 | 0.38 | Identify the type of semiconductor using hall effect and measure the energy band gap. | 33 |
| 7 | 20BS1152 | Engineering Physics Lab | 1YEAR - 1 SEM | CO3 | **L4** | **1.92** | **2.22** | **2.80** | 1.78 | 0.56 | 2.34 | 0.42 | Examine the characteristics of photodiode, p-n junction diode and solar cell. | 34 |
| 7 | 20BS1152 | Engineering Physics Lab | 1YEAR - 1 SEM | CO4 | **L4** | **1.92** | **2.03** | **2.86** | 1.62 | 0.57 | 2.20 | 0.28 | Assess the intensity of the magnetic field of circular coil carrying current with distance and measure resistance using four probe method. | 35 |
| 7 | 20BS1152 | Engineering Physics Lab | 1YEAR - 1 SEM | CO5 | **L4** | **1.92** | **2.44** | **2.74** | 1.95 | 0.55 | 2.50 | 0.58 | Estimate the acceptance angle of an optical fiber and numerical aperture. | 36 |
| 7 | 20BS1152 | Engineering Physics Lab | 1YEAR - 1 SEM | CO6 | | **1.92** | **2.76** | **2.81** | 2.21 | 0.56 | 2.77 | 0.85 | Summarize and tabulate the experimental observations and output. | 37 |
| 8 | 20ES1151 | Basic Electrical & Electronics Engineering Lab | 1YEAR - 1 SEM | CO1 | **L3** | **1.92** | **2.16** | **2.44** | 1.73 | 0.49 | 2.22 | 0.30 | Apply techniques/procedures of Electrical & Electronics Engineering to solve problems. | 38 |
| 8 | 20ES1151 | Basic Electrical & Electronics Engineering Lab | 1YEAR - 1 SEM | CO2 | | **1.92** | **2.21** | **2.44** | 1.77 | 0.49 | 2.26 | 0.34 | Conduct experiments as a team / individual by using equipment available in the laboratory. | 39 |

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| 8 | 20ES1151 | Basic Electrical & Electronics Engineering Lab | 1YEAR - 1 SEM | CO3 | **L4** | **1.92** | **2.08** | **2.50** | 1.66 | 0.50 | 2.16 | 0.24 | Examine the network theorems and Kirchhoff's laws for DC electrical circuits. | 40 |
| 8 | 20ES1151 | Basic Electrical & Electronics Engineering Lab | 1YEAR - 1 SEM | CO4 | **L4** | **1.92** | **1.94** | **2.42** | 1.55 | 0.48 | 2.04 | 0.12 | Analyse the open circuit characteristic of DC shunt generator and efficiency of single phase transformer. | 41 |
| 8 | 20ES1151 | Basic Electrical & Electronics Engineering Lab | 1YEAR - 1 SEM | CO5 | **L4** | **1.92** | **2.04** | **2.43** | 1.63 | 0.49 | 2.12 | 0.20 | Analyse the characteristics/ performance parameters of Electronic and Analog Circuits. | 42 |
| 8 | 20ES1151 | Basic Electrical & Electronics Engineering Lab | 1YEAR - 1 SEM | CO6 | | **1.92** | **2.16** | **2.44** | 1.73 | 0.49 | 2.22 | 0.30 | make an effective report based on experiments | 43 |
| | | | | | | | | | | | | | | |
| 9 | 20HS1201 | Communicative English-II | I YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **2.43** | **2.44** | 1.94 | 0.49 | 2.43 | 0.57 | Understand various Linguistic aspects | 44 |
| 9 | 20HS1201 | Communicative English-II | I YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.27** | **2.28** | 1.82 | 0.46 | 2.27 | 0.41 | Apply language to draft letters for various business purposes | 45 |
| 9 | 20HS1201 | Communicative English-II | I YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.52** | **2.53** | 2.02 | 0.51 | 2.52 | 0.66 | Interpret the text for information processing and effective communication. | 46 |
| 9 | 20HS1201 | Communicative English-II | I YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **2.58** | **2.59** | 2.06 | 0.52 | 2.58 | 0.72 | Analyze the data for report writing and précis writing. | 47 |
| 9 | 20HS1201 | Communicative English-II | I YEAR - 2nd SEM | CO5 | **L4** | **1.86** | **2.48** | **2.48** | 1.98 | 0.50 | 2.48 | 0.62 | Relate advanced writing skills for better employability. | 48 |
| 10 | 20BS1202 | Engineering Chemistry | I YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **2.56** | **2.70** | 2.05 | 0.54 | 2.59 | 0.73 | Understand the basic principles related to renewable energy sources, energy systems, metal | 49 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | finishing and materials | |
| 10 | 20BS1202 | Engineering Chemistry | I YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.13** | **2.76** | 1.70 | 0.55 | 2.26 | 0.40 | Apply the knowledge of energy transformation principles to classify and describe the working of electrodes and cells | 50 |
| 10 | 20BS1202 | Engineering Chemistry | I YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.13** | **2.88** | 1.70 | 0.58 | 2.28 | 0.42 | Apply suitable methods for metal finishing and advanced techniques for the characterization of nano materials | 51 |
| 10 | 20BS1202 | Engineering Chemistry | I YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **2.08** | **2.88** | 1.66 | 0.58 | 2.24 | 0.38 | Analyse the performance of different electrochemical techniques, energy conversion systems, polymers and nano materials in their respective applications | 52 |
| 10 | 20BS1202 | Engineering Chemistry | I YEAR - 2nd SEM | CO5 | | **1.86** | **2.98** | **2.76** | 2.38 | 0.55 | 2.94 | 1.08 | Make an effective report on various concepts and technologies related to Engineering chemistry | 53 |
| 11 | 20BS1204 | Probability And Statisctics | I YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **2.66** | **2.58** | 2.13 | 0.52 | 2.64 | 0.78 | Understand the basic concepts of probability and statistics | 54 |
| 11 | 20BS1204 | Probability And Statisctics | I YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.42** | **2.58** | 1.94 | 0.52 | 2.45 | 0.59 | Calculate the measures of central tendencies, correlation and regression to the given data and apply appropriate probability distributions to the given problem | 55 |

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| 11 | 20BS1204 | Probability And Statisctics | I YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.49** | **2.52** | 1.99 | 0.50 | 2.50 | 0.64 | Apply the concepts of testing hypothesis for large and small samples | 56 |
| 11 | 20BS1204 | Probability And Statisctics | I YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **2.45** | **2.55** | 1.96 | 0.51 | 2.47 | 0.61 | Connect the concepts of probability, correlation and regression to real life problems | 57 |
| 11 | 20BS1204 | Probability And Statisctics | I YEAR - 2nd SEM | CO5 | **L4** | **1.86** | **2.01** | **2.50** | 1.61 | 0.50 | 2.11 | 0.25 | Identify appropriate test statistic to test given hypothesis for statistical decision | 58 |
| 11 | 20BS1204 | Probability And Statisctics | I YEAR - 2nd SEM | CO6 | **L3** | **1.86** | **2.70** | **2.54** | 2.16 | 0.51 | 2.67 | 0.81 | Apply the concepts of probability and statistics to the given data and submit the report. | 59 |
| 12 | 20ES1202 | Programming For Problem Solving | I YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.70** | **2.57** | 1.36 | 0.51 | 1.87 | 0.01 | Understand the principles of structured programming and C constructs for solving problems. | 60 |
| 12 | 20ES1202 | Programming For Problem Solving | I YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.29** | **2.55** | 1.83 | 0.51 | 2.34 | 0.48 | Apply suitable control constructs and array concepts to solve problems. | 61 |
| 12 | 20ES1202 | Programming For Problem Solving | I YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.06** | **2.44** | 1.65 | 0.49 | 2.14 | 0.28 | Apply the concept of pointers, user defined data types and files to solve problems. | 62 |
| 12 | 20ES1202 | Programming For Problem Solving | I YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **1.99** | **2.47** | 1.59 | 0.49 | 2.09 | 0.23 | Analyze the given problem and use modular programming approach to develop solutions. | 63 |
| 13 | 20ES1204 | Engineering Graphics | I YEAR - 2nd SEM | CO1 | **L3** | **1.86** | **1.83** | **2.75** | 1.46 | 0.55 | 2.01 | 0.15 | Construct conic sections and curves used in Engineering practice | 64 |
| 13 | 20ES1204 | Engineering Graphics | I YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **1.92** | **2.56** | 1.54 | 0.51 | 2.05 | 0.19 | Construct orthographic projections of an object when its position is defined with | 65 |

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| | | | | | | | | | | | | | respect to the reference planes | |
| 13 | 20ES1204 | Engineering Graphics | I YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.01** | **2.36** | 1.61 | 0.47 | 2.08 | 0.22 | Develop the isometric view for the given orthographic projections and vice versa. | 66 |
| 13 | 20ES1204 | Engineering Graphics | I YEAR - 2nd SEM | CO4 | **L3** | **1.86** | **1.89** | **2.50** | 1.51 | 0.50 | 2.01 | 0.15 | Develop the lateral surfaces of solids | 67 |
| 13 | 20ES1204 | Engineering Graphics | I YEAR - 2nd SEM | CO5 | **L3** | **1.86** | **2.07** | **2.66** | 1.66 | 0.53 | 2.19 | 0.33 | Identify the appropriate commands that are used to prepare the given drawing in CAD environment. | 68 |
| 14 | 20HS1251 | Communicative English-II Lab | I YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.74** | **2.52** | 2.19 | 0.50 | 2.70 | 0.78 | Hone employability skills | 69 |
| 14 | 20HS1251 | Communicative English-II Lab | I YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.72** | **2.54** | 2.18 | 0.51 | 2.68 | 0.76 | Develop an ability of making discussions, inferences and presentations | 70 |
| 14 | 20HS1251 | Communicative English-II Lab | I YEAR - 2nd SEM | CO3 | **L4** | **1.92** | **2.73** | **2.49** | 2.18 | 0.50 | 2.68 | 0.76 | Refine communication skills through various strategies | 71 |
| 14 | 20HS1251 | Communicative English-II Lab | I YEAR - 2nd SEM | CO4 | **L4** | **1.92** | **2.74** | **2.48** | 2.19 | 0.50 | 2.69 | 0.77 | Process the information in different contexts | 72 |
| 15 | 20BS1251 | Engineering Chemistry Lab | 1YEAR - 2ND SEM | CO1 | **L3** | **1.92** | **3.00** | **2.58** | 2.40 | 0.52 | 2.92 | 1.00 | Demonstrate the working of instruments such as pH meter and Conduct meter. | 73 |
| 15 | 20BS1251 | Engineering Chemistry Lab | 1YEAR - 2ND SEM | CO2 | **L3** | **1.92** | **3.00** | **2.58** | 2.40 | 0.52 | 2.92 | 1.00 | Apply the acquired knowledge to determine the quantity of metal ions in a given solution. | 74 |
| 15 | 20BS1251 | Engineering Chemistry Lab | 1YEAR - 2ND SEM | CO3 | **L4** | **1.92** | **3.00** | **2.76** | 2.40 | 0.55 | 2.95 | 1.03 | Estimate the amount of active chlorine in bleaching powder. | 75 |

