**Program and Course Structure B.Tech CSE**

**1. Standard Structure of the Program at University Level**

**1.1 Vision, Mission and Core Values of the University**

**Vision of the University**

**To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.**

**Mission of the University**

1. **Transformative educational experience**
2. **Enrichment by educational initiatives that encourage global outlook**
3. **Develop research, support disruptive innovations and accelerate entrepreneurship**
4. **Seeking beyond boundaries**

***Creative Campaign Can be TEDs: This is guiding principle for promotion and wide circulation among various stakeholder.***

***Guidelines: Similar Mnemonics can be designed by schools.***

**Core Values**

* **Integrity**
* **Leadership**
* **Diversity**
* **Community**

**Note: Detailed Mission Statements of University can be used for developing Mission Statements of Schools/ Departments.**

**1.2 Vision and Mission of the School**

**Vision of the School**

**To become a globally acclaimed institution of higher learning in engineering and technology promoting excellence in research, innovation and entrepreneurship**

**Mission of the School**

1. **To impart quality education with strong industry & academic connectivity in the expanding fields of Engineering and Technology in a conductive and enriching learning environment.**
2. **To product technocrats equipped with technical & soft skills and experiential learning required to stay current with the modern tools in emerging technologies to fulfill professional responsibilities and uphold ethical values.**
3. **To inculcate a culture of interdisciplinary research, innovation and entrepreneurship to provide sustainable solutions to meet the growing challenges and societal needs.**
4. **To foster collaborative learning and to play adaptive leadership role in professional career and pursuit of higher education through effective mentoring and counselling.**

**1.2.1Vision and Mission of the Department**

**Vision of the Department**

To be known and recognized as the fountainhead of excellence in technical knowledge and research in computer science and engineering, and draw to it the students and scholars across nations.

**Mission of the Department**

1. To facilitate and foster the academia industry collaboration to enhance entrepreneurship skills and acquaintance with corporate culture.
2. To strengthen core competences of students to be successful, ethical , effective problem solver in Computer Science & Engineering through analytical learning
3. To promote research based activities in emerging areas of technology convergence.
4. To induce moral values and spirit of social commitment.

**1.3 Programme Educational Objectives (PEO)**

**1.3.1 Writing Programme Educational Objectives (PEO)**

|  |
| --- |
| The Educational Objectives of UG Program in Computer Science Engineering are: |

**PEO1 :** The Graduate will ensconce himself/herself as effective professionals by solving real life problems using exploratory and analytical skills along with the knowledge acquired in the field of Computer Science and Engineering.

**PEO2 :**The Graduate will demonstrate his/her ability to accustom to rapidly changing environment in advanced areas of Computer Science and scale new height in their profession through lifelong learning.

**PEO3 :** The Graduate will have the ability to work and communicate effectively as a team member or leader to complete the task with minimal resources, meeting deadlines.

**PEO4 :** The Graduate will embrace professional code of ethics in the profession while deliberately being part of projects which contributes to the society at large without disturbing the ecological balance.

**Methods of Forming PEO’s**

STEP 1: The needs of the Nation and society are identified through scientific publications, industry interaction and media.

STEP 2. Taking the above into consideration, the PEOs are established by the coordination Committee of the department.

STEP 3. The PEOs are communicated to the alumni and their suggestions are obtained.

STEP 4. The PEOs are communicated to all the faculty members of the department and their feedback is obtained.

STEP 5. The PEOs are then put to the Board of Studies of the department for final approval.

***[Note: Prepare a file for the same, how you arrive for PEO’s]***

**1.3.2 Map PEOs with School Mission Statements:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PEO Statements** | **School**  **Mission 1** | **School**  **Mission 2** | **School**  **Mission 3** | **School**  **Mission 4** |
| **PEO1:** | **3** | **3** | **2** | **2** |
| **PEO2:** | **2** | **3** | **2** | **1** |
| **PEO3:** | **2** | **2** | **2** | **3** |
| **PEO4:** | **2** | **1** | **3** | **1** |

Enter correlation levels 1, 2, or 3 as defined below:

1. **Slight (Low) 2. Moderate (Medium) 3. Substantial (High)**

If there is no correlation, put “-“

**1.3.2.1 Map PEOs with Department Mission Statements:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PEO Statements** | **Department**  **Mission 1** | **Department Mission 2** | **Department Mission 3** | **Department Mission 4** |
| **PEO1:** | **2** | **3** | **2** | **1** |
| **PEO2:** | **1** | **3** | **3** | **1** |
| **PEO3:** | **3** | **2** | **1** | **1** |
| **PEO4:** | **1** | **2** | **2** | **3** |
| **PEO5:** | **2** | **3** | **2** | **1** |

Enter correlation levels 1, 2, or 3 as defined below:

1. **Slight (Low) 2. Moderate (Medium) 3. Substantial (High)**

If there is no correlation, put “-“

**1.3.3 Program Outcomes (PO’s)**

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PSO1: Familiarity and practical proficiency with a broad area of programming concepts and provide new ideas and innovations towards research and societal issues.

PSO2: Understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics and networking for efficient design of computer-based systems of varying complexity.

PSO3: Apply standard Software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality product for business success.

PSO4: Be acquainted with the contemporary issues, latest trends in technological development and thereby innovate new ideas and solutions to existing environmental and societal problems.

PSO5: To prepare graduates to apply their skills in creating innovative computing solutions by employing effective communication, teamwork, leadership, ethical practices and professionalism.

**1.3.4 Mapping of Program Outcome Vs Program Educational Objectives**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Mapping | PEO1 | PEO2 | PEO3 | PEO4 |
| PO1 | 3 | 3 | 2 | 1 |
| PO2 | 3 | 3 | 3 | 1 |
| PO3 | 2 | 2 | 3 | 3 |
| PO4 | 2 | 2 | 3 | 2 |
| PO5 | 2 | 3 | 2 | 2 |
| PO6 | 1 | 2 | 2 | 3 |
| PO7 | 1 | 1 | 2 | 3 |
| PO8 | 1 | 1 | 2 | 3 |
| PO9 | 1 | 2 | 3 | 1 |
| PO10 | 1 | 1 | 3 | 2 |
| PO11 | 3 | 2 | 3 | 1 |
| PO12 | 2 | 3 | 1 | 1 |
| PSO1 | 2 | 3 | 1 | 3 |
| PSO2 | 3 | 3 | 2 | 2 |
| PSO3 | 3 | 3 | 2 | 2 |
| PSO4 | 2 | 2 | 1 | 3 |
| PSO5 | 3 | 2 | 3 | 1 |

***1. Slight (Low) 2. Moderate (Medium) 3. Substantial (High)***

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: I | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| 1. | CSE113 | Programming for Problem Solving | 3 | 0 | 0 | 3 |  |
| 2. | MTH 142 | Calculus and Abstract Algebra | 3 | 1 | 0 | 4 |  |
| 3. | PHY117 | Semiconductor Physics | 2 | 1 | 0 | 3 |  |
| 4. | EEE112 | Principles of Electrical and Electronics Engineering | 2 | 1 | 0 | 3 |  |
| 5. | EVS103 | Environmental Science | 2 | 0 | 0 | 2 |  |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 6. | CSP113 | Programming for Problem Solving Lab | 0 | 0 | 2 | 1 |  |
| 7. | CSP101 | Introduction to Computer Science and Engineering | 0 | 0 | 2 | 1 |  |
| 8. | MEP106 | Computer Aided Design & Drafting | 0 | 0 | 3 | 1.5 |  |
| 9. | EEP112 | Principles of Electrical and Electronics Engineering | 0 | 0 | 2 | 1 |  |
| 10. | PHY161/162 | Physics Lab –I / Physics Lab-II | 0 | 0 | 2 | 1 |  |
| 11. | FEN101 | Functional English Beginners-I | 0 | 0 | 2 | 1 |  |
| 12. | FEN103 | Functional English Intermediate-I |  |
| 13. | ENP102 | Functional English-I | 0 | 0 | 2 | 1 |  |
| **TOTAL CREDITS** | |  |  |  |  | **22.5** |  |

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: II | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| 1. | CSE114 | Application based Programming in Python | 3 | 0 | 0 | 3 |  |
| 2. | MTH 145 | Probability and Statistics | 3 | 1 | 0 | 4 |  |
| 3. | PHY116 | Engineering Physics | 2 | 1 | 0 | 3 |  |
| 4. | CHY111 | Engineering Chemistry | 3 | 0 | 2 | 4 |  |
| 5. | HMM111 | Human Value & Ethics | 2 | 0 | 0 | 2 |  |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 6. | CSP114 | Application based Programming in Python | 0 | 0 | 2 | 1 |  |
| 7. | MEP105 | Mechanical Workshop | 0 | 0 | 3 | 1.5 |  |
| 8. | CSP103 | Multimedia Application Lab | 0 | 0 | 2 | 1 |  |
| 9. | PHY161/162 | Physics Lab –I / Physics Lab-II | 0 | 0 | 2 | 1 |  |
| 10. | FEN102 | Functional English Beginners-II | 0 | 0 | 2 | 1 |  |
| 11. | FEN104 | Functional English Intermediate-II |  |
| 12. | ENP103 | Functional English-II | 0 | 0 | 2 | 1 |  |
| **TOTAL CREDITS** | |  |  |  |  | **22.5** |  |

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: III | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| 1. | BTY223 | Introduction to Biology for Engineers | 2 | 0 | 0 | 2 |  |
| 2. | MTH201 | Discrete Structures | 3 | 1 | 0 | 4 |  |
| 3. | CSE247 | Computer Organization and Architecture | 3 | 0 | 0 | 3 |  |
| 4. | CSE242 | Data Structures | 3 | 0 | 0 | 3 |  |
| 5. | CSE243 | Object Oriented Programming Using Java | 3 | 0 | 0 | 3 |  |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 6 | CSP242 | Data Structures Lab | 0 | 0 | 2 | 1 |  |
| 7. | CSP243 | Object Oriented Programming Using Java | 0 | 0 | 2 | 1 |  |
| 8. | ARP203 | Aptitude Reasoning and Business Communication Skills-Basic | 0 | 0 | 4 | 2 |  |
| 9. | CSP297 | Project Based Learning (PBL) -1 | 0 | 0 | 2 | 1 |  |
| 10. | CSP299 | Industrial Internship-I | - | - | - | 1 |  |
| **TOTAL CREDITS** | |  |  |  |  | **21** |  |

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: IV | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| 1. | CSE244 | Principles of Operating System | 3 | 0 | 0 | 3 |  |
| 2. | CSE245 | Computer Networks | 3 | 0 | 0 | 3 |  |
| 3. | CSE246 | Data Base Management System | 3 | 0 | 0 | 3 | Discrete Structures |
| 4. | CSE248 | Theory of Computation | 3 | 1 | 0 | 4 |  |
| 5 |  | Program Elective-1 | 3 | 0 | 0 | 3 |  |
| 6. | OE1 | Open Elective – 1 | 2 | 0 | 0 | 2 |  |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 7. | ARP204 | Aptitude Reasoning and Business Communication Skills-Intermediate | 0 | 0 | 4 | 2 | ARP201 |
| 8. | CSP244 | Principles of Operating System Lab | 0 | 0 | 2 | 1 |  |
| 9. | CSP245 | Computer Networks Lab | 0 | 0 | 2 | 1 |  |
| 10. | CSP246 | Data Base Management System Lab | 0 | 0 | 2 | 1 |  |
| 11. | CSP298 | Project Based Learning (PBL) -2 | 0 | 0 | 2 | 1 | PBL-I |
| **TOTAL CREDITS** | |  |  |  |  | **24** |  |

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: V | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| 1. | CSE341 | Design and Analysis of Algorithm | 3 | 1 | 0 | 4 | Data Structure |
| 2 | CSE343 | Software Engineering and Testing Methodologies | 3 | 0 | 0 | 3 |  |
| 3 |  | Program Elective-2 | 3 | 0 | 0 | 3 |  |
| 4. |  | Program Elective-3 | 3 | 0 | 0 | 3 |  |
| 5. | OE-2 | Open Elective – 2 | 3 | 0 | 0 | 3 |  |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 6. |  | Community Connect | - | - | - | 2 |  |
| 7. | ARP301 | Quantitative Aptitude Behavioral and Interpersonal Skills | 0 | 0 | 4 | 2 | ARP204 |
| 8. | CSP341 | Design and Analysis of Algorithm Lab | 0 | 0 | 2 | 1 | Data Structure Lab |
| 9 | CSP302 | Technical Skill Enhancement Course-1 Simulation Lab | 0 | 0 | 2 | 1 | Operating system, Database Management system |
| 10. | CSP397 | Project Based Learning (PBL) -3 | 0 | 0 | 2 | 1 | PBL-2 |
| 11. | CSP399 | Industrial Internship-II | - | - | - | 1 | Industrial Internship-I |
| **TOTAL CREDITS** | |  |  |  |  | **24** |  |

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: VI | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| 1. | HMM305 | Management for Engineers | 3 | 0 | 0 | 3 |  |
| 2. | CSE458 | Web Technologies | 3 | 0 | 0 | 3 | Java |
| 3 | CSE344 | Compiler Design | 3 | 0 | 0 | 3 | Theory of Computation |
| 4 | PE4 | Program Elective-4 | 3 | 0 | 0 | 3 |  |
| 5. | OE-3 | Open Elective – 3 | 3 | 0 | 0 | 3 |  |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 6. | ARP302 | Higher Order Mathematics and Advanced People Skills | 0 | 0 | 4 | 2 | ARP301 |
| 7. | CSP458 | Web Technologies Lab | 0 | 0 | 2 | 1 | Java |
| 8. | CSP344 | Compiler Design Lab | 0 | 0 | 2 | 1 | Principles of Operating system Lab |
| 9. | CSP301 | Technical Skill Enhancement Course-2(Application Development Lab) | 0 | 0 | 2 | 1 |  |
| 10 | CSP398 | Project Based Learning (PBL) -4 | 0 | 0 | 2 | 1 | PBL-3 |
| **TOTAL CREDITS** | |  |  |  |  | **21** |  |

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: VII | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| 1. | CSE346 | Artificial Intelligence | 3 | 0 | 0 | 3 |  |
| 2. | PE5 | Program Elective-5 | 3 | 0 | 0 | 3 |  |
| 3. | PE6 | Program Elective-6 | 3 | 0 | 0 | 3 |  |
| 4. |  | Comprehensive Examination | 0 | 0 | 0 | 0 | Audit |
| 5 | OE4 | Open Elective - 4 | 3 | 0 | 0 | 3 |  |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 6 | CSP346 | Artificial Intelligence Lab | 0 | 0 | 2 | 1 |  |
| 7. | CSP497 | Major Project- 1 | - | - | - | 3 | PBL-4 |
| 8. | CSP499 | Industrial Internship-III | - | - | - | 1 | Industrial Internship-II |
| **TOTAL CREDITS** | |  |  |  |  | **17** |  |

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| **School of Engineering and Technology** | | | | | | | |
| **B.Tech-Computer Science Engineering** | | | | | | | |
| **Batch: 2018 Onwards** | | |  | | | TERM: VIII | |
| **S. No.** | **Course Code** | **Course** | **Teaching Load** | | | **Credits** | **Pre-Requisite/Co Requisite** |
| **L** | **T** | **P** |
| **THEORY SUBJECTS** | | | | | | | |
| **Practical/Viva-Voce/Jury** | | | | | | | |
| 1. | CSP498 | Major Project - 2 | - | - | - | 8 | Major Project - 1 |
| **TOTAL CREDITS** | |  |  |  |  | **8** |  |

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| **Program Elective** | | | | | |
| Introduction to Mathematical & Statistical Techniques in Computer Science CSE348 | Android Application Development CSE350 | Web Designing CSE352 | Mobile Computing CSE460 | Wireless Networks CSE454 | Distributed System Concepts & Design CSE456 |
| Introduction to Graph Theory and its Applications CSE349 | Introduction to Cloud Computing CSE351 | Software Project Management CSE353 | Software Testing CSE459 | Digital Image Processing CSA403 | Introduction to Internet of Things CSI201 |

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| **Minor in Program** | | | | | | | | |
| **S. No** | **Course Code** | **Course Name** | **L** | **T** | **P** | **C** | **Category** | **Prerequisite** |
|  | | | | | | | | |
| 1 | CSE243/CSP243 | Object Oriented Programming Using Java | 3 | 0 | 2 | 4 | Engineering |  |
| 2 | CSE246/CSP246 | Data Base Management System | 3 | 0 | 2 | 4 | Engineering |  |
| 3 | CSE343 | Software Engineering and Testing Methodologies | 3 | 0 | 0 | 3 | Engineering |  |
| 4 | CSE346 | Artificial Intelligence | 3 | 0 | 0 | 3 | Engineering |  |
| 5 | CSE458 | Web Technologies | 3 | 0 | 0 | 3 | Engineering |  |
| 6 | CSA301 | Introduction to Machine Learning | 3 | 0 | 0 | 3 | Engineering |  |
|  |  | Total Credits to be taken |  |  |  | 20 |  |  |

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| **Honours in Computer Science and Engineering** | | | | | | | | |
| **Honours in Program Cyber Security** | | | | | | | | |
| **S. No** | **Course Code** | **Course Name** | **L** | **T** | **P** | **C** | **Category** | **Prerequisite** |
|  | | | | | | | | |
| 1 | CSC201 | Introduction to Cyber Laws | 3 | 0 | 0 | 3 | Engineering |  |
| 2 | CSC202 | Web and Mobile Application security | 3 | 0 | 0 | 3 | Engineering |  |
| 3 | CSC301/CCL301 | Digital Forencics | 3 | 0 | 2 | 4 | Engineering |  |
| 4 | CSC302/CCL302 | Ethical Hacking | 3 | 0 | 2 | 4 | Engineering |  |
| 5 | CSC401 | Security Architecture | 3 | 0 | 0 | 3 | Engineering |  |
| 6 | CSC402 | Risk Management | 3 | 0 | 0 | 3 | Engineering |  |
|  |  | Total Credits to be taken |  |  |  | 20 |  |  |
|  |  |  |  |  |  |  |  |  |
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| **Honors in Program Data Sciences** | | | | | | | | |
| **S. No** | **Course Code** | **Course Name** | **L** | **T** | **P** | **C** | **Category** | **Prerequisite** |
|  | | | | | | | | |
| 1 | CSD201 | Applied Stsistical Analysis | 3 | 0 | 0 | 3 | Engineering |  |
| 2 | CSD202 | Data Aquasition | 3 | 0 | 0 | 3 | Engineering |  |
| 3 | CSD301 | Data Warehouse | 3 | 0 | 0 | 3 | Engineering |  |
| 4 | CSD302 | Data Mining | 3 | 0 | 2 | 4 | Engineering |  |
| 5 | CSD401 | Business Intelligence | 3 | 0 | 0 | 3 | Engineering |  |
| 6 | CSD402 | Big Data Analytics | 3 | 0 | 2 | 4 | Engineering |  |
|  |  | Total Credits to be taken |  |  |  | 20 |  |  |
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| **Honors in Program Artificial Intelligence and Machine Learning** | | | | | | | | |
| **S. No** | **Course Code** | **Course Name** | **L** | **T** | **P** | **C** | **Category** | **Prerequisite** |
|  | | | | | | | | |
| 1 | CSA201 | Soft computing | 3 | 0 | 0 | 3 | Engineering |  |
| 2 | CSA202 | Pattern Recognition | 3 | 0 | 2 | 4 | Engineering |  |
| 3 | CSA301/CAL301 | Introduction to Machine Learning | 3 | 0 | 2 | 4 | Engineering |  |
| 4 | CSA302 | Neural Networks | 3 | 0 | 0 | 3 | Engineering |  |
| 5 | CSA401 | Introduction to Deep Leaning | 3 | 0 | 0 | 3 | Engineering |  |
| 6 | CSA402 | Robotics and Intelligent Systems | 3 | 0 | 0 | 3 | Engineering |  |
|  |  | Total Credits to be taken |  |  |  | 20 |  |  |

**Syllabus:** CSP 101:Introduction to Computer Science and Engineering

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| **School: SET** | | **Batch : 2018** | | | | | |
| **Program:B.Tech** | | **Current Academic Year:** | | | | | |
| **Branch: CSE** | | **Semester:I** | | | | | |
| 1 | Course Code | CSP101 | | Course Name | | | |
| 2 | Course Title | Introduction to Computer Science and Engineering | | | | | |
| 3 | Credits | 1 | | | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | | | |
|  | Course Status | UG | | | | | |
| 5 | Course Objective | 1. To familiarize the students about the importance of Undergraduate course on Computer Science & Engineering. 2. To discuss recent developments in hardware and software environments. 3. To focus future application areas of Computer Science and Engineering. 4. To discuss various research and development options in Computer Science and Engineering. | | | | | |
| 6 | Course Outcomes | **The student should be able to:**  CO1: Understand the technical aspects of Computer Science & Engineering Course.  CO2: Perceive some knowledge about programming in various applications.  CO3: Acquire basic understanding about computer networking and related technology.  CO4: Enhance some fundamental knowledge of DBMS including application areas.  CO5: Understand the current trends in computing in discovering wisdom/knowledge and future prediction. | | | | | |
| 7 | Course Description | This course focuses application areas of Computer Science and Engineering for students admitted in undergraduate program. The purpose of B. Tech. in Computer Science & Engineering is to be given through this course to students. | | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | | **Hardware aspect of Computer Science & Engineering** | | | |  |
| A | | History of Computing Systems, Computer Basics and Computer Organization. | | | | CO1 |
| B | | Computer Architecture, Introduction to various connecting devices. | | | |
| C | | Recent additions – IoT, Robotics and new alternate architectures. | | | |
|  | **Unit 2** | | **Programming Aspects** | | | |  |
| A | | Basics of Programming, Programming Paradigms, System Software versus Application Software. | | | | CO2 |
| B | | Hard Computing versus Soft Computing, Data Structures and Algorithms. | | | |
| C | | Computer Graphics, Multimedia, Computer Vision. | | | |
|  | **Unit 3** | | **Computer Networking** | | | |  |
| A | | Introduction to Networking, Various terminologies, Client Server Technology, Web Technology. | | | | CO3 |
| B | | Introduction to data/network security and current trends. | | | |
| C | | Concept of Cloud Computing and Virtualization, Real life applications. | | | |
|  | **Unit 4** | | **Database Management Systems** | | | |  |
| A | | Introduction to DBMS, DBMS versus File System, Relational DBMS. | | | | CO4 |
| B | | Information Processing and Retrieval | | | |
| C | | Big Data Analytics & Scientific Computing | | | |
|  | **Unit 5** | | **Artificial Intelligence** | | | |  |
| A | | Basics of Artificial Intelligence | | | | CO5 |
| B | | Basics of Pattern Recognition | | | |
| C | | Basics of Machine Learning | | | |
|  | Mode of examination | | Practical | | | | |
|  | Weightage Distribution | | CA | | MTE | ETE |  |
| 60% | | NIL | 40% |  |
|  | Text book/s\* | | 1. Introduction to Computer, Peter Norton, 7/e, 2017, Tata McGraw Hill Publishing. | | | | |
|  | Other References | | |  | | --- | | 1. Foundations of Computer Science, B A Forouzan& F Mosharraf, 2/e, 2008, Delmar Learning. | |  | | | | | |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1: Understand the technical aspects of Computer Science &Engineering Course. | PO1, PO2, PO12, PSO4 |
| 2. | **CO2:**Perceive some knowledge about programming in various applications. | PO1, PO12, PSO1, PSO4 |
| 3. | **CO3:** Acquire basic understanding about computer networking and related technology. | PO1, PO2, PO12, PSO2, PSO4 |
| 4. | **CO4:**Enhance some fundamental knowledge of DBMS including application areas. | PO1, PO12, PSO2, PSO4 |
| 5. | **CO5:** Understand the current trends in computing in discovering wisdom/knowledge and future prediction. | PO1, PO6, PO8, PO12, PSO2, PSO4 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 | - | - | 3 | - |
| CO2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 2 | - | 3 | - |
| CO4 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO5 | 3 | - | - | - | - | 2 | - | 2 | - | - | - | 3 | - | 3 | - | 3 | - |

**PO and PSO mapping with level of strength for Introduction to Computer Science &Engineering(Course Code :CSP 101)**

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus:** CSE 113:Programming for problem solving

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch :2018-22** | | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | | |
| **Branch: ALL** | | **Semester:1** | | | | |
| 1 | Course Code | **CSE113** | Course Name: Programming for problem solving | | | |
| 2 | Course Title | Programming for problem solving | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | Core | | | | |
| 5 | Course Objective | 1. Learn basic programming constructs –data types, decision structures, control structures in C 2. learning logic aptitude programming in c language 3. Developing software in c programming | | | | |
| 6 | Course Outcomes | Students will be able to:  CO1: Create flowchart , algorithm and Pseudo-code  CO2: Understanding basic C concept  CO3: Implement Array and Functions  CO4: Understand and implement Pointers  CO5: Apply user-defined data types | | | | |
| 7 | Course Description | Programming for problem solving gives the Understanding of C programming and implement code from flowchart or algorithm | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Logic Building** | | | |  |
| A | Flowchart: Elements, Identifying and understanding input/ output, Branching and iteration in flowchart | | | | CO1, |
| B | Algorithm design: Problem solving approach(top down/bottom up approach) | | | | CO1 |
| C | Pseudo Code : Representation of different construct, writing pseudo-code from algorithm and flowchart | | | | CO1 |
|  | **Unit 2** | **Introduction to C Programming** | | | |  |
| A | Introduction to C programming language, Data types, Variables, Constants, Identifiers and keywords, Storage classes | | | | CO2 |
| B | Operators and expressions, Types of Statements: Assignment, Control, jumping. | | | | CO2 |
| C | Control statements: Decisions, Loops, break, continue | | | | CO2 |
|  | **Unit 3** | **Arrays and Functions** | | | |  |
| A | Arrays: One dimensional and multi dimensional arrays: Declaration, Initialization and array manipulation (sorting, searching). | | | | CO3 |
| B | Functions: Definition, Declaration/Prototyping and Calling, Types of functions, Parameter passing: Call by value, Call by reference. | | | | CO3 |
| C | Passing and Returning Arrays from Functions, Recursive Functions. | | | | CO3 |
|  | **Unit 4** | **Pre-processors and Pointers** | | | |  |
| A | Pre-processors: Types, Directives, Pre-processors Operators (#,##,\) , Macros: Types, Use, predefined Macros | | | | CO4 |
| B | Pointer: Introduction, declaration of pointer variables, Operations on pointers: Pointer arithmetic, Arrays and pointers, Dynamic memory allocation. | | | | CO4 |
| C | String: Introduction, predefined string functions, Manipulation of text data, Command Line Arguments. | | | | CO4 |
|  | **Unit 5** | **User Defined Data Types and File Handling** | | | |  |
| A | Structure and Unions: Introduction, Declaration, Difference, Application, Nested structure, self-referential structure, Array of structures, Passing structure in function. | | | | CO5 |
| B | Files: Introduction, concept of record, I/O Streaming and Buffering, Types of Files: Indexed file, sequential file and random file, | | | | CO5 |
| C | Creating a data file, Opening and closing a data file, Various I/O operations on data files: Storing data or records in file, adding records, Retrieving, and updating Sequential file/random file. | | | | CO5 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | Kernighan, Brian, and Dennis Ritchie. The C Programming Language | | | |  |
|  | Other References | 1. B.S. Gottfried - Programming With C - Schaum's Outline Series - Tata McGraw Hill 2nd Edition - 2004. 2. E. Balagurusamy - Programming in ANSI C - Second Edition - Tata McGraw Hill- 1999 | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1: Create flowchart , algorithm and Pseudo-code | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 2. | CO2: Understanding basic C concept | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 3. | CO3: Implement Array and Functions | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 4. | CO4: Understand and implement Pointers | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 5. | CO5: Apply user-defined data types | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |

**PO and PSO mapping with level of strength for Course Name Programming for problem solving(Course Code CSE 113)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CSE113** | Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | 3 | - | - | - | - | - | - | - | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | - | - | - | - | - | - | - | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO3 | 3 | 2 | 3 | - | - | - | - | - | - | - | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO4 | 3 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO5 | 3 | 2 | 3 | - | - | - | - | - | - | - | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**Syllabus:** CSP 113: Programming for problem solving Lab

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School:** SET | | **Batch: 2018** | | | |
| **Program: B.Tech.** | | **Current Academic Year: 2018-19** | | | |
| **Branch: CSE** | | **Semester: I** | | | |
| 1 | Course Code | CSP113 | | | |
| 2 | Course Title | Programming for problem solving Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | 1. Learn basic programming constructs –data types, decision structures, control structures in C 2. learning logic aptitude programming in c language 3. Developing software in c programming | | | |
| 6 | Course Outcomes | Students will be able to:  CO1: Understand core concept of c Programming  CO2: Implement Array and String  CO3: Implement Functions  CO4: Use Union and Structure  CO5: Understand and implement Pointers | | | |
| 7 | Course Description | Programming for problem solving gives the Understanding of C programming and implement code from flowchart or algorithm | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Logic Building** | | | **CO1** |
|  | Draw flowchart for finding leap year | | |  |
|  | Write a c [Program to Add Two Integers](https://www.programiz.com/c-programming/examples/add-numbers) | | |  |
|  | Write a program to create a calculator | | |  |
|  | **Unit 2** | **Introduction to C Programming** | | | **CO2** |
|  | Write a c program to convert length meter to cm | | |  |
|  | Write a c program to convert temp | | |  |
|  | Write a c program to swap two numbers | | |  |
|  | **Unit 3** | **Arrays and Functions** | | | **CO3** |
|  | Write a c program to calculate the average using arrays | | |  |
|  | Write a c program to find the largest element of the array | | |  |
|  | **Unit 4** | **Pre-processors and Pointers** | | | **CO4** |
|  | Write a c program to swap two values using pointers | | |  |
|  | Write a c program to find largest number from array using pointers | | |  |
|  | **Unit 5** | **User Defined Data Types and File Handling** | | | **CO5** |
|  | Write a c program to store information of a student using structure | | |  |
|  | Write a c program to store information of a student using union | | |  |
|  | Mode of examination | Practical | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | Kernighan, Brian, and Dennis Ritchie. The C Programming Language | | |  |
|  | Other References | 1. B.S. Gottfried - Programming With C - Schaum's Outline Series - Tata McGraw Hill 2nd Edition - 2004. 2. E. Balagurusamy - Programming in ANSI C - Second Edition - Tata McGraw Hill- 1999 | | |  |

|  |
| --- |
| **Course outline**  This course implements array and pointer and Recursive applications. The course talks primarily about Array, string, functions, structure & union and Pointers etc. |

|  |  |
| --- | --- |
| **Course Evaluation** | |
| Attendance | None |
| Any other | CA judged on the practicals conducted in the lab , weightage may be specified |
| References | |
| Text book | Kernighan, Brian, and Dennis Ritchie. The C Programming Language |
| Other References | 1. B.S. Gottfried - Programming With C - Schaum's Outline Series - Tata McGraw Hill 2nd Edition - 2004. 2. E. Balagurusamy - Programming in ANSI C - Second Edition - Tata McGraw Hill- 1999 |
| Softwares | Turbo C |

**Syllabus:** MTH 142:Calculus And abstract Algebra

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch :2018- 2022** | | | |
| **Program: B.Tech.** | | **Current Academic Year: 2018-19** | | | |
| **Branch: CSE** | | **Semester: 1** | | | |
| 1 | Course Code | **MTH 142** | | | |
| **2** | Course Title | **Calculus and Abstract Algebra** | | | |
| 3 | Credits | 4 | | | |
| 4 | Contact Hours  (L-T-P) | 3-1-0 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | The objective of this course is to familiarize the prospective engineers with techniques in basic calculus and linear algebra. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines. | | | |
| 6 | Course Outcomes | CO1: Explain the concept of differential calculus, illustrate thecurvature and Maxima, minima and saddle point. (K2, K3, K4)  CO2: Explain the basic concepts matrices and determinate, evaluate system of linear equation by using rank and inverse method. (K2, K3, K5)  CO3: Explain the basic concept of sets, relation, functions, groups Rings and Field. (K2, K4)  CO4: Discuss the basic of Vector spaces. (K1, K3)  CO5: Describe and use the linear transformation and evaluate nullity and kernel. (K1, K2, K3, K5)  CO6:Explain the concept of Eigen values and Eigen vectors; evaluate the diagonalization of matrices, explain the basic introduction of Inner product spaces.(K2, K3, K4, K5) | | | |
| 7 | Course Description | This course is an introduction to the fundamental of Mathematics. The primary objective of the course is to develop the basic understanding of differential and integral calculus, linear Algebra and Abstract Algebra. | | | |
| 8 | **Outline syllabus: Calculus and Abstract Algebra** | | | | **CO Mapping** |
|  | **Unit 1** | **Calculus** | | |  |
| A | Differentiation, Taylor’s and Maclaurin theorems with remainders; indeterminate forms, L' Hospital's rule. | | | CO1 |
| B | Maxima and minima, Partial derivatives, Euler’s theorem. | | | CO1 |
| C | Total derivative. Evaluation of double integration. Applications of double integral (to calculate area). | | | CO1 |
|  | **Unit 2** | **Matrices** | | |  |
| A | Matrices, vectors: addition and scalar multiplication, matrix multiplication. | | | CO2 |
| B | Linear systems of equations, linear Independence, rank of a matrix, determinants, Cramer’s Rule | | | CO2 |
| C | Inverse of a matrix, Gauss elimination and Gauss-Jordan elimination. | | | CO2 |
|  | **Unit 3** | **Basic Algebra** | | |  |
| A | Sets, relations and functions. | | | CO3 |
| B | Basics of groups, cyclic groups. | | | CO3 |
| C | Subgroups, basics of Rings and Field. | | | CO3 |
|  | **Unit 4** | **Vector spaces** | | |  |
| A | Vector Space, linear dependence of vectors, basis, dimension. | | | CO4, CO5 |
| B | Linear transformations (maps), range and kernel of a linear map, rank and nullity. | | | CO4, CO5 |
| C | Inverse of a linear transformation, Matrix associated with a linear map. | | | CO4, CO5 |
|  | **Unit 5** | **Vector spaces (Prerequisite Module 2 –Matrices & Module-4 Vector spaces)** | | |  |
| A | Eigenvalues, Eigenvectors | | | CO6 |
| B | Symmetric, skew-symmetric, and orthogonal Matrices, Diagonalization | | | CO6 |
| C | Basic introduction of Inner product spaces, Gram-Schmidt orthogonalization. | | | CO6 |
|  | Mode of examination | Theory | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 30% | 20% | 50% |  |
|  | Text book/s\* | 1. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.  2. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006. | | |  |
|  | Other References | 1. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.  2. Veerarajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008.  3. Ramana B.V., Higher Engineering Mathematics, Tata McGraw Hill New Delhi, 11th Reprint, 2010.  4. V. Krishnamurthy, V.P. Mainra and J.L. Arora, An introduction to Linear Algebra, Affiliated East–West press, Reprint 2005. | | |  |

**COURSE OUTCOMES – PROGRAMME OUTCOMES MAPPING TABLE**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO** |
| **C142.1** | **3** | **3** | **2** | **2** | **3** | **1** | **-** | **-** | **-** | **1** | **1** | **1** |
| **C142.2** | **3** | **3** | **3** | **2** | **2** | **2** | **-** | **-** | **-** | **1** | **1** | **2** |
| **C142.3** | **3** | **3** | **2** | **2** | **2** | **1** | **-** | **-** | **-** | **1** | **1** | **1** |
| **C142.4** | **3** | **3** | **2** | **2** | **2** | **1** | **-** | **-** | **-** | **1** | **1** | **1** |
| **C142.5** | **3** | **3** | **2** | **2** | **2** | **1** | **-** | **-** | **-** | **1** | **1** | **2** |
| **C142.6** | **3** | **3** | **2** | **3** | **2** | **2** | **-** | **-** | **-** | **1** | **1** | **2** |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: PHY 117, Semiconductor Physics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: School of Basic Sciences and Research** | | | **Batch:2018-2022** | | | |
| **Program: B.TECH .** | | | **Current Academic Year: 2018-2019** | | | |
| **Branch: CSE/EC/EEE** | | | **Semester: II** | | | |
| 1 | Course Code | | PHY 117 | | | |
| 2 | Course Title | | Semiconductor Physics | | | |
| 3 | Credits | | 4 | | | |
| 4 | Contact Hours (L-T-P) | | 3-1-0 | | | |
|  | Course Status | | Compulsory | | | |
| 5 | Course Objective | | To make students proverbial with the fundamental concepts of Semiconductors materials and their real life applications for configuring various electronics devices. | | | |
| 6 | Course Outcomes | | After the completion of this course,  CO1: Students will learn the various fundamental theory of materials and concept of solid classification.  CO2: Students will learn the fundamental concepts of mobility, conductivity, electrons and holes in an intrinsic semiconductors, Donor and Acceptor impurities (n-type and p-type semiconductor), Fermi levels etc.  CO3: Students will gain knowledge about the formation of depletion region, barrier potential, Zener diode, Characteristics of Zener diode etc.  CO4: Students will have a clear understanding of Coherent sources, interaction of radiation with matter (spontaneous and stimulated emission), Einstein’s relation, population inversion and pumping, etc.  CO5: Students will learn the concept of optical sources: Light emitting diode (construction, basic working principle), semiconductor laser (construction, basic working principle), and optical detectors.  CO6: Student will be familiar with the essential concepts of Semiconductors materials technology and their applications in industries. | | | |
| 7 | Course Description | | This course provides the basic foundation for understanding electronic semiconductor devices and their applications and limitations. It has introductory elements of various concept of material science. This course is essential for students who desire to specialize their engineering in Computer Sciences, Electronics, and Electronics and Electrical engineering. | | | |
| 8 | Outline Syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Physics ofSemiconductor** | | | |  |
| A | Introduction, classical free electron theory (Lorentz-Drude theory and limitations), Quantum theory of free electron | | | | CO1, CO6 |
| B | (Fermi energy, effect of temperature on Fermi-Dirac distribution) (qualitative analysis) | | | | CO1 |
| C | Energy bands, Classification of Solids on the basis of energy band. | | | | CO1 |
|  | **Unit 2** | **Transport phenomena in semiconductors** | | | |  |
| A | Mobility, conductivity, electrons and holes in an intrinsic semiconductors, Donor and Acceptor impurities (n-type and p-type semiconductor) | | | | CO2, CO6 |
| B | Fermi levels , carrier densities in semiconductor | | | | CO2 |
| C | Concentration of electrons in conduction band and holes in valence band, Drift and diffusion current, Hall effect. | | | | CO2 |
|  | **Unit 3** | **p-n Junction** | | | |  |
| A | p-n junction, types of p-n junction (step-graded and Linearly-graded junction) | | | | CO3 |
| B | formation of depletion region, barrier potential, Zener diode, Characteristics of Zener diode | | | | CO3 |
| C | Avalanche and Zener breakdown, comparison of Zener diode and pn junction diode, concept of tunneling, I-V characteristics of tunnel diode. | | | | CO3, CO6 |
|  | **Unit 4** | **Laser Physics** | | | |  |
| A | Coherent sources, interaction of radiation with matter (spontaneous and stimulated emission), Einstein’s relation | | | | CO4 |
| B | population inversion and pumping, active components of laser, optical amplification or gain | | | | CO4 |
| C | threshold condition for laser action, three and four level lasers, Ruby and He-Ne lasers. | | | | CO4 |
|  | **Unit 5** | **Optoelectronic Devices** | | | |  |
| A | optical sources: Light emitting diode (construction, basic working principle)**,** semiconductor laser (construction, basic working principle) | | | | CO5 |
| B | optical detectors: photodiode (working principle), p-i-n photodiode (working principle), | | | | CO5, CO6 |
| C | Photovoltaic effect, p-n junction solar cell (basic working idea). | | | | CO5, CO6 |
|  | Mode of Examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text books | Integrated Electronics- Millman - Halkias, Tata Mc Graw Hill | | | |  |
|  | Other References | 1.Semiconductor Devices Physics and Technology- S M Sze, John Wiley & Sons  2. Semiconductor Device Fundamentals- Robert F. Pierret Addison Wesley Longman.  3. Semiconductor Devices- Kanaan Kano, Pearson Education.  4. Basic Electronics by B.L Thareja  5. Principles of Electronics by V.K Mehta | | | |  |

**Syllabus:** CSE 114:Application based programming in Python

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch :2018-2022** | | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-19** | | | | |
| **Branch: CSE** | | **Semester: II** | | | | |
| 1 | Course Code | CSE114 | Course Name | | | |
| 2 | Course Title | Application Based Programming in Python | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | Compulsory | | | | |
| 5 | Course Objective | Emphasis is placed on procedural programming, algorithm design, and language constructs common to most high-level languages through Python Programming. | | | | |
| 6 | Course Outcomes | Upon successful completion of this course, the student will be able to:  CO1. Select decision-making and looping structures in programming.  CO2. Apply Modular programming approach using methods and functions.  CO3. Show the use of Python lists, tuples and dictionary.  CO4. Incorporate object-oriented programming concept in programming.  CO5: Use of python packages in different applications. | | | | |
| 7 | Course Description | Python is a language with a simple syntax, and a powerful set of libraries. It is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience. We cover data types, control flow, object-oriented programming. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | |  |
| A | History, Python Environment, Variables, Data Types, Operators. | | | | CO5 |
| B | **Conditional Statements:** If, If- else, Nested if-else.  **Looping:** For, While, Nested loops. | | | | CO1,CO5 |
| C | **Control Statements:** Break, Continue, And Pass. Comments | | | | CO1,CO5 |
|  | **Unit 2** | **List, Tuple and Dictionaries** | | | |  |
| A | **Lists and Nested List:** Introduction, Accessing list, Operations, Working with lists, Library Functionand Methods with Lists. | | | | CO3 |
| B | **Tuple:** Introduction, Accessing tuples, Operations, Working, Library Functions and Methods with Tuples. | | | | CO3 |
| C | **Dictionaries :**Introduction, Accessing values in dictionaries, Working with dictionaries, Library Functions | | | | CO3 |
|  | **Unit 3** | **Functions and Exception Handling** | | | |  |
| A | **Functions:** Defining a function, Calling a function, Types of functions, Function Arguments | | | | C02,CO5 |
| B | Anonymous functions, Global and local variables | | | | C02,CO5 |
| C | **Exception Handling**: Definition Exception, Exception handling  Except clause, Try? finally clause | | | | CO2,CO5 |
|  | **Unit 4** | **OOP and File Handling** | | | |  |
| A | **OOPs concept** : Class and object, Attributes, Abstraction, Encapsulation, Polymorphism and Inheritance | | | | C04 |
| B | Static and Final Keyword, Access Modifiers and specifiers, scope of a class | | | | CO4 |
| C | User Defined Exceptions | | | | CO4 |
|  | **Unit 5** | **Module and Applications** | | | |  |
| A | **Modules:** Importing module, Math module, Random module | | | | C02,CO5 |
| B | Matplotlib, Packages | | | | C02,CO5 |
| C | **Applications: Searching Linear Search, Binary Search. Sorting: Bubble Sort** | | | | C02,CO5 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. The Complete Reference Python, Martin C. Brown, McGraw Hill | | | |  |
|  | Other References | 1. Introduction to computing in problem solving using Python, E Balahurusamy, McGraw Hill 2. Introduction to programming using Python, Y. Daniel Liang, Pearson 3. Mastering Python, Rick Van Hatten, Packet Publishing House 4. Starting out with Python, Tony Gaddis, Pearson | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1. Apply decision and repetition structures in program design. | PO1,PO5,PO9,PO11,PSO3 |
| 2. | CO2. Implement methods and functions to improve readability of programs. | PO1,PO2,PO3,PO4,PO5,PO9,PO11,PSO1,  PSO2,PSO3,PSO4,PSO5 |
| 3. | CO3. Demonstrate the use of Python lists, tuples and dictionaries | PO1,PO2,PO3,PO4,PO5,PO9,PO11,PSO1,  PSO2,PSO3,PSO4,PSO5 |
| 4. | CO4. Describe and apply object-oriented programming methodology. | PO1,PO2,PO3,PO4,PO5,PO9,PO11,PSO1,  PSO2,PSO3,PSO4,PSO5 |
| 5. | CO5. Apply top-down concepts in algorithm design. | PO1PO3,PO4,PO5,PO9,PO11,PSO1,  PSO2,PSO3,PSO4,PSO5 |
| 6. | CO6. Write Python programs to illustrate concise and efficient algorithms | PO1,PO4,PO5,PO9,PO11,PSO1,  PSO2,PSO3,PSO4,PSO5 |

**PO and PSO mapping with level of strength for Course Name** Application Based Programming in Python  **(Course Code CSE 114)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 1 | 3 | 2 | 2 | 1 | - | - | - | 1 | - | 1 | - | 2 | 2 | 1 | 2 | 3 |
| CO2 | 3 | 3 | 3 | 3 | 3 | - | - | - | 3 | - | 3 | - | 3 | 3 | 3 | 3 | 3 |
| CO3 | 3 | 3 | 3 | 3 | 2 | - | - | - | 3 | - | 2 | - | 3 | 3 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 2 | 1 | 2 | - | -- | - | 2 | - | 1 | - | 2 | 1 | 1 | 2 | 1 |
| CO5 | 2 | 3 | 2 | 1 | 2 |  |  |  | 1 |  | 2 |  | 1 | 2 | 2 | 1 | 1 |
| CO6 | 1 | 2 | 1 | 2 | 1 |  |  |  | 1 |  | 1 |  | 3 | 2 | 2 | 1 | 2 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus:** CSP 114:Application based programming in Python Lab

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018-2022** | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018** | | | |
| **Branch:All** | | **Semester: II** | | | |
| 1 | Course Code | CSP114 | | | |
| 2 | Course Title | Application Based Programming in Python Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | Emphasis is placed on procedural programming, algorithm design, and language constructs common to most high level languages through Python Programming. | | | |
| 6 | Course Outcomes | Upon successful completion of this course, the student will be able to:  CO1. Apply decision and repetition structures in program design.  CO2. Implement methods and functions to improve readability of programs.  CO3. Demonstrate the use of Python lists, tuples and dictionaries  CO4. Describe and apply object-oriented programming methodology.  CO5. Apply top-down concepts in algorithm design.  CO6. Write Python programs to illustrate concise and efficient algorithms | | | |
| 7 | Course Description | Python is a language with a simple syntax, and a powerful set of libraries. It is widely used in many scientific areas for data exploration. This course is an introduction to the Python programming language for students without prior programming experience. We cover data types, control flow, object-oriented programming. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Practical based on conditional statements and control structures** | | |  |
|  | 1. Program to implement all conditional statements 2. Program to implement different control structures | | | CO1,C06 |
|  | **Unit 2** | **Practical related to List, Tuples and dictionaries** | | |  |
|  | 1. Program to implement operations on lists 2. Program to implement operations on Dictionary 3. Program to implement operations on Tuple | | | CO3,CO6 |
|  | **Unit 3** | **Practical related to Functions and Exception Handling** | | |  |
|  | 1. Program to implement Exception Handling 2. Program to use different functions | | | CO2,CO6 |
|  | **Unit 4** | **Practical related to Object Oriented Programming** | | |  |
|  | Program to use object oriented concepts like inheritance, overloading polymorphism etc.  Program for file handling | | | CO4,CO6 |
|  | **Unit 5** | **Practical related to Modules and Applications** | | |  |
|  | Program to use modules and package  Program to implement searching and sorting | | | CO2,CO5,CO6 |
|  | Mode of examination | Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. The Complete Reference Python, Martin C. Brown, McGraw Hill | | |  |
|  | Other References | 1. Introduction to computing in problem solving using Python, E Balagurusamy, McGraw Hill 2. Introduction to programming using Python, Y. Daniel Liang, Pearson 3. Mastering Python, Rick Van Hatten, Packet Publishing House 4. Starting out with Python, Tony Gaddis, Pearson | | |  |

**Syllabus:** MTH 145:Probability and Statistics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch :2018- 2021** | | | |
| **Program: B.Tech.** | | **Current Academic Year: 2018-19** | | | |
| **Branch: CSE** | | **Semester: II** | | | |
| 1 | Course Code | **MTH 145** | | | |
| **2** | Course Title | **Probability and Statistics** | | | |
| 3 | Credits | 4 | | | |
| 4 | Contact Hours  (L-T-P) | 3-1-0 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | The objective of this course is to familiarize the students with statistical techniques. It aims to equip the students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline. | | | |
| 6 | Course Outcomes | CO1: Explain the concept of probability and Random Variable. (K2,K3, K4)  CO2: Explain the concept of distribution functions, densities andprobability distributions; illustrate discrete and continuous probability distributions. (K1, K2, K3, K4)  CO3: Describe the concept of moments, skewness and Kurtosis; evaluatecorrelation and regression – Rank correlation; discuss bivariate distributions and their properties  . (K1, K2, K5)  CO4: Discuss the basic of Curve fitting by the method of least squares; evaluate straight lines, second degree parabolas and more general curves. (K1, K2, K5)  CO5: Describe and use the concepts test of significance: Large sample test for single proportion, difference of proportions; calculate single mean, difference of means, and difference of standard deviations. (K1,K2,K3)  CO6: Explain the basic concepts of tests of small samples- Student’s T test, Chi-square test for goodness of fit, and evaluate the result. (K2, K4, K5) | | | |
| 7 | Course Description | This course is an introduction to the fundamental of Mathematics. The primary objective of the course is to develop the basic understanding of statistics including measures of central tendency, correlation and regression, statistical methods of data sampling, probability and random variables and various discrete andcontinuous probability distributions and their properties. | | | |
| 8 | **Outline syllabus :Probability and Statistics** | | | | **CO Mapping** |
|  | **Unit 1** | **Basic Probability** | | |  |
| A | Probability spaces, conditional probability, Bayes' rule. | | | CO1 |
| B | Discrete random variables, Independent random variables | | | CO1 |
| C | Expectation of Discrete Random Variables, Chebyshev's Inequality | | | CO1 |
|  | **Unit 2** | **Discrete and Continuous Probability Distributions** | | |  |
| A | Discrete Probability distributions: Binomial, Poisson. | | | CO2 |
| B | Continuous random variables and their properties, distribution functions and densities. | | | CO2 |
| C | Normal, exponential and gamma distribution. | | | CO2 |
|  | **Unit 3** | **Statistics** | | |  |
| A | Moments, skewness and Kurtosis. | | | CO3 |
| B | Correlation and regression – Rank correlation. | | | CO3 |
| C | Bivariate distributions and their properties. | | | CO3 |
|  | **Unit 4** | **Applied Statistics** | | |  |
| A | Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. | | | CO4, CO5 |
| B | Test of significance: Large sample test for single proportion, | | | CO4, CO5 |
| C | Difference of proportions, single mean, difference of means, and difference of standard deviations. | | | CO4, CO5 |
|  | **Unit 5** | **Testing Hypothesis** | | |  |
| A | Test for single mean, difference of means | | | CO6 |
| B | test for ratio of variances | | | CO6 |
| C | Chi-square test for goodness of fit and independence of attributes | | | CO6 |
|  | Mode of examination | Theory | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 30% | 20% | 50% |  |
|  | Text book/s\* | 1. Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006. 2. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003 (Reprint). 3. S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002. | | |  |
|  | Other References | 1. W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, 3rd Ed., Wiley, 1968. 2. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000. Veerarajan T., Engineering Mathematics (for semester III), Tata McGraw-Hill, New Delhi, 2010. | | |  |

**COURSE OUTCOMES – PROGRAMME OUTCOMES MAPPING TABLE**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO** |
| **C145.1** | **3** | **3** | **2** | **2** | **3** | **1** | **-** | **-** | **-** | **1** | **1** | **1** |
| **C145.2** | **3** | **2** | **3** | **2** | **2** | **2** | **-** | **-** | **-** | **1** | **1** | **2** |
| **C145.3** | **3** | **3** | **2** | **2** | **2** | **1** | **-** | **-** | **-** | **1** | **1** | **1** |
| **C145.4** | **3** | **2** | **2** | **2** | **2** | **1** | **-** | **-** | **-** | **1** | **1** | **1** |
| **C145.5** | **3** | **3** | **2** | **2** | **2** | **1** | **-** | **-** | **-** | **1** | **1** | **2** |
| **C145.6** | **3** | **3** | **2** | **3** | **2** | **2** | **-** | **-** | **-** | **1** | **1** | **2** |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus:** CSP103:Multimedia Application Lab

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018-2022** | | | |
| **CSE/IT** | | **Current Academic Year: 2018** | | | |
|  | | **Semester: II** | | | |
| 1 | Course Code | **CSP103** | | | |
| 2 | Course Title | Multimedia application Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Core | | | |
| 5 | Course Objective | Provide the knowledge to design and develop web application .Students will gain the skills and project-based experience needed for entry into web application and development careers | | | |
| 6 | Course Outcomes | On successful completion of this module students will be able to:   1. Use critical thinking skills to create web pages 2. Design interactive web pages 3. Design web pages/site having validation on user data access. 4. Develop web site for small business and organization or for individual | | | |
| 7 | Course Description | This course is an overview of the modern technologies used for the Web development. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** |  | | |  |
|  | 1. Write HTML code to display your bio-data 2. Write HTML code to show the working of hyperlinks.Create a Home page having three links: About Us, Our Services and Contact Us. Create separate web pages for the three links. 3. Write HTML code to create unordered list. Create disc bullets, circle bullets, square bullets lists of the subjects you are studying in CURRENT semester | | | CO1,CO2 |
|  | **Unit 2** |  | | |  |
|  | 1. Write HTML code to create ordered list. Create numbered, uppercase list, lowercase list, roman numbered list, lower roman numbered list of the subjects you are studying in CURRENT semester. 2. Write HTML code to perform Image mapping using image tags.Set image height/width, border, alignment properties. 3. Write a HTML code to create Table to store information regarding employee using Table tags. Employee name, Id, DOJ, Experience. Create table for 5 employees. | | | CO2 |
|  | **Unit 3** |  | | |  |
|  | 1. Write a HTML code for student registration using form tags. 2. Write a HTML code to show the working of Canvas tag. 3. Write HTML code to embed multimedia: audio and video into web page | | | CO2,CO3 |
|  | **Unit 4** |  | | |  |
|  | 1. Write an HTML code to demonstrate the usage of inline CSS. 2. Write an HTML code to demonstrate the usage of internal CSS. 3. Write an HTML code to demonstrate the usage of external CSS. | | | CO3 |
|  | **Unit 5** |  | | |  |
|  | 1. Write an HTML code to design an image gallery. 2. Design horizontal navigation bar for XYZ companyhome; services; investors; past record &achievements;careers; contact us.   Careers have dropdown menu >Departmentwise>Countrywise>Profile Wise   1. Write Javascript code to design calculator to perform subtraction, multiplication, division, addition operation. | | | CO3,CO4 |
|  | Mode of examination | Jury/Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | Ivan Bayross,”HTML,DHTML, JavaScript, Perl & CGI”, BPB Publication | | |  |
|  | Other References | 1. Rick Delorme,” Programming in HTML5 with JavaScript and CSS3”, Microsoft | | |  |