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| 15 | 20BS1251 | Engineering Chemistry Lab | 1YEAR - 2ND SEM | CO4 | **L4** | **1.92** | **3.00** | **2.76** | 2.40 | 0.55 | 2.95 | 1.03 | Compare the viscosities and surface tension of different liquids | 76 |
| 15 | 20BS1251 | Engineering Chemistry Lab | 1YEAR - 2ND SEM | CO5 | **L4** | **1.92** | **3.00** | **2.70** | 2.40 | 0.54 | 2.94 | 1.02 | Analyze different compounds and examine the preparation of different polymers. | 77 |
| 15 | 20BS1251 | Engineering Chemistry Lab | 1YEAR - 2ND SEM | CO6 | | **1.92** | **3.00** | **2.52** | 2.40 | 0.50 | 2.90 | 0.98 | Make an effective report based on experiments | 78 |
| 16 | 20ES1253 | Programming For Problem Solving Lab | I YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.11** | **2.59** | 1.69 | 0.52 | 2.21 | 0.29 | Apply Structured Programming/C constructs for solving problems | 79 |
| 16 | 20ES1253 | Programming For Problem Solving Lab | I YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.21** | **2.54** | 1.77 | 0.51 | 2.28 | 0.36 | Implement programs as an individual on different IDEs/ online platforms. | 80 |
| 16 | 20ES1253 | Programming For Problem Solving Lab | I YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **3.00** | **2.65** | 2.40 | 0.53 | 2.93 | 1.01 | Develop an effective report based on various programs implemented. | 81 |
| 16 | 20ES1253 | Programming For Problem Solving Lab | I YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **2.48** | **2.58** | 1.98 | 0.52 | 2.50 | 0.58 | Apply technical knowledge for a given problem and express with an effective oral communication. | 82 |
| 16 | 20ES1253 | Programming For Problem Solving Lab | I YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **1.69** | **2.53** | 1.35 | 0.51 | 1.86 | -0.06 | Analyze outputs using given constraints/test cases. | 83 |
| 17 | 20MC1201 | Life Sciences For Engineers | I YEAR - 2nd SEM | CO1 | **L3** | **1.86** | **1.64** | **2.76** | 1.31 | 0.55 | 1.86 | 0.00 | Apply the concepts of biology to create tangible and economically viable engineering goods. | 84 |
| 17 | 20MC1201 | Life Sciences For Engineers | I YEAR - 2nd SEM | CO2 | **L4** | **1.86** | **2.40** | **2.76** | 1.92 | 0.55 | 2.47 | 0.61 | Analyse new technologies in Genetics biotechnology, pharmaceutical, medical and agricultural fields from the | 85 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | knowledge gained from DNA technology | |
| 17 | 20MC1201 | Life Sciences For Engineers | I YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **1.65** | **2.70** | 1.32 | 0.54 | 1.86 | 0.00 | Apply the knowledge of biology to improve the living standards of societies | 86 |
| 17 | 20MC1201 | Life Sciences For Engineers | I YEAR - 2nd SEM | CO4 | **L3** | **1.86** | **2.03** | **2.70** | 1.62 | 0.54 | 2.16 | 0.30 | Apply the basic knowledge of genetics and DNA technology for disease diagnostics and therapy | 87 |
| 17 | 20MC1201 | Life Sciences For Engineers | I YEAR - 2nd SEM | CO5 | **L4** | **1.86** | **1.99** | **2.76** | 1.59 | 0.55 | 2.15 | 0.29 | Analyse new technologies in biotechnology, pharmaceutical, medical and agricultural fields from the knowledge gained from DNA technology | 88 |
| | | | | | | | | | | | | | | |
| 18 | 20BS1303 | Discrete Mathemetical Structures | II YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.75** | **2.54** | 1.40 | 0.51 | 1.91 | 0.05 | Understand the fundamental concepts of discrete mathematical structures | 89 |
| 18 | 20BS1303 | Discrete Mathemetical Structures | II YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.15** | **2.50** | 1.72 | 0.50 | 2.22 | 0.36 | Apply Normal forms/ Rules of Inference for solving suitable problems. | 90 |
| 18 | 20BS1303 | Discrete Mathemetical Structures | II YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.47** | **2.56** | 1.98 | 0.51 | 2.49 | 0.63 | Apply the method of Characteristic roots for solving different recurrence relations and make an effective document | 91 |
| 18 | 20BS1303 | Discrete Mathemetical Structures | II YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.34** | **2.57** | 1.87 | 0.51 | 2.39 | 0.53 | Analyze various graph techniques to construct a tree. | 92 |
| 19 | 20CS3301 | Fundamentals Of Digital Logic Design | II YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.88** | **2.55** | 1.50 | 0.51 | 2.01 | 0.15 | Understand the basic concepts of digital circuits. | 93 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 20CS3301 | Fundamentals Of Digital Logic Design | II YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.01** | **2.56** | 1.61 | 0.51 | 2.12 | 0.26 | Apply minimization techniques to simplify Boolean expressions. | 94 |
| 19 | 20CS3301 | Fundamentals Of Digital Logic Design | II YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.13** | **2.44** | 1.70 | 0.49 | 2.19 | 0.33 | Apply the principles of digital electronics to design combinational and sequential circuits. | 95 |
| 19 | 20CS3301 | Fundamentals Of Digital Logic Design | II YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.04** | **2.43** | 1.63 | 0.49 | 2.12 | 0.26 | Analyze the functionality of combinational circuits and sequential circuits. | 96 |
| 20 | 20CS3302 | Object Oriented Programming Through C++ | II YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.01** | **2.65** | 1.61 | 0.53 | 2.14 | 0.28 | Understand the principles of OOP and key features of C++ | 97 |
| 20 | 20CS3302 | Object Oriented Programming Through C++ | II YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.28** | **2.74** | 1.82 | 0.55 | 2.37 | 0.51 | Apply object oriented concepts to develop solution for the given problem | 98 |
| 20 | 20CS3302 | Object Oriented Programming Through C++ | II YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.39** | **2.62** | 1.91 | 0.52 | 2.44 | 0.58 | Apply functions as per the problem requirement | 99 |
| 20 | 20CS3302 | Object Oriented Programming Through C++ | II YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.22** | **2.68** | 1.78 | 0.54 | 2.31 | 0.45 | Analyze the given scenario and choose appropriate generic programming aspects/ exception handling mechanism to solve the problem. | 100 |
| 21 | 20CS3303 | Computer Organization And Architecture | II YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.05** | **2.50** | 1.64 | 0.50 | 2.14 | 0.28 | Understand the basic functional units of a computer system and its organization. | 101 |
| 21 | 20CS3303 | Computer Organization And Architecture | II YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.06** | **2.43** | 1.65 | 0.49 | 2.13 | 0.27 | Apply appropriate instructions for processing various types of computer operations. | 102 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21 | 20CS3303 | Computer Organization And Architecture | II YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.80** | **2.42** | 1.44 | 0.48 | 1.92 | 0.06 | Apply various types of organizations on registers. | 103 |
| 21 | 20CS3303 | Computer Organization And Architecture | II YEAR - 1st SEM | CO4 | **L4** | **1.86** | **1.98** | **2.42** | 1.58 | 0.48 | 2.07 | 0.21 | Analyze memory hierarchy, I/O communication and pipelining. | 104 |
| 22 | 20ES1305 | Data Structures | II YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.71** | **2.62** | 1.37 | 0.52 | 1.89 | 0.03 | Understand the basic concepts of algorithm complexities, recursion and data structures | 105 |
| 22 | 20ES1305 | Data Structures | II YEAR - 1st SEM | CO2 | **L3** | **1.86** | **1.97** | **2.57** | 1.58 | 0.51 | 2.09 | 0.23 | Apply suitable searching, sorting algorithms for various applications. | 106 |
| 22 | 20ES1305 | Data Structures | II YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.80** | **2.60** | 1.44 | 0.52 | 1.96 | 0.10 | Apply suitable data structure to solve the problems. | 107 |
| 22 | 20ES1305 | Data Structures | II YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.00** | **2.54** | 1.60 | 0.51 | 2.10 | 0.24 | Analyze the problem to construct an algorithm using suitable data structure. | 108 |
| 23 | 20CS3351 | Object Oriented Programming Through C++ Lab | II YEAR - 1st SEM | CO1 | **L3** | **1.92** | **2.93** | **2.61** | 2.34 | 0.52 | 2.87 | 0.95 | Apply Object oriented principles/ C++ constructs for solving problems. | 109 |
| 23 | 20CS3351 | Object Oriented Programming Through C++ Lab | II YEAR - 1st SEM | CO2 | **L3** | **1.92** | **2.93** | **2.65** | 2.34 | 0.53 | 2.87 | 0.95 | Implement programs as an individual on different IDEs/ online platforms. | 110 |
| 23 | 20CS3351 | Object Oriented Programming Through C++ Lab | II YEAR - 1st SEM | CO3 | **L3** | **1.92** | **3.00** | **2.62** | 2.40 | 0.52 | 2.92 | 1.00 | Develop an effective report based on various programs implemented. | 111 |
| 23 | 20CS3351 | Object Oriented Programming Through C++ Lab | II YEAR - 1st SEM | CO4 | **L3** | **1.92** | **2.80** | **2.55** | 2.24 | 0.51 | 2.75 | 0.83 | Apply technical knowledge for a given problem and express with an effective oral communication. | 112 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | 20CS3351 | Object Oriented Programming Through C++ Lab | II YEAR - 1st SEM | CO5 | **L4** | **1.92** | **2.37** | **2.61** | 1.90 | 0.52 | 2.42 | 0.50 | Analyze outputs using given constraints/test cases. | 113 |
| 24 | 20ES1356 | Data Structures Lab | II YEAR - 1st SEM | CO1 | **L3** | **1.92** | **2.38** | **2.56** | 1.90 | 0.51 | 2.42 | 0.50 | Apply Linear and Non-linear data structures for solving problems. | 114 |
| 24 | 20ES1356 | Data Structures Lab | II YEAR - 1st SEM | CO2 | **L3** | **1.92** | **2.27** | **2.46** | 1.82 | 0.49 | 2.31 | 0.39 | Implement programs as an individual on different IDEs | 115 |
| 24 | 20ES1356 | Data Structures Lab | II YEAR - 1st SEM | CO3 | **L3** | **1.92** | **2.80** | **2.62** | 2.24 | 0.52 | 2.76 | 0.84 | Develop an effective report based on various programs implemented. | 116 |
| 24 | 20ES1356 | Data Structures Lab | II YEAR - 1st SEM | CO4 | **L3** | **1.92** | **1.70** | **2.49** | 1.36 | 0.50 | 1.86 | -0.06 | Apply technical knowledge for a given problem and express with an effective oral communication. | 117 |
| 24 | 20ES1356 | Data Structures Lab | II YEAR - 1st SEM | CO5 | **L4** | **1.92** | **1.80** | **2.53** | 1.44 | 0.506 | 1.946 | 0.03 | Analyze outputs using given constraints/test cases. | 118 |
| 25 | 20CS3352 | Python Programming | II YEAR - 1st SEM | CO1 | **L3** | **1.86** | **2.95** | **2.25** | 2.36 | 0.45 | 2.81 | 0.95 | Apply Python programming constructs for solving problems. | 119 |
| 25 | 20CS3352 | Python Programming | II YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.95** | **2.23** | 2.36 | 0.45 | 2.81 | 0.95 | Conduct experiments as an individual or team member by using python programming. | 120 |
| 25 | 20CS3352 | Python Programming | II YEAR - 1st SEM | CO3 | **L3** | **1.86** | **3.00** | **2.33** | 2.40 | 0.47 | 2.87 | 1.01 | Develop an effective report based on various programs implemented | 121 |
| 25 | 20CS3352 | Python Programming | II YEAR - 1st SEM | CO4 | **L3** | **1.86** | **3.00** | **2.29** | 2.40 | 0.46 | 2.86 | 1.00 | Apply technical knowledge for a given problem and express with an effective oral communication. | 122 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 20CS3352 | Python Programming | II YEAR - 1st SEM | CO5 | **L4** | **1.86** | **3.00** | **2.33** | 2.40 | 0.47 | 2.87 | 1.01 | Analyze outputs generated through Python programming | 123 |
| 26 | 20SO8355 | Introduction To Linux Operating Systems | II YEAR - 1st SEM | CO1 | **L3** | **1.92** | **2.27** | **2.42** | 1.82 | 0.48 | 2.30 | 0.38 | Apply suitable commands to perform various tasks on Linux Operating System. | 124 |
| 26 | 20SO8355 | Introduction To Linux Operating Systems | II YEAR - 1st SEM | CO2 | **L3** | **1.92** | **2.47** | **2.42** | 1.98 | 0.48 | 2.46 | 0.54 | Implement tasks as an individual on Linux Operating System. | 125 |
| 26 | 20SO8355 | Introduction To Linux Operating Systems | II YEAR - 1st SEM | CO3 | **L3** | **1.92** | **2.99** | **2.36** | 2.39 | 0.47 | 2.86 | 0.94 | Develop an effective report based on various tasks implemented. | 126 |
| 26 | 20SO8355 | Introduction To Linux Operating Systems | II YEAR - 1st SEM | CO4 | **L3** | **1.92** | **2.43** | **2.40** | 1.94 | 0.48 | 2.42 | 0.50 | Apply technical knowledge for a given problem and express with an effective oral communication | 127 |
| 26 | 20SO8355 | Introduction To Linux Operating Systems | II YEAR - 1st SEM | CO5 | **L4** | **1.92** | **2.20** | **2.45** | 1.76 | 0.49 | 2.25 | 0.33 | Analyze outputs using given constraints | 128 |
| 27 | 20MC1301 | Environmental Sciences | II YEAR - 1st SEM | CO1 | **L3** | **1.86** | **2.44** | **2.72** | 1.95 | 0.54 | 2.50 | 0.64 | Apply advanced solutions to measure the threats and hazards in environment to link with human natural systems. | 129 |
| 27 | 20MC1301 | Environmental Sciences | II YEAR - 1st SEM | CO2 | **L4** | **1.86** | **2.47** | **2.70** | 1.98 | 0.54 | 2.52 | 0.66 | Analyze the ethical ,cultural and historical interactions between man and environment. | 130 |
| 27 | 20MC1301 | Environmental Sciences | II YEAR - 1st SEM | CO3 | **L4** | **1.86** | **2.39** | **2.69** | 1.91 | 0.54 | 2.45 | 0.59 | Analyze various environmental assets and record for better management | 131 |
| 27 | 20MC1301 | Environmental Sciences | II YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.54** | **2.77** | 2.03 | 0.55 | 2.59 | 0.73 | Analyze global issues to design and evaluate policies | 132 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | 20MC1301 | Environmental Sciences | II YEAR - 1st SEM | CO5 | **L3** | **1.86** | **2.46** | **2.72** | 1.97 | 0.54 | 2.51 | 0.65 | Apply system concepts to methodological social and environmental issues | 133 |
| 28 | 20CS3391 | Community Service Project | II YEAR - 1st SEM | CO1 | **L4** | **1.95** | **2.21** | **3.00** | 1.77 | 0.60 | 2.37 | 0.42 | Analyze the issues that confront the vulnerable/marginalized section of society (village/community/habitation) and identify problem (s), objectives, requirements, and scope with proper planning in compilation of community service project. | 134 |
| 28 | 20CS3392 | Community Service Project | II YEAR - 1st SEM | CO2 | **L3** | **1.95** | **2.19** | **3.00** | 1.75 | 0.60 | 2.35 | 0.40 | Apply the engineering knowledge in project design and use methods to carry out the project work by justifying ethical principles. | 135 |
| 28 | 20CS3393 | Community Service Project | II YEAR - 1st SEM | CO3 | **L6** | **1.95** | **2.08** | **3.00** | 1.66 | 0.60 | 2.26 | 0.31 | Create an economic ecosystem using modern tools to meet societal needs and examine the results obtained to derive conclusions. | 136 |
| 28 | 20CS3394 | Community Service Project | II YEAR - 1st SEM | CO4 | **L5** | **1.95** | **2.06** | **3.00** | 1.648 | 0.6 | 2.248 | 0.298 | Evaluate the performance of the project task as an individual and / or team members based on their effective communication, presentation, and report to manage the task in time. | 137 |
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 20BS1403 | Formal Languages and Automata Theory | II YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.67** | **2.50** | 1.34 | 0.50 | 1.84 | -0.02 | Understand the fundamental concepts of Formal Languages and Automata. | 138 |
| 29 | 20BS1403 | Formal Languages and Automata Theory | II YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **1.97** | **2.40** | 1.58 | 0.48 | 2.06 | 0.20 | Apply the knowledge of Automata Theory, Grammars & Regular Expressions for solving various problems. | 139 |
| 29 | 20BS1403 | Formal Languages and Automata Theory | II YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.06** | **2.38** | 1.65 | 0.48 | 2.12 | 0.26 | Apply different Turing machines techniques to solve problems. | 140 |
| 29 | 20BS1403 | Formal Languages and Automata Theory | II YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **2.19** | **2.32** | 1.75 | 0.46 | 2.22 | 0.36 | Analyze automata and their computational power to recognize languages. | 141 |
| 30 | 20CS3401 | Operating Systems | II YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **2.22** | **2.54** | 1.77 | 0.51 | 2.28 | 0.42 | Understand the structure and functionalities of operating systems | 142 |
| 30 | 20CS3401 | Operating Systems | II YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **1.65** | **2.51** | 1.32 | 0.50 | 1.82 | -0.04 | Apply different algorithms of CPU scheduling, Page replacement and disk scheduling. | 143 |
| 30 | 20CS3401 | Operating Systems | II YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.16** | **2.49** | 1.73 | 0.50 | 2.23 | 0.37 | Apply various concepts to solve problems related to process synchronization and deadlocks. | 144 |
| 30 | 20CS3401 | Operating Systems | II YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **1.30** | **2.40** | 1.04 | 0.48 | 1.52 | -0.34 | Analyse and interpret the functionalities of operating system. | 145 |
| 31 | 20CS3402 | Advanced Data Structures | II YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.76** | **2.47** | 1.41 | 0.49 | 1.90 | 0.04 | Understand the basic principles and operations of Data Structures | 146 |
| 31 | 20CS3402 | Advanced Data Structures | II YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.27** | **2.45** | 1.82 | 0.49 | 2.31 | 0.45 | Apply Hashing and String Matching Techniques for solving problems effectively | 147 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | 20CS3402 | Advanced Data Structures | II YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.37** | **2.43** | 1.90 | 0.49 | 2.38 | 0.52 | Apply the concept of advanced Trees and Graphs for Solving Problems effe tively | 148 |
| 31 | 20CS3402 | Advanced Data Structures | II YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **2.45** | **2.47** | 1.96 | 0.49 | 2.45 | 0.59 | Analyze the given scenario and choose appropriate data structure for solving problems | 149 |
| 32 | 20CS3403 | Design and Analysis of Algorithms | II YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.56** | **2.77** | 1.25 | 0.55 | 1.80 | -0.06 | Understand the fundamental concepts of algorithm analysis and design techniques | 150 |
| 32 | 20CS3403 | Design and Analysis of Algorithms | II YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **1.88** | **2.70** | 1.50 | 0.54 | 2.04 | 0.18 | Apply various algorithm design techniques for solving problems | 151 |
| 32 | 20CS3403 | Design and Analysis of Algorithms | II YEAR - 2nd SEM | CO3 | **L4** | **1.86** | **1.80** | **2.61** | 1.44 | 0.52 | 1.96 | 0.10 | Analyze the performance of given problem using different algorithm techniques | 152 |
| 32 | 20CS3403 | Design and Analysis of Algorithms | II YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **2.19** | **2.66** | 1.75 | 0.53 | 2.28 | 0.42 | Analyze the given problem and provide the feasible solution. | 153 |
| 33 | 20ES1402 | Internet of Things | II YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **2.38** | **2.37** | 1.90 | 0.47 | 2.38 | 0.52 | Summarize the genesis and impact of IoT applications, architectures in real world. | 154 |
| 33 | 20ES1402 | Internet of Things | II YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.61** | **2.29** | 2.09 | 0.46 | 2.55 | 0.69 | Apply diverse methods in deploying smart objects and connecting them to network. | 155 |
| 33 | 20ES1402 | Internet of Things | II YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.65** | **2.30** | 2.12 | 0.46 | 2.58 | 0.72 | Construct simple applications using Arduino. | 156 |
| 33 | 20ES1402 | Internet of Things | II YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **2.62** | **2.29** | 2.10 | 0.46 | 2.55 | 0.69 | Analyze different protocols and select which protocol can be used for a specific application | 157 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 20ES1402 | Internet of Things | II YEAR - 2nd SEM | CO5 | **L3** | **1.86** | **2.56** | **2.47** | 2.05 | 0.49 | 2.54 | 0.68 | Identify and develop a solution for a given application using APIs. | 158 |
| 34 | 20ES1452 | Internet of Things Lab | II YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.48** | **2.68** | 1.99 | 0.54 | 2.52 | 0.60 | Develop various sensor interfacing using Arduino IDE | 159 |
| 34 | 20ES1452 | Internet of Things Lab | II YEAR - 2nd SEM | CO2 | **L4** | **1.92** | **2.95** | **2.70** | 2.36 | 0.54 | 2.90 | 0.98 | Evaluate Wireless Control of Remote Devices | 160 |
| 34 | 20ES1452 | Internet of Things Lab | II YEAR - 2nd SEM | CO3 | **L5** | **1.92** | **2.53** | **2.58** | 2.02 | 0.52 | 2.54 | 0.62 | Design and develop Mobile Application which can interact with Sensors and Actuators. | 161 |
| 34 | 20ES1452 | Internet of Things Lab | II YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **2.48** | **2.64** | 1.99 | 0.53 | 2.52 | 0.60 | Make an effective report based on experiments. | 162 |
| 35 | 20CS3451 | Advanced Data Structures through C++ Lab | II YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.75** | **2.39** | 2.20 | 0.48 | 2.68 | 0.76 | Apply object oriented principles/c++ constructs for solving problems | 163 |
| 35 | 20CS3451 | Advanced Data Structures through C++ Lab | II YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.74** | **2.30** | 2.19 | 0.46 | 2.65 | 0.73 | Implement programs as an individual on different IDEs/ online platforms. | 164 |
| 35 | 20CS3451 | Advanced Data Structures through C++ Lab | II YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **3.00** | **2.33** | 2.40 | 0.47 | 2.87 | 0.95 | Develop an effective report based on various programs implemented. | 165 |
| 35 | 20CS3451 | Advanced Data Structures through C++ Lab | II YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **1.83** | **2.33** | 1.46 | 0.47 | 1.93 | 0.01 | Apply technical knowledge for a given problem and express with an effective oral communication. | 166 |
| 35 | 20CS3451 | Advanced Data Structures through C++ Lab | II YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **2.18** | **2.35** | 1.74 | 0.47 | 2.21 | 0.29 | Analyze outputs using given constraints/test cases. | 167 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | 20CS3452 | Design and Analysis of Algorithms Lab | II YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.99** | **2.57** | 2.39 | 0.51 | 2.91 | 0.99 | Apply different design techniques for solving problems. | 168 |
| 36 | 20CS3452 | Design and Analysis of Algorithms Lab | II YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.99** | **2.52** | 2.39 | 0.50 | 2.90 | 0.98 | Implement programs as an individual on different IDEs/ online platforms. | 169 |
| 36 | 20CS3452 | Design and Analysis of Algorithms Lab | II YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **3.00** | **2.64** | 2.40 | 0.53 | 2.93 | 1.01 | Develop an effective report based on various programs implemented. | 170 |
| 36 | 20CS3452 | Design and Analysis of Algorithms Lab | II YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **1.76** | **2.56** | 1.41 | 0.51 | 1.92 | 0.00 | Apply technical knowledge for a given problem and express with an effective oral communication. | 171 |
| 36 | 20CS3452 | Design and Analysis of Algorithms Lab | II YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **2.97** | **2.51** | 2.38 | 0.50 | 2.88 | 0.96 | Analyze outputs using given constraints/test cases. | 172 |
| 37 | 20SO8454 | Programming with JAVA | II YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.27** | **2.42** | 1.82 | 0.48 | 2.30 | 0.38 | Apply object oriented principles/ Java constructs for solving problems | 173 |
| 37 | 20SO8454 | Programming with JAVA | II YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.47** | **2.42** | 1.98 | 0.48 | 2.46 | 0.54 | Implement programs as an individual on different IDE/ online platforms. | 174 |
| 37 | 20SO8454 | Programming with JAVA | II YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **2.99** | **2.36** | 2.39 | 0.47 | 2.86 | 0.94 | Develop an effective report based on various programs implemented. | 175 |
| 37 | 20SO8454 | Programming with JAVA | II YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **2.43** | **2.40** | 1.94 | 0.48 | 2.42 | 0.50 | Apply technical knowledge for a given problem and express with an effective oral communication | 176 |
| 37 | 20SO8454 | Programming with JAVA | II YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **2.20** | **2.45** | 1.76 | 0.49 | 2.25 | 0.33 | Analyze outputs using given constraints/test cases. | 177 |
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38 | 20CS3501 | Software Engineering | III YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.93** | **2.74** | 1.54 | 0.55 | 2.09 | 0.23 | Understand the fundamentals of Software Engineering | 178 |
| 38 | 20CS3501 | Software Engineering | III YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.05** | **2.59** | 1.64 | 0.52 | 2.16 | 0.30 | Apply various life cycle activities for a project development | 179 |
| 38 | 20CS3501 | Software Engineering | III YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.01** | **2.68** | 1.61 | 0.54 | 2.14 | 0.28 | Apply Risk and Quality management Strategies for project development. | 180 |
| 38 | 20CS3501 | Software Engineering | III YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.04** | **2.69** | 1.63 | 0.54 | 2.17 | 0.31 | Analyze the various requirements, design and techniques to select the appropriate techniques for the software project development. | 181 |
| 39 | 20CS3502 | Database Management Systems | III YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.85** | **2.50** | 1.48 | 0.50 | 1.98 | 0.12 | Understand the basic concepts of database management systems | 182 |
| 39 | 20CS3502 | Database Management Systems | III YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.13** | **2.43** | 1.70 | 0.49 | 2.19 | 0.33 | Apply SQL or Relational Algebra operations to find solutions for a given application | 183 |
| 39 | 20CS3502 | Database Management Systems | III YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.10** | **2.42** | 1.68 | 0.48 | 2.16 | 0.30 | Apply normalization techniques to improve database design | 184 |
| 39 | 20CS3502 | Database Management Systems | III YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.06** | **2.42** | 1.65 | 0.48 | 2.13 | 0.27 | Analyze a real time scenario to use Conceptual and Relational data models for designing the database | 185 |
| 40 | 20CS3503 | Computer Networks | III YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.88** | **2.58** | 1.50 | 0.52 | 2.02 | 0.16 | Understand the basic concepts and protocols of different layers. | 186 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 20CS3503 | Computer Networks | III YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.05** | **2.57** | 1.64 | 0.51 | 2.15 | 0.29 | Apply Error Correction or MAC Protocol mechanism for a given scenario. | 187 |
| 40 | 20CS3503 | Computer Networks | III YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.62** | **2.61** | 1.30 | 0.52 | 1.82 | -0.04 | Apply various Addressing mechanisms /Routing protocols for a given network.. | 188 |
| 40 | 20CS3503 | Computer Networks | III YEAR - 1st SEM | CO4 | **L3** | **1.86** | **1.35** | **2.55** | 1.08 | 0.51 | 1.59 | -0.27 | Apply appropriate Transport & Application layer protocol for a given context. | 189 |
| 40 | 20CS3503 | Computer Networks | III YEAR - 1st SEM | CO5 | **L4** | **1.86** | **2.53** | **2.59** | 2.02 | 0.52 | 2.54 | 0.68 | Analyze the given scenario and use appropriate methods/mechanisms/protocols for designing a network. | 190 |
| 41 | 20ME2501A | Design Thinking | III YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.88** | **2.55** | 1.50 | 0.51 | 2.01 | 0.15 | Understand the principles of design thinking and its approaches | 191 |
| 41 | 20ME2501A | Design Thinking | III YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.10** | **2.56** | 1.68 | 0.51 | 2.19 | 0.33 | Apply the empathy, the Define phase and develop an idea through ideation Techniques in human-centered design problems. | 192 |
| 41 | 20ME2501A | Design Thinking | III YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.13** | **2.44** | 1.70 | 0.49 | 2.19 | 0.33 | Apply the design thinking techniques for innovation processes | 193 |
| 41 | 20ME2501A | Design Thinking | III YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.07** | **2.43** | 1.66 | 0.49 | 2.14 | 0.28 | Analyze the prototype and test in a design thinking context. | 194 |
| 42 | 20CS4501A | Data Science | III YEAR - 1st SEM | CO1 | **L2** | **1.65** | **1.55** | **2.53** | 1.24 | 0.506 | 1.746 | 0.096 | Understand the life cycle process of data science. | 195 |
| 42 | 20CS4501A | Data Science | III YEAR - 1st SEM | CO2 | **L3** | **1.65** | **1.87** | **2.37** | 1.496 | 0.474 | 1.97 | 0.32 | Apply different data pre-processing techniques to improve data quality. | 196 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | 20CS4501 A | Data Science | III YEAR - 1st SEM | CO3 | **L3** | **1.65** | **1.62** | **2.43** | 1.296 | 0.486 | 1.782 | 0.132 | Apply statistical methods to evaluate the data. | 197 |
| 42 | 20CS4501 A | Data Science | III YEAR - 1st SEM | CO4 | **L3** | **1.65** | **1.91** | **2.43** | 1.53 | 0.49 | 2.01 | 0.36 | Apply Statistical Learning techniques for model building, Assessment and Selection. | 198 |
| 43 | 20CS4501 D | Artificial Intelligence | III YEAR - 1st SEM | CO1 | **L2** | **1.65** | **1.84** | **2.59** | 1.47 | 0.52 | 1.99 | 0.34 | Understand the basic concepts of artificial intelligence. | 199 |
| 43 | 20CS4501 D | Artificial Intelligence | III YEAR - 1st SEM | CO2 | **L3** | **1.65** | **1.89** | **2.58** | 1.51 | 0.52 | 2.03 | 0.38 | Apply the principles of AI in solutions that require problem solving, knowledge representation. | 200 |
| 43 | 20CS4501 D | Artificial Intelligence | III YEAR - 1st SEM | CO3 | **L3** | **1.65** | **1.59** | **2.60** | 1.27 | 0.52 | 1.79 | 0.14 | Apply Planning and Learning for solving AI problems. | 201 |
| 43 | 20CS4501 D | Artificial Intelligence | III YEAR - 1st SEM | CO4 | **L4** | **1.65** | **2.01** | **2.53** | 1.61 | 0.51 | 2.11 | 0.46 | Analyze a given problem and apply AI Techniques. | 202 |
| 44 | 20CS3551 | Database Management Systems Lab | III YEAR - 1st SEM | CO1 | **L3** | **1.92** | **2.35** | **2.62** | 1.88 | 0.52 | 2.40 | 0.48 | Apply database management techniques to solve problems | 203 |
| 44 | 20CS3551 | Database Management Systems Lab | III YEAR - 1st SEM | CO2 | **L3** | **1.92** | **2.52** | **2.55** | 2.02 | 0.51 | 2.53 | 0.61 | Implement experiments by using modern tools like MYSQL, Oracle | 204 |
| 44 | 20CS3551 | Database Management Systems Lab | III YEAR - 1st SEM | CO3 | **L3** | **1.92** | **3.00** | **2.58** | 2.40 | 0.52 | 2.92 | 1.00 | Develop an effective report based on various constructs implemented. | 205 |
| 44 | 20CS3551 | Database Management Systems Lab | III YEAR - 1st SEM | CO4 | **L3** | **1.92** | **1.93** | **2.57** | 1.544 | 0.514 | 2.058 | 0.138 | Apply technical knowledge for a given problem and express with an effective oral communication. | 206 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | 20CS3551 | Database Management Systems Lab | III YEAR - 1st SEM | CO5 | **L4** | **1.92** | **2.34** | **2.60** | 1.87 | 0.52 | 2.39 | 0.47 | Analyze outputs of queries for a given problem | 207 |
| 45 | 20CS3552 | Computer Networks Lab | III YEAR - 1st SEM | CO1 | **L3** | **1.92** | **2.83** | **2.56** | 2.26 | 0.51 | 2.78 | 0.86 | Demonstrate the commands and configuration of Networking in various environments. | 208 |
| 45 | 20CS3552 | Computer Networks Lab | III YEAR - 1st SEM | CO2 | **L3** | **1.92** | **2.54** | **2.46** | 2.03 | 0.49 | 2.52 | 0.60 | Analyze the Behavior and performance of network using network monitoring tools | 209 |
| 45 | 20CS3552 | Computer Networks Lab | III YEAR - 1st SEM | CO3 | **L3** | **1.92** | **3.00** | **2.62** | 2.40 | 0.52 | 2.92 | 1.00 | Develop an effective report based on various Functionalities of layers in TCP/IP | 210 |
| 45 | 20CS3552 | Computer Networks Lab | III YEAR - 1st SEM | CO4 | **L3** | **1.92** | **1.98** | **2.49** | 1.58 | 0.50 | 2.08 | 0.16 | Apply Technical knowledge for a given scenario and express with an effective oral communication | 211 |
| 45 | 20CS3552 | Computer Networks Lab | III YEAR - 1st SEM | CO5 | **L4** | **1.92** | **2.13** | **2.53** | 1.70 | 0.51 | 2.21 | 0.29 | Analyze the outputs and visualizations generated for different scenarios. | 212 |
| 46 | 20SS8551 | Soft Skills | III YEAR - 1st SEM | CO1 | **L3** | **1.86** | **2.21** | **2.90** | 1.77 | 0.58 | 2.35 | 0.49 | Develop logical and Analytical skill set through Case Studies | 213 |
| 46 | 20SS8552 | Soft Skills | III YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.21** | **2.87** | 1.77 | 0.57 | 2.34 | 0.48 | Proficient in giving Presentations | 214 |
| 46 | 20SS8553 | Soft Skills | III YEAR - 1st SEM | CO3 | **L2** | **1.86** | **2.21** | **2.89** | 1.77 | 0.58 | 2.35 | 0.49 | Understand the corporate etiquette | 215 |
| 46 | 20SS8554 | Soft Skills | III YEAR - 1st SEM | CO4 | **L3** | **1.86** | **2.21** | **2.89** | 1.77 | 0.58 | 2.35 | 0.49 | Develop Competency in group discussion & Interviews | 216 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | 20SS8555 | Soft Skills | III YEAR - 1st SEM | CO5 | **L3** | **1.86** | **2.21** | **2.89** | 1.77 | 0.58 | 2.35 | 0.49 | Present themselves with corporate readiness | 217 |
| 47 | 20MC1501 | Constitution of India | III YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.32** | **2.97** | 1.86 | 0.59 | 2.45 | 0.59 | Understand about the historical background of Indian constitution and features | 218 |
| 47 | 20MC1501 | Constitution of India | III YEAR - 1st SEM | CO2 | **L3** | **1.86** | **1.97** | **2.96** | 1.576 | 0.592 | 2.168 | 0.308 | Apply provisions of citizenship Act and fundamental rights and responsibilities of the citizen | 219 |
| 47 | 20MC1501 | Constitution of India | III YEAR - 1st SEM | CO3 | **L4** | **1.86** | **2.10** | **2.98** | 1.68 | 0.596 | 2.276 | 0.416 | Analyze the structure and function of union government | 220 |
| 47 | 20MC1501 | Constitution of India | III YEAR - 1st SEM | CO4 | **L2** | **1.86** | **1.91** | **2.97** | 1.528 | 0.594 | 2.122 | 0.262 | Understand the knowledge about the legislature assembly of state government | 221 |
| 47 | 20MC1501 | Constitution of India | III YEAR - 1st SEM | CO5 | **L4** | **1.86** | **1.87** | **2.98** | 1.496 | 0.596 | 2.092 | 0.232 | Analyze Indian statutory bodies and working of Election Commission | 222 |
| 48 | 20CS3581A | Summer Internship | III YEAR - 1st SEM | CO1 | **L3** | **1.95** | **2.18** | **3.00** | 1.74 | 0.60 | 2.34 | 0.39 | Apply domain knowledge during the course of internship | 223 |
| 48 | 20CS3581A | Summer Internship | III YEAR - 1st SEM | CO2 | **L3** | **1.95** | **2.02** | **3.00** | 1.62 | 0.60 | 2.22 | 0.27 | Demonstrate effective oral communication skills. | 224 |
| 48 | 20CS3581A | Summer Internship | III YEAR - 1st SEM | CO3 | **L3** | **1.95** | **2.15** | **3.00** | 1.72 | 0.60 | 2.32 | 0.37 | Work as an individual or a team member in a collaborative environment. | 225 |
| 48 | 20CS3581A | Summer Internship | III YEAR - 1st SEM | CO4 | **L3** | **1.95** | **2.11** | **3.00** | 1.69 | 0.60 | 2.29 | 0.34 | Exhibit integrity and ethical behavior while carrying out the internship. | 226 |
| 48 | 20CS3581A | Summer Internship | III YEAR - 1st SEM | CO5 | **L3** | **1.95** | **1.98** | **3.00** | 1.584 | 0.6 | 2.184 | 0.234 | Apply effective time management skills to complete | 227 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | the work within appropriate time | |
| 48 | 20CS3581 A | Summer Internship | III YEAR - 1st SEM | CO6 | **L3** | **1.95** | **2.19** | **3.00** | 1.75 | 0.60 | 2.35 | 0.40 | Develop an effective report based on the work completed during the internship. | 228 |
| | | | | | | | | | | | | | | |
| 49 | 20CS3601 | Compiler Design | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.99** | **2.53** | 1.59 | 0.51 | 2.10 | 0.24 | Understand the fundamental concepts of Compiler Design. | 229 |
| 49 | 20CS3601 | Compiler Design | III YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **1.95** | **2.55** | 1.56 | 0.51 | 2.07 | 0.21 | Apply top-down parsing techniques to generate the parse trees. | 230 |
| 49 | 20CS3601 | Compiler Design | III YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **1.98** | **2.59** | 1.58 | 0.52 | 2.10 | 0.24 | Apply bottom up parsing techniques to generate parse tree for the given grammar. | 231 |
| 49 | 20CS3601 | Compiler Design | III YEAR - 2nd SEM | CO4 | **L3** | **1.86** | **2.10** | **2.47** | 1.68 | 0.49 | 2.17 | 0.31 | Apply various code optimization techniques for intermediate code forms and Code Generation. | 232 |
| 49 | 20CS3601 | Compiler Design | III YEAR - 2nd SEM | CO5 | **L4** | **1.86** | **2.04** | **2.50** | 1.63 | 0.50 | 2.13 | 0.27 | Analyze the given grammar and apply suitable parsing techniques. | 233 |
| 50 | 20CS3602 | Machine Learning | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.59** | **2.48** | 1.27 | 0.50 | 1.77 | -0.09 | Understand the basic concepts of Machine Learning. | 234 |
| 50 | 20CS3602 | Machine Learning | III YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.00** | **2.46** | 1.60 | 0.49 | 2.09 | 0.23 | Apply Supervised Learning Algorithms for solving various problems | 235 |
| 50 | 20CS3602 | Machine Learning | III YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **1.82** | **2.46** | 1.46 | 0.49 | 1.95 | 0.09 | Apply Unsupervised Learning Algorithms for solving various problems | 236 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 20CS3602 | Machine Learning | III YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **1.90** | **2.46** | 1.52 | 0.49 | 2.01 | 0.15 | Analyze the given application and use suitable Machine Learning Algorithm. | 237 |
| 51 | 20CS3603 | Mern Stack Development | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.99** | **2.44** | 1.59 | 0.49 | 2.08 | 0.22 | Understand the fundamental concepts of web application development. | 238 |
| 51 | 20CS3603 | Mern Stack Development | III YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **1.67** | **2.39** | 1.34 | 0.48 | 1.81 | -0.05 | Apply Node.JS restful APIs to Interact with HTTP services | 239 |
| 51 | 20CS3603 | Mern Stack Development | III YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **1.80** | **2.38** | 1.44 | 0.48 | 1.92 | 0.06 | Apply React JS concepts to build an Application. | 240 |
| 51 | 20CS3603 | Mern Stack Development | III YEAR - 2nd SEM | CO4 | **L4** | **1.86** | **1.72** | **2.38** | 1.38 | 0.48 | 1.85 | -0.01 | Apply the concepts of Mongo DB to manipulate the Database | 241 |
| 52 | 20ME2601 A | Value Engineering | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **2.14** | **2.55** | 1.71 | 0.51 | 2.22 | 0.36 | Understand the basic concepts, techniques and applications of value engineering | 242 |
| 52 | 20ME2601 A | Value Engineering | III YEAR - 2nd SEM | CO2 | **L2** | **1.86** | **1.85** | **2.56** | 1.48 | 0.51 | 1.99 | 0.13 | Describe job plan of value engineering. | 243 |
| 52 | 20ME2601 A | Value Engineering | III YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.02** | **2.44** | 1.62 | 0.49 | 2.10 | 0.24 | Illustrate different value engineering techniques and versatility of value engineering. | 244 |
| 52 | 20ME2601 A | Value Engineering | III YEAR - 2nd SEM | CO4 | **L3** | **1.86** | **2.12** | **2.43** | 1.70 | 0.49 | 2.18 | 0.32 | Illustrate the efforts of value engineering team during the process of value engineering | 245 |
| 53 | 20ME2601 B | Human Factors in Engineering | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.82** | **2.44** | 1.46 | 0.49 | 1.94 | 0.08 | Understand the fundamentals of Human factors, Physical work, Anthropometry, Ergonomics, Machine controls, Seating design, Colour - Light, | 246 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | Temperature - Humidity – Illuminations and Measurement of sound. | |
| 53 | 20ME2601 B | Human Factors in Engineering | III YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.04** | **2.41** | 1.63 | 0.48 | 2.11 | 0.25 | Identify the role of Anthropometry and Ergonomics in product design. | 247 |
| 53 | 20ME2601 B | Human Factors in Engineering | III YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.08** | **2.40** | 1.66 | 0.48 | 2.14 | 0.28 | Choose the effective seating design and Machine controls for improvement of human workplace. | 248 |
| 53 | 20ME2601 B | Human Factors in Engineering | III YEAR - 2nd SEM | CO4 | **L3** | **1.86** | **1.93** | **2.44** | 1.54 | 0.49 | 2.03 | 0.17 | Represent the importance of colour and light, Temperature - Humidity – Illumination, Measurement of sound in human workplace. | 249 |
| 54 | 20CS4601 A | Design Patterns | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **1.94** | **2.55** | 1.55 | 0.51 | 2.06 | 0.20 | Understand the fundamental concepts of Design patterns for problems. | 250 |
| 54 | 20CS4601 A | Design Patterns | III YEAR - 2nd SEM | CO2 | **L3** | **1.86** | **2.01** | **2.45** | 1.61 | 0.49 | 2.10 | 0.24 | Apply creational patterns in software design for object creation. | 251 |
| 54 | 20CS4601 A | Design Patterns | III YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.35** | **2.49** | 1.88 | 0.50 | 2.38 | 0.52 | Apply structural patterns to assemble objects and classes in software design. | 252 |
| 54 | 20CS4601 A | Design Patterns | III YEAR - 2nd SEM | CO4 | **L3** | **1.86** | **2.48** | **2.49** | 1.98 | 0.50 | 2.48 | 0.62 | Apply behavioral patterns to identify common communication patterns among objects in software design. | 253 |
| 54 | 20CS4601 A | Design Patterns | III YEAR - 2nd SEM | CO5 | **L4** | **1.86** | **1.70** | **2.47** | 1.36 | 0.49 | 1.85 | -0.01 | Analyze design solutions by using suitable patterns for given case studies | 254 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 20CS4601 C | Block chain | III YEAR - 2nd SEM | CO1 | **L2** | **1.65** | **1.68** | **2.46** | 1.34 | 0.49 | 1.84 | 0.19 | Understand the key dimensions of Blockchain Technology | 255 |
| 55 | 20CS4601 C | Block chain | III YEAR - 2nd SEM | CO2 | **L3** | **1.65** | **1.88** | **2.43** | 1.50 | 0.49 | 1.99 | 0.34 | Apply the principles of Blockchain for a given application. | 256 |
| 55 | 20CS4601 C | Block chain | III YEAR - 2nd SEM | CO3 | **L3** | **1.65** | **1.87** | **2.44** | 1.50 | 0.49 | 1.98 | 0.33 | Apply the features of Ethereum and Hyperledger to develop various applications | 257 |
| 55 | 20CS4601 C | Block chain | III YEAR - 2nd SEM | CO4 | **L4** | **1.65** | **2.28** | **2.36** | 1.82 | 0.47 | 2.30 | 0.65 | Analyze the given scenario and design a block chain based solution | 258 |
| 56 | 20CS3651 | Compiler Design Lab | III YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.09** | **2.42** | 1.67 | 0.48 | 2.16 | 0.24 | Apply C, LEX and YACC programming to write a solution for the phases of compiler problems. | 259 |
| 56 | 20CS3651 | Compiler Design Lab | III YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.24** | **2.45** | 1.79 | 0.49 | 2.28 | 0.36 | Implement programs as an individual on different IDEs. | 260 |
| 56 | 20CS3651 | Compiler Design Lab | III YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **2.81** | **2.42** | 2.25 | 0.48 | 2.73 | 0.81 | Develop an effective report based on various programs implemented. | 261 |
| 56 | 20CS3651 | Compiler Design Lab | III YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **1.92** | **2.42** | 1.54 | 0.48 | 2.02 | 0.10 | Apply technical knowledge for a given problem and express with an effective oral communication. | 262 |
| 56 | 20CS3651 | Compiler Design Lab | III YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **1.94** | **2.45** | 1.55 | 0.49 | 2.04 | 0.12 | Analyze outputs generated by executing C, LEX and YACC programs for different test cases. | 263 |
| 57 | 20CS3652 | Machine Learning Lab | III YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **2.88** | **2.42** | 2.30 | 0.48 | 2.79 | 0.87 | Apply various pre-processing techniques and Machine Learning methods on different | 264 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | datasets for a given problem. | |
| 57 | 20CS3652 | Machine Learning Lab | III YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.87** | **2.45** | 2.30 | 0.49 | 2.79 | 0.87 | Implement various experiments in Jupyter Notebook Environment and Google Colab. | 265 |
| 57 | 20CS3652 | Machine Learning Lab | III YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **2.93** | **2.42** | 2.34 | 0.48 | 2.83 | 0.91 | Develop an effective report based on various learning methods implemented. | 266 |
| 57 | 20CS3652 | Machine Learning Lab | III YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **1.96** | **2.42** | 1.57 | 0.48 | 2.05 | 0.13 | Apply technical knowledge for a given scenario and express with an effective oral communication. | 267 |
| 57 | 20CS3652 | Machine Learning Lab | III YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **2.97** | **2.45** | 2.38 | 0.49 | 2.87 | 0.95 | Analyze the outputs and visualizations generated for different datasets. | 268 |
| 58 | 20CS3653 | Mern Stack Development Lab | III YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **3.00** | **2.63** | 2.40 | 0.53 | 2.93 | 1.01 | Apply Mern technologies to develop web applications. | 269 |
| 58 | 20CS3653 | Mern Stack Development Lab | III YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **2.88** | **2.65** | 2.30 | 0.53 | 2.83 | 0.91 | Implement various applications as an individual or team member | 270 |
| 58 | 20CS3653 | Mern Stack Development Lab | III YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **2.94** | **2.62** | 2.35 | 0.52 | 2.88 | 0.96 | Develop an effective report based on various programs implemented. | 271 |
| 58 | 20CS3653 | Mern Stack Development Lab | III YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **2.00** | **2.61** | 1.60 | 0.52 | 2.12 | 0.20 | Apply technical knowledge for a given problem and express with an effective oral communication. | 272 |
| 58 | 20CS3653 | Mern Stack Development Lab | III YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **1.80** | **3.00** | 1.44 | 0.60 | 2.04 | 0.12 | Analyze outputs of web based applications | 273 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO1 | **L3** | **1.92** | **1.61** | **2.82** | 1.29 | 0.56 | 1.85 | -0.07 | Apply the basics of android to develop android applications | 274 |
| 59 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO2 | **L3** | **1.92** | **1.04** | **2.81** | 0.83 | 0.56 | 1.39 | -0.53 | Develop various applications as an individual or team | 275 |
| 59 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO3 | **L3** | **1.92** | **2.20** | **2.82** | 1.76 | 0.56 | 2.32 | 0.40 | Develop an effective report based on various programs implemented | 276 |
| 59 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO4 | **L3** | **1.92** | **2.19** | **2.80** | 1.75 | 0.56 | 2.31 | 0.39 | Apply technical knowledge for a given problem and express with an effective oral communication | 277 |
| 59 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO5 | **L4** | **1.92** | **0.64** | **3.00** | 0.51 | 0.60 | 1.11 | -0.81 | Analyze outputs generated using android application | 278 |
| 60 | 20MC1602 | Universal Human Values | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | **2.32** | **2.97** | 1.86 | 0.59 | 2.45 | 0.59 | Understand the importance of universal human values and value education | 279 |
| 60 | 20MC1602 | Universal Human Values | III YEAR - 2nd SEM | CO2 | **L2** | **1.86** | **2.33** | **2.96** | 1.86 | 0.59 | 2.46 | 0.60 | Understand the Harmony in human being, Family and society | 280 |
| 60 | 20MC1602 | Universal Human Values | III YEAR - 2nd SEM | CO3 | **L3** | **1.86** | **2.29** | **2.98** | 1.83 | 0.60 | 2.43 | 0.57 | Apply a holistic perception of harmony at all levels of Existence | 281 |
| 60 | 20MC1603 | Universal Human Values | III YEAR - 2nd SEM | CO4 | **L3** | **1.86** | **2.27** | **2.97** | 1.82 | 0.59 | 2.41 | 0.55 | Apply human values and professional ethics to the self, family, society, and day-to-day activities of real life. | 282 |
| | | | | | | | | | | | | | | |
| 61 | 20CS4701 A | Deep Learning | IV YEAR - | CO1 | **L2** | **1.65** | **1.58** | **2.41** | 1.264 | 0.482 | 1.746 | 0.10 | Understand the fundamental concepts of Deep learning. | 283 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1st SEM | | | | | | | | | | | |
| 61 | 20CS4701 A | Deep Learning | IV YEAR - 1st SEM | CO2 | **L3** | **1.65** | **1.99** | **2.31** | 1.592 | 0.462 | 2.054 | 0.40 | Apply concepts of deep networks to analyze various architectures. | 284 |
| 61 | 20CS4701 A | Deep Learning | IV YEAR - 1st SEM | CO3 | **L3** | **1.65** | **1.98** | **2.34** | 1.584 | 0.468 | 2.052 | 0.40 | Apply deep learning models to build applications in various domains. | 285 |
| 61 | 20CS4701 A | Deep Learning | IV YEAR - 1st SEM | CO4 | **L4** | **1.65** | **1.89** | **2.35** | 1.512 | 0.47 | 1.982 | 0.33 | Analyze the given problem and apply suitable deep learning algorithm. | 286 |
| 62 | 20CS4701 B | Software Testing Methodologies | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.06** | **2.71** | 1.65 | 0.54 | 2.19 | 0.33 | Understand the importance and significance of Software Testing. | 287 |
| 62 | 20CS4701 B | Software Testing Methodologies | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **1.99** | **2.64** | 1.59 | 0.53 | 2.12 | 0.26 | Apply the functional testing techniques to design test cases. | 288 |
| 62 | 20CS4701 B | Software Testing Methodologies | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.98** | **2.69** | 1.58 | 0.54 | 2.12 | 0.26 | Apply Structural Testing techniques and creating test cases from use cases and requirements. | 289 |
| 62 | 20CS4701 B | Software Testing Methodologies | IV YEAR - 1st SEM | CO4 | **L3** | **1.86** | **2.19** | **2.64** | 1.75 | 0.53 | 2.28 | 0.42 | Apply the selection, minimization, Prioritization of test cases for regression Testing. | 290 |
| 62 | 20CS4701 B | Software Testing Methodologies | IV YEAR - 1st SEM | CO5 | **L4** | **1.86** | **2.03** | **3.00** | 1.62 | 0.60 | 2.22 | 0.36 | Analyse test strategies and data generation techniques. | 291 |
| 63 | 20CS4701 C | Cloud Computing | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.86** | **2.35** | 1.49 | 0.47 | 1.96 | 0.10 | Understand the basic concepts of virtualization and Cloud Computing | 292 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 63 | 20CS4701 C | Cloud Computing | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.21** | **2.43** | 1.77 | 0.49 | 2.25 | 0.39 | Apply cloud computing framework to build and deploy customized applications | 293 |
| 63 | 20CS4701 C | Cloud Computing | IV YEAR - 1st SEM | CO3 | **L4** | **1.86** | **2.05** | **2.29** | 1.64 | 0.46 | 2.10 | 0.24 | Analyze the given application and choose a suitable platform for deploying the cloud. | 294 |
| 64 | 20CS4702 B | Software Project Management | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.02** | **2.67** | 1.62 | 0.53 | 2.15 | 0.29 | Understand the fundamentals of Project Management principles while developing software. | 295 |
| 64 | 20CS4702 B | Software Project Management | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.18** | **2.67** | 1.74 | 0.53 | 2.28 | 0.42 | Apply a suitable software process model to develop a project. | 296 |
| 64 | 20CS4702 B | Software Project Management | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.77** | **2.75** | 1.42 | 0.55 | 1.97 | 0.11 | Apply the effort Estimation techniques to prepare accurate project estimation | 297 |
| 64 | 20CS4702 B | Software Project Management | IV YEAR - 1st SEM | CO4 | **L4** | **1.86** | **1.83** | **2.67** | 1.46 | 0.53 | 2.00 | 0.14 | Analyze and estimate cost, risk and outline the project plan | 298 |
| 65 | 20CS4702 C | Cyber Security | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.02** | **2.47** | 1.62 | 0.49 | 2.11 | 0.25 | Understand the basic concepts of cybercrime and offences | 299 |
| 65 | 20CS4702 C | Cyber Security | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **1.86** | **2.47** | 1.49 | 0.49 | 1.98 | 0.12 | Apply various methods and tools to identify various Cyber Crimes | 300 |
| 65 | 20CS4702 C | Cyber Security | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.24** | **2.41** | 1.79 | 0.48 | 2.27 | 0.41 | Apply different security measures on mobile devices. | 301 |
| 65 | 20CS4702 C | Cyber Security | IV YEAR - 1st SEM | CO4 | **L4** | **1.86** | **1.95** | **2.50** | 1.56 | 0.50 | 2.06 | 0.20 | Analyze the cyber security requirements/measures for an IT Infrastructure | 302 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 66 | 20CS4703 C | User Interface Design | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.98** | **2.49** | 1.58 | 0.50 | 2.08 | 0.22 | Understand the concepts and principles of graphical user interface design | 303 |
| 66 | 20CS4703 C | User Interface Design | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.27** | **2.54** | 1.82 | 0.51 | 2.32 | 0.46 | Apply concepts of interaction devices to identify appropriate devices for an application | 304 |
| 66 | 20CS4703 C | User Interface Design | IV YEAR - 1st SEM | CO3 | **L4** | **1.86** | **2.18** | **2.47** | 1.74 | 0.49 | 2.24 | 0.38 | Analyze given scenario and apply screen elements and windows to design a screen | 305 |
| 66 | 20CS4703 C | User Interface Design | IV YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.13** | **2.57** | 1.70 | 0.51 | 2.22 | 0.36 | Analyze human physical and mental limitations for using computers to provide solutions. | 306 |
| 67 | 20EC2701 B | E – Waste Management | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.03** | **2.60** | 1.62 | 0.52 | 2.14 | 0.28 | Understand the environmental impacts of e-waste. | 307 |
| 67 | 20EC2701 B | E – Waste Management | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **1.98** | **2.68** | 1.58 | 0.54 | 2.12 | 0.26 | Apply concepts of e-waste management hierarchy. | 308 |
| 67 | 20EC2701 B | E – Waste Management | IV YEAR - 1st SEM | CO3 | **L4** | **1.86** | **2.09** | **2.58** | 1.67 | 0.52 | 2.19 | 0.33 | Distinguish the role of various national and internal act and laws applicable for e-waste management and handling. | 309 |
| 67 | 20EC2701 B | E – Waste Management | IV YEAR - 1st SEM | CO4 | **L4** | **1.86** | **1.97** | **2.70** | 1.58 | 0.54 | 2.12 | 0.26 | Analyze the e – waste management measures proposed under national and global legislations. | 310 |
| 68 | 20EE2701 A | Non- Conventional Energy Resources | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.35** | **2.57** | 1.88 | 0.51 | 2.39 | 0.53 | Understand the process of energy collection, quantification, storage, conversion and applications of non-conventional sources. | 311 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 68 | 20EE2701 A | Non- Conventional Energy Resources | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **1.71** | **2.60** | 1.37 | 0.52 | 1.89 | 0.03 | Apply the knowledge of energy conversion for harvesting energy from different sources like light, heat, wind etc. | 312 |
| 68 | 20EE2701 A | Non- Conventional Energy Resources | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.92** | **2.54** | 1.54 | 0.51 | 2.04 | 0.18 | Apply basic laws of physics for the production of energy from Solar, wind, ocean, biomass, geothermal, fuel cell and hydrogen energy sources. | 313 |
| 68 | 20EE2701 A | Non- Conventional Energy Resources | IV YEAR - 1st SEM | CO4 | | **1.86** | **1.91** | **2.60** | 1.53 | 0.52 | 2.05 | 0.19 | Analyze the theory and designing wind mills, MHD, Fuel cells. | 314 |
| 68 | 20EE2701 A | Non- Conventional Energy Resources | IV YEAR - 1st SEM | CO5 | **L4** | **1.86** | **2.09** | **2.57** | 1.67 | 0.51 | 2.19 | 0.33 | Examine the performance of solar and wind generating units and economic aspects of MHD biomass and Ocean energy sources. | 315 |
| 68 | 20EE2701 A | Non- Conventional Energy Resources | IV YEAR - 1st SEM | CO6 | **L4** | **1.86** | **2.19** | **2.54** | 1.75 | 0.51 | 2.26 | 0.40 | Ability to apply the various energy generation techniques and to measure the basic parameters and submit a report. | 316 |
| 69 | 20ME2701 B | Management Information Systems | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **2.23** | **2.61** | 1.78 | 0.52 | 2.31 | 0.45 | Discuss the basic concepts of MIS, Decision making, Applications of MIS, Decision support systems, BPR and E-Commerce. | 317 |
| 69 | 20ME2701 B | Management Information Systems | IV YEAR - 1st SEM | CO2 | **L3** | **1.86** | **2.04** | **2.58** | 1.63 | 0.52 | 2.15 | 0.29 | Interpret the MIS decision making and its applications. | 318 |