**Syllabus: CSE 247, Computer organization and architecture**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-2019** | | | | |
| **Branch: CSE/IT** | | **Semester: III** | | | | |
| 1 | Course Code | CSE247 | Course Name | | | |
| 2 | Course Title | Computer Organization and Architecture | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | Compulsory | | | | |
| 5 | Course Objective | To impart an understanding of the internal organization and operations of a computer and to introduce the concepts of processor logic design and control logic design. | | | | |
| 6 | Course Outcomes | Upon successful completion of this course, the student will be able to:  **CO1:**Identify the basic structure and functional units of a digital computer. **CO2:**Study the design of arithmetic and logic unit and implementation of fixedpoint and floating-point arithmetic operations  **CO3:**Understand basic processing unit and organization of simple processor including instruction sets, instruction formats and various addressing modes  **CO4:**Study the two types of control unit techniques  **CO5:**Describe hierarchical memory systems including cache memories and select appropriate interfacing standards for I/O devices. | | | | |
| 7 | Course Description | This course discusses the basic structure of a digital computer and used for understanding the organization of various units such as control unit, Arithmetic and Logical unit and Memory unit and I/O unit in a digital computer. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Computer Organization and Design** | | | |  |
| A | Functional units of digital system and their interconnections, buses, bus architecture, types of buses and bus arbitration. Register bus and memory transfer | | | | CO1 |
| B | Register transfer Language, Registertransfer, Bus & memory transfer, Logic micro operations, Shift micro operation. | | | | CO1 |
| C | Adder-Subtractor- Incrementor, Arithmetic unit, Logic unit. | | | | CO1 |
|  | **Unit 2** | **Computer Arithmetic** | | | |  |
| A | Representation of numbers in 1’s and 2’s complement, Addition and subtractionofsignednumbers. | | | | CO1, CO2 |
| B | Binary Multiplier, Multiplication: Signed operand multiplication, Booth algorithm | | | | CO1, CO2 |
| C | Floating point arithmetic representation: addition and subtraction. | | | | CO1, CO2 |
|  | **Unit 3** | **Processor Organization** | | | |  |
| A | General register organization, stack organization | | | | CO3 |
| B | Instruction set architecture of a CPU - registers, Instruction types, formats, instruction execution cycle | | | | CO3 |
| C | Addressing modes, RISC/CISC | | | | CO3 |
|  | **Unit 4** | **Control Unit** | | | |  |
| A | Introduction to CPU design, Instruction interpretation and execution, Micro-operation and their register transfer language (RTL) specification | | | | CO3, CO4 |
| B | Hardwired control CPU design | | | | CO3, CO4 |
| C | Microprogrammed control CPU design | | | | CO3, CO4 |
|  | **Unit 5** | **Memory and I/O** | | | |  |
| A | RAM/ROM/Flash memory, Designing Memory System using RAM and ROM chips | | | | CO1, CO5 |
| B | Cache memory: Memory hierarchy, performance Considerations, mapping techniques | | | | CO1, CO5 |
| C | Input Output: Isolated vs. Memory mapped I/O, Programmed I/O, Interrupt driven I/O, Direct Memory Access | | | | CO1, CO5 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. M. Morris Mano, Computer System Architecture, Pearson | | | |  |
|  | Other References | 1. C. Hamacher, Z. Vranesic and S. Zaky, "Computer Organization", McGrawHill, 2002. 2. W. Stallings, "Computer Organization and Architecture - Designing for Performance", Prentice Hall of India, 2002. 3. D. A. Patterson and J. L. Hennessy, "Computer Organization and Design - The Hardware/Software Interface", Morgan Kaufmann,1998. 4. J.P. Hayes, "Computer Architecture and Organization", McGraw-Hill, 1998. | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1. Identify the basic structure and functional units of a digital computer. | PO1, PO2, PO3, PO6, PO12, PSO5 |
| 2. | CO2. Study the design of arithmetic and logic unit and implementation of fixedpoint and floating-point arithmetic operations | PO1, PO2, PO3, PO6, PO12, PSO5 |
| 3. | CO3. Understand basic processing unit and organization of simple processor including instruction sets, instruction formats and various addressing modes | PO1, PO2, PO3, PO6, PO12, PSO5 |
| 4. | CO4. Study the two types of control unit techniques | PO1, PO2, PO3, PO4, PO6, PO12, PSO4, PSO5 |
| 5. | CO5. Describe hierarchical memory systems including cache memories and select appropriate interfacing standards for I/O devices | PO1, PO2, PO3, PO6, PO12, PSO4, PSO5 |

**PO and PSO mapping with level of strength for Course Name** Computer Organization and Architecture **(Course Code CSE 247)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CSE247 | Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | - | - | 2 | - | - | - | - | - | 2 | - | - | - | - | 2 |
| CO2 | 3 | 3 | 3 | - | - | 3 | - | - | - | - | - | 3 | - | - | - | - | 3 |
| CO3 | 3 | 2 | 3 | - | - | 2 | - | - | - | - | - | 3 | - | - | - | - | 3 |
| CO4 | 3 | 2 | 2 | - | - | 1 | - | - | - | - | - | 3 | - | - | - | 3 | 2 |
| CO5 | 3 | 3 | 3 | - | - | 2 | - | - | - | - | - | 3 | - | - | - | 3 | 2 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 242, Data Structures**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School:** SET | | **Batch :**2018-2022 | | | | |
| **Program:** B.Tech. | | **Current Academic Year:** 2018-19 | | | | |
| **Branch:**CSE/IT | | **Semester:**III | | | | |
| 1 | Course Code | CSE242 |  | | | |
| 2 | Course Title | Data Structures | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | Core | | | | |
| 5 | Course Objective | 1. Learn the basicconcepts of Data Structures and algorithms. 2. Design and Implementation of Various Basic and Advanced Data Structures. 3. Learn the concepts of various searching, Sorting and Hashing Techniques. 4. Choose the appropriate data structures and algorithm design method for a specified application. | | | | |
| 6 | Course Outcomes | CO1: Implement operation like traversing, insertion, deletion, searching etc. on various data structures.  CO2: Evaluate algorithms and data structures in terms of time and memory complexity.  CO3 Understand the application of linear data structure(s) to solve various problems  CO4: Understand the application of non linear data structure(s) to solve various problems.  CO5: Implement and know when to apply standard algorithms for searching and sorting.  CO6: Choose the most appropriate data structure(s) for a given problem | | | | |
| 7 | Course Description | This course starts with an introduction to data structures with its classification, efficiency of different algorithms, array and pointer based implementations and Recursive applications. As the course progresses the study of Linear and Non-Linear data structures are studied in details. The course talks primarily about Linked list, stacks, queue, Tree structure, Graphs etc. This Course also deals with the concept of searching, sorting and hashing methods. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | |  |
| A | Data Structure – Definition, Operations and Applications, Abstract Data Types, Algorithm – Definition, Complexity and Asymptotic notations, Time and Space tradeoffs. | | | | CO1 |
| B | Programming Principles – The art of writing programs, Recursion – Definition, Examples- Tower of Hanoi problem, Fibonacci Series. | | | | CO1 |
| C | Arrays: Implementation of One Dimensional Arrays, Multidimensional Arrays, Pointer Arrays. Applications of Arrays, Address Calculation, Matrix Operations, Dense and Sparse Data in Arrays. | | | | CO1 |
|  | **Unit 2** | **Linked List** | | | |  |
| A | Concept of Linked List, Garbage Collection, Overflow and Underflow, Array Implementation and Dynamic Implementation of Singly Linked Lists | | | | CO2 |
| B | Array Implementation and Dynamic Implementation of Doubly Linked List, Circularly Linked List | | | | CO3 |
| C | Operations on a Linked List- Insertion, Deletion, Traversal, Polynomial Representation and Addition | | | | CO2 |
|  | **Unit 3** | **Stack and Queue** | | | |  |
| A | Stacks: Definitions, Primitive operations, Application of stacks – Conversion of Infix Expression to Postfix form, Evaluation of Postfix Expressions | | | | CO3 |
| B | Queues: Definition, Primitive Operations, Implementation of Circular Queues, Priority Queues | | | | CO3 |
| C | Deques, Application of Queues.  Implementation - Linked Stacks, Linked Queues. | | | | CO3 |
|  | **Unit 4** | **Tree and Graphs** | | | |  |
| A | Trees: Terminologies, Binary tree, Representation,Applications – Operations on Binary Search Trees, Binary Search Algorithm, B Trees - Operations on a B Tree, Applications of B-trees.AVL Tree | | | | CO4, CO6 |
| B | Graph: Terminology, Representation, Traversals- Depth First Search, Breadth First Search. | | | | CO4, CO6 |
| C | Graph Applications – Minimum Spanning Trees – Prim’s and Kruskal’s Algorithms, Shortest Path – Dijkstra’s andFlyodWarshall’s Algorithm | | | | CO4, CO6 |
|  | **Unit 5** | **Searching, Sorting and Hashing** | | | |  |
| A | Implementation and Analysis - Linear search, Binary Search | | | | CO5 |
| B | Implementation and Analysis- Bubble Sort, Merge Sort, Insertion Sort. Implementation and Analysis - Quick Sort, Selection Sort, Heap Sort, | | | | CO5 |
| C | Hashing: Concepts and Applications, Hash Functions, Methods of Resolving Clashes | | | | CO5 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Lipschutz, “Data Structures” Schaum’s Outline Series, TMH | | | |  |
|  | Other References | 1. Aaron M. Tenenbaum, Yedidyah Langsam and Moshe J. Augenstein “Data Structures Using C and C++” , PHI  2. Horowitz and Sahani, “Fundamentals of Data Structures”, Galgotia Publication  3. Jean Paul Trembley and Paul G. Sorenson, “An Introduction to Data Structures with applications”, McGraw Hill  4. R. Kruse etal, “Data Structures and Program Design in C”, Pearson Education  5. G A V Pai, “Data Structures and Algorithms”, TMH | | | |  |

CO and PO Mapping

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | Handle operation like traversing, insertion, deletion, searching etc. on various data structures. | PO1, PO3, PSO3 |
| 2. | Evaluate algorithms and data structures in terms of time and memory complexity. | PO1, PO2, PO3, PSO1, PSO2 |
| 3. | Understand the application of linear data structure(s) to solve various problems | PO2, PO3, PO4, PO9, PSO1, PSO2 |
| 4. | Understand the application of non linear data structure(s) to solve various problems. | PO3, PO9, PSO1, PSO2 |
| 5. | Implement and know when to apply standard algorithms for searching and sorting. | PO1, PO2, PO9, PSO1,PSO3 |
| 6. | Choose the most appropriate data structure(s) for a given problem | PO1, PO2, PO4, PO9, PSO1 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code** | **Course Name** | **PO1** | **PO**  **2** | **PO**  **3** | **PO4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO 10** | **PO 11** | **PO 12** | **PSO**  **1** | **PSO2** | **PSO3** | **PSO 4** | **PSO5** |
| **CSE 242** | **Data Structures Using C** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **CO1** | 2 |  | 1 |  |  |  |  |  |  |  |  |  | 2 |  | 1 |  |  |
| **CO2** |  | 2 |  | 1 |  |  |  |  | 2 |  |  |  | 3 | 1 |  |  |  |
| **CO3** | 3 | 3 | 2 |  |  |  |  |  | 3 |  |  |  |  | 3 |  |  |  |
| **CO4** | 3 | 3 | 2 | 3 |  |  |  |  | 3 |  |  |  |  | 3 |  |  |  |
| **CO5** |  | 1 | 2 |  |  |  |  |  |  |  |  |  |  |  | 2 |  |  |
| **CO6** |  |  | 3 | 3 | 2 |  |  |  |  |  |  |  |  |  | 3 |  |  |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 242, Data Structure Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School:** SET | | **Batch: 2018-2022** | | | |
| **Program: B.Tech.** | | **Current Academic Year: 2018-19** | | | |
| **Branch: CSE/IT** | | **Semester: III** | | | |
| 1 | Course Code | CSP242 | | | |
| 2 | Course Title | Data Structure Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | 1. Learn the basicconcepts of Data Structures and algorithms. 2. Design and Implementation of Various Basic and Advanced Data Structures. 3. Learn the concepts of various searching, Sorting and Hashing Techniques. 4. Choose the appropriate data structures and algorithm design method for a specified application. | | | |
| 6 | Course Outcomes | CO1: Handle operation like traversing, insertion, deletion, searching etc. on various data structures.  CO2 Implement the application of linear data structure(s) to solve various problems  CO3: Implement the application of non linear data structure(s) to solve various problems.  CO4: Implement and know when to apply standard algorithms for searching and sorting.  CO5: Choose the most appropriate data structure(s) for a given problem | | | |
| 7 | Course Description | This course starts with an introduction to data structures with its classification, efficiency of different algorithms, array and pointer based implementations and Recursive applications. As the course progresses the study of Linear and Non-Linear data structures are studied in details. The course talks primarily about Linked list, stacks, queue, Tree structure, Graphs etc. This Course also deals with the concept of searching, sorting and hashing methods. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | **CO1** |
|  | Program to implement Operation on Array such as Traversing, Insertion & Deletion operation | | | **CO1** |
|  | Program based on Recursion such as Towers of Hanoi, Fibonacci series etc. | | | CO1 |
|  | **Unit 2** | **Linked List** | | | **CO2** |
|  | Program to implement different operation on the following linked list: Singly, Doubly and circular linked list. | | | CO2 |
|  | **Unit 3** | **Stack & Queue** | | | **CO3** |
|  | Program to Implement Stack operation using Array and Linked list | | | **CO3** |
|  | Program to convert infix expression to post fix expression | | | **CO3** |
|  |  | Program on Evaluation of Post fix expression | | | **CO3** |
|  | Program to implement queue operation using array and linked list | | | **CO3** |
|  | Program to implement circular queue and deque. | | | **CO3** |
|  | **Unit 4** | **Tree & Graph** | | | **CO4, CO6** |
|  | Program to implement binary tree and BST. | | | **CO4, CO6** |
|  | Program to implement MST and shortest path algorithm. | | | CO4, CO6 |
|  | **Unit 5** | **Searching, Sorting & Hashing** | | | **CO5** |
|  | Program on Searching and Hashing | | | **CO5** |
|  | Program on Sorting. | | | CO5 |
|  | Mode of examination | Practical | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. Lipschutz, “Data Structures” Schaum’s Outline Series, TMH | | |  |
|  | Other References | 1. Aaron M. Tenenbaum, Yedidyah Langsam and Moshe J. Augenstein “Data Structures Using C and C++” , PHI  2. Horowitz and Sahani, “Fundamentals of Data Structures”, Galgotia Publication  3. Jean Paul Trembley and Paul G. Sorenson, “An Introduction to Data Structures with applications”, McGraw Hill  4. R. Kruse etal, “Data Structures and Program Design in C”, Pearson Education  5. G A V Pai, “Data Structures and Algorithms”, TMH | | |  |

**Syllabus: CSE 243, Object Oriented Programming Using JAVA**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-2019** | | | | |
| **Branch:CSE** | | **Semester:III** | | | | |
| 1 | Course Code | CSE243 | Course Name | | | |
| 2 | Course Title | Object Oriented Programming Using JAVA | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | UG | | | | |
| 5 | Course Objective | **1.**GainknowledgeaboutbasicJavalanguagesyntaxandsemanticstowriteJavaprogramsanduse concepts such as variables, conditional and iterative execution methods etc.  **2.** Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.  **3.** Understand the principles of inheritance, packages and interfaces. | | | | |
| 6 | Course Outcomes | Students will be able to:  CO1. Identify classes, objects, members of a class and relationships among them needed for a specific problem.  CO2. Write Java programs using OOP principles and demonstrate the concepts of polymorphism and inheritance  CO3.Create Java programs to implement error-handling techniques using exception handling.  CO4. Construct a professional looking package for business project using java doc. | | | | |
| 7 | Course Description | Basic Object Oriented Programming (OOP) concepts, including objects, classes, methods, parameter passing, information hiding, inheritance and polymorphism are introduced and their implementations using Java are discussed. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction to Object Oriented Paradigm** | | | |  |
| A | History, The meaning of Object Orientation, Features of Java, OOPs concepts object identity, | | | | CO1, CO2 |
| B | Encapsulation, information hiding, polymorphism inheritance Java virtual machine, | | | | CO1, CO2 |
| C | Byte Code, Architecture of JVM, Class Loader Execution Engine, Garbage collection. | | | | CO1, CO2,CO3 |
|  | **Unit 2** | **Introduction to Java** | | | |  |
| A | Java development Kit(JDK),Introduction to IDE for java development, Setting java environment(steps for path and CLASSPATH setting). | | | | CO1, CO2,CO4 |
| B | Constants, Variables, Data Types, Operators, Expressions. | | | | CO1, CO2,CO4 |
| C | Decision Making Branching, Loops, command line argument. | | | | CO1, CO2,CO4 |
|  | **Unit 3** | **Class & Object** | | | |  |
| A | Arrays, Type conversion & casting, Input from keyboard, Classes Objects. | | | | CO1,CO2,CO3 |
| B | Methods Method overloading, Constructors, Constructors overloading. | | | | CO1,CO2,CO3 |
| C | static keyword, Introducing Access Control, String handling. | | | | CO4,CO2 |
|  | **Unit 4** | **Inheritance, package and Interface Inheritance Implementation** | | | |  |
| A | Multilevel Hierarchy, Overriding methods, Polymorphism, use of this and super, Constructor call in inheritance Abstract class and method, | | | | CO1,CO2,CO3 |
| B | Final class, method and variable, Implementing Interface, Concept of multiple inheritance in Java, Wrapper class | | | | CO1,CO2,CO3 |
| C | Packages: User defined packages, built-in packages (java.lang package), Access modifiers. | | | | CO1,CO2,CO3 |
|  | **Unit 5** | **Exception and Multithreading** | | | |  |
| A | Input/output: Exploring java.io, File,StreamClassesByte Stream Classes and Character stream Classes,. | | | | CO1,CO2,CO3 |
| B | reading and writing in file, Introduction to Exception Handling, Introduction to try, catch, Finally , throw and throws, Checked and Unchecked exceptions, User define exception | | | | CO1,CO2,CO3 |
| C | Java's Built-in Exception Chained Exception, Introduction to Multithreading: Creating thread using Runnable interface and Thread class, Thread life cycle, Thread priorities, sleep method. | | | | CO1,CO2,CO3 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1.Schildt H, “The Complete Reference JAVA2”, TMH | | | |  |
|  | Other References | 1. Balagurusamy E, “Programming in JAVA”, TMH 2. Professional Java Programming:BrettSpell,WROX Publication | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1. Identify classes, objects, members of a class and relationships among them needed for a specific problem. | PO1,PO2,PO3,PO4,PSO1 |
| 2. | CO2:WriteJavaapplicationprogramsusingOOPprinciplesandproperDemonstrate the concepts of polymorphism and inheritance | PO1, PO3, PO4, PSO2 |
| 3. | CO3. How to test, document and prepare a professional looking package for each business project using java doc. | PO1,PO2,PO3,PO4 |
| 4. | CO3. Write Java programs to implement error handling techniques using exception handling. | PO9, PO10,PO11, PSO5 |

**PO and PSO mapping with level of strength for Course Name Object Oriented Programming using JAVA (Course code CSE 243)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 243, Object Oriented Programming Using JAVA Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018** | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | |
| **Branch:CSE** | | **Semester:III** | | | |
| 1 | Course Code | CSP243 | | | |
| 2 | Course Title | Object oriented programming using JAVA Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | 1. Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc.  2. Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.  3. Understand the principles of inheritance, packages and interfaces. | | | |
| 6 | Course Outcomes | Students will be able to:  CO1. Identify classes, objects, members of a class and relationships among them needed for a specific problem.  CO2. Write Java application programs using OOP principles and proper Demonstrate the concepts of polymorphism and inheritance  CO3. Write Java programs to implement error handling techniques using exception handling.  CO4. How to test, document and prepare a professional looking package for each business project using javadoc. | | | |
| 7 | Course Description | Basic Object Oriented Programming (OOP) concepts, including objects, classes, methods, parameter passing, information hiding, inheritance and polymorphism are introduced and their implementations using Java are discussed. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Practical based on classes and objects** | | | CO1,CO2 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 2** | **Practical based on constructors** | | | CO1,CO2 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 3** | **Practical based on inheritance and package** | | | CO2, CO4 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 4** | **Practical based on Polymorphism** | | | CO1, CO2 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 5** | **Practical based on Exception handling** | | | CO1, CO3 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | Mode of examination | Practical | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1.Schildt H, “The Complete Reference JAVA2”, TMH | | |  |
|  | Other References | 1. Balagurusamy E, “Programming in JAVA”, TMH  2. ProfessionalJavaProgramming:BrettSpell,WROX Publication | | |  |

**Syllabus: CSP 297, Project Based Learning -1**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | | **Batch : 2018 - 2022** | | | | |
| **Program: B.Tech** | | | **Current Academic Year: 2018-2019** | | | | |
| **Branch: CSE / IT** | | | **Semester: 3rd** | | | | |
| 1 | Course Code | | **CSP297** | Course Name: Project Based Learning -1 | | | |
| 2 | Course Title | | Project Based Learning -1 | | | | |
| 3 | Credits | | 1 | | | | |
| 4 | Contact Hours  (L-T-P) | | 0-0-2 | | | | |
|  | Course Status | | Compulsory | | | | |
| 5 | Course Objective | | 1. To align student’s skill and interests with a realistic problem or project 2. To understand the significance of problem and its scope 3. Students will make decisions within a framework | | | | |
| 6 | Course Outcomes | | Students will be able to:  CO1: Acquire practical knowledge within the chosen area of technology for project development  CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach  CO3: Discuss and accumulate the background information  CO4: Develop effective communication skills for presentation of project related activities  CO5: Contribute as an individual or in a team in development of technical projects  CO6: Prepare a technical report based on the project. | | | | |
| 7 | Course Description | | In PBL-1, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set of specifications and all subjects of that Semester. | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | Problem Definition, Team/Group formation and Project Assignment. | | | | | CO1, CO2 |
|  | **Unit 2** | Finalizing the problem statement, resource requirement, if any and design of the proposed project.  Develop a block diagram and flowchart of proposed system algorithm. | | | | | CO1, CO2 |
|  | **Unit 3** | Implementation work under the guidance of a faculty member and obtain the appropriate results. | | | | | CO1, CO2, CO3 |
|  | **Unit 4** | Demonstrate and execute Project with the team. | | | | | CO3, CO4 |
|  | **Unit 5** | The presentation, report, work done during the term supported by the documentation, forms the basis of assessment. | | | | | CO4, CO5, CO6 |
|  | Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References.  Presentation – PBL-1 | | | | |  |
|  |  | | | | |  |
|  | Mode of examination | Theory | | | | |  |
|  | Weightage Distribution | CA | | | MTE | ETE |  |
| 60% | | | NA | 40% |  |
|  | Text book/s\* |  | | | | |  |
|  | Other References |  | | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) |
| 1. | CO1: Acquire practical knowledge within the chosen area of technology for project development | PO1, PO2, PO4, PO9, PO10, PO11, PO12 |
| 2. | CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach | PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12 |
| 3. | CO3: Discuss and accumulate the background information | PO1, PO2, PO5, PO9, PO10, PO11, PO12 |
| 4. | CO4: Develop effective communication skills for presentation of project related activities | PO1, PO2, PO6, PO9, PO10, PO11, PO12 |
| 5. | CO5: Contribute as an individual or in a team in development of technical projects | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |
| 6. | CO6: Prepare a technical report based on the project. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |

**PO and PSO mapping with level of strength for Course Name Project Based Learning -1 (Course Code CSP297)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CSE297** | Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | 2 | 3 |
| CO2 | 3 | 2 | - | 3 | - | - | 2 | - | 3 | 3 | 2 | 3 |
| CO3 | 3 | 2 | - | - | 2 | - | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | - | - | - | 2 | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 299, Industrial Internship-1**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | | |
| **Program:B.Tech** | | **Current Academic Year:** | | | | | |
| **Branch: CSE** | | **Semester:III** | | | | | |
| 1 | Course Code | CSP299 | | Course Name | | | |
| 2 | Course Title | Industrial Internship-1 | | | | | |
| 3 | Credits | 1 | | | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | | | |
|  | Course Status | UG | | | | | |
| 5 | Course Objective | 1. Acquire knowledge of the industry in which the internship is done. 2. Apply knowledge and skills learned in the classroom in a work setting. 3. To decide the future application areas of Computer Science and Engineering. | | | | | |
| 6 | Course Outcomes | CO1. An ability to apply knowledge of mathematics, science, and engineering  CO2. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability  CO3. An ability to function on multidisciplinary teams  CO4. An ability to identify, formulate, and solve engineering problems  CO5. An understanding of professional and ethical responsibility  CO6. Understanding the impact of engineering solutions in a global, economic, environmental, and societal context | | | | | |
| 7 | Course Description | An internship experience provides the student with an opportunity to explore career interests while applying knowledge and skills learned in the classroom in a work setting. | | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | | Submission of Internship Proposal to be approved by academic advisor. For that students will select the company and field, ideally at the end of the first year. | | | | CO1 |
|  | **Unit 2** | | The Student will submit the work plan approved by the supervising faculty at the university and the internship supervisor for the organisation offering the internship. | | | | CO2 |
|  | **Unit 3** | | The student will do project implementation during Internship under the guidance of the Program Director of the Host Organization. it will be further supervised by faculty members at the University. This activity must guarantee continuous presence and continuity to activities related to project. | | | | CO3,CO4 |
|  | **Unit 4** | | Submission of evaluation form and final report completed by the intern. | | | | CO4,CO6 |
|  | **Unit 5** | | Final evaluation form completed by the supervisor at the Host Organization and final presentation before departmental committee. | | | | CO5 |
|  | Mode of examination | | Practical | | | | |
|  | Weightage Distribution | | CA | | MTE | ETE |  |
| 60% | | NIL | 40% |  |
|  | Text book/s\* | | NA | | | | |
|  | Other References | | |  | | --- | | NA | | | | | |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1. An ability to apply knowledge of mathematics, science, and engineering | PO1, PO2, PO12, PSO4 |
| 2. | CO2. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. | PO1, PO12, PSO1, PSO4 |
| 3. | CO3. An ability to function on multidisciplinary teams | PO1, PO2, PO12, PSO2, PSO4 |
| 4. | CO4. An ability to identify, formulate, and solve engineering problem. | PO1, PO12, PSO2, PSO4 |
| 5. | CO5. An understanding of professional and ethical responsibility. | PO1, PO6, PO8, PO12, PSO2, PSO4 |

**PO and PSO mapping with level of strength for Industrial Internship(Course Code CSP 299)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO 9 | PO10 | PO 11 | PO12 | PSO1 | PSO2 | PSO 3 | PSO 4 | PSO 5 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 | - | - | 3 | - |
| CO2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 2 | - | 3 | - |
| CO4 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO5 | 3 | - | - | - | - | 2 | - | 2 | - | - | - | 3 | - | 3 | - | 3 | - |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 244, Principles of Operating System**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018-2022** | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-19** | | | |
| **Branch: CSE** | | **Semester: IV** | | | |
| 1 | Course Code | **CSE 244** | Course Name: Principles of Operating System | | |
| 2 | Course Title | Principles of Operating System | | | |
| 3 | Credits | 4 | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | |
|  | Course Status | Core | | | |
| 5 | Course Objective | 1. This course introduces the challenges for designing the operating systems. 2. Includes different design principles and algorithms. 3. Evaluation of algorithms proposed. 4. Implementation of algorithms and utilities. | | | |
| 6 | Course Outcomes | Students will be able :  **CO1:**To Understand the basic concept of Operating system.  **CO2:**Explore process management concepts including scheduling, synchronization, deadlocks  **CO3:** To understand and implement algorithms in resource allocation and utilization.  **CO4:** To integrate and interpret effectiveness, efficiency of algorithms used for resource management of operating systems. | | | |
| 7 | Course Description | This course introduces the design principles of operating systems, resource management, identifying challenges and applying respective algorithms. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | |  |
| A | Operating System Concepts and functions, Comparison of different Operating system | | | CO1 |
| B | Types of Operating Systems (Batch, Multiprogramming ,Multi Tasking , Multiprocessing, Distributed and Real Time Operating System) | | | CO1 |
| C | Operating System Structure(Monolithic, Layered and Microkernel ), Operating System Services | | | CO1 |
|  | **Unit 2** | **Process Synchronization** | | |  |
| A | Process Concepts (PCB, Process States , Process Operations, Inter process communication) | | | CO1, CO2 |
| B | Critical Section problem & their solutions, Introduction to Semaphores | | | CO1, CO2 |
| C | Classical Problems of Synchronization(Producer Consumer Problem, Readers Writer Problem, Dining philosophers problem) | | | CO1, CO2 |
|  | **Unit 3** | **CPU Scheduling** | | |  |
| A | Concept , Types of schedulers( Short term, Long term, Middle term), Dispatcher, Performance Criteria | | | CO1,CO2 |
| B | CPU Scheduling Algorithms( FCFS, SJF, Priority, Round Robin, Multilevel Queue, Multilevel feedback Queue) | | | CO1,CO2,CO3,CO4 |
| C | Deadlock concepts & Handling Techniques(Avoidance, Prevention and Detection & Recovery) | | | CO1,CO2,CO3,CO4 |
|  | **Unit 4** | **Memory Management** | | |  |
| A | Memory Hierarchy, Memory Management Unit | | | CO1,CO2,CO3 |
| B | Paging, Segmentation | | | CO1,CO2,CO3 |
| C | Virtual memory concept, demand paging, Page replacement algorithms(FCFS, Optimal, LRU) | | | CO1,CO2,CO3 |
|  | **Unit 5** | **INPUT-OUTPUT Management** | | |  |
| A | Input –Output interface, Modes of data transfer(Programmed, interrupt and DMA) | | | CO1,CO2,CO3 |
| B | Disk structure , Disk scheduling(FCFS,SSTF, SCAN, LOOK,C-SCAN, C-LOOK) | | | CO1,CO2,CO3,CO4 |
| C | File Concept ,File operations, File Directories, Case study of Windows Operating System | | | CO1,CO2,CO3 |
|  | Mode of examination | Theory | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 30% | 20% | 50% |  |
|  | Text book/s\* | 1. Silberschatz G, *Operating System Concepts*, Wiley | | |  |
|  | Other References | 1. W. Stalling, “Operating System”, Maxwell Macmillan 2. Tannenbaum A S, *Operating System Design and Implementation*, Prentice Hall India 3. Milenkovic M, *Operating System Concepts*, McGraw Hill | | |  |
|  |  |  | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** To identify the challenges and apply suitable algorithms for them. | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2:** To assess the strengths and weaknesses of the algorithms. | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:** To understand and implement algorithms in resource allocation and utilization. | PO1,PO2,PO3,PO4 |
| 4. | **CO4:** To integrate and interpret effectiveness, efficiency of algorithms used for resource management of operating systems. | PO9, PO10,PO11, PSO5 |

**PO and PSO mapping with level of strength for Course Name Principles of Operating System (Course Code CSE 244)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CSE244 | Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 244, Principles of Operating System Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School:** SET | | **Batch: 2018** | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-19** | | | |
| **Branch: CSE** | | **Semester: IV** | | | |
| 1 | Course Code | **CSP 244** | | | |
| 2 | Course Title | Principles of operating System Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status |  | | | |
| 5 | Course Objective | Introduces different type operating systems, functions of operating systems, working in a Unix/Linux and Windows system, writing programs on Process management and file management. | | | |
| 6 | Course Outcomes | CO1: Working with single user multi task and multi-user multi-tasking environment.  CO2: Identify and use utilities of Windows & Unix operating systems  CO3: Use the resources of operating system i.e. process management and file management  CO4: Writing programs on Process creation, multiple process creation, process synchronization, file operations and file buffering. | | | |
| 7 | Course Description | The course is designed to make the students research/industry ready as operating systems are indispensable for the systems used in industries/research organizations. New operating systems for different gadgets are launched in last few years. So the students will get the design principles operating system in this course. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | |  |
|  | Illustration of Different types of operating system: Single user Multi task, Multi user Multi task | | | CO1 |
|  | Basic Windows features & Unix commands. | | | CO2 |
|  | **Unit 2** | **Processes** | | |  |
|  | Process basics: Creating processes using fork( ), the parent-child processes PID, PPID, process states: creating orphan, zombie processes. | | | CO2, CO3, CO4 |
|  | **Unit 3** | **Process Synchronization** | | |  |
|  | Creating multiple processes, Process table, use the command ps with –el, Synchronization of processes by using sleep( ) & wait( ), background process, | | | CO3, CO4 |
|  | **Unit 4** | **Files** | | |  |
|  | Basic file operations, Programs for File operations, sharing data between processes using files. | | | CO3, CO4 |
|  | **Unit 5** | **File Buffering** | | |  |
|  | File descriptor table, system file table, file pointer, buffer accessing block wise, use the functions: fopen( ), fread( ), ftell( ), lseek( ), fflush( ) etc. | | | CO3, CO4 |
|  | Mode of examination | Practical | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. Sumitabha Das, “Unix Concepts and Applications”, Tata McGraw Hill. | | |  |
|  | Other References | 1. Unix: The complete Reference, Kenneth Rosen et.al., TMH  2. Unix ‘C’ Odessey, Meeta Gandhi et.al. BPB | | |  |

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| **Course outline**  This course introduces the features of GUI i.e. Windows operating system as well as the CUI i.e. the commands used in Unix, so that the students will be familiar with both GUI & CUI environment of operating systems. As the course progresses the students will learn to write programs for process management and file operations. Further the students can implement the algorithms studied in theory by writing programs using the above principles and skills. |

|  |  |
| --- | --- |
| **Course Evaluation** | |
| Attendance | None |
| Any other | CA judged on the practical conducted in the lab , weightage may be specified |
| References | |
| Text book | 1. Sumitabha Das, “Unix Concepts and Applications”, Tata McGraw Hill. |
| Other References | 1. Unix: The complete Reference, Kenneth Rosen et.al., TMH  2. Unix ‘C’ Odessey, Meeta Gandhi et.al. BPB |
| Software | Windows, Unix / Any Unix family OS i.e. Linux |

**Syllabus: CSE 245, Computer Networks**

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| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch :2018-2022** | | | | |
| **Program: B.tech** | | **Current Academic Year: 2018-2019** | | | | |
| **Branch:CSE** | | **Semester: 4** | | | | |
| 1 | Course Code | CSE245 | Course Name: B. Tech | | | |
| 2 | Course Title | **Computer Networks** | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | Compulsory | | | | |
| 5 | Course Objective | 1. Provide students with an overview of networking 2. Gain insight into the issues, challenges and work at all level of reference models 3. Provide the students with practice on applying network design 4. Enhance students communication and problem solving skills | | | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:**Demonstrate and differentiate working of all layers of the OSI Reference Model and TCP/IP model  **CO2:**Investigate and explore fundamental issues driving network design including error control, IP addressing, access control, flow and congestion control  **CO3:**Have a basic knowledge of the use ofcryptography and network security;  **CO4:**Understand and analyze working of various routing algorithms | | | | |
| 7 | Course Description | To familiarize with the basic taxonomy and terminology of computer networking area. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | |  |
| A | Introduction to computer networks, applications and uses, classification of Networks based on topologies, geographical distribution and communication techniques | | | | CO1, CO2 |
| B | **Reference models:** OSI model, TCP/IP model , Overview of Connecting devices (Hub, Repeaters, Switches, Bridges, Routers, Gateways) | | | | CO1, CO2 |
| C | **Transmission Media:**wired , wireless, Multiplexing techniques-FDM, TDM | | | | CO1, CO2 |
|  | **Unit 2** | **Data Link Layer** | | | |  |
| A | Functions, Framing, Error Control-Error correction codes(Hamming code),Error Detection codes(Parity Bit, CRC) | | | | CO1, CO2 |
| B | Flow Control- Stop and Wait Protocol, Sliding window –Goback N and Selective repeat(ARQ) | | | | CO1, CO2 |
| C | MAC- Sub-layer Protocols: ALOHA, CSMA, CSMA/CD protocols, IEEE Standards 802.3, 802.4,802.5 | | | | CO1, CO2 |
|  | **Unit 3** | **Network Layer** | | | |  |
| A | Design issues , IPV4addressing basics and Header format, CIDR, sub-netting and sub-masking | | | | CO1,CO2 |
| B | Routing, optimality Principle Routing protocols-, Shortest path, flooding, distance vector routing , link state routing | | | | CO1,CO2,CO4 |
| C | Congestion control-Leaky bucket , Token Bucket, jitter control | | | | CO1,CO2 |
|  | **Unit 4** | **Transport Layer** | | | |  |
| A | Need of transport layer with its services, Quality of service, connection oriented and connection less | | | | CO1,CO2 |
| B | Transmission Control Protocol: Segment structure and header format, TCP Connection Management, Flow Control | | | | CO1,CO2 |
| C | TCP congestion control, Internet Congestion Control Algorithm, Overview of User Datagram Protocol (UDP) | | | | CO1,CO2 |
|  | **Unit 5** | **Application Layer** | | | |  |
| A | Domain Name System (DNS), HTTP, FTP, SMTP | | | | CO1,CO2 |
| B | Network Security services, cryptography, Symmetric versus Asymmetric cryptographic algorithms- DES, and RSA | | | | CO1,CO2,CO3 |
| C | Application of Security in Networks: Digital signature | | | | CO1,CO2,CO3 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Tanenbaum, A.S.” Computer Networks”, 4th Edition, PHI | | | |  |
|  | Other References | 1. Forouzan, B.., “Communication Networks”, TMH, Latest Edition 2. W. Stallings, “Data and Computer Communication” Macmillan Press | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** Demonstrate and differentiate working of all layers of the OSI Reference Model and TCP/IP model | PO11,PO12,PSO2,PSO3,PSO4 |
| 2. | **CO2:**Investigate and explore fundamental issues driving network design | PO1,PO3,PO4,PO5,PO7,PO10,PO11PO12,PSO4 |
| 3. | **CO3:**Have a basic knowledge of the use of cryptography and network security; | PO1,PO2,PO4,PO6,PO7,PO8,PO10,PSO1,PSO3 |
| 4. | **CO4:**Understand and analyze working of various routing algorithms | PO2,PO7,PSO2,PSO3 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CSE245 | Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | - | - | - | - | - | - | - | - | - | - | 1 | 3 | - | 2 | 3 | 1 | - |
| CO2 | 3 | - | 3 | 3 | 2 | - | 3 | - | - | 3 | 1 | 2 | - | - | - | 1 | - |
| CO3 | 2 | 3 | - | 2 | - | 2 | 3 | 2 | - | 2 | - | - | 1 | - | 3 | - | - |
| CO4 | - | 2 | - | - | - | - | 1 | - | - | - | - | - | - | 1 | 3 | - | - |

**Syllabus: CSP 245, Computer Networks Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018-2022** | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018** | | | |
| **Branch:CSE** | | **Semester: 4** | | | |
| 1 | Course Code | CSP 245 | | | |
| 2 | Course Title | Computer Networks Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | * To interpret the working principle of various communication protocols * To identify the working difference between different topologies * To describe the concept of data transfer between nodes | | | |
| 6 | Course Outcomes | By the end of this course you will be able to:  CO1: To interpret the working principle of various network topologies  CO2: To analyze ALOHA, CSMA,CSMA/CD for packet communication between nodes connected to common topology  CO3: Investigate and explore fundamental issues in IP addressing and application layer.  CO4: To distinguish different flow control mechanism over an unreliable network | | | |
| 7 | Course Description | Familiarize the student with the basic taxonomy and terminology of the computer networking area. Encapsulate basic understanding of networking in a way to use and apply. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | |  |
|  | Familiarization with Networking Components and devices: LAN Adapters, Hubs, Switches, Routers etc. To implement the token passing access in BUS-LAN, To implement the token passing access in RING-LAN. | | | CO1 |
|  | **Unit 2** | **Data link layer** | | |  |
|  | Implement the ALOHA protocol for packet communication between a number of nodes connected to a common bus , Implement the CSMA protocol for packet communication between a number of nodes connected to a common bus | | | CO2 |
|  | **Unit 3** | **Network Layer** | | |  |
|  | IP Addressing :sub netting, Super netting | | | CO3 |
|  | **Unit 4** | **Transport Layer** | | |  |
|  | Provide reliable data transfer between two nodes over an unreliable network using the stop and-wait protocol, Provide reliable data transfer between two nodes over an unreliable network using the slidingwindow go back N protocol. | | | CO4 |
|  | **Unit 5** | **Application Layer** | | |  |
|  | Implementation and study of Simple mail transfer protocol and file transfer protocol. | | | CO3 |
|  | Mode of examination | Jury/Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. Tanenbaum, A.S.” Computer Networks”, 4th Edition, PHI | | |  |
|  | Other References | 1. Forouzan, B.., “Communication Networks”, TMH, Latest Edition 2. W. Stallings, “Data and Computer Communication” Macmillan Press | | |  |

**Syllabus: CSE 246, Database Management System**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School:** | | **Batch : 2018-2022** | | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018** | | | | |
| **Branch: CSE** | | **Semester: IV** | | | | |
| 1 | Course Code | CSE246 | Course Name | | | |
| 2 | Course Title | **Database Management System** | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status |  | | | | |
| 5 | Course Objective | 1.Develop the ability to design,  2. Implement and manipulate databases.  3. Introduce students to build data base management systems.  4. Apply DBMS concepts to various examples and real life applications. | | | | |
| 6 | Course Outcomes | Students will be able to:  1. Apply the knowledge of databases to E-R modelling.  2. Apply the concept of Relational Database model to databasedesign.  3. Learn and apply Structured Query Language (SQL) for data definition and data manipulation.  4.Design a normalized databaseand able to perform transaction management and concurrency control. | | | | |
| 7 | Course Description | This course introduces database design and creation using a DBMS product. Emphasis is on, normalization, data integrity, data modeling, and creation of simple tables, queries, reports, and forms. Upon completion, students should be able to design and implement normalized database structures by creating simple database tables, queries, reports, and forms. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction to Databases:** | | | |  |
| A | Introduction ofof DBMS, Characteristic of DBMS, Data Models, Database languages, Database Administrator, Database Users. | | | | CO1 |
| B | Three Schema architecture of DBMS, Data Models,Hierarchical, Network ,Data independence and database language, DDL, DML, Data Modeling using Entity Relationship Model | | | | CO1,CO2 |
| C | Strong Entity, Weak entity, Specialization and generalization, converting ER Model to relational tables. | | | | CO1,CO2 |
|  | **Unit 2** | **Relational Database Language and Interfaces:** | | | |  |
| A | Relational data model concepts ,Concept of keys, Mapping Constraints | | | | CO3,CO2 |
| B | Null Values, Domain Constraints, Referential Integrity Constraints | | | | CO3,CO2 |
| C | Unary Relational Operations: SELECT and PROJECT Relational Algebra Operations from Set Theory ,Binary Relational Operations: JOIN and DIVISION ,SQL. | | | | CO3,CO2 |
|  | **Unit 3** | **Normalization in Design of Databases:** | | | |  |
| A | Functional Dependency, Different anomalies in designing a Database, Normalization first | | | | CO4,CO2 |
| B | second and third normal forms, BoyceCodd normal form, multi-valued dependencies | | | | CO4,CO2 |
| C | fourth normal forms, Inclusion dependencies, loss less join decompositions | | | | CO4,CO2 |
|  | **Unit 4** | **Transaction Management:** | | | |  |
| A | Transaction processing system, schedule and recoverability, Testing of serializability, | | | | CO4,CO2 |
| B | Serializability of schedules, conflict & view serializable schedule | | | | CO4,CO2 |
| C | Recovery from transaction failures, deadlock handling. | | | | CO4,CO2 |
|  | **Unit 5** | **Concurrency Control** | | | |  |
| A | Two-Phase Locking Techniques for Concurrency Control , Concurrency Control Based on Timestamp Ordering | | | | CO4,CO2 |
| B | Multiversion Concurrency Control Techniques ,Validation (Optimistic) Concurrency Control Techniques | | | | CO4,CO2 |
| C | Granularity of Data Items and Multiple Granularity Locking | | | | CO4,CO2 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Korth , Silberschatz&Sudarshan, Data base Concepts, Tata McGraw-Hill, Latest Edition | | | |  |
|  | Other References | 1.Elmasri, Navathe, Fundamentals of Database Systems, Pearson Education Inc.  2.Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to design, Implementation and Management, Pearson Education, Third Edition.  3.Jeffrey D. Ullman, Jennifer Windon, A first course in Database Systems, Pearson Education.  4.Date C.J., An Introduction to Database Systems, Addison Wesley. | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:**Apply the knowledge of databases to E-R modelling. | PO1,PO2,PO3,PO10,PSO12,PSO3 |
| 2. | **CO2:**Apply the concept of Relational Database model to databasedesign. | PO1, PO2, PO3, PS5,PO9,PO10,PO11,PO12,PSO1,PSO2,PSO3,PSO5 |
| 3. | **CO3:** Learn and apply Structured Query Language (SQL) for data definition and data manipulation. | PO1,PO2,PO3,PO5,PO9,PO10,PO11,PO12,PSO1,PSO2,PSO3PSO5 |
| 4. | **CO4:**Design a normalized databaseand able to perform transaction management and concurrency control. | PO1, PO2,PO3, PO4,PO5,PO9,PO10,PO11,PO12,PSO1,PSO2,PSO3,PSO4,PSO5 |

**PO and PSO mapping with level of strength for Course Name Database Management System(Course Code CSE 246)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 2 | 1 | 1 | - | - | - | - | - | - | 3 | - | 2 | - | - | 1 | - | - |
| CO2 | 3 | 3 | 3 |  | 3 | - | - | - | 2 | 3 | 2 | 1 | 3 | 3 | 3 | - | 3 |
| CO3 | 3 | 3 | 3 | - | 3 | - | - | - | 3 | 1 | 3 | 3 | 2 | 2 | 3 | -- | 3 |
| CO4 | 3 | 3 | 3 | 2 | 3 | - | - | - | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 246, Database management System Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018-2022** | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | |
| **Branch:CSE** | | **Semester: IV** | | | |
| 1 | Course Code | CSP246 | | | |
| 2 | Course Title | Database Management System Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | * To Develop efficient SQL programs to access Oracle databases * Build database using Data Definition Language Statements * Perform operations using Data Manipulation Language statements like Insert, Update and Delete | | | |
| 6 | Course Outcomes | By the end of this course you will be able to:  CO1: Understandthe concept of SQL commands in DBMS  CO2: Create SQL SELECT statements that retrieve any required data  CO3: Perform operations using Data Manipulation Language statements like Insert, Update and Delete  CO4: Manipulate your data to modify and summaries your results for reporting | | | |
| 7 | Course Description | An introduction to the design and creation of relational databases. Create database-level applications and tuning robust business applications. Lab sessions reinforce the learning objectives and provide participants the opportunity to gain practical hands-on experience. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Practical based Data types** | | |  |
|  | Classification SQL, Data types of SQL/Oracle | | | CO1,CO2 |
|  | **Unit 2** | **Practical based on DDL commands** | | |  |
|  | Create table , Alter table and drop table | | | CO1,CO2 |
|  | **Unit 3** | **DML commands and Aggregate functions** | | |  |
|  | Introduction about the INSERT, SELECT , UPDATE & DELETE command.,sum,avg,count,max,min | | | CO2,CO4 |
|  | **Unit 4** | **Practical based on Grouping Clauses GROUP BY ORDER BY & GROUP BY HAVING** | | | CO1,CO4 |
|  | Briefly explain Group by, order by ,having clauses with examples. | | |  |
|  | **Unit 5** | **Practical based on Sub- queries, JOINS** | | | CO1,CO4 |
|  | Related example of Sub- queries, Joins and related examples | | |  |
|  | Mode of examination | Jury/Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. Korth , Silberschatz& Sudarshan, Data base Concepts, Tata McGraw-Hill | | |  |
|  | Other References | 1. Elmasri, Navathe, Fundamentals of Database Systems, Pearson Education Inc. 2. Thomas Connolly, Carolyn Begg, Database Systems: A Practical Approach to design, Implementation and Management, Pearson Education, Latest Edition. 3. Jeffrey D. Ullman, Jennifer Windon, A first course in Database Systems, Pearson Education. | | |  |

**Syllabus: CSE 248, Theory Of Computation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018-2022** | | | | |
| **Program: B.Tech** | | **Current Academic Year:2018-2019** | | | | |
| **Branch:CSE** | | **Semester:IV** | | | | |
| 1 | Course Code | CSE-248 | Course Name: Theory of Computation | | | |
| 2 | Course Title | Theory of Computation | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-1-0 | | | | |
|  | Course Status |  | | | | |
| 5 | Course Objective | The goal of this course is to provide students with an understanding of basic concepts in the theory of computation. | | | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:** Formulate the concept of Automata and related terminology.  **CO2:** Design DFA and NDFA and conversion from NDFA to DFA.  **CO3:** Construct finite automata without output and with output.  **CO4:**Implement regular expression and grammar corresponding to DFA and vice-versa  **CO5:** Design Push down Automata from Context Free Language or Grammar and vice-versa.  **CO6:** Design Turing Machine for computational problems, Develop a clear understanding of un-decidability. | | | | |
| 7 | Course Description | The course introduces some fundamental concepts in automata theory and formal languages including grammar, finite automaton, regular expression, formal language, pushdown automaton, and Turing machine. Not only do they form basic models of computation, they are also the foundation of many branches of computer science, e.g. compilers, software engineering, concurrent systems, etc. The properties of these models will be studied and various rigorous techniques for analyzing and comparing them will be discussed, by using both formalism and examples. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Finite Automata** | | | |  |
| A | Introduction to languages, Kleene closures, Finite Automata (FA), Transition graph, Nondeterministic finite Automata (NFA), Deterministic finite Automata (DFA). | | | | CO1, CO2 |
| B | Equivalence of NDFA and DFA, Construction of DFA from NFA and optimization of Finite Automata. | | | | CO1, CO2 |
| C | Applications and Limitation of FA. (FAT tool). | | | | CO1, CO2 |
|  | **Unit 2** | **Regular Expression and Finite Automata** | | | |  |
| A | Regular Expression, Finite Automata with null move, Regular Expression to Finite Automata. | | | | CO1, CO2,CO4 |
| B | Arden Theorem, Pumping Lemma for regular expressions. | | | | CO1, CO2,CO4 |
| C | FA with output: Moore machine, Mealy machine and Equivalence. | | | | CO1, CO2,CO3 |
|  | **Unit 3** | **REGULAR & CONTEXT FREE LANGUAGE** | | | |  |
| A | Defining grammar, Chomsky hierarchy of Languages and Grammar. Ambiguous to Unambiguous CFG. | | | | CO4 |
| B | Simplification of CFGs. | | | | CO4 |
| C | Normal forms for CFGs, Pumping lemma for CFLs. | | | | CO4 |
|  | **Unit 4** | **PUSH DOWN AUTOMATA** | | | |  |
| A | Description and definition of PDA and Non-Deterministic PDA, Working of PDA. | | | | CO5 |
| B | Acceptance of a string by PDA with final state and with Null store. Two stack PDA. | | | | CO5 |
| C | Conversion of PDA into CFG, Conversion of CFG into PDA. | | | | CO5 |
|  | **Unit 5** | **TURING MACHINE** | | | |  |
| A | Turing machines (TM): Basic model, definition and representation, Language acceptance by TM. | | | | CO6 |
| B | Turing machine as a computational machine, Halting problem of TM, Universal TM (Visual Turing machine). | | | | CO6 |
| C | Modifications in TM, Undecidability of Post correspondence problem, Church’s Thesis, Godel Numbering. | | | | CO6 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. K.L.P. Mishra and N.Chandrasekaran, “Theory of Computer Science(Automata, Languages and Computation)”, PHI | | | |  |
|  | Other References | 1.Peter Linz, “Formal Languages and Auomata”, Narosa Publishing House  2.Hopcroft, Ullman, “Introduction to Automata Theory, Language and Computation”, Narosa Publishing House | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** Formulate the concept of Automata and related terminology. | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2:** Design DFA and NDFA and conversion from NDFA to DFA. | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:** Construct finite automata without output and with output. | PO1,PO2,PO3,PO4 |
| 4. | **CO4:** Implement regular expression and grammar corresponding to DFA and vice-versa | PO9, PO10,PO11, PSO5 |
| 5 | **CO5:** Design Push down Automata from Context Free Language or Grammar and vice-versa . | PO1,PO2,PO3,PO4,PSO1 |
| 6 | **CO6:** Design Turing Machine for computational problems,Develop a clear understanding of un-decidability. | PO1,PO3,PO4,PSO2 |

**PO and PSO mapping with level of strength for Course Name** Theory of Automata **(Course Code CSE248)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO6 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 298, Project Based Learning(PBL) -2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | | **Batch : 2018-2022** | | | | |
| **Program: B.Tech** | | | **Current Academic Year: 2018-2019** | | | | |
| **Branch: CSE** | | | **Semester: 4th** | | | | |
| 1 | Course Code | | **CSP298** | Course Name: Project Based Learning - 2 | | | |
| 2 | Course Title | | Project Based Learning -2 | | | | |
| 3 | Credits | | 1 | | | | |
| 4 | Contact Hours  (L-T-P) | | 0-0-2 | | | | |
|  | Course Status | | Compulsory | | | | |
| 5 | Course Objective | | 1. To align student’s skill and interests with a realistic problem or project 2. To understand the significance of problem and its scope 3. Students will make decisions within a framework | | | | |
| 6 | Course Outcomes | | Students will be able to:  CO1: Acquire practical knowledge within the chosen area of technology for project development  CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach  CO3: Discuss and accumulate the background information  CO4: Develop effective communication skills for presentation of project related activities  CO5: Contribute as an individual or in a team in development of technical projects  CO6: Prepare a technical report based on the project. | | | | |
| 7 | Course Description | | In PBL-2, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set ofspecifications and all subjects of that Semester. | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | Problem Definition,Team/Group formation and Project Assignment. | | | | | CO1, CO2 |
|  | **Unit 2** | Description and design of the proposed project. Specifying resource requirement, if any. | | | | | CO1, CO2 |
|  | **Unit 3** | Implementation work under the guidance of a faculty member. | | | | | CO1, CO2, CO3 |
|  | **Unit 4** | Demonstrate and execute Project with the team. | | | | | CO3, CO4 |
|  | **Unit 5** | The presentation, report, work done during the term supported by the documentation, forms the basis of assessment. | | | | | CO4, CO5, CO6 |
|  | Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References.  Presentation – PBL-2 | | | | |  |
|  | Mode of examination | Theory | | | | |  |
|  | Weightage Distribution | CA | | | MTE | ETE |  |
| 60% | | | NA | 40% |  |
|  | Text book/s\* |  | | | | |  |
|  | Other References |  | | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) |
| 1. | CO1: Acquire practical knowledge within the chosen area of technology for project development | PO1, PO2, PO4, PO9, PO10, PO11, PO12 |
| 2. | CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach | PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12 |
| 3. | CO3: Discuss and accumulate the background information | PO1, PO2, PO5, PO9, PO10, PO11, PO12 |
| 4. | CO4: Develop effective communication skills for presentation of project related activities | PO1, PO2, PO6, PO9, PO10, PO11, PO12 |
| 5. | CO5: Contribute as an individual or in a team in development of technical projects | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |
| 6. | CO6: Prepare a technical report based on theproject. | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |