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| 69 | 20ME2701 B | Management Information Systems | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.82** | **2.51** | 1.46 | 0.50 | 1.96 | 0.10 | Categorise Decision support systems and Business Process Re-Engineering | 319 |
| 69 | 20ME2701 B | Management Information Systems | IV YEAR - 1st SEM | CO4 | **L3** | **1.86** | **2.05** | **2.63** | 1.64 | 0.53 | 2.17 | 0.31 | Summarise the Electronic commerce environment and its opportunities. | 320 |
| 70 | 20CE2702 A | Environmental Managment and Audit | IV YEAR - 1st SEM | CO1 | **L3** | **1.86** | **2.25** | **2.45** | 1.80 | 0.49 | 2.29 | 0.43 | Apply basic knowledge on solid waste management | 321 |
| 70 | 20CE2702 A | Environmental Managment and Audit | IV YEAR - 1st SEM | CO2 | **L4** | **1.86** | **2.08** | **2.52** | 1.66 | 0.50 | 2.17 | 0.31 | Analyze the various hazards, handling techniques and disposal methods of biomedical waste | 322 |
| 70 | 20CE2702 A | Environmental Managment and Audit | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **2.50** | **2.46** | 2.00 | 0.49 | 2.49 | 0.63 | Design E-waste disposal procedures for different E-waste | 323 |
| 70 | 20CE2702 A | Environmental Managment and Audit | IV YEAR - 1st SEM | CO4 | **L4** | **1.86** | **2.39** | **2.52** | 1.91 | 0.50 | 2.42 | 0.56 | Outline the basic principles and importance of EIA and analyze the effect of developmental activities on the environment. | 324 |
| 70 | 20CE2702 A | Environmental Managment and Audit | IV YEAR - 1st SEM | CO5 | **L3** | **1.86** | **2.32** | **2.47** | 1.86 | 0.49 | 2.35 | 0.49 | Understand the activities in environmental auditing and applying them to industries to improve their environmental impact and sustainability performance | 325 |
| 71 | 20ME2702 B | Robotics | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.84** | **2.84** | 1.47 | 0.57 | 2.04 | 0.18 | Understand the basic anatomy of robots, actuators, end effectors, robot sensors, programming and applications. | 326 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 20ME2702 B | Robotics | IV YEAR - 1st SEM | CO2 | **L2** | **1.86** | **2.34** | **2.80** | 1.87 | 0.56 | 2.43 | 0.57 | Understand the working principles of robot actuators, end effectors | 327 |
| 71 | 20ME2702 B | Robotics | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.88** | **2.67** | 1.50 | 0.53 | 2.04 | 0.18 | Apply robot programming skills | 328 |
| 71 | 20ME2702 B | Robotics | IV YEAR - 1st SEM | CO4 | **L3** | **1.86** | **1.80** | **2.69** | 1.44 | 0.54 | 1.98 | 0.12 | Apply knowledge of robot sensors and their applications in industries | 329 |
| 72 | 20HS7701 C | Entrepreneurship Management | IV YEAR - 1st SEM | CO1 | **L2** | **1.86** | **1.95** | **2.86** | 1.56 | 0.57 | 2.13 | 0.27 | Understand the basic concepts and factors for starting and successful running of different forms of an enterprise. | 330 |
| 72 | 20HS7701 C | Entrepreneurship Management | IV YEAR - 1st SEM | CO2 | **L2** | **1.86** | **1.86** | **2.80** | 1.49 | 0.56 | 2.05 | 0.19 | Describe characteristics, values and attitudes of an entrepreneur. | 331 |
| 72 | 20HS7701 C | Entrepreneurship Management | IV YEAR - 1st SEM | CO3 | **L3** | **1.86** | **1.92** | **2.83** | 1.54 | 0.57 | 2.10 | 0.24 | Illustrate different forms of Entrepreneurial structures and Intrapreneurship. | 332 |
| 72 | 20HS7701 C | Entrepreneurship Management | IV YEAR - 1st SEM | CO4 | **L3** | **1.86** | **1.74** | **2.81** | 1.39 | 0.56 | 1.95 | 0.09 | Summarize critical Factors for starting a new enterprise and ethics to be followed during running of enterprise. | 333 |
| 73 | 20SA8755 | Sales Force Technologies | IV YEAR - 1st SEM | CO1 | **L3** | **1.92** | **1.93** | **3.00** | 1.544 | 0.6 | 2.144 | 0.224 | Apply basics of CRM, multi-tenancy, Data modelling and management in Sales force for solving problems in Apex. | 334 |
| 73 | 20SA8755 | Sales Force Technologies | IV YEAR - 1st SEM | CO2 | **L3** | **1.92** | **1.93** | **3.00** | 1.544 | 0.6 | 2.144 | 0.224 | Implement programming constructs of Apex like class, interface triggers as an individual on different IDEs/Online Platforms. | 335 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73 | 20SA8755 | Sales Force Technologies | IV YEAR - 1st SEM | CO3 | **L3** | **1.92** | **1.96** | **3.00** | 1.568 | 0.6 | 2.168 | 0.248 | Develop an effective report based on various programs implemented | 336 |
| 73 | 20SA8755 | Sales Force Technologies | IV YEAR - 1st SEM | CO4 | **L3** | **1.92** | **1.25** | **3.00** | 1.00 | 0.60 | 1.60 | -0.32 | Apply technical knowledge for a given problem and express with an effective oral Communication. | 337 |
| 73 | 20SA8755 | Sales Force Technologies | IV YEAR - 1st SEM | CO5 | **L4** | **1.92** | **1.93** | **3.00** | 1.54 | 0.60 | 2.14 | 0.22 | Analyze outputs using given constraints/test case/ debugging and deployment tools of sales force. | 338 |
| 74 | 20CS3781 B/C | Industrial/Research Internship | IV YEAR - 1st SEM | CO1 | **L3** | **1.95** | **2.22** | **3.00** | 1.776 | 0.6 | 2.376 | 0.426 | Apply domain knowledge during the course of internship | 339 |
| 74 | 20CS3781 B/C | Industrial/Research Internship | IV YEAR - 1st SEM | CO2 | **L3** | **1.95** | **2.06** | **3.00** | 1.648 | 0.6 | 2.248 | 0.298 | Demonstrate effective oral communication skills. | 340 |
| 74 | 20CS3781 B/C | Industrial/Research Internship | IV YEAR - 1st SEM | CO3 | **L3** | **1.95** | **1.97** | **3.00** | 1.576 | 0.6 | 2.176 | 0.226 | Work as an individual or a team member in a collaborative environment. | 341 |
| 74 | 20CS3781 B/C | Industrial/Research Internship | IV YEAR - 1st SEM | CO4 | **L3** | **1.95** | **1.99** | **3.00** | 1.592 | 0.6 | 2.192 | 0.242 | Exhibit integrity and ethical behavior while carrying out the internship. | 342 |
| 74 | 20CS3781 B/C | Industrial/Research Internship | IV YEAR - 1st SEM | CO5 | **L3** | **1.95** | **1.99** | **3.00** | 1.592 | 0.6 | 2.192 | 0.242 | Apply effective time management skills to complete the work within appropriate time | 343 |
| 74 | 20CS3781 B/C | Industrial/Research Internship | IV YEAR - 1st SEM | CO6 | **L3** | **1.95** | **2.00** | **3.00** | 1.6 | 0.6 | 2.2 | 0.25 | Develop an effective report based on the work completed during the internship. | 344 |
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | 20CS3861 | Project work, seminar and internship in industry | IV YEAR - 2nd SEM | CO1 | **L3** | **1.95** | **1.96** | **2.42** | 1.57 | 0.48 | 2.05 | 0.10 | Apply the knowledge of mathematics, computer science fundamentals, and computer science specializations to the solution of engineering problems. | 345 |
| 75 | 20CS3861 | Project work, seminar and internship in industry | IV YEAR - 2nd SEM | CO2 | **L4** | **1.95** | **1.99** | **2.33** | 1.59 | 0.47 | 2.06 | 0.11 | Analyze problem solution, its requirements, feasibility study and scope with appropriate planning in compiling the projects work using literature review. | 346 |
| 75 | 20CS3861 | Project work, seminar and internship in industry | IV YEAR - 2nd SEM | CO3 | **L3** | **1.95** | **1.96** | **2.37** | 1.568 | 0.474 | 2.042 | 0.092 | Apply the engineering knowledge in project design and use methods to carry out the project work by justifying ethical principles | 347 |
| 75 | 20CS3861 | Project work, seminar and internship in industry | IV YEAR - 2nd SEM | CO4 | **L6** | **1.95** | **1.95** | **2.36** | 1.56 | 0.47 | 2.03 | 0.08 | Create an economic ecosystem using modern tools to meet societal needs and examine the results obtained to derive conclusions | 348 |
| 75 | 20CS3865 | Project work, seminar and internship in industry | IV YEAR - 2nd SEM | CO5 | **L5** | **1.95** | **2.02** | **2.50** | 1.62 | 0.50 | 2.12 | 0.17 | Evaluate the performance of the project task as an individual and / or team members based on their effective communication, presentation, and report to manage the task in time | 349 |
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# 8.1.1A Documentary evidences of identification of gaps in CO's attainment