**PO and PSO mapping with level of strength for Course Name** **Project Based Learning -2 (Course Code CSP298)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | 2 | 3 |
| CO2 | 3 | 2 | - | 3 | - | - | 2 | - | 3 | 3 | 2 | 3 |
| CO3 | 3 | 2 | - | - | 2 | - | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | - | - | - | 2 | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 341, Design and Analysis of Algorithms**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch :2018** | | | |
| **Program:B.Tech** | | **Current Academic Year:** | | | |
| **Branch:CSE** | | **Semester:V** | | | |
| 1 | Course Code | CSE 341 | Course Name: Design and Analysis of Algorithms | | |
| 2 | Course Title | Design and Analysis of Algorithms | | | |
| 3 | Credits | 4 | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | |
|  | Course Status | UG | | | |
| 5 | Course Objective | Objective of this course is to   1. Reinforce basic design concepts (e.g., pseudocode, specifications, top-down design) 2. Knowledge of algorithm design strategies 3. Familiarity with an assortment of important algorithms. 4. Enable students to analyze time and space complexity | | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:** Analyze the asymptotic performance of algorithms  **CO2**: Write rigorous correctness proofs for algorithms.  **CO3:** Demonstrate a familiarity with major algorithms and data structures  **CO4:** Apply important algorithmic design paradigms and methods of analysis | | | |
| 7 | Course Description | This course introduces concepts related to the design and analysis of algorithms. Specifically, it discusses recurrence relations, and illustrates their role in asymptotic and probabilistic analysis of algorithms. It covers in detail greedy strategies divide and conquer techniques, dynamic programming and max flow - min cut theory for designing algorithms, and illustrates them using a number of well-known problems and applications. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | |  |
| A | Notion of an Algorithm – Fundamentals of Algorithmic Problem Solving – Important Problem Types – Fundamentals of the Analysis of Algorithm Efficiency – Analysis Framework | | | CO2, CO3 |
| B | Asymptotic Notations and their properties – Mathematical analysis for Recursive and Non-recursive algorithms, Recurrences relations | | | CO1, CO2, CO3 |
| C | Divide-and-conquer: Analysis and Structure of divide-and-conquer algorithms, Divide-and-conquer examples- Binary search, Quick sort, Merge sort, Medians and Order Statics, Strassen’s Matrix Multiplication. | | | CO1, CO2, CO4 |
|  | **Unit 2** | **Dynamic Programming** | | |  |
| A | Overview, Difference between dynamic programming and divide and conquer | | | CO1, CO2, CO3, CO4 |
| B | Applications and analysis: Matrix Chain Multiplication, 0/1 Knapsack Problem records | | | CO1, CO2, CO4 |
| C | Applications and analysis: Longest Common sub-sequence, Optimal Binary Search tree | | | CO1, CO2, CO3, CO4 |
|  | **Unit 3** | **Greedy Method** | | |  |
| A | Overview of the Greedy paradigm, Analysis and example of exact optimization solution, Minimum Spanning Tree – Prim’s and Kruskal’s Algorithm | | | CO1,CO2,CO3, CO4 |
| B | Fractional Knapsack problem, Single source shortest paths, task scheduling | | | CO1, CO2, CO3, CO4 |
| C | Overview and analysis of Backtracking & Branch and Bound: N-Queens problem and Sum of subsets | | |  |
|  | **Unit 4** | **Advanced Data Structures** | | | CO1,CO2,CO3 |
| A | Red-Black Trees - Definition, Applications, Insertion and deletion of elements in RB-Tree | | | CO1,CO2,CO3 |
| B | B-Trees - Definitions, Applications, Insertion and Deletion in B-Trees | | | CO1,CO2,CO3 |
| C | Data Structure for Disjoint Sets - Definition, Operations, Applications in Kruskal’s algorithm. | | |  |
|  | **Unit 5** | **Selected Topics** | | | CO1,CO2,CO3, |
| A | Introduction to NP Complete and NP Hard Problems, Examples, Amortized Analysis | | | CO1,CO2,CO3, |
| B | Approximation Algorithms – Travelling Sales Person Problem and Vertex Cover Problem, Randomized Algorithms, Need, Evaluation of π, Randomized Quick Sort Algorithm | | | CO1,CO2,CO3 |
| C | String Matching Algorithms – Naive String Matching Algorithm, Rabin Karp Algorithm. | | | CO1,CO2,CO3, CO4 |
|  | Mode of examination | Theory | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 30% | 20% | 50% |  |
|  | Text book/s\* | 1. Cormen et al., “Introduction of Computer Algorithms”, Prentice Hall India | | |  |
|  | Other References | 1. Sahni et al., “Fundamentals of Computer Algorithms”, Galgotia Publications. 2. Hopcroft A, The Design And Analysis Computer Algorithms, Addison Wesley | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:**Analyze the asymptotic performance of algorithms | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2**: Write rigorous correctness proofs for algorithms | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:** Demonstrate a familiarity with major algorithms and data structures | PO1,PO2,PO3,PO4 |
| 4. | **CO4:**Apply important algorithmic design paradigms and methods of analysis | PO9, PO10,PO11, PSO5 |

**PO and PSO mapping with level of strength for Course Name Design and Analysis of Algorithms Course Code CSE 341)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 341, Design and Analysis of Algorithms Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018-2022** | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | |
| **Branch: CSE** | | **Semester:V** | | | |
| 1 | Course Code | CSP 341 | | | |
| 2 | Course Title | Design and Analysis of Algorithms Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | Objective of this course is to   * Reinforce basic design concepts (e.g., pseudocode, specifications, top-down design) * Knowledge of algorithm design strategies * Familiarity with an assortment of important algorithms. * Enable students to analyze time and space complexity | | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:** Analyze the asymptotic performance of algorithms  **CO2**: Write rigorous correctness proofs for algorithms.  **CO3:** Demonstrate a familiarity with major algorithms and data structures  **CO4:** Apply important algorithmic design paradigms and methods of analysis | | | |
| 7 | Course Description | This course introduces concepts related to the design and analysis of algorithms. Specifically, it discusses recurrence relations, and illustrates their role in asymptotic and probabilistic analysis of algorithms. It covers in detail greedy strategies divide and conquer techniques, dynamic programming and max flow - min cut theory for designing algorithms, and illustrates them using a number of well-known problems and applications. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Practical based on algorithm design by brute force and divide and conquer paradigm** | | | CO1, CO2, CO4 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 2** | **Practical related to dynamic programming paradigm** | | | CO1, CO2. CO3, CO4 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 3** | **Practical related to greedy method** | | | CO2, CO3, CO4 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 4** | **Practical related to advanced data structures** | | | CO2, CO3, CO4 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | **Unit 5** | **Practical related to string matching algorithms** | | | CO1, CO2, CO3, CO4 |
|  | Sub unit - a, b and c detailed in Instructional Plan | | |  |
|  | Mode of examination | Jury/Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | - | | |  |
|  | Other References |  | | |  |

**Syllabus: CSE 344, Compiler Design**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year:2018-2019** | | | | |
| **Branch:CSE** | | **Semester: V** | | | | |
| 1 | Course Code | **CSE 344** | Course Name | | | |
| 2 | Course Title | **Compiler Design** | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | Core | | | | |
| 5 | Course Objective | 1. To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant theoretical developments and tools that are deep rooted into computer science.  2. To introduce the major phases of Compiler construction and also its theoretical aspects including regular expressions, context-free grammars, Finite Automata etc. | | | | |
| 6 | Course Outcomes | After the successful completion of this course, students will be able to :  **CO 1:** Employ formal attributed grammars for specifying the syntax and semantics of programming languages.  **CO 2:** Apply regular patterns and grammars.  **CO 3:** Comprehend the working knowledge of the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation.  **CO 4:** Implement parsing and translation techniques for automation of computing tasks.  **CO 5:** Design and write a complex programming project on system software. | | | | |
| 7 | Course Description | To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant theoretical developments and tools that are deep rooted into computer science. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | Introduction | | | |  |
| A | Introduction to Compiler, Phases and passes, Bootstrapping, Cross-Compiler | | | | CO1, CO2 |
| B | Finite state machines and regular expressions and their applications to lexical analysis | | | | CO1, CO2 |
| C | lexical-analyzer generator, Lexical Phase errors | | | | CO1, CO2 |
|  | **Unit 2** | **Parsing Techniques** | | | |  |
| A | The syntactic specification of programming languages: Context free grammars, derivation and parse trees. | | | | CO1, CO2 |
| B | Basic Parsing Techniques: Parsers, Shift reduce parsing, operator precedence parsing, top down parsing, predictive parsers.  Automatic Construction of efficient Parsers: LR parsers, the canonical Collection of LR(0) items, constructing SLR parsing tables | | | | CO1, CO2 |
| C | Constructing Canonical LR parsing tables, Constructing LALR parsing tables, using ambiguous grammars. Syntactic phase errors and semantic errors. | | | | CO1, CO2 |
|  | **Unit 3** | **Syntax Directed Translations And Intermediate Code Generation** | | | |  |
| A | Syntax directed definition, Construction of syntax trees, syntax directed translation scheme | | | | CO3,CO4 |
| B | Variants of Syntax Trees, Three Address Codes | | | | CO3,CO4 |
| C | Translation of Expression, Type Checking and control flow. | | | | CO3,CO4 |
|  | **Unit 4** | **Symbol table** | | | |  |
| A | Data structure for symbols tables, representing scope information. | | | | CO3,CO4 |
| B | Run-Time Administration: Implementation of simple stack allocation scheme | | | | CO3,CO4 |
| C | Run Time Storage Management | | | | CO3,CO4 |
|  | **Unit 5** | **Code Generation And Optimization** | | | |  |
| A | Sources of Optimization of basic blocks and flow graphs | | | | CO5,CO6 |
| B | Basic Blocks, Flow graphs, DAG | | | | CO5,CO6 |
| C | Global Data Flow Analysis | | | | CO5,CO6 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. 1.Aho, Sethi, Ulman, compilers Principles, Techniques, and Tools, Pearson Education, 2003 | | | |  |
|  | Other References | 1. Lauden, Principles of Compiler Construction. 2. D. M. *Dhamdhere Compiler* Construction--Principles and Practice, Macmillan India, | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:CO1:** Employ formal attributed grammars for specifying the syntax and semantics of programming languages. | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2** Apply regular patterns and grammars. | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:** Comprehend the working knowledge of the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation. | PO1,PO2,PO3,PO4 |
| 4. | **CO4:** Implement parsing and translation techniques for automation of computing tasks. | PO9, PO10,PO11, PSO5 |
| 5. | **CO5**: Design and write a complex programming project on system software. | PO1,PO2,PO3,PO4,PSO1 |

**PO and PSO mapping with level of strength for Course Name Compiler Design (Course Code CSE 344)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |
| CO5 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 344, Compiler Design Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018-2022** | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | |
| **Branch:CSE** | | **Semester:5** | | | |
| 1 | Course Code | CSP 344 | | | |
| 2 | Course Title | Compiler Design Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | 1. To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant theoretical developments and tools that are deep rooted into computer science.  2. To introduce the major phases of Compiler construction and also its theoretical aspects including regular expressions, context-free grammars, Finite Automata etc. | | | |
| 6 | Course Outcomes | After the successful completion of this course, students will be able to :  **CO 1:** Employ formal attributed grammars for specifying the syntax and semantics of programming languages.  **CO 2:** Apply regular patterns and grammars.  **CO 3:** Comprehend the working knowledge of the major phases of compilation, particularly lexical analysis, parsing, semantic analysis, and code generation.  **CO 4:** Implement parsing and translation techniques for automation of computing tasks.  **CO 5:** Design and write a complex programming project on system software. | | | |
| 7 | Course Description | To provide students with an overview of the issues that arise in Compiler construction as well as to throw light upon the significant theoretical developments and tools that are deep rooted into computer science. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | |  |
|  | 1. Write a C program to identify whether a given line is a comment or not. 2. Write a C program to recognize strings under ‘a’, ‘a\*b+’, ‘abb’. 3. Implement the lexical analyser using Lex. | | | CO1, CO2 |
|  | **Unit 2** | **Parsing Techniques** | | |  |
|  | 1. Write a program for constructing of LL (1) parsing for any given language. 2. Write a C program for constructing recursive descent parsing for any given language. | | | CO1, CO2 |
|  | **Unit 3** | **Syntax Directed Translations And Intermediate Code Generation** | | |  |
|  | 1. Implement Program semantic rules to calculate the expression that takes an expression with digits, + and \* and computes the value. 2. Program to generate a Intermediate code(3 Address code). | | | CO3, CO4 |
|  | **Unit 4** | **Symbol table** | | | CO3, CO4 |
|  | Implement symbol table | | | CO1, CO2 |
|  | **Unit 5** | **Code Generation And Optimization** | | |  |
|  | Implement DAG | | | CO5,CO |
|  | Mode of examination | Jury/Practical/Viva | | |  |
|  | Weightage Distribution | CA | CO3,CO4 | ETE |  |
| 60% |  | 40% |  |
|  | Text book/s\* | 1. 1.Aho, Sethi, Ulman, compilers Principles, Techniques, and Tools, Pearson Education, 2003 | | |  |
|  | Other References | 1. Lauden, Principles of Compiler Construction. 2. D. M. *Dhamdhere Compiler* Construction--Principles and Practice, Macmillan India, | | |  |

**Syllabus: CSP 302, Technical Skill Enhancement Course-1 (Simulation Lab)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.TECH** | | **Current Academic Year:** | | | | |
| **Branch:CSE** | | **Semester: V** | | | | |
| 1 | Course Code | CSP 302 | Technical Skill Enhancement Course-1 ( Simulation Lab) | | | |
| 2 | Course Title | Simulation Lab | | | | |
| 3 | Credits | 1 | | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | | |
|  | Course Status | Lab | | | | |
| 5 | Course Objective | * Demonstrate basic programming skills – functions, arrays, loops, conditional statements, procedures * Demonstrate technical communication skills: Create a comprehensive report and an oral presentation with accurate visual representations of a model and its results. | | | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:** Students will apply MATLAB Programming to solve real life problem.  **CO2:** implement the mathematical representation of the model.  **CO3:** create a simulation in a computational tool in Matlab  **CO4:** Utilize Matlab as a computational tool | | | | |
| 7 | Course Description | This course introduces the concepts of MATLAB programing, Modelling and simulation to identify the problems, and choose the relevant models and algorithms to apply.Matlab is used for scientific applications involving images, sound, and other signals. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **UNIT-I** | **Introduction** | | | |  |
| A | 1. Introduction to MATLAB, Basic Commands, Variables and Operators, Logical Operators and their Control flow, Algorithm | | | | CO1, CO2 |
| B | MATLAB conditional statements | | | | CO1, CO2 |
| C | MATLAB loops, Solve a problem for one case, then iterate (Take care of middle, then first and last) | | | |  |
| **UNIT-2** | 1. **Structures and Cell arrays** | | | |  |
| A | 1. Structures, Properties, Declaration of Structure, Definition, Accessing Elements from structure, Use of Structure | | | | CO2,CO3 |
| B | Array, Cell Array, Array operation, Cell Array Operations, Introduction Complexity, Divide and conquer. | | | | CO2 |
| C | 1. Scripts and Functions | | | | CO3 |
| **UNIT-3** | 1. **Review of Mathematical Operations** | | | |  |
| A | 1. Mathematical operations on sequences: Convolution, graphical and analytical techniques | | | | CO2 |
| B | 1. Overlap and add methods, matrix method, some examples and solutions of LTI systems, | | | | CO2 |
| C | MATLAB examples | | | | CO1,CO3 |
| **UNIT-4** | 1. **Modeling** | | | |  |
| A | 1. Stochastic models, Curve fitting, Graphing data in MATLAB | | | | CO4 |
| B | Accuracy and precision in modeling | | | | CO1, CO2 |
| C | Verification and validationProject on Simulation based | | | | CO1, CO2 |
| **UNIT-V** | 1. **Matlab Applications** | | | |  |
| A | Working with Sound, Working with Images | | | | CO2, CO4 |
| B | * 1. File, Types of File, file Input/Output Operations, Reading and Writing files, Building GUI’s | | | | CO1, CO2 |
| C | * 1. Recursion, Compression | | | | CO1, CO3 |
|  | **UNIT-5** | 1. **Visualization** | | | |  |
|  | **A** | 1. Stochastic models, Curve fitting, | | | | CO4 |
|  | B | 1. Graphing data in MATLAB | | | | CO4 |
|  | C | 1. Accuracy and precision in modeling | | | | CO4 |
|  | Mode of examination | Verification and validationProject on Simulation based | | | |  |
|  | Weightage Distribution | Project on Simulation based | | ETE |  |  |
| 60 % | | 40% |  |  |
|  | Text book/s\* |  | | | |  |
|  | Other References |  | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** Students will apply MATLAB Programing to solve real life problem. | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2:** implement the mathematical representation of the model. | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:** create a simulation in a computational tool in Matlab | PO1,PO2,PO3,PO4 |
| 4. | **CO4:** Utilize Matlab as a computational tool - | PO9, PO10,PO11, PSO5 |

**PO and PSO mapping with level of strength for Course NameSimulation Lab (Course Code CSP 302)**

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**Syllabus: CSP 397, Project Based Learning(PBL)-3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | | **Batch : 2018-2022** | | | | |
| **Program: B.Tech** | | | **Current Academic Year: 2018** | | | | |
| **Branch: CSE** | | | **Semester: 5th** | | | | |
| 1 | Course Code | | **CSP397** | Course Name: Project Based Learning -3 | | | |
| 2 | Course Title | | Project Based Learning – 3 | | | | |
| 3 | Credits | | 1 | | | | |
| 4 | Contact Hours  (L-T-P) | | 0-0-2 | | | | |
|  | Course Status | | Compulsory | | | | |
| 5 | Course Objective | | 1. To align student’s skill and interests with a realistic problem or project 2. To understand the significance of problem and its scope 3. Students will make decisions within a framework | | | | |
| 6 | Course Outcomes | | Students will be able to:  CO1: Acquire practical knowledge within the chosen area of technology for project development  CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach  CO3: To prepare the designs requirements, functional and concept design.  CO4: Develop effective communication skills for presentation of project related activities  CO5: Contribute as an individual or in a team in development of technical projects  CO6: Prepare a technical report based on the project. | | | | |
| 7 | Course Description | | In PBL-3, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set ofspecifications and all subjects of that Semester. | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | Problem Definition,Team/Group formation and Project Assignment. | | | | | CO1, CO2 |
|  | **Unit 2** | Description and design of the proposed project using ER Diagrams.Specifying resource requirement, if any. | | | | | CO1, CO2 |
|  | **Unit 3** | Implementation work under the guidance of a faculty member. | | | | | CO1, CO2, CO3 |
|  | **Unit 4** | Demonstrate and execute Project with the team. | | | | | CO3, CO4 |
|  | **Unit 5** | The presentation, report, work done during the term supported by the documentation, forms the basis of assessment. | | | | | CO4, CO5, CO6 |
|  | Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References.  Presentation – PBL-3 | | | | |  |
|  | Mode of examination | Theory | | | | |  |
|  | Weightage Distribution | CA | | | MTE | ETE |  |
| 60% | | | NA | 40% |  |
|  | Text book/s\* |  | | | | |  |
|  | Other References |  | | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) |
| 1. | CO1: Acquire practical knowledge within the chosen area of technology for project development | PO1, PO2, PO4, PO9, PO10, PO11, PO12 |
| 2. | CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach | PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12 |
| 3. | CO3: Discuss and accumulate the background information | PO1, PO2, PO5, PO9, PO10, PO11, PO12 |
| 4. | CO4: Develop effective communication skills for presentation of project related activities | PO1, PO2, PO6, PO9, PO10, PO11, PO12 |
| 5. | CO5: Contribute as an individual or in a team in development of technical projects | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |
| 6. | CO6: Prepare a technical report based on theproject. | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |

**PO and PSO mapping with level of strength for Course Name Project Based Learning -3 (Course Code CSP397)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | 2 | 3 |
| CO2 | 3 | 2 | - | 3 | - | - | 2 | - | 3 | 3 | 2 | 3 |
| CO3 | 3 | 2 | - | - | 2 | - | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | - | - | - | 2 | - | - | 3 | 3 | 2 | 3 |
| CO5 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |
| CO6 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |

**Syllabus: CSP 399, Industrial Internship-II**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018-2022** | | | | | |
| **Program:B.Tech** | | **Current Academic Year:** | | | | | |
| **Branch: CSE** | | **Semester:V** | | | | | |
| 1 | Course Code | CSP399 | | Course Name | | | |
| 2 | Course Title | Industrial Internship-II | | | | | |
| 3 | Credits | 1 | | | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | | | |
|  | Course Status | UG | | | | | |
| 5 | Course Objective | 1. Experience the activities and functions of business professionals.  2. Develop and refine oral and written communication skills.  3. Identify areas for future knowledge and skill development. | | | | | |
| 6 | Course Outcomes | * CO1. Experience of applying existing engineering knowledge in similar or new situations * CO2. Ability to identify when new engineering knowledge is required, and apply it * CO3. Ability to integrate existing and new technical knowledge for industrial application. * CO4. Knowledge of contemporary/engineering practice. * CO5. Use of acquired techniques, skills, and modern engineering tools necessary for engineering practice. * CO6. Ability to work on multi‐disciplinary teams. | | | | | |
| 7 | Course Description | An internship experience provides the student with an opportunity to explore career interests while applying knowledge and skills learned in the classroom in a work setting. The experience also helps students gain a clearer sense of what they still need to learn and provides an opportunity to build professional networks. | | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | | * Define objectives and conditions for the internship, ensuring students that it is related to the study path carried out at the University. Specify the names of the university supervisor, the Host Organization supervisor and the duration, the period in which the internship will be carried out and any changes in duration | | | | **CO1** |
|  | **Unit 2** | | * The internship work plan is drawn up in consultation with the student, the supervising faculty at the university and the internship supervisor for the organisation offering the internship. | | | | **CO2** |
|  | **Unit 3** | | * Project during Internship involves: a) project activated by the Program Director / Host Organization. b) Project activity to be monitored by faculty members at the University. This activity must guarantee continuous presence and continuity to activities related to project. | | | | **CO2,CO3** |
|  | **Unit 4** | | Submission of evaluation form and final report completed by the intern. | | | | **CO4** |
|  | **Unit 5** | | Final evaluation form completed by the supervisor at the Host Organization and final presentation before departmental committee. | | | | **CO5,CO6** |
|  | Mode of examination | | Practical | | | | |
|  | Weightage Distribution | | CA | | MTE | ETE |  |
| 60% | | NIL | 40% |  |
|  | Text book/s\* | | NA | | | | |
|  | Other References | | |  | | --- | | NA | |  | | | | | |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | * CO1. Experience of applying existing engineering knowledge in similar or new situations | PO1, PO2, PO12, PSO4 |
| 2. | * CO2. Ability to identify when new engineering knowledge is required, and apply it | PO1, PO12, PSO1, PSO4 |
| 3. | * CO3. Ability to integrate existing and new technical knowledge for industrial application | PO1, PO2, PO12, PSO2, PSO4 |
| 4. | * CO4. Knowledge of contemporary/engineering practice. | PO1,PO12, PSO 2,PSO4 |
| 5. | * CO5. Use of acquired techniques, skills, and modern engineering tools necessary for engineering practice. | PO1,PO6,PO8,PO12, PSO 2,PSO4 |
| 6. | * CO6. Ability to work on multi‐disciplinary teams. | PO1,PO7,PSO2 |

**PO and PSO mapping with level of strength for Industrial Internship-II(Course Code CSP 399)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 | - | - | 3 | - |
| CO2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 2 | - | 3 | - |
| CO4 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO5 | 3 | - | - | - | - | 2 | - | 2 | - | - | - | 3 | - | 3 | - | 3 | - |
| CO6 | 3 | - | - | - | - | - | 2 | - | - | - | - | - | - | 2 | - | - | - |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 348,Introduction to Mathematical & Statistical Techniques in Computer Science (Program Elective-1)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | | |
| **Branch:CSE** | | **Semester:V** | | | | |
| 1 | Course Code | CSE 348 | Course Name | | | |
| 2 | Course Title | Introduction to Mathematical and Statistical Techniques in Computer Science | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | Program Elective-I | | | | |
| 5 | Course Objective | The objective of the course is to teach students the mathematical & statistical techniques that provide sound basis for research and application development in Computer Science. | | | | |
| 6 | Course Outcomes | By the end of the course, students will be able to:  **CO1:** Understand important mathematical and statistical methods that are essential for Computer Science research and application development;  **CO2:** Apply mathematical and statistical methods in their research and application development.  **CO3:**Use a mathematical tool such as MATLAB efficiently. | | | | |
| 7 | Course Description | In this subject, the fundamental concepts and principles of Mathematical & Statistical Techniques together with the challenging issues in Computer Science software development will be introduced. Discussion on various topics related to mathematics and Computer Science will also be conducted. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction,Computational Errors andtheirAnalysis** | | | |  |
| A | Accuracyofnumbers,Errorsandageneralerrorformula,ErrorsinNumericalComputations. | | | | CO1, CO2 |
| B | Errorsina Series Approximation. | | | | CO1, CO2 |
| C | Precisions | | | | CO1, CO3 |
|  | **Unit 2** | **Numerical Techniques** | | | |  |
| A | LU decomposition for systems of linear equations; | | | | CO1, CO2 |
| B | numerical solutions of non-linear algebraic equations by Secant, Bisection and Newton-Raphson Methods; | | | | CO1, CO2, |
| C | Numerical integration by trapezoidal and Simpson’s rules. | | | | CO1, CO2 |
|  | **Unit 3** | **Probability** | | | |  |
| A | Probability: Conditional Probability; | | | | CO1,CO2 |
| B | Mean, Median, Mode and Standard Deviation;. | | | | CO1,CO2,CO3 |
| C | Random Variables; Distributions; | | | |  |
|  | **Unit 4** | **Permutation** | | | |  |
| A | uniform, normal, exponential | | | | CO1,CO2 |
| B | Poisson, Binomial distribution | | | | CO1,CO2 |
| C | Permutations; Combinations; Counting; Summation; | | | | CO1,CO2,CO3 |
|  | **Unit 5** | **Hypothesis testing** | | | |  |
| A | Generating functions; recurrence relations; | | | | CO2,CO3 |
| B | Techniquesforstatisticalqualitycontrol, | | | | CO2,CO3 |
| C | Testingofhypothesis. | | | | CO1,CO2,CO3 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | M. Goyal, “Computer Based Numerical & Statistical Techniques”, Infinity Science Press, LLC, MA, USA. | | | |  |
|  | Other References | 1. Matheus Grasselli and Dimitry Pelinovsky, “Numerical Mathematics”, Jones and Bartlet Publishers, USA. 2. Lars Elden, “Mattrix Methods in Data Mining and Pattern Recognition”, SIAM (Society for Industrial and Applied Mathematics), USA. 3. Internet as a resource for references. | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** Understand important mathematical and statistical methods that are essential for Computer Science research and application development; | PO1,PO2,PO3, PSO1 |
| 2. | **CO2:** Apply mathematical and statistical methods in their research and application development. | PO1, PO3, PSO2 |
| 3. | **CO3:**Use a mathematical tool such as MATLAB efficiently. | PO1,PO2,PO3 |

**Syllabus: CSE 349,Introduction to Graph Theory and its Applications(Program Elective-1)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch :2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-19** | | | | |
| **Branch:CS/IT** | | **Semester:5** | | | | |
| 1 | Course Code | CSE349 | Course Name: Introduction to Graph Theory and its Application | | | |
| 2 | Course Title | Introduction to Graph Theory and its Application | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | Program Elective-I | | | | |
| 5 | Course Objective | The objective of the course is to teach students the basic graph theory concepts and their applications in computer science. | | | | |
| 6 | Course Outcomes | After successful completion of the course students will be able to   1. demonstrate some of the most important notions and types of graph theory and develop their skill in solving basic exercises 2. interpret the fundamentals of graphs and trees and to relate them with the use in computer science applications 3. explore a graph with the help of matrices and to find a minimal spanning tree for a given weighted graph 4. apply graph-theoretic algorithms and methods used in computer science 5. develop efficient graph-theoretic algorithms (mathematically)explore the applications of coloring problem of graph theory | | | | |
| 7 | Course Description | This course is to teach students the basic graph theory concepts and their applications in computer science. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | |  |
| A | Basic terminologies and concepts of Graph Theory, Fundamental types of graphs, Applications in various areas | | | | CO1 |
| B | Properties of graphs, theorems based on different types of graph and various operations on graphs | | | | CO1,CO4 |
| C | Special types of graphs (Hamiltonian, Euler), Travelling salesman problem | | | | CO1, CO5 |
|  | **Unit 2** | **TREES** | | | |  |
| A | Fundamentals of trees and their types, Binary trees and their properties, importance of binary trees in data structure (searching algorithms) | | | | CO2 |
| B | fundamental circuits, spanning trees, algorithms to find spanning trees in a weighted graph (Kruskal& Prim) | | | | CO2, CO3 |
| C | Applications: Representation of the algebraic expressions as ordered binary trees, Huffman procedure for construction of an optimal tree for a given set of weights. | | | | CO4 |
|  | **Unit 3** | **CUT SETS** | | | |  |
| A | a cut-set of a connected graph, the fundamental circuit ,Properties of circuits & cut–sets, Concept of connectivity and separability | | | | CO1 |
| B | Concept of Planar graphs with introduction to Kuratowski’s non-planar graphs, Proof of Euler’s formula | | | | CO4 |
| C | Detection of planarity , geometric duals of graph, thickness & Crossings, network flow | | | | CO5 |
|  | **Unit 4** | **Coloring and Covering** | | | |  |
| A | Concept of proper coloring of vertices of a graph, chromatic number , Chromatic partitioning | | | | CO4, CO5 |
| B | Chromatic polynomial, finding chromatic polynomial of a given graph | | | | CO4, CO5 |
| C | Matching, Covering, Five color problem and its proof | | | | CO4, CO5 |
|  | **Unit 5** | **Matrix Representation of Graphs& Applications** | | | |  |
| A | Incidence matrix, sub matrices of A(G), circuit matrix, fundamental circuit matrix and Rank of B | | | | CO3, CO4 |
| B | Cut set matrix , fundamental cut set matrix, path matrix, Adjacency matrix | | | | CO4 |
| C | Finding Rank of different matrices, Relationship among Af, Bf, andCf | | | | CO4, CO5 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Deo, N, *Graphtheory with applications to Engineering and Computer Science*, Prentice Hall India | | | |  |
|  | Other References | 1. Wilson R J, *Introduction to Graph Theory*, PearsonEducation 2. Harary, F, *Graph Theory*, Narosa 3. Bondy& Murthy, *Graph theory and application*. Addison Wesley | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1: demonstrate some of the most important notions and types of graph theory and develop their skill in solving basic exercises | PO1, PO2, PSO1 |
| 2. | CO2: interpret the fundamentals of graphs and trees and to relate them with the use in computer science applications | PO1, PO2, PO3, PO4, PSO2 |
| 3. | CO3: explore a graph with the help of matrices and to find a minimal spanning tree for a given weighted graph | PO3, PO4, PO5, PSO2 |
| 4. | CO4: apply graph-theoretic algorithms and methods used in computer science | PO4, PO5, PO6, PSO2, PSO4 |
| 5. | CO5: develop efficient graph-theoretic algorithms (mathematically)  explore the applications of colouring problem of graph theory | PO4, PO5, PO9, PSO2, PSO4 |

**PO and PSO mapping with level of strength for Course Name: Introduction to Graph Theory and its Application (CSE 349 )**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 2 | 1 | 2 | 1 |
| CO2 | 3 | 3 | 3 | 3 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 3 | 1 | 2 | 1 |
| CO3 | 2 | 2 | 3 | 3 | 3 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| CO4 | 2 | 2 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 3 | 1 |
| CO5 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 1 | 1 | 2 | 1 | 3 | 1 | 3 | 1 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: ARP 302, Higher Order Mathematics and Advanced People Skills**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **School:** SET | | | **Batch :** 2018-19 | |
| **Program:B.Tech** | | | **Current Academic Year:** 2018-19 | |
| **Branch:** CSE | | | **Semester: VIth |HOM** | |
| 1 | Course Code | | **ARP 302** | Course Name : **Higher Order Mathematics and Advanced People Skills** |
| 2 | Course Title | | **Higher Order Mathematics and Advanced People Skills** | |
| 3 | Credits | | 2 | |
| 4 | Contact Hours  (L-T-P) | | 0-0-4 | |
|  | Course Status | |  | |
| 5 | Course Objective | | To enhance holistic development of students and improve their employability skills. Provide a 360 degree exposure to learning elements of Business English readiness program, behavioural traits, achieve softer communication levels and a positive self-branding along with augmenting numerical and altitudinal abilities. To up skill and upgrade students’ across varied industry needs to enhance employability skills. By the end of this semester, a will have entered the threshold of his/her 4thphase of employability enhancement and skill building activity exercise. | |
| 6 | Course Outcomes | | CO1: *Understanding basics of Human Resources*  CO2: *Role Clarity | KRA | KPI | Understanding JD*  CO3: *Conflict Management*  CO4: *The art of Negotiations*  CO5: *Understanding Personal Branding*  CO6: *Relationship Management | Verbal Abilities-4*  CO7: *Level-4 Quant & aptitude, Reasoning abilities* | |
| 7 | Course Description | | This penultimate stage introduces the student to the basics of Human Resources. Allows the student to understand and interpret KRA | KPI and understand Job descriptions. A student also understands how to manage conflicts, brand himself/herself, understand relations and empathise others with level-4 of quant, aptitude and logical reasoning | |
| 8 | Outline syllabus – ARP 302 | | | |
|  | **Unit 1** | **Ace the Interview** | | | **CO MAPPING** |
| A | HR Sensitization ( Role Clarity | KRA | KPI | Understanding JD ) | Conflict Management | | | CO1, CO2, CO3 |
| B | Negotiation Skills | Personal Branding | | | CO4, CO5 |
| C | Empathy VS Sympathy | Relationship Management | Verbal Abilities-4 | | | CO6 |
|  | **Unit 2** | **Introduction to APTITUDE TRAINING- Reasoning- Logical/ Analytical** | | |  |
| A | Sitting Arrangement & Venn Diagrams | Puzzles | Distribution | Selection | | | CO7 |
| B | Direction Sense | Statement & Conclusion | Strong & Weak Arguments | | | CO7 |
| C | Analogies,Odd One out | Cause & Effect | | | CO7 |
|  | **Unit 3** | **Quantitative Aptitude** | | |  |
| A | Average , Ratio & Proportions,Mixtures & Allegation | | | CO7 |
| B | Geometry-Lines,Angles& Triangles | | | CO7 |
| C | Problem of Ages | Data Sufficiency - L2 | | | CO7 |
|  | Weightage Distribution | *( CA )Class Assignment/Free Speech Exercises / JAM – 60% | (ETE) Group Presentations/Mock Interviews/GD/ Reasoning, Quant & Aptitude – 40%* | | |  |
| Text book/s\* | *Wiley's Quantitative Aptitude-P Anand |* ***Quantum CAT – ArihantPublications | Quicker Maths- M. Tyra |*** *Power of Positive Action  (English, Paperback, Napoleon Hill) | Streets of Attitude  (English, Paperback, Cary Fagan, Elizabeth Wilson) The 6 Pillars of self-esteem and awareness – Nathaniel Brandon | Goal Setting  (English, Paperback, Wilson Dobson* | | |  |

**Syllabus:CSE 346, Artificial Intelligence**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | | |
| **Branch: CSE** | | **Semester:**VI | | | | |
| 1 | Course Code | CSE346 | Course Name | | | |
| 2 | Course Title | Artificial Intelligence | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | Core | | | | |
| 5 | Course Objective | The objective of the course is to introduce basic fundamental concepts in Artificial Intelligence (AI), with a practical approach in understanding them. To visualize the scope of AI and its role in futuristic development. | | | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:** Compare AI and non-AI solutions.  **CO2:** Apply AI techniques in problem solving.  **CO3:** Analyze the best search technique and implement it in real-life applications.  **CO4:** Classify supervised and unsupervised learning and knowledge representation.  CO5: To explore the scope of AI in various application domains. | | | | |
| 7 | Course Description | This course introduces basic aspects of Artificial intelligence comparing the AI and conventional solutions to real world problems, utilizing and analyze AI techniques for identifying optimal solutions to search strategies. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **INTRODUCTION TO AI** | | | |  |
| A | Foundation of AI, Goals of AI, History and AI course line, | | | | CO1, CO5 |
| B | Introduction to Intelligent Agents; Environment; Structure of Agent, | | | | CO1, CO5 |
| C | AI Solutions Vs Conventional Solutions; a philosophical approach; a practical approach. | | | | CO1, CO5 |
|  | **Unit 2** | **PROBLEM SOLVING AGENTS** | | | |  |
| A | Problem solving using Search Techniques; Problems; Solutions; Optimality, | | | | CO1, CO2, CO3 |
| B | Informed Search Strategies; Greedy Best-First; A\* Search; Heuristic Functions, | | | | CO1, CO2, CO3 |
| C | Uninformed Search Strategies; BFS; DFS; DLS; UCS; IDFS; BDS. Local Search algorithms: Hill Climbing, genetic Algorithms. | | | | CO1, CO2, CO3 |
|  | **Unit 3** | **KNOWLEDGE & REASONING** | | | |  |
| A | Knowledge-Based Agents; clause form, First-Order Logic; Syntax-Semantics in FOL; | | | | CO1,CO4 |
| B | Representation revisited, ; Simple usage; Inference Procedure; Inference in FOL; | | | | CO1, CO4 |
| C | Forward Chaining; Backward Chaining; Resolution | | | | CO4 |
|  | **Unit 4** | **LEARNING** | | | |  |
| A | Common Sense Vs Learning; Components; Representations; Forms of learning, Feedback, Learning Types: Supervised; Unsupervised; | | | | CO4 |
| B | Reinforcement Learnings, Decision trees, | | | | CO4 |
| C | Artificial Neural Networks: Introduction, types of networks; Single Layer and Multi-Layer n/w. | | | | CO4 |
|  | **Unit 5** | **APPLICATIONS** | | | |  |
| A | case studies on NLP, Image Processing;, | | | | CO1,CO5 |
| B | Robotics – Hardware; Vision; Navigation based case studies, | | | | CO1,CO5 |
| C | Water jug problem and similar case studies | | | | CO1,CO5 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Russell S &Norvig P, *Artificial Intelligence: A Modern Approach*, Prentice Hall. | | | |  |
|  | Other References | 1. Rich E& Knight K, Artificial Intelligence, Tata McGraw Hill, Edition 3. 2. Dan W. Patterson, Artificial Intelligence & Expert Systems, Pearson Education with Prentice Hall India. Indian Edition. | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** Compare between AI and non-AI solutions. | PO1,PO2,PO7,PO9,PO10, ,PSO1 |
| 2. | **CO2:** Apply AI techniques in problem solving. | PO2, PO3, PO4, PO5, PSO2 |
| 3. | **CO3:** Analyze the best search technique and implement it in real-life applications. | PO1,PO2,PO3,PO4, PO6, PO9, PO11, PO12 |
| 4. | **CO4:** Classify supervised and unsupervised learning and knowledge representation. | PO6,PO11, PSO5 |
| 5. | CO5: To explore the scope of AI in various application domains. | PO9, PO11,PO12, PSO5 |

**PO and PSO mapping with level of strength for Course Name** Artificial Intelligence**(Course Code CSE 346)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 1 | 1 | -- | -- | 3 | - | 2 | 2 | - | - | 3 | - | - | - | - |
| CO2 | 1 | 2 | 3 | 3 | 3 | -- | -- | 1 | 1 | 1 | - | - | 1 | 2 | - | - | - |
| CO3 | 3 | 3 | 3 | 3 | -- | 2 | -- | 1 | 2 | 1 | 3 | 2 | - | - | - | - | - |
| CO4 | 1 | 1 | 1 | 1 | - | 3 | -- | 1 | 1 | - | 3 | 1 | 1 | 1 | 1 | 1 | 3 |
| CO5 | 1 | 1 | 1 | 1 | - | - | -- | 1 | 3 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 2 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus:CSP 346, Artificial Intelligence Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018-2022** | | | |
| **Program: B.Tech CSE** | | **Current Academic Year: 2018** | | | |
| **Branch: CSE** | | **Semester: VI** | | | |
| 1 | Course Code | CSP346 | | | |
| 2 | Course Title | Artificial Intelligence Lab | | | |
| 3 | Credits | 2 | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | |
|  | Course Status | Compulsory | | | |
| 5 | Course Objective | The objective is to gain knowledge of basic concepts of artificial intelligence and machine learning. | | | |
| 6 | Course Outcomes | Upon successful completion of this course, the student will be able to:  CO1. Identify the basic components of library environment and installations.  CO2. Understand the working of machine learning libraries.  CO3. Analyze the significant methodology needs to be applied for data preprocessing.  CO4. Develop some application oriented projects on Image Processing, Natural Language Processing etc  CO5. Identify how to use github and submit back genuine contributions on the same. | | | |
| 7 | Course Description | Artificial Intelligence Lab covers the hands-on, understanding and analysis of machine learning technology and to trace its recent trend. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Library Environment Understanding and installation** | | |  |
|  | 1. To install the pypi libraries for Machine Learning. 2. Review of python datatypes for Artificial Intelligence and Machine Learning | | | CO1 |
|  | **Unit 2** | **Machine Learning Experiments** | | |  |
|  | 1. Develop a machine learning model for standard database using Support Vector Machines 2. Develop a machine learning model for standard database using Decision Trees. 3. Develop a machine learning model for standard database using Random Forest. | | | CO2 |
|  | **Unit 3** | **Data Preprocessing** | | |  |
|  | 1. Deploy standardization and normalization on some standard dataset. 2. Deploy Principal Component Analysis to extract relevant features on some standard database. | | | CO3 |
|  | **Unit 4** | **Application Oriented Experiment** | | |  |
|  | 1. Develop a decision boundary for facial recognition purpose. 2. Develop a decision boundary to predict the emotions from the human voice. | | | CO4 |
|  | **Unit 5** | **Industry Oriented Experiments** | | |  |
|  | 1. Understanding of github and conda environments. 2. To use the github packages and libraries to frame a standard project and commit back to github. | | | CO5 |
|  | Mode of examination | Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. Russell S &Norvig P, *Artificial Intelligence: A Modern Approach*, Prentice Hall. | | |  |
|  | Other References | 1. D. H. Wolpert. The supervised learning no-free-lunch theorems. In Soft Computing and Industry, pages 25–42. Springer, 2002. 2. V. Vapnik. The nature of statistical learning theory. Springer Science & Business Media, 2013. 3. C. J. Burges. A tutorial on support vector machines for pattern recognition. Data mining and knowledge discovery, 2(2):121–167, 1998. 4. J. H. Friedman, J. L. Bentley, and R. A. Finkel. An algorithm for finding best matches in logarithmic expected time. ACM Transactions on Mathematical Software (TOMS), 3(3):209–226, 1977. | | |  |

**Syllabus: CSP 301, Technical Skill Enhancement Course-2( Application Development Lab)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018** | | | |
| **Program: BTech** | | **Current Academic Year: 2018-19** | | | |
| **Branch:** | | **Semester:2** | | | |
| 1 | Course Code | CSP301 | | | |
| 2 | Course Title | Application Development Lab | | | |
| 3 | Credits | 4 | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | |
|  | Course Status | Compulsory/Elective | | | |
| 5 | Course Objective | Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools (ADT)) and learn how and when to apply the different components to develop a working system. | | | |
| 6 | Course Outcomes | On successful completion of the course, the student will:   1. Design App user Interface 2. Perform Event driven programming 3. Implement relational Databases on devices using SQLite 4. Examine the usage of commonly available device sensors while building Android App | | | |
| 7 | Course Description | The course will introduce concepts of the Android platform, Android application components, Activities and their lifecycle, UI design. It will also help students to build applications according to their problem statements. | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **Introduction to Android** | | |  |
|  | 1. Configuration of android SDK and test run of application on device 2. Create “Hello World” application. That will display “Hello World” in the middle of the screen in the emulator. 3. Develop an Android Application to implement Activity life cycle. | | | CO1 |
|  | **Unit 2** | **Android UI Components** | | | CO1 |
|  | 1. Create a layout of Calculator using Grid layout. 2. Develop an Android Application to implement event listener on above layout. 3. Develop an Android Application to implement implicit intent. | | | CO1 |
|  | **Unit 3** | **Services and Notification** | | |  |
|  | 1. Develop an Android Application to implement Service life cycle 2. Develop an Android Application to implement status bar notification 3. Create a menu with 5 options and selected option should appear in text box | | | CO1,CO2 |
|  | **Unit 4** | **Working with SQL Lite** | | | CO1,CO2 |
|  | 1. Create and Login application as above. On successful login, pop up the message. 2. Create an application to implement Create, Insert and update operation on the database. 3. Create an application to perform Delete and retrieve operation on the database. | | | CO1,CO2 |
|  | **Unit 5** | **Sensor Device** | | |  |
|  | 1. Develop an Android Application to detect availability of all sensors. 2. Develop an Android Application to Fetch data from sensors 3. Develop an Android Application for development of compass application with help of Orientation sensor | | | CO1 |
|  | Mode of examination | Jury/Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. Anubhav Pradhan and Anil V. Deshpande , Composing Mobile Apps: Learn, Explore, Apply Using Android , 1st Edition, Wiley India. | | |  |
|  | Other References | 1. Wei-Meng Lee , Beginning Android 4 Application Development.  2. Neil Smyth ,Android Studio Development essentials-Android 6 | | |  |

**Syllabus: Android Development(Program Elective-2)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year: 18-19** | | | | |
| **Branch: CSE** | | **Semester: VI** | | | | |
| 1 | Course Code | CSE-350 | Course Name | | | |
| 2 | Course Title | Android Development | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | Core/Elective | | | | |
| 5 | Course Objective | Describe the components and structure of a mobile development frameworks (Android SDK and Eclipse Android Development Tools (ADT)) and learn how and when to apply the different components to develop a working system. | | | | |
| 6 | Course Outcomes | On successful completion of the course, the student will:   1. Design App user Interface 2. Perform Event driven programming 3. Implement relational Databases on devices using SQLite 4. Examine the usage of commonly available device sensors while building Android App | | | | |
| 7 | Course Description | The course will introduce concepts of the Android platform, Android application components, Activities and their lifecycle, UI design.It will also help students to build applications according to their problem statements. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit-1** | **Introduction to OOP** | | | |  |
|  | A | History, The meaning of Object Orientation, Features of OOP, OOPs concepts, object identity | | | |  |
|  | B | Encapsulation, information hiding, | | | |  |
|  | C | polymorphism inheritance, Interfaces | | | |  |
|  | **Unit-2** | **Introduction to DBMS** | | | |  |
|  | A | Relational data model concepts ,Concept of keys, Mapping Constraints | | | |  |
|  | B | DDL and DML commands: Create, Insert, update, alter etc. Fetch and update database | | | |  |
|  | C | Unary Relational Operations: SELECT and PROJECT Relational Algebra Operations from Set Theory . | | | |  |
|  | Unit-3 | **Introduction to Operating System** | | | |  |
|  |  | Process Concepts (PCB, Process States , Process Operations, Inter process communication) | | | |  |
|  |  | Memory Hierarchy, Memory Management Unit, Paging, Segmentation | | | |  |
|  |  | Types of Operating Systems (Batch, Multiprogramming ,Multi-Tasking , Multiprocessing, Distributed and Real Time Operating System) | | | |  |
|  | **Unit 4** | **Android UI Components** | | | |  |
| A | Layouts-Linear layout, Relative layout, Table layout, Frame layout | | | | CO1,CO2 |
| B | Button, TextView, EditTextView, Label, List, Radio Button, Checkbox | | | | CO1,CO2 |
| C | Concept of intent, configuration of intent, Intent filters | | | | CO1,CO2 |
|  | **Unit 5** | **Activities, Services and Notification** | | | |  |
| A | Services- states and life cycle | | | | CO1 |
| B | Type of notification, Toast notification, status bar notification | | | | CO1,CO2 |
| C | Creating Menu Option Menu, Context Menu | | | | CO1,CO2 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE | |
| 30% | | 20% | 50% | |
|  | Text book/s\* | 1. Anubhav Pradhan and Anil V. Deshpande , Composing Mobile Apps: Learn, Explore, Apply Using Android , 1st Edition,Wiley India. | | | | |
|  | Other References | 1. Wei-Meng Lee , Beginning Android 4 Application Development.  2. Neil Smyth ,Android Studio Development essentials-Android 6 | | | | |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:**Design App user Interface | PO4,PO5,PSO4 |
| 2. | **CO2:**Perform Event driven programming | PO3,PO5 |
| 3. | **CO3:**Implement relational Databases on devices using SQLite | PO4,PO5,PO9 |
| 4. | **CO4:**Examine the usage of commonly available device sensors while building Android App | PO5,PO7,PO12,PSO4 |

**PO and PSO mapping with level of strength for Android Development(Course Code CSE 350)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| CO1 | 1 | 2 | 2 | 3 | 3 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 3 |
| CO2 | 2 | 2 | 3 | 2 | 3 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| CO3 | 2 | 1 | 2 | 3 | 3 | 1 | 2 | - | 3 | 2 | 2 | 2 | - | 1 | 1 | 2 |
| CO4 | 2 | 1 | 1 | 1 | 3 | 1 | 3 | - | 2 | 1 | 2 | 3 | - | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus:CSE 351Introduction to Cloud Computing(Program Elective-2)**

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| --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-19** | | |
| **Branch: CSE/IT** | | **Semester: VI** | | |
| 1 | Course Code | CSE351 | Course Name | |
| 2 | Course Title | **Introduction to Cloud Computing** | | |
| 3 | Credits | 3 | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | |
|  | Course Status | Elective | | |
| 5 | Course Objective | 1. Provide students with an overview of the fundamental concepts of Cloud Computing. 2. Gain insight into the challenges and limitations Models of cloud computing. 3. To learn the various technologies of the cloud computing paradigm and learn about recent advances in Cloud Computing and enabling technologies. 4. Prepare students for research in the area of cloud Computing risks, cloud security challenges and virtual security management. 5. Enhance students communication and problem solving skills | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:** To understand the cloud computing Concepts.  **CO2:**Explain how and why this paradigm came about and the influence of several enabling technologies like Virtualization (e.g. VMware) and Google file systems  **CO3:**Build cloud based applications using MS Azure, Amazon AWS and/or Google App Engine.  **CO4:**Understanding of Cloud Computing risk issues, Cloud security challenges and management of Virtual system security. | | |
| 7 | Course Description | This course introduces advanced aspects of Cloud Computing, encompassing the principles, to analyze the cloud, identify the problems, and choose the relevant models and algorithms to apply. | | |
| 8 | Outline syllabus | | | CO Mapping |
|  | **Unit 1** | **Introduction Cloud Computing** | |  |
| A | Introduction to distributed systems, Defining Cloud Computing, Understanding of Cloud Architecture: Composability, Infrastructure, Platform, Virtual Appliances, Communication Protocols, Applications, Understanding Services: SaaS, PaaS, IaaS, Service Oriented Architecture(SOA),Salesforce.com and CRM SaaS | | CO1, CO2 |
| **Unit 2** | **Understanding Abstraction and Virtualization** | |  |
| A | Advanced Load Balancing, the Google Cloud, Virtual machine types, VMware vSphere, Understanding Machine Imaging, Porting Applications.  **Storage in the Cloud:**  Google file system. | | CO1, CO2,CO4 |
|  | **Unit 3** | **Cloud Computing with the Titans** | |  |
| A | Google Web Services: Google app Engine, Google Web Toolkit. Amazon: Amazon Elastic Cloud Computing, Amazon Simple Storage System, Amazon Block Store (EBS). Microsoft: Azure Service Platform, Exchange Online. | | CO1,CO2,CO3 |
| **Unit 4** | **Cloud Computing Risk Issues** | |  |
| A | The CIA Triad: Confidentiality, Integrity, And Availability. Privacy and Compliance: PCI DSS, Information Privacy and Privacy law. Common Threats and Vulnerability: Logon Abuse, Inappropriate System Use, Eavesdropping, Denial-of-service (DoS) Attack, Session Hijacking Attack.  Cloud Service Provider (CSP) Risks: Back Door, Spoofing, Replay Attack, Social Engineering Attack, Dumpster Diving, Trojan Horse and Malware. | | CO1,CO2,CO3 |
|  | **Unit 5** | **Cloud Computing Security Challenges and virtualization** | |  |
| A | Security Policy Implementation, Policy Types: Senior Management Statement of Policy, Regulatory Policies, Advisory Policies, And Informative Policies. | | CO1,CO2,CO3 |
| B | **Virtual Security Management:**Virtual Threats: Hypervisor Risks, Increase Denial of Service Risk. VM-Specific Security Techniques: Hardening the Virtual Machine, Securing VM Remote Access. | | CO1,CO2,CO3 |
| Mode of examination | Theory | |  |
|  | Weightage Distribution | CA | | MTE |
|  | 30% | | 20% |
| Text book/s\*  Other References | 1. Barrie Sosinsky “*Cloud Computing (Bible)”*,Wiley 2. Anthony T.Velte, Toby J. Velte, Robert Elsenpeter”Cloud Computing: A Practical Approach” TATA McGRAW-HILL Edition. 3. Ronald L. Krutz and Russell Dean Vines, “Cloud Security: A comprehensive Guide to Secure Cloud Computing”, WILEY. | |  |
|  |  | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** To understand the cloud computing Concepts | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2:**Explain how and why this paradigm came about and the influence of several enabling technologies like Virtualization (e.g. VMware) and Google file systems | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:**Build cloud based applications using MS Azure, Amazon AWS and/or Google App Engine. | PO1,PO2,PO3,PO4 |
| 4. | **CO4:**Understanding of Cloud Computing risk issues, Cloud security challenges and management of Virtual system security. | PO9, PO10,PO11, PSO5 |

**PO and PSO mapping with level of strength for Course Name Introduction to Cloud Computing (Course Code CSE 351)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 352, Web Designing (Program Elective-3)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year: 2018-19** | | | | |
| **Branch:CSE/IT** | | **Semester:VI** | | | | |
| 1 | Course Code | CSE352 | Course Name: | | | |
| 2 | Course Title | Web Designing | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | Elective | | | | |
| 5 | Course Objective | The objective of this course is to provide a foundation of technologies and technical skills in web development.  Based upon the development of a web, this course provides an insight of computer and networking technologies, and hands on experience in web programming. | | | | |
| 6 | Course Outcomes | 1. Design and develop a simple interactive web application 2. Demonstrate the ability to design web sites utilizing multiple tools and techniques. 3. Build dynamic web pages using JavaScript 4. Apply the network programming knowledge to setup a web site | | | | |
| 7 | Course Description | This course is an overview of the modern Web technologies used for the Web development. The purpose of this course is to give students the basic understanding of how things work in the Web world from the technology point of view as well as to give the basic overview of the different technologies. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | |  |
| A | Web Page: Static and dynamic sites, client and server end technology, URL syntax, open source web design tools overview. | | | | CO1,CO2 |
| B | HTML basic tags, image map, implementation of links, table, form design. | | | | CO1 |
| C | Page layout design: using frame, div and span tag, iframes, DHTML | | | | CO1,CO2 |
|  | **Unit 2** | **HTML5** | | | |  |
| A | New elements, semantic, canvas, offline webpage, canvas, SVG | | | | CO1 |
| B | HTML Media: video, audio, HTML API: geolocation | | | | CO2 |
| C | Location storage, Migration from HTML to HTML5. | | | | CO2 |
|  | **Unit 3** | **CSS** | | | |  |
| A | CSS: Introduction, syntax, selector, text formatting, margin, align, Positioning, background formatting, Navigation bar, and image gallery. | | | | CO2,CO3 |
| B | CSS3: Introduction, colors, text formatting, fonts formatting, Background formatting | | | | CO2 |
| C | 2D transform, Transition, animation, user interface | | | | CO4 |
|  | **Unit 4** | **XML** | | | |  |
| A | XML: Introduction, syntax, well form XML document | | | | CO1,CO2 |
| B | DTD, schema, XML Technology: xlink, xpath, xpointer, xslt | | | | CO1,CO2 |
| C | displaying XML file data into HTML file | | | | CO2 |
|  | **Unit 5** | **Java Script** | | | |  |
| A | Syntax, comment, statement, variable, operators, conditional statements, looping statements | | | | CO3,CO4 |
| B | functions, object, events, Accessing form elements | | | | CO3,CO4 |
| C | History, pop up windows, cookies. | | | | CO3,CO4 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Ivan Bayross,”HTML,DHTML, JavaScript, Perl & CGI”, BPB Publication 2. Rick Delorme,” Programming in HTML5 with JavaScript and CSS3”, Microsoft | | | |  |
|  | Other References | 1. Burdman, “Collaborative Web Development” Addison Wesley. 2. Chris Bates, “Web Programing Building Internet Applications”, 2nd Edition, WILEY. 3. Steven Holzner,“PHP: The Complete Reference”, TataMcGraw Hill Publication | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1: Design and develop a simple interactive web application | PO3,PO8,PO12,PSO3 |
| 2. | CO2: Demonstrate the ability to design web sites utilizing multiple tools and techniques. | PO3,PO5,PO10,PO12,PSO1,PSO2 |
| 3. | CO3:Build dynamic web pages using JavaScript | PO3,PO12 |
| 4. | CO4: Apply the network programming knowledge to setup a web site | PO10,PO12 |