| PVP20-Admitted Batch | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO -DIRECT & INDIRECT ATTAINMENTS** | | | | | | | | | | | | | | |
| **S.No** | **Course Code** | **Course Name** | **Semester & Year** | **CO's** | **Level** | **Target Value** | **Direct Attainment Value(DA)** | **Indirect Attainment Value(IDA)** | **DA(80%) - DA*0.8** | **IDA(20%) -IDA*0.2** | **Overall CO Attainment (DA+IDA)** | **Gap Analysis (OA-TV) L-G** | **Course Outcome(CO) Statements** | **Identified Gap** |
| 1 | 20ES1253 | Programming For Problem Solving Lab | I YEAR - 2nd SEM | CO5 | **L4** | **1.92** | 1.69 | 2.53 | 1.35 | 0.51 | 1.86 | **-0.06** | Analyze outputs using given constraints/test cases. | Students may not have had enough exposure to a wide variety of well-structured test cases or constraints during exercises and assessments. |
| 2 | 20ES1356 | Data Structures Lab | II YEAR - 1st SEM | CO4 | **L3** | **1.92** | 1.70 | 2.49 | 1.36 | 0.50 | 1.86 | **-0.06** | Apply technical knowledge for a given problem and express with an effective oral communication. | The course emphasize technical problem-solving but not adequately integrate communication training into technical assessments. |