**PO and PSO mapping with level of strength for Course Web Designing(CSE 352 )**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| CO1 | 1 | 2 | 3 | 1 | 1 | 1 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 3 |
| CO2 | 1 | 2 | 3 | 2 | 3 | 1 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 1 | 1 |
| CO3 | 1 | 2 | 3 | -- | 2 | 1 | 2 | 2 | 2 | 2 | -- | 3 | 2 | 2 | 1 | 3 |
| CO4 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | -- | 3 | 1 | 3 | 2 | 1 | 1 | 2 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 353, Software Project Management (Program Elective-3)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018-2022** | | | | |
| **Program: B. Tech** | | **Current Academic Year:** | | | | |
| **Branch:CSE** | | **Semester:VI** | | | | |
| 1 | Course Code | CSE353 |  | | | |
| 2 | Course Title | **Software Project Management** | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | Elective | | | | |
| 5 | Course Objective | * 1. Introduces students with an overview and concepts of software project management.   2. Gain insight into the challenges and limitations of different phases of software project management   3. Using techniques for planning, monitoring and control of software projects   4. Prepare students understand project evaluation and software effort estimation.   5. Enhance the managerial and leadership skillsof the students | | | | |
| 6 | Course Outcomes | Students will be able to:  **CO1:** Apply software project management and engineering methods in the projects under taken.  **CO2:**design and conduct a software effort estimation in a project under taken  **CO3: d**evelop the ability to lead or, work in a team till the completion of a project.  **CO4:** Have an ability understand and identify various software project management problems, and solve these problems by designing and selecting appropriate strategies, and methods. | | | | |
| 7 | Course Description | This course introduces concepts of software project management in which Project Planning, Project Evaluation, Software Effort estimation, Monitoring and control and Managing contracts tools and techniques are included. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | |  |
| A | Introduction to software project management, software projects versus other types of project, | | | | CO1, CO2 |
| B | activities covered by software project management, the project as a system, problems with software projects, | | | | CO1, CO2 |
| C | management control, stakeholders, requirement specification, information and control in organization. | | | | CO1, CO2 |
|  | **Unit 2** | **Project Planning** | | | |  |
| A | Introduction to step wise project planning, select project, identify project scope and objectives, | | | | CO1, CO2,CO4 |
| B | identify project infrastructure, analyze project characteristics, identify project products and activities, | | | | CO1, CO2,CO4 |
| C | estimate effort for each activity, identify activity risk, allocate resources, review/publicize plan, execute plan and lower levels of planning | | | | CO1, CO2,CO4 |
|  | **Unit 3** | **Project Evaluation** | | | |  |
| A | Strategic assessment, Technical assessment: cost-benefit analysis, cash flow forecasting, | | | | CO1,CO2,CO3 |
| B | cost-benefit evaluation techniques, risk evaluation. | | | | CO1,CO2,CO3 |
| C | Application development models: the waterfall model, the V-process model, the spiral model, software prototyping, tools | | | | CO4 |
|  | **Unit 4** | **Software Effort estimation** | | | |  |
| A | Introduction, Where are estimates done?, problems with over and under estimates, | | | | CO1,CO2,CO3 |
| B | the basis for software estimating, effort estimation techniques, expert judgment, estimating by analogy, Albert function point analysis, | | | | CO1,CO2,CO3 |
| C | Function points MARK II, object points, COCOMO, publishing the resource schedule, cost schedule, the scheduling sequence | | | | CO1,CO2,CO3 |
|  | **Unit 5** | **Monitoring and Managing contracts** | | | |  |
| A | Creating the framework, collecting the data, visualizing progress, cost monitoring, earned value, | | | | CO1,CO2,CO3 |
| B | prioritizing monitoring, getting the project back to target, change control. | | | | CO1,CO2,CO3 |
| C | Managing contracts: types of contract, stages in contract placement, typical terms of a contract, contract management, contract management, acceptance. | | | | CO1,CO2,CO3 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Software Project Management, Bob Hughes and Mike Cotterell, McGraw Hill | | | |  |
|  | Other References | 1. Software Project Management A Unified Framework, Walker Royce, Addison-Wesley 2. A practitioner’s Guide to Software Engineering, Roger Pressman, Tata McGraw Hill 2014 8th edition. 3. Basics of Software Project Management, NIIT, Prentice-Hall India, Latest Edition. | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:** Apply software project management and engineering methods in the projects under taken. | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2:**design and conduct a software effort estimation in a project under taken | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:**Develop the ability to lead or, work in a team till the completion of a project. | PO1,PO2,PO3,PO4 |
| 4. | **CO4:** Have an ability understand and identify various software project management problems, and solve these problems by designing and selecting appropriate strategies, and methods. | PO9, PO10,PO11 |

**PO and PSO mapping with level of strength for Course Name Software Project Management (CSE 353)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 398, Project Based Learning (PBL) -4**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | | **Current Academic Year: 2018** | | | | |
| **Branch: CSE** | | | **Semester: 6th** | | | | |
| 1 | Course Code | | **CSP398** | Course Name: Project Based Learning -4 | | | |
| 2 | Course Title | | Project Based Learning-4 | | | | |
| 3 | Credits | | 1 | | | | |
| 4 | Contact Hours  (L-T-P) | | 0-0-2 | | | | |
|  | Course Status | | Compulsory | | | | |
| 5 | Course Objective | | 1. To align student’s skill and interests with a realistic problem or project 2. To understand the significance of problem and its scope 3. Students will make decisions within a framework | | | | |
| 6 | Course Outcomes | | Students will be able to:  CO1: Acquire practical knowledge within the chosen area of technology for project development  CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach  CO3: To design and implementsolutions to open-endedproblem/project.  CO4: Develop effective communication skills for presentation of project related activities  CO5: To deploy and justify the project and contribute as an individual or in a team in development of technical projects  CO6: Use different tools forcommunication, design,  implementation, testing andreport writing. | | | | |
| 7 | Course Description | | In PBL-4, the students will learn how to define the problem for developing projects, identifying the skills required to develop the project based on given a set ofspecifications and all subjects of that Semester. | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | Problem Definition,Team/Group formation and Project Assignment. Create Software Requirement Specification | | | | | CO1, CO2 |
|  | **Unit 2** | Finalize and present the functional design brief, concept designs and the outline design process results to an outline design report. | | | | | CO1, CO2 |
|  | **Unit 3** | Implementation or Coding: the actual coding work of different modules/units is started. | | | | | CO1, CO2, CO3 |
|  | **Unit 4** | Test the project modules | | | | | CO3, CO4 |
|  | **Unit 5** | Demonstrate and execute Project with the team. The presentation, report, work done during the term supported by the documentation, forms the basis of assessment. | | | | | CO4, CO5, CO6 |
|  | Report should include Abstract, Introduction, Proposed System Design/Algorithm, Experimentation & Result Analysis, Conclusion, and References.  Presentation – PBL-4 | | | | |  |
|  |  | | | | |  |
|  | Mode of examination | Theory | | | | |  |
|  | Weightage Distribution | CA | | | MTE | ETE |  |
| 60% | | | NA | 40% |  |
|  | Text book/s\* |  | | | | |  |
|  | Other References |  | | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) |
| 1. | CO1: Acquire practical knowledge within the chosen area of technology for project development | PO1, PO2, PO4, PO9, PO10, PO11, PO12 |
| 2. | CO2: Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach | PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12 |
| 3. | CO3: Discuss and accumulate the background information | PO1, PO2, PO5, PO9, PO10, PO11, PO12 |
| 4. | CO4: Develop effective communication skills for presentation of project related activities | PO1, PO2, PO6, PO9, PO10, PO11, PO12 |
| 5. | CO5: Contribute as an individual or in a team in development of technical projects | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |
| 6. | CO6: Prepare a technical report based on theproject. | PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |

**PO and PSO mapping with level of strength for Course Name Project Based Learning -4 (Course Code CSP398)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | 2 | 3 |
| CO2 | 3 | 2 | - | 3 | - | - | 2 | - | 3 | 3 | 2 | 3 |
| CO3 | 3 | 2 | - | - | 2 | - | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | - | - | - | 2 | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |
| CO4 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 2 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 458, Web Technology**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: Btech** | | **Current Academic Year: 2018-19** | | | | |
| **Branch:CSE** | | **Semester:7** | | | | |
| 1 | Course Code | CSE458 | Course Name | | | |
| 2 | Course Title | Web Technology | | | | |
| 3 | Credits | 4 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-2 | | | | |
|  | Course Status | Compulsory | | | | |
| 5 | Course Objective | Provide the knowledge to design and develop web application with and without database. Students will gain the skills and project-based experience needed for entry into web application and development careers. It provides information about web technologies that relate to the interface between web servers and their clients. | | | | |
| 6 | Course Outcomes | On successful completion of this module students will be able to:   1. Design interactive web pages 2. Design web pages/site having validation on user data access. 3. Develop web site for small business and organization or for individual 4. Client server communication RMI | | | | |
| 7 | Course Description | The purpose of this course is to give students the basic understanding of how different computers and devices to communicate and share resources as well as to give the basic overview of the different technologies. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **INTRODUCTION TO HTML & JAVA SCRIPT** | | | |  |
| A | HTML basic tags, various links implementation, image map, table formatting, form design. | | | | CO1 |
| B | **Java Script:** Introduction, syntax, comment, statement, variable, operators, Conditional statements, looping statements | | | | CO2 |
| C | Functions, object, events, Accessing form elements, validating form elements | | | | CO2 |
|  | **Unit 2** | **XML** | | | |  |
| A | Introduction, syntax, well form XML document, DTD, schema | | | | CO1,CO3 |
| B | XML Processors/Parser: DOM and SAX | | | | CO1,CO3 |
| C | XML Technology: xlink, xpath, xpointer, xslt , displaying XML file data into HTML file | | | | CO1,CO3 |
|  | **Unit 3** | **JAVA APPLET & SERVLET** | | | |  |
| A | Introduction to Applet , Creation of applet,Managing Applets | | | | CO1,CO3 |
| B | Introduction to JDBC and its Components,Implementing JDBC in Applet. | | | | CO1,CO3 |
| C | Servlet, Creating Servlet, Managing request and response in Servlet, Servlet Collaboration, Session Tracking | | | | CO1,CO3 |
|  | **Unit 4** | **JAVA SERVER PAGES & ENTERPRISE JAVA BEANS** | | | |  |
| A | Introduction to JSP , Life cycle of JSP,JSP Application Design | | | | CO3 |
| B | Scripting elements, scriptlet tag, expression tag, declaration tag, Implicit Objects, JSP Objects, Directive Elements | | | | CO3 |
| C | EJB - Introduction, Components of EJB, Architecture of EJB | | | | CO3 |
|  | **Unit 5** | **RMI AND JAVA NETWORKING** | | | |  |
| A | Remote Method Invocation - Introduction, Structure of RMI, Implementing RMI | | | | CO4 |
| B | Sockets: Introduction, Application, TCP socket, UDP socket | | | | CO4 |
| C | Socket Implementation, Client and Server sockets, data transmission over socket | | | | CO4 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. Ivan Bayross,”HTML,DHTML, JavaScript, Perl & CGI”, BPB Publication 2. Schildt H, “The Complete Reference JAVA2”, TMH 3. Schildt H, “The Complete Reference J2EE”, TMH | | | |  |
|  | Other References | 1. Rick Delorme,” Programming in HTML5 with JavaScript and CSS3”, Microsoft | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1:Design interactive web pages by applying CSS . | PO3,PO5,PO8,PO12,PS01,PSO3,PSO4 |
| 1. | CO2: Design web page which has animation and dynamic data | PO3,PO5,PO8,PO10,PSO3,PSO4 |
| 2. | CO3: Design web pages/site having validation on user data access.  . | PO3,PO4,PO5,PO8,PO10, PS01,PSO3,PSO4 |
| 3. | CO4: Develop web site for small business and organization or for individual | PO3,PO4,PO5,PO8,PO10, PO12,PSO3,PSO4 |

**PO and PSO mapping with level of strength for Course Web Technology(Course Code CSE 458)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 |
| CO1 | 1 | - | 3 | 1 | 3 | 2 | - | 3 | 2 | 2 | 2 | 3 | 3 | - | 3 | 3 |
| CO2 | 2 | - | 3 | 2 | 3 | 2 | - | 3 | 1 | 3 | 2 | 3 | 2 | - | 3 | 3 |
| CO3 | 1 | - | 3 | 3 | 3 | 2 | - | 3 | 1 | 3 | 2 | 3 | 3 | - | 3 | 3 |
| CO4 | 2 | - | 3 | 3 | 3 | 2 | - | 3 | 2 | 3 | 2 | 3 | 2 | - | 3 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 458, Web Technology Lab**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch: 2018** | | | |
| **Program: BTECH** | | **Current Academic Year:** | | | |
| **Branch:CSE** | | **Semester: VII** | | | |
| 1 | Course Code | **CSP458** | | | |
| 2 | Course Title | Web Technology Lab | | | |
| 3 | Credits | 1 | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | |
|  | Course Status | Provide the knowledge to design and develop web application with and without database. Students will gain the skills and project-based experience needed for entry into web application and development careers. It provides information about web technologies that relate to the interface between web servers and their clients. | | | |
| 5 | Course Objective | On successful completion of this module students will be able to:   1. Design interactive web pages 2. Design web pages/site having validation on user data access. 3. Develop web site for small business and organization or for individual 4. Client server communication RMI | | | |
| 6 | Course Outcomes | This course is an overview of the modern Web technologies used for the Web development. The purpose of this course is to give students the basic understanding of how different computers and devices to communicate and share resources as well as to give the basic overview of the different technologies. | | | |
| 7 | Course Description |  | | | |
| 8 | Outline syllabus | | | | CO Mapping |
|  | **Unit 1** | **INTRODUCTION TO HTML & JAVA SCRIPT** | | |  |
|  | 1. Write HTML code to design College Website 2. Write HTML code to design students registration form 3. Write javascript code to perform validation on above form. | | | CO1, CO2 |
|  | **Unit 2** | **XML** | | |  |
|  | 1. Write a program in XML to create Product Catalog. 2. Write a program for Product Catalog DTD. 3. Write a program to display the XML file data into HTML file. | | | CO1,CO2 |
|  | **Unit 3** | **JAVA APPLET & SERVLET** | | |  |
|  | 1. Write a program to count number of character in words in the text written in text area. 2. Write a program to draw circle using mouse click event. 3. Write a program to insert and then retrieve name,rollno,and branch rom the database using JDBC | | | CO2, CO3,CO4 |
|  | **Unit 4** | **JAVA SERVER PAGES & ENTERPRISE JAVA BEANS** | | |  |
|  | 1. Write a program to create registration form using jsp. 2. Write a program to describe jsp:param,jsp:include and jsp forward action. 3. Write a program to implement EJB | | | CO1,CO2,CO3 |
|  | **Unit 5** | **RMI AND JAVA NETWORKING** | | |  |
|  | 1. Write a program to perform addition using RMI 2. Create Chat application using TCP socket Programming. 3. Write a program in which Client keeps reading input from user and sends to the server until “Over” is typed. | | | CO3,CO4 |
|  | Mode of examination | Jury/Practical/Viva | | |  |
|  | Weightage Distribution | CA | MTE | ETE |  |
| 60% | 0% | 40% |  |
|  | Text book/s\* | 1. Ivan Bayross,”HTML,DHTML, JavaScript, Perl & CGI”, BPB Publication 2. Schildt H, “The Complete Reference JAVA2”, TMH 3. Schildt H, “The Complete Reference J2EE”, TMH | | |  |
|  | Other References | 1. Rick Delorme,” Programming in HTML5 with JavaScript and CSS3”, Microsoft | | |  |

**Syllabus: CSP 497, Major Project -1**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | | **Batch : 2018 - 2022** | | | | |
| **Program: B.Tech** | | | **Current Academic Year: 2018-2019** | | | | |
| **Branch: CSE** | | | **Semester: 7th** | | | | |
| 1 | Course Code | | **CSP497** | Course Name: Major Project -1 | | | |
| 2 | Course Title | | Major Project -1 | | | | |
| 3 | Credits | | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | | 0-0-6 | | | | |
|  | Course Status | | Compulsory | | | | |
| 5 | Course Objective | | 1. To align student’s skill and interests with a realistic problem or project 2. To understand the significance of problem and its scope 3. To realize the outcome artifacts of the project. 4. Students will make decisions within a framework | | | | |
| 6 | Course Outcomes | | Students will be able to:  CO1: Identify problems in engineering and technology in selected field of interest. Gather and manage the information required to develop a project  CO2: Discuss and accumulate the background information  CO3: Synthesize and apply prior knowledge of mathematics, computer science and engineering.  CO4: To prepare the designs requirements, functional and concept design.  CO5: To build and evaluate the modules to verify the required need of the project.  CO6: To start the actual implementation of the project work to produce the deliverables. To design and implement solutions to open-ended problem/project. | | | | |
| 7 | Course Description | | The object of Major Project-I is to enable the student to take up investigative study in the broad field of Computer Science & Engineering, either fully theoretical/practical orinvolving both theoretical and practical work to be assigned by the Department on an individual basis or two/three students in a group, under the guidance of a Supervisor. | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | Problem identification, Literature survey/Gather & analyze information from multiple sources | | | | | CO1, CO2 |
|  | **Unit 2** | Formulate solution/ Problem Description: Project Planning, Time and Cost Estimation and budgeting, Risk Management, Project scheduling and Planning Tools: Work Breakdown structure, LRC, Gantt charts, CPM/PERT Networks. Creating System Requirement Specifications (Functional & Non Functional) | | | | | CO1, CO2, CO3 |
|  | **Unit 3** | Preparing Design: Data Flow Diagrams & Flow Charts, Use of appropriate tools and techniques for project design | | | | | CO2, CO3, CO4 |
|  | **Unit 4** | Identify and Implement Project Modules | | | | | CO4, CO5 |
|  | **Unit 5** | Use of appropriate tools/technologies for coding the modules | | | | | CO4, CO5, CO6 |
|  | Report on final problem statement, specifications, project schedule, final concept design and project schedule  Report and Presentation - Project Modules development | | | | |  |
|  | Mode of examination | Theory | | | | |  |
|  | Weightage Distribution | CA | | | MTE | ETE |  |
| 60% | | | NA | 40% |  |
|  | Text book/s\* |  | | | | |  |
|  | Other References |  | | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) |
| 1. | CO1: Identify problems in engineering and technology in selected field of interest. Gather and manage the information required to develop a project | PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12 |
| 2. | CO2: Discuss and accumulate the background information. | PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12 |
| 3. | CO3: Synthesize and apply prior knowledge of mathematics, computer science and engineering | PO1, PO2, PO3, PO6, PO5, PO9, PO10, PO11, PO12 |
| 4. | CO4: To prepare the designs requirements, functional and concept design | PO1, PO2, PO3, PO6, PO7, PO9, PO10, PO11, PO12 |
| 5. | CO5: To build and evaluate the prototype to verify the required need of the project. | PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10, PO11, PO12 |
| 6. | To start the actual implementation of the project work to produce the deliverables. To design and implement solutions to open-ended problem/project. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |

**PO and PSO mapping with level of strength for Course Name Major Project -1 (Course Code CSP497)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 3 | 3 | 3 | - | - | 2 | 3 | 3 | 2 | 3 |
| CO2 | 3 | 2 | 3 | 3 | 3 | - | 2 | - | 3 | 3 | 2 | 3 |
| CO3 | 3 | 2 | 3 | - | 3 | 3 | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 2 | 3 | - | - | 2 | 2 | - | 3 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | - | 2 | 2 | 2 | 3 | 3 | 3 |
| CO6 | 3 | 2 | 3 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 499, Industrial Internship-III**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018-2022** | | | | | |
| **Program:B.Tech** | | **Current Academic Year:** | | | | | |
| **Branch: CSE** | | **Semester:VII** | | | | | |
| 1 | Course Code | CSP499 | | Course Name | | | |
| 2 | Course Title | Industrial Internship-III | | | | | |
| 3 | Credits | 1 | | | | | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | | | | | |
|  | Course Status | UG | | | | | |
| 5 | Course Objective | 1. Get hands-on experience about real world problems in a field relevant to their major of studies.  2. Acquire confidence for employment after graduation.  3. Acquire skills important for time management, discipline, selflearning  4. Effective communication and so on. Learn practically about team-work, collaboration, and leadership. | | | | | |
| 6 | Course Outcomes | CO1: Arrive at work as scheduled, ready to work, and stay for the agreed upon time  CO2: Present yourself in a professional manner at all times, including being appropriately dressed for your workplace  CO 3: Communicate any concerns with your supervisor and the internship coordinator in a timely manner and respectfully  CO 4: Demonstrate enthusiasm and interest in what you are doing; ask questions and take initiative as appropriate.  CO 5. Exposure to professional and ethical responsibility | | | | | |
| 7 | Course Description | The Internship aims to offer students the opportunity to apply their knowledge in real-life environments through an industry placement for eight-weeks. It is expected that the skills students will gain from working with an organization will help them perform better on their jobs after graduation. In addition, the Internship greatly increases the chances for students to obtain full time employment after graduation. | | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | | * Define objectives and conditions for the internship, ensuring students that it is related to the study path carried out at the University. Specify the names of the university supervisor, the Host Organization supervisor and the duration, the period in which the internship will be carried out and any changes in duration | | | | **CO1** |
|  | **Unit 2** | | * The internship work plan is drawn up in consultation with the student, the supervising faculty at the university and the internship supervisor for the organisation offering the internship. | | | | **CO2** |
|  | **Unit 3** | | * Project during Internship involves: a) project activated by the Program Director / Host Organization. b) Project activity to be monitored by faculty members at the University. This activity must guarantee continuous presence and continuity to activities related to project. | | | | **CO3,CO6** |
|  | **Unit 4** | | Submission of evaluation form and final report completed by the intern. | | | | **CO3,CO4** |
|  | **Unit 5** | | Final evaluation form completed by the supervisor at the Host Organization and final presentation before departmental committee. | | | | **CO4,CO5** |
|  | Mode of examination | | Practical | | | | |
|  | Weightage Distribution | | CA | | MTE | ETE |  |
| 60% | | NIL | 40% |  |
|  | Text book/s\* | | NA | | | | |
|  | Other References | | |  | | --- | | NA | |  | | | | | |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1: Arrive at work as scheduled, ready to work, and stay for the agreed upon time. | PO1, PO2, PO12, PSO4 |
| 2. | CO2: Present yourself in a professional manner at all times, including being appropriately dressed for your workplace | PO1, PO12, PSO1, PSO4 |
| 3. | CO 3: Communicate any concerns with your supervisor and the internship coordinator in a timely manner and respectfully | PO1, PO2, PO12, PSO2, PSO4 |
| 4. | CO 4: Demonstrate enthusiasm and interest in what you are doing; ask questions and take initiative as appropriate. | PO1, PO12, PSO2, PSO4 |
|  | CO 5. Exposure to professional and ethical responsibility | PO1, PO6, PO8, PO12, PSO2, PSO4 |

**PO and PSO mapping with level of strength for Industrial Internship-III(Course Code CSP 499)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 | - | - | 3 | - |
| CO2 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | 2 | - | 3 | - |
| CO4 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | 3 | - | 2 | - |
| CO5 | 3 | - | - | - | - | 2 | - | 2 | - | - | - | 3 | - | 3 | - | 3 | - |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: ARP 401, Problem Solving Creative Thinking and Leadership Skills**

|  |  |  |  |
| --- | --- | --- | --- |
| **School:** SET | | **Batch :** 2018-22 | |
| **Program:** | | **Current Academic Year:** 2018-19 | |
| **Branch:** CSE | | **Semester: VIIth |PSC** | |
| 1 | Course Code | **ARC 401** | Course Name **Problem Solving Creative Thinking and Leadership Skills** |
| 2 | Course Title | **Problem Solving Creative Thinking and Leadership Skills** | |
| 3 | Credits | 1 | |
| 4 | Contact Hours  (L-T-P) | 0-0-2 | |
|  | Course Status |  | |
| 5 | Course Objective | To enhance holistic development of students and improve their employability skills. Provide a 360 degree exposure to learning elements of Business English readiness program, behavioural traits, achieve softer communication levels and a positive self-branding along with augmenting numerical and altitudinal abilities. To up skill and upgrade students’ across varied industry needs to enhance employability skills. By the end of this semester, a will have entered the last threshold of his/her employability enhancement and skill building activity exercise. | |
| 6 | Course Outcomes | CO1: *Inculcate Innovative & Critical Thinking abilities | Problem Solving attitude*  CO2:*Team Building & Team Synergy | Ownership | Accountability | Trust*  CO3: *Time Management | Leadership skills | Verbal Abilities-5*  CO4: *Level-5 of quant , aptitude and reasoning abilities* | |
| 7 | Course Description | This is the final level of the program where in a student is now a step away from full readiness to step out and greet the world. This semester equips students with Innovative & Critical Thinking abilities, Problem Solving attitude,Team Building, Team Synergy,Ownership, Accountability, Trust,  Time Management, Leadership skills and Verbal Abilities-5 | |
| 8 | Outline syllabus – ARC 401 | | |
|  | **Unit 1** | **Campus to Corporate** | | **CO MAPPING** |
| A | Innovative & Critical Thinking | Problem Solving | | CO1 |
| B | Team Building & Team Synergy | Ownership | Accountability | Trust | | CO2 |
| C | Time Management | Leadership skills | Verbal Abilities-5 | | CO3 |
|  | **Unit 2** | **Introduction to APTITUDE TRAINING- Reasoning- Logical/ Analytical** | |  |
| A | Puzzles | Linear Arrangement & Circular | AMCAT Practice Paper Exercise Kit | | CO4 |
| B | E- Litmus Practice Paper Kit | | CO4 |
| C | C- Cube Practice Test | | CO4 |
|  | **Unit 3** | **Quantitative Aptitude** | |  |
| A | AMCAT Practice Paper Exercise Kit | | CO4 |
| B | E- Litmus Practice Paper Kit | | CO4 |
| C | C- Cube Practice Test | | CO4 |
|  | Weightage Distribution | *( CA )Class Assignment/Free Speech Exercises / JAM – 60% | (ETE) Group Presentations/Mock Interviews/GD/ Reasoning, Quant & Aptitude – 40%* | |  |
| Text book/s\* | *Wiley's Quantitative Aptitude-P Anand |* ***Quantum CAT – ArihantPublications | Quicker Maths- M. Tyra |*** *Power of Positive Action  (English, Paperback, Napoleon Hill) | Streets of Attitude  (English, Paperback, Cary Fagan, Elizabeth Wilson) The 6 Pillars of self-esteem and awareness – Nathaniel Brandon | Goal Setting  (English, Paperback, Wilson Dobson* | |  |