| S.No | Course Code | Course Name | Semester & Year | CO's | Level | Target Value | Direct Attainment Value(DA) | Indirect Attainment Value(IDA) | DA(80%) - DA*0.8 | IDA(20%) -IDA*0.2 | Overall CO Attainment (DA+IDA) | Gap Analysis (OA-TV) L-G | Course Outcome(CO) Statements | Identified Gap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 20BS1403 | Formal Languages and Automata Theory | II YEAR - 2nd SEM | CO1 | **L2** | **1.86** | 1.67 | 2.50 | 1.34 | 0.50 | 1.84 | **-0.02** | Understand the fundamental concepts of Formal Languages and Automata. | Need to emphasis more on fundamental concepts of Automata |
| 4 | 20CS3401 | Operating Systems | II YEAR - 2nd SEM | CO2 | **L3** | **1.86** | 1.65 | 2.51 | 1.32 | 0.50 | 1.82 | **-0.04** | Apply different algorithms of CPU scheduling, Page replacement and disk scheduling. | Students might have understood the algorithms in theory but did not practicesufficient number of problems |
| 5 | 20CS3401 | Operating Systems | II YEAR - 2nd SEM | CO4 | **L4** | **1.86** | 1.30 | 2.40 | 1.04 | 0.48 | 1.52 | **-0.34** | Analyse and interpret the functionalities of operating system. | Need to emphasis more on functionalities of Operating Systems |
| 6 | 20CS3403 | Design and Analysis of Algorithms | II YEAR - 2nd SEM | CO1 | **L2** | **1.86** | 1.56 | 2.77 | 1.25 | 0.55 | 1.80 | **-0.06** | Understand the fundamental concepts of algorithm analysis and design techniques | students may understand theoretical concepts like time complexity (Big O notation), the actual application of these concepts through hands-on algorithm is inadequate |