**Syllabus: CSE 460, Mobile Computing (-4)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018** | | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | | |
| **Branch:CSE** | | **Semester:VII** | | | | |
| 1 | Course Code | CSE460 | Course Name | | | |
| 2 | Course Title | Mobile Computing | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | ELECTIVE | | | | |
| 5 | Course Objective | The objective of the course is to impart knowledge of mobile and wireless computing systems and techniques. | | | | |
| 6 | Course Outcomes | Students will be able to:  CO1. Understand the basic concepts and principles in mobile computing.  CO2.Analyze the structure and components for mobile IP and mobility Management.  CO3. Develop algorithms for allocation estimations based on different positioning techniques and platforms.  CO4. Design and develop mobile applications. | | | | |
| 7 | Course Description | This course will give you an understanding of mobile computer systems particularly in the context of wireless network systems such as 2G/3G/4G mobile telephony, data networks, and other wireless networks and infrastructure. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **Introduction** | | | |  |
| A | [Wireless transmission](http://www.indiastudychannel.com/resources/33365-IT-MOBILE-COMPUTING-Syllabus-Anna-university.aspx) , Frequencies for radio transmission | | | | CO1, CO2 |
| B | Signals , Antennas , Signal Propagation , Multiplexing, Modulations | | | | CO1, CO2 |
| C | [Spread spectrum](http://www.indiastudychannel.com/resources/33365-IT-MOBILE-COMPUTING-Syllabus-Anna-university.aspx), MAC, SDMA , FDMA , TDMA , CDMA , Cellular Wireless Networks | | | | CO1, CO2 |
|  | **Unit 2** | **Telecommunication Networks** | | | |  |
| A | GSM: Mobile services, System architecture, [Radio interface](http://www.indiastudychannel.com/resources/69044-MOBILE-COMPUTING-Syllabus-Jntu-II-year-MCA-IV.aspx), Protocols | | | | CO1,CO2,CO4 |
| B | Localization and calling, Handover, Security | | | | CO1,CO2,CO4 |
| C | General Packet Radio Service (GPRS): GPRS Architecture, GPRS network nodes, | | | | CO1,CO2,CO4 |
|  | **Unit 3** | **Wireless LANs** | | | |  |
| A | Introduction to IEEE 802.11b/g/n | | | | CO1,CO2,CO3 |
| B | Bluetooth technologies and architecture. | | | | CO1,CO2,CO3 |
| C | HIPERLAN, WML programming | | | | CO4,CO2 |
|  | **Unit 4** | **Mobile Network Layer** | | | |  |
| A | Mobile IP Goals, Entities, IP packet Delivery Agent Advertisement and Discovery, Registration. | | | | CO1,CO2 |
| B | Hidden and exposed terminal problems ,Routing protocols classification | | | | CO1,CO2 |
| C | DSDV, DSR, AODV **,** Security | | | | CO1,CO2,CO3 |
|  | **Unit 5** | **Mobile Transport Layer & Wireless Application Protocol** | | | |  |
| A | Traditional TCP, Indirect TCP, | | | | CO1,CO2,CO4 |
| B | Snooping TCP, Mobile TCP | | | | CO1,CO2,CO4 |
| C | WAP: Protocols, Architecture | | | | CO1,CO2,CO4 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1.JochenSchiller : Mobile Communication, Pearson Education. | | | |  |
|  | Other References | 1.U. Hansman and L. Merck : Principles of Mobile Computing”, 2nd Ed., Springer.  2. D. Milojicic, F. Douglis. : Mobility Processes, Computers and Agents”,Addison Wesley. | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1. Understand the basic concepts and principles in mobile computing. | PO1,PO2,PO3,PO4,PSO1 |
| 2. | CO2.Analyze the structure and components for mobile IP and mobility Management. | PO1, PO3, PO4, PSO2 |
| 3. | CO3. Develop algorithms for allocation estimations based on different positioning techniques and platforms. | PO1,PO2,PO3,PO4 |
| 4. | CO4. Design and develop mobile applications. | PO9, PO10,PO11, PSO5 |

**PO and PSO mapping with level of strength for Course Name Mobile Computing(Course Code CSE 460)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**Syllabus: CSE 459, Software Testing(-4)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018-22** | | | | |
| **Program:B.Tech** | | **Current Academic Year:** | | | | |
| **Branch:CSE/IT** | | **Semester:VII** | | | | |
| 1 | Course Code | CSE459 | Course Name | | | |
| 2 | Course Title | Software Testing | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | ELECTIVE | | | | |
| 5 | Course Objective | The primary objective of this course is to introduce and instruct software testing and Quality assurance concepts, strategies, and techniques in order to develop a total understanding of the testing process and how it impacts the software project. | | | | |
| 6 | Course Outcomes | Students will be able to:  CO1: Perform functional and non-functional testing  CO2: Design test case and make test case report  CO3:Locate bugs and analyze their impact  CO4:Perform control flow and data flow testing  CO5:Memorize how to effectively plan your tests, communicate the bugs you find, and measure your success as a software tester  CO6:Assess various test automation tools available in market and choose appropriate tool for kinds of testing | | | | |
| 7 | Course Description | This course will examine fundamental software testing and related program analysis techniques. In particular, the important phases of testing will be reviewed, emphasizing the significance of each phase when testing different types of software. The course will also include concepts such as test generation, test coverage, regression testing, mutation testing, program analysis (e.g., program-flow and data-flow analysis), and test prioritization. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | Introduction | | | |  |
| A | Human and errors, Testing Objectives, Principles of Testing, Behaviour and Correctness, Debugging and its techniques | | | | CO1, CO2 |
| B | Software metrics, Software Testing Life Cycle, Testing activities and Levels, Testing myths and facts | | | | CO1, CO2 |
| C | Testing exit criteria, Bug defect life cycle, White Box and Black Box Testing | | | | CO1, CO2, CO6 |
|  | **Unit 2** | Unit Testing | | | |  |
| A | Concept of Unit Testing, Static Unit Testing, Defect Prevention, Dynamic Unit Testing, Mutation Testing | | | | CO1, CO2,CO4 |
| B | Control Flow Testing: Overview of Control Flow Testing, Control Flow Graph, Paths in a Control Flow Graph | | | | CO1, CO2,CO4 |
| C | Path Selection Criteria, Regression testing , Agile testing | | | | CO1, CO2,CO4 |
|  | **Unit 3** | Data Flow & Performance testing | | | |  |
| A | Data Flow Anomaly, Overview of Dynamic Data Flow Testing, Data Flow Graph, Data Flow Terms | | | | CO1,CO2,CO3 |
| B | Data Flow Testing Criteria, Comparison of Data Flow Test Selection Criteria, Feasible Paths and Test Selection Criteria | | | | CO1,CO2,CO3 |
| C | Integration Testing: Integration Testing, Integration Techniques , Performance testing: Stress , Load , Volume | | | | CO4, CO6 |
|  | **Unit 4** | Functional Testing | | | |  |
| A | Equivalence Class Partitioning, Boundary Value Analysis, Decision Tables, Random Testing, Error Guessing, Category Partition | | | | CO1,CO2,CO3 |
| B | Test case designing – Test cases, Test case format, Test case designing, Acceptance testing and criteria | | | | CO1,CO2,CO3 |
| C | Automation testing**:** Need for automation , categorization of Testing tools, Selection of testing tools, Guidelines for automated testing | | | | CO1,CO2,CO3 |
|  | **Unit 5** | Controlling and Monitoring | | | |  |
| A | Test metrics and measurements –project, progress and productivity metrics – Status Meetings – Reports and Control Issues – Criteria for Test Completion – SCM | | | | CO1,CO2,CO3,CO6 |
| B | Types ofreviews – Developing a review program – Components of Review Plans– Reporting | | | | CO1,CO2,CO3 |
| C | Review Results. – evaluating software quality – defect prevention – testing maturitymodel | | | | CO1,CO2,CO3,CO6 |
|  | Mode of examination | Theory | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1. SagarNaik&PiyuTripathy, “Software Testing and Quality Assurance: Theory and Practice”, Wiley. | | | |  |
|  | Other References | 1.Naresh Chauhan, “Software Testing : Principles and practices”, Oxford university press  2.Boris Beizer, “Software Testing Techniques”, Dreamtech Press  3.K.K. Aggrawal and Yogesh Singh, “ Software Engineering” New Age International Publication | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | **CO1:**Perform functional and non-functional testing | PO1,PO2,PO3,PO4,PSO1 |
| 2. | **CO2:**Design test case and make test case report | PO1, PO3, PO4, PSO2 |
| 3. | **CO3:**Locate bugs and analyze their impact | PO1,PO2,PO3,PO4 |
| 4. | **CO4:** Perform control flow and data flow testing | PO9, PO10,PO11, PSO5 |
| 5. | **CO5**: Memorize how to effectively plan your tests, communicate the bugs you find, and measure your success as a software tester. | PO1,PO2,PO3,PO4 |
| 6. | **CO6:**Assess various test automation tools available in market and choose appropriate tool for kinds of testing | PO1, PO3, PO4, PSO2 |

**PO and PSO mapping with level of strength for Course Name Software Testing(Course Code CSE 459)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |
| CO5 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO6 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSP 498, Major Project - 2**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | | **Batch : 2018 – 2022** | | | | |
| **Program: B.Tech** | | | **Current Academic Year: 2018-2019** | | | | |
| **Branch: CSE / IT** | | | **Semester: 3rd** | | | | |
| 1 | Course Code | | **CSP498** | Course Name: Major Project -2 | | | |
| 2 | Course Title | | Major Project -2 | | | | |
| 3 | Credits | | 9 | | | | |
| 4 | Contact Hours  (L-T-P) | | 0-0-18 | | | | |
|  | Course Status | | Compulsory | | | | |
| 5 | Course Objective | | 1. To understand the concept of project design after the completion of project planning 2. Students making decisions within a framework 3. Continuous evaluation of the project 4. A final product to be evaluated for quality | | | | |
| 6 | Course Outcomes | | Students will be able to:  CO1: To identify the test procedure for each implemented module  CO2: To perform testing using test techniques associated with the white box and black box test-approach methods  CO3: To deploy and justify the project after successful testing  CO4: Use different tools forcommunication, testing andreport writing.  CO5:Enhancing the technical skill and report writing.  CO6: To provide a goodtraining for the students in R&D work and technical leadership. | | | | |
| 7 | Course Description | | The objective of Major Project-II is to enable the student to extend further the development of project till testing and deployment under the guidance of a Supervisor. | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | Testing of the modules, Use of appropriate tools/techniques for testing | | | | | CO1, CO2 |
|  | **Unit 2** | Deploy & demonstrate developed modules of the project | | | | | CO1, CO2, CO3 |
|  | **Unit 3** | Preparing a Project Report in the standard format for being evaluated by the Supervisor | | | | | CO4, CO5, CO6 |
|  | **Unit 4** | Submission of Project and Report to Departmental Committee | | | | | CO4, CO5, CO6 |
|  | **Unit 5** | Final Presentation before Departmental Committee | | | | | CO6 |
|  |  | | | | |  |
|  | Mode of examination | Theory | | | | |  |
|  | Weightage Distribution | CA | | | MTE | ETE |  |
| 60% | | | NA | 40% |  |
|  | Text book/s\* |  | | | | |  |
|  | Other References |  | | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) |
| 1. | CO1: To start the actual implementation of the project work to produce the deliverables. To design and implementsolutions to open-endedproblem/project. | PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12 |
| 2. | CO2: To identify the test procedure for each implemented module | PO1, PO2, PO4, PO7, PO9, PO10, PO11, PO12 |
| 3. | CO3: To perform testing using test techniques associated with the white box and black box test-approach methods | PO1, PO2, PO3, PO6, PO5, PO9, PO10, PO11, PO12 |
| 4. | CO4: To deploy and justify the project after successful testing | PO1, PO2, PO3, PO6, PO7, PO9, PO10, PO11, PO12 |
| 5. | CO5:Use different tools forcommunication, design,implementation, testing andreport writing. | PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10, PO11, PO12 |
| 6. | CO6: To provide a goodtraining for the students in R&D work and technical leadership. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 |

**PO and PSO mapping with level of strength for Course Name Major Project -2 (Course Code CSP498)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 3 | 2 | 3 | 3 | 3 | - | - | 2 | 3 | 3 | 2 | 3 |
| CO2 | 3 | 2 | 3 | 3 | 3 | - | 2 | - | 3 | 3 | 2 | 3 |
| CO3 | 3 | 2 | 3 | - | 3 | 3 | - | - | 3 | 3 | 2 | 3 |
| CO4 | 3 | 2 | 3 | - | - | 2 | 2 | - | 3 | 3 | 2 | 3 |
| CO5 | 3 | 2 | 3 | 3 | 3 | - | 2 | 2 | 2 | 3 | 3 | 3 |
| CO6 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 3 | 3 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 454(-5)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **School:** | | **Batch : 2018-22** | | | | |
| **Program: B.Tech** | | **Current Academic Year:** | | | | |
| **Branch:CSE** | | **Semester:VIII** | | | | |
| 1 | Course Code | CSE454 | Course Name | | | |
| 2 | Course Title | Wireless Networks | | | | |
| 3 | Credits | 3 | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | |
|  | Course Status | UG | | | | |
| 5 | Course Objective | The objective of this course is to enable students to understand the basic concepts of wireless networks specially MANETs and Sensor networks and apply these concepts for designing, evaluating and comparing wireless networks. | | | | |
| 6 | Course Outcomes | Students will be able to:  CO1: Differentiate between various types of wireless networks.  CO2: Compare various MAC and routing protocols in sensor networks.  CO3: Analyze energy management issue in MANETs.  CO4: Establish a sensor networks. | | | | |
| 7 | Course Description | Overview of wireless network architectures including cellular networks, local area networks, multi-hop wireless networks such as ad hoc networks, mesh networks, and sensor networks; capacity of wireless networks; medium access control, routing protocols, and transport protocols for wireless networks; mechanisms to improve performance and security in wireless networks; energy-efficient protocols for sensor networks. | | | | |
| 8 | Outline syllabus | | | | | CO Mapping |
|  | **Unit 1** | **FUNDAMENTAL OF WIRELESS NETWORKS** | | | |  |
| A | Basic Networking Concepts | | | | CO1, CO2 |
| B | Wireless LANs and PANs: Bluetooth, 802.11, and Hiper LAN | | | | CO1, CO2 |
| C | Wireless internet, mobile ip (wi-fi routers) | | | | CO1, CO2,CO3 |
|  | **Unit 2** | **INTRODUCTION TO MANETs** | | | |  |
| A | Overview of MANETs | | | | CO1, CO2,CO4 |
| B | Cellular vs. Ad-hoc networks, issues and challenges | | | | CO1, CO2,CO4 |
| C | MAC protocols for ad-hoc networks | | | | CO1, CO2,CO4 |
|  | **Unit 3** | **CHALLENGES IN MANETs** | | | |  |
| A | Routing protocols for ad-hoc networks, DSR/AODV etc. (NS2) | | | | CO1,CO2,CO3 |
| B | Transport protocols for ad-hoc networks | | | | CO1,CO2,CO3 |
| C | Energy Management in Ad-Hoc Wireless Networks | | | | CO2,CO4 |
|  | **Unit 4** | **SENSOR NETWORKS** | | | |  |
| A | Introduction, Applications and Issues | | | | CO1,CO2,CO3 |
| B | Networking Sensors, MAC protocols and Routing protocols | | | | CO1,CO2,CO3 |
| C | Infrastructure Establishment Issues | | | | CO1,CO2,CO3 |
|  | **Unit 5** | **CHALLENGES IN SENSOR NETWORKS** | | | |  |
| A | Tasking and control in sensor networks | | | | CO1,CO2,CO4 |
| B | Sensor network plat forms and tools, emerging trends in sensor networks **(SENSE)** | | | | CO1,CO2,CO4 |
| C | Establishing sensor network using Zigbee, | | | | CO1,CO2,CO4 |
|  | Mode of examination | Enabling Technologies For Wireless Sensor Networks. | | | |  |
|  | Weightage Distribution | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | 1.Ad Hoc Wireless Networks: Architectures and Protocols. C. Siva Ram Murthy, Prentice Hall PTR. | | | |  |
|  | Other References | 1.Wireless Sensor Networks: An Information Processing Approach, Feng Zhao and Leonidas Guibas, Publisher: Morgan Kaufmann.  2. Ad-hoc networks and sensor networks: Theory and Applications, D.D. Marios, D.P. Agarwal World Scientific. | | | |  |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | CO1: Differentiate between various types of wireless networks | PO1,PO2,PO3,PO4,PSO1 |
| 2. | CO2: Compare various MAC and routing protocols in sensor networks. | PO1, PO3, PO4, PSO2 |
| 3. | CO3: Analyze energy management issue in MANETs | PO1,PO2,PO3,PO4 |
| 4. | CO4: Establish a sensor networks. | PO9, PO10,PO11, PSO5 |

**PO and PSO mapping with level of strength for Course Name Wireless Networks (Course Code CSE 454)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cos | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 3 | 3 | 3 | -- | -- | -- | 2 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | 3 | -- | -- | -- | 2 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO3 | 3 | 3 | 3 | 3 | -- | -- | -- | 1 | 1 | 1 | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO4 | 2 | 2 | 2 | 2 | 1 | -- | -- | 2 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSA403, Digital Image Processing (-5)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **School: SET** | | **Batch : 2018-2022** | | | | | |
| **Program: B-TECH** | | **Current Academic Year:** | | | | | |
| **Branch: CSE** | | **Semester: VIII** | | | | | |
| 1 | Course Code | **CSA 403** | | Course Name: Digital Image Processing | | | |
| 2 | Course Title | Digital Image Processing | | | | | |
| 3 | Credits | 3 | | | | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | | | | |
|  | Course Status | UG | | | | | |
| 5 | Course Objective | **Students will try to learn:**   1. To study the image fundamentals and mathematical transforms necessary for image processing. 2. To study the image enhancement techniques 3. To study image restoration procedures. 4. To study the image compression procedures | | | | | |
| 6 | Course Outcomes | Students will be able to:   1. ***Recognize*** the fundamental concepts of a digital image processing system. 2. ***Formulate*** images in the frequency domain using various transformations. 3. ***Perform*** operations for image enhancement and image restoration. 4. ***Interpret*** image segmentation and representation techniques. 5. ***Design*** Image application for recognitions. 6. ***Support*** Computer Vision techniques in intelligent systems. | | | | | |
| 7 | Course Description | Basic concepts of Digital Image Processing | | | | | |
| 8 | Outline syllabus | | | | | | CO Mapping |
|  | **Unit 1** | | **Introduction** | | | |  |
| A | | **Fundamental of digital image processing:** | | | | CO1, |
| B | | **Image Enhancement** in Spatial Domain | | | | CO1 |
| C | | Arithmetic/Logic Operations in Image enhancement | | | | CO1 |
|  | **Unit 2** | | **Image Enhancement in Frequency Domain** | | | |  |
| A | | Fourier Transform Filters – | | | | CO2 |
| B | | Low-pass filter in frequency domain | | | | CO2 |
| C | | High-pass filter in frequency domain | | | | CO2 |
|  | **Unit 3** | | **Image Restoration & segmentation** | | | |  |
| A | | Restoration Process model. | | | | CO3 |
| B | | Segmentation and Region Extraction, | | | | CO3 |
| C | | Edge Detection and Corner Detection. | | | | CO3 |
|  | **Unit 4** | | **Color Image Processing** | | | |  |
| A | | Color Models, Color Transformation | | | | CO4 |
| B | | Morphological Image Processing | | | | CO4 |
| C | | Morphological Operations | | | | CO4 |
|  | **Unit 5** | | **Application of Digital Image Processing** | | | |  |
| A | | Face Recognition | | | | CO5 ,CO6 |
| B | | Optical character recognition | | | | CO5,CO6 |
| C | | Computer vision | | | | CO5,CO6 |
|  | Mode of examination | | Theory | | | |  |
|  | Weightage Distribution | | CA | | MTE | ETE |  |
| 30% | | 20% | 50% |  |
|  | Text book/s\* | | 1. Digital Image Processing 2nd Edition, Rafael C. Gonzalvez and Richard E. Woods. Published by: Pearson Education. | | | | |
|  | Other References | | 1. Digital Image Processing and Computer Vision, R.J. Schalkoff. Published by: John Wiley and Sons, NY. 2. Fundamentals of Digital Image Processing, A.K. Jain. Published by Prentice Hall, Upper Saddle River, NJ. | | | | |

**CO and PO Mapping**

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | 1. ***Recognize*** the fundamental concepts of a digital image processing system. | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 2. | 1. ***Formulate*** images in the frequency domain using various transformations. | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 3. | 1. ***Perform*** operations for image enhancement and image restoration. | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 4. | 1. ***Interpret*** image segmentation and representation techniques. | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 5. | 1. ***Design*** Image application for recognitions. | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |
| 6. | 1. ***Support*** Computer Vision techniques in intelligent systems. | PO1,PO2,PO3,PO11,PO12  PSO1,PSO2,PSO3,PSO4,SPO5 |

**PO and PSO mapping with level of strength for Course Name Digital Image Processing(CSA 403)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | 3 | - | - | - | - | - | - | - | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO2 | 3 | 2 | 3 | - | - | - | - | - | - | - | 2 | 1 | 3 | 2 | 2 | 1 | 2 |
| CO3 | 3 | 2 | 3 | - | - | - | - | - | - | - | 1 | 1 | 2 | 3 | 2 | 1 | 2 |
| CO4 | 3 | 2 | 3 | - | - | - | - | - | - | - | 3 | 2 | 3 | 2 | 1 | 1 | 1 |
| CO5 | 3 | 2 | 3 | - | - | - | - | - | - | - | 3 | 1 | 2 | 2 | 2 | 1 | 3 |
| CO6 | 3 | 2 | 3 | - | - | - | - | - | - | - | 3 | 1 | 2 | 2 | 2 | 1 | 3 |

**1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)**

**Syllabus: CSE 456, Distributed System Concepts & Design (-6)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **School:** SET | | **Batch :** 2018-22 | | |
| **Program:** B.Tech | | **Current Academic Year:** 2018-19 | | |
| **Branch: CSE** | | **Semester: VIII** | | |
| 1 | Course Code | CSE456 | Course Name | |
| 2 | Course Title | Distributed System Concepts & Design | | |
| 3 | Credits | 3 | | |
| 4 | Contact Hours  (L-T-P) | 3-0-0 | | |
|  | Course Status | ELECTIVE | | |
| 5 | Course Objective | The course aims to provide an understanding of the principles on which the distributed systems are based; their architecture, algorithms and how they meet the demands of contemporary distributed applications. The course covers the building blocks for a study of distributed systems, and addressing the characteristics and the challenges that must be addressed in their design: scalability, heterogeneity, security and failure handling being the most significant. | | |
| 6 | Course Outcomes | CO1: Understand the basic elements and concepts related to distributed system technologies  CO2: Acquire knowledge of the core architectural aspects of distributed systems  CO 3: Design and implement distributed applications  CO 4:Distinguish the main underlying components of distributed systems and centralized system  CO 5: Use and apply important security algorithms in distributed systems | | |
| 7 | Course Description | This course covers issues and solutions related to the design and the implementation of distributed algorithms for different issues of distributed system. | | |
| 8 | Outline syllabus | | | CO Mapping |
|  | **Unit 1** | **Characterization of Distributed Systems** | |  |
| A | Introduction, Examples of distributed Systems | | CO1 |
| B | Resource sharing and the Web Challenges. | | CO2 |
| C | System Models: Architectural models, Fundamental Models | | CO2 |
|  | **Unit 2** | **Theoretical Foundation for Distributed System** | |  |
| A | Limitation of Distributed system: Absence of global clock, shared memory | | CO2, CO3 |
| B | Logical clocks; Lamport’s logical clock, vector logical clocks | | CO2, CO3 |
| C | Causal ordering of messages. Termination detection. | | CO2, CO3 |
|  | **Unit 3** | **Distributed Mutual Exclusion** | |  |
| A | Classification of distributed mutual exclusion, requirement of mutual exclusion theorem | | CO3, CO4 |
| B | Token based Mutual exclusion algorithms, Non token based Mutual exclusion algorithms | | CO3, CO4 |
| C | Performance metric for distributed mutual exclusion algorithms | | CO3, CO4 |
|  | **Unit 4** | **Distributed Deadlock Detection** | |  |
| A | System model, resource vs. communication deadlocks | | CO3, CO4 |
| B | Deadlock prevention, avoidance, detection & resolution, centralized dead lock detection, | | CO3, CO4 |
| C | distributed dead lock detection: Path pushing algorithms, edge chasing algorithms. | | CO3, CO4 |
|  | **Unit 5** | **Data Security & Case Study** | |  |
| A | Introduction , A Model of Cryptography, Private key cryptography | | Co1,CO3, CO4 |
| B | Public key cryptography, Authentication in Distributed System | | CO1, CO3, CO4 |
| C | Case study: The Kerberos System. | | CO1, CO3, CO4 |
|  | Mode of examination | Theory | |  |
|  | Weightage Distribution | CA | | MTE |
|  |  | 30% | | 20% |
|  | Text book/s\* | 1.Coulouris et al, *Distributed System: Concepts and Design,* Pearson Education | |  |
|  | Other References | 1. Singhal & Shivaratri, *Advanced Concept in Operating Systems*, Tata McGraw Hill.  2. Tanenbaum A S, Distributed *System*, Prentice Hall India  3.Stallings, W, *Cryptography and Network Security, 4th Edition*, Prentice hall India | |  |

CO and PO Mapping

|  |  |  |
| --- | --- | --- |
| S. No. | Course Outcome | Program Outcomes (PO) & Program Specific Outcomes (PSO) |
| 1. | Understand the basic elements and concepts related to distributed system technologies | PO1, PO2, PSO1, PSO3 |
| 2. | Acquire knowledge of the core architectural aspects of distributed systems | PO1,PO2, PO3, PO4, PO9, PSO1, PSO2, PSO3 |
| 3. | Design and implement distributed applications | PO1, PO2, PO9, PSO1, PSO2, PSO3 |
| 4. | Distinguish the main underlying components of distributed systems and centralized system | PO1, PO2, PO9, PSO1,PSO2, PSO3 |
| 5. | Use and apply important security algorithms in distributed systems | PO1, PO2, PO9, PSO1,PSO2, PSO3 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code** | **Course Name** | **PO1** | **PO**  **2** | **PO**  **3** | **PO4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO 10** | **PO 11** | **PO 12** | **PSO**  **1** | **PSO2** | **PSO3** |
| **CSE 456** | Distributed System Concepts & Design |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **CO1** | 2 |  | 1 |  |  |  |  |  |  |  |  |  | 2 |  | 1 |
| **CO2** |  | 2 |  | 1 |  |  |  |  | 2 |  |  |  | 3 | 1 |  |
| **CO3** | 3 | 3 | 2 |  |  |  |  |  | 3 |  |  |  |  | 3 |  |
| **CO4** | 3 | 3 | 2 | 3 |  |  |  |  | 3 |  |  |  |  | 3 |  |
| **CO5** | 1 | 3 | 3 | 3 | 1 |  |  |  | 2 |  |  |  | 3 | 3 | 2 |
|  | | | | | | | | | | | | | | | |

**PO and PSO mapping with level of strength for Course Name** Distributed System Concepts & Design **(Course Code CSE 456)**