| S.No | Course Code | Course Name | Semester & Year | CO's | Level | Target Value | Direct Attainment Value(DA) | Indirect Attainment Value(IDA) | DA(80%) - DA*0.8 | IDA(20%) -IDA*0.2 | Overall CO Attainment (DA+IDA) | Gap Analysis (OA-TV) L-G | Course Outcome(CO) Statements | Identified Gap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 20CS3503 | Computer Networks | III YEAR - 1st SEM | CO3 | **L3** | **1.86** | 1.62 | 2.67 | 1.30 | 0.53 | 1.83 | **-0.03** | Apply various addressing mechanisms /Routing protocols for a given network.. | Insufficient understanding of networking fundamentals like IP addressing, subnetting, and addressing schemes, making it difficult for students to apply these concepts effectively. |
| 8 | 20CS3503 | Computer Networks | III YEAR - 1st SEM | CO4 | **L3** | **1.86** | 1.35 | 2.64 | 1.08 | 0.53 | 1.61 | **-0.25** | Apply appropriate Transport & Application layer protocol for a given context. | Limited understanding of transport and application layer protocols like TCP, UDP, HTTP, FTP, DNS, etc., and their role in networking. |
| 9 | 20CS3602 | Machine Learning | III YEAR - 2nd SEM | CO1 | **L2** | **1.86** | 1.59 | 2.48 | 1.27 | 0.50 | 1.77 | **-0.09** | Understand the basic concepts of Machine Learning. | Need to emphasis more on basics |

| S.No | Course Code | Course Name | Semester & Year | CO's | Level | Target Value | Direct Attainment Value(DA) | Indirect Attainment Value(IDA) | DA(80%) - DA*0.8 | IDA(20%) -IDA*0.2 | Overall CO Attainment (DA+IDA) | Gap Analysis (OA-TV) L-G | Course Outcome(CO) Statements | Identified Gap |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 20CS3603 | Mern Stack Development | III YEAR - 2nd SEM | CO2 | **L3** | **1.86** | 1.67 | 2.39 | 1.34 | 0.48 | 1.81 | **-0.05** | Apply Node.JS restful APIs to Interact with HTTP services | Limited hands-on practice with Node.js and Express framework |
| 11 | 20CS3603 | Mern Stack Development | III YEAR - 2nd SEM | CO4 | **L4** | **1.86** | 1.72 | 2.38 | 1.38 | 0.48 | 1.85 | **-0.01** | Apply the concepts of Mongo DB to manipulate the Database | Students might not have had enough hands-on practice using MongoDB commands or interfaces. |
| 12 | 20CS4601 A | Design Patterns | III YEAR - 2nd SEM | CO5 | **L4** | **1.86** | 1.70 | 2.47 | 1.36 | 0.49 | 1.85 | **-0.01** | Analyze design solutions by using suitable patterns for given case studies | Students may lack a deep conceptual understanding of design patterns |
| 13 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO1 | **L3** | **1.92** | 1.61 | 2.82 | 1.29 | 0.56 | 1.85 | **-0.07** | Apply basics of android to develop android applications | Students lack hands-on exposure to real-time Android SDK and emulator tools |
| 14 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO2 | **L3** | **1.92** | 1.04 | 2.81 | 0.83 | 0.56 | 1.39 | **-0.53** | Develop various applications as an individual or team | In team projects, some students might have carried the workload while |

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| | | | | | | | | | | | | | | others underperformed, affecting learning and performance collectively. |
| 15 | 20SA8651 | Mobile Application Development | III YEAR - 2nd SEM | CO5 | **L2** | **1.86** | 0.64 | 3 | 0.51 | 0.60 | 1.11 | **-0.75** | Analyze outputs generated using android application | Students may not have had adequate exposure to a wide variety of well-structured test cases and edge-case scenarios during lab exercises and assessments |
| 16 | 20SA8755 | Sales Force Technologies | IV YEAR - 1st SEM | CO4 | **L3** | **1.92** | 1.20 | 3.00 | 0.96 | 0.60 | 1.56 | **-0.36** | Apply technical knowledge for a given problem and express with an effective oral Communication. | The course emphasize technical problem-solving but not adequately integrate communication training into technical assessments. |

# 8.1.1B Plan of action to bridge the gaps /Improvement

## PVP20-Admitted Batch

| S.No | Course Code | Course Name | Identified Gap | Plan of Action |
|---|---|---|---|---|
| 1 | 20ES1253 | Programming For Problem Solving Lab | Students may not have had enough exposure to a wide variety of well-structured test cases or constraints during exercises and assessments. | Include peer-review exercises where students exchange and analyze each other's test cases. |
| 2 | 20ES1356 | Data Structures Lab | The course emphasize technical problem-solving but not adequately integrate communication training into technical assessments. | During lab sessions, make students more interactive to verbally explain their logic, challenges, and alternatives. |
| 3 | 20BS1403 | Formal Languages and Automata Theory | Need to emphasis more on fundamental concepts of Automata | Include more practice problems on concepts of automata |
| 4 | 20CS3401 | Operating Systems | Students might have understood the algorithms in theory but did not practicesufficient number of problems | Dedicate part of class/lab time to guide problem-solving on CPU scheduling, Page replacement and disk scheduling. |
| 5 | 20CS3401 | Operating Systems | Need to emphasis more on functionalities of Operating Systems | emphasis more on functionalities of Operating Systems |
| 6 | 20CS3403 | Design and Analysis of Algorithms | students may understand theoretical concepts like time complexity (Big O notation), the actual application of these concepts through hands-on algorithm is inadequate | Incorporate more coding assignments, algorithmic problem-solving platforms (like LeetCode or HackerRank), and case studies to reinforce theoretical knowledge. |
| 7 | 20CS3503 | Computer Networks | Insufficient understanding of networking fundamentals like IP addressing, subnetting, and addressing schemes, making it difficult for students to apply these concepts effectively. | Student are suggest to practice more IP addressing and Routing problems using tools like Packet tracer or group discussion can also help them understand better. |

| S.No | Course Code | Course Name | Identified Gap | Plan of Action |
|---|---|---|---|---|
| 8 | 20CS3503 | Computer Networks | Limited understanding of transport and application layer protocols like TCP, UDP, HTTP, FTP, DNS, etc., and their role in networking. | Students need more examples and activities to understand TCP/UDP and application protocols. Practice quizzes and real tasks can help them improve. |
| 9 | 20CS3602 | Machine Learning | Need to emphasis more on basics | Suggest course instructor to use suitable teaching methodology for better understanding. |
| 10 | 20CS3603 | Mern Stack Development | Limited hands-on practice with Node.js and Express framework | Suggest course instructor to include more hands-on practice on Node.js and Express framework |
| 11 | 20CS3603 | Mern Stack Development | Students might not have had enough hands-on practice using MongoDB commands or interfaces. | Suggest course instructor to include more hands-on practice on Mongo DB . |
| 12 | 20CS4601A | Design Patterns | Students may lack a deep conceptual understanding of design patterns | Suggest to Include assignments requiring implementation of small applications using 2–3 different design patterns, with reflection on the rationale for each. |
| 13 | 20SA8651 | Mobile Application Development | Students lack hands-on exposure to real-time Android SDK and emulator tools | Suggest course instructor to conduct more lab sessions focused on Android fundamentals |
| 14 | 20SA8651 | Mobile Application Development | In team projects, some students might have carried the workload while others underperformed, affecting learning and performance collectively. | Divide class into small teams for project-based assignments and review contributions frequently |
| 15 | 20SA8651 | Mobile Application Development | Students may not have had adequate exposure to a wide variety of well-structured test cases and edge-case scenarios during lab exercises and assessments | Include peer-review activities where students analyze and validate each other’s test cases and app outputs. |
| 16 | 20SA8755 | Sales Force Technologies | The course emphasize technical problem-solving but not adequately integrate communication training into technical assessments. | During lab sessions, make students more interactive to verbally explain their logic, challenges, and alternatives. |

# 8.1.1C Implementation

## PVP20-Admitted Batch

| S.No | Course Code | Course Name | Plan of Action | Implementation |
|---|---|---|---|---|
| 1 | 20ES1253 | Programming For Problem Solving Lab | Include peer-review exercises where students exchange and analyze each other's test cases. | Use automated grading tools (e.g., HackerRank, CodeRunner, or custom scripts) that show outputs for various test cases. |
| 2 | 20ES1356 | Data Structures Lab | During lab sessions, make students more interactive to verbally explain their logic, challenges, and alternatives. | During lab sessions, make students more interactive to verbally explain their logic, challenges, and alternatives. |
| 3 | 20BS1403 | Formal Languages and Automata Theory | Include more practice problems on concepts of automata | Include more practice problems on concepts of automata |
| 4 | 20CS3401 | Operating Systems | Dedicate part of class/lab time to guide problem-solving on CPU scheduling, Page replacement and disk scheduling. | Dedicate part of class/lab time to guide problem-solving on CPU scheduling, Page replacement and disk scheduling. |
| 5 | 20CS3401 | Operating Systems | emphasis more on functionalities of Operating Systems | Use lectures to introduce core OS concepts and discuss different OS functionalities in-depth, followed by real-life examples and case studies. |
| 6 | 20CS3403 | Design and Analysis of Algorithms | Incorporate more coding assignments, algorithmic problem-solving platforms (like LeetCode or HackerRank), and case studies to reinforce theoretical knowledge. | Incorporated problems from the coding platform LeetCode |
| 7 | 20CS3503 | Computer Networks | Student are suggest to practice more IP addressing and Routing problems using tools like Packet tracer or group discussion can also help them understand better. | Utilized packet tracer tool to provide hands-on practice in configuring and simulating routing protocols . |

| S.No | Course Code | Course Name | Plan of Action | Implementation |
|---|---|---|---|---|
| 8 | 20CS3503 | Computer Networks | Students need more examples and activities to understand TCP/UDP and application protocols. Practice quizes and real tasks can help them improve. | Demonstrate how TCP and UDP are used in real applications (e.g., HTTP over TCP, DNS over UDP).Simulate TCP and UDP communication using tools like Wireshark. |
| 9 | 20CS3602 | Machine Learning | Suggest course instructor to use suitable teaching methodology for better understanding. | Use visual aids, quizes or puzzles. |
| 10 | 20CS3603 | Mern Stack Development | Suggest course instructor to include more hands-on practice on Node.js and Express framework | Introduce project based learning |
| 11 | 20CS3603 | Mern Stack Development | Suggest course instructor to include more hands-on practice on Mongo DB . | Introduce project based learning |
| 12 | 20CS4601A | Design Patterns | Suggest to Include assignments requiring implementation of small applications using 2–3 different design patterns, with reflection on the rationale for each. | Suggested to Include assignments requiring implementation of small applications using 2–3 different design patterns, with reflection on the rationale for each. |
| 13 | 20SA8651 | Mobile Application Development | Suggest course instructor to conduct more lab sessions focused on Android fundamentals | Course Instructor conducted more lab sessions focused on Android fundamentals |
| 14 | 20SA8651 | Mobile Application Development | Divide class into small teams for project-based assignments and review contributions frequently | Conducted weekly or biweekly progress reviews to track individual contributions. |
| 15 | 20SA8651 | Mobile Application Development | Include peer-review activities where students analyze and validate each other’s test cases and app outputs. | Include peer-review activities where students analyze and validate each other’s test cases and app outputs. |
| 16 | 20SA8755 | Sales Force Technologies | During lab sessions, make students more interactive to verbally explain their logic, challenges, and alternatives. | During lab sessions, make students more interactive to verbally explain their logic, challenges, and alternatives. |