# LECTURE PLAN



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| **Institute/Department** | UNIVERSITY INSTITUTE OF ENGINEERING (UIE) | **Program** | **Bachelor of Engineering - Computer Science & Engineering (CS201)** |
| **Master Subject Coordinator Name:** | Shefali Goyal | **Master Subject Coordinator E-Code**: | **E8754** |
| **Course Name** | Advance Programming Lab-1 | **Course Code** | **21CSP-314** |

| Lecture | Tutorial | Practical | Self Study | Credit | Subject Type |
|---|---|---|---|---|---|
| 0 | 0 | 2 | 0 | 1.0 | P |

| Course Type | Course Category | Mode of Assessment | Mode of Delivery |
|---|---|---|---|
| N.A | Graded (GR) | Practical Examination (PRAC) | Practical (PRAC) |

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| Mission of the Department | M1: To provide practical knowledge using state-of-the-art technological support for the experiential learning of our students.<br>M2: To provide industry recommended curriculum and transparent assessment for quality learning experiences.<br>M3: To create global linkages for interdisciplinary collaborative learning and research.<br>M4: To nurture advanced learning platform for research and innovation for students 'profound future growth.<br>M5: To inculcate leadership qualities and strong ethical values through value-based education. |
| Vision of the Department | To be recognized as a leading Computer Science and Engineering department through effective teaching practices and excellence in research and innovation for creating competent professionals with ethics, values and entrepreneurial attitude to deliver service to society and to meet the current industry standards at the global level. |

| Program Educational Objectives(PEOs) | |
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| PEO1 | Engage in successful careers in industry, academia, and public service, by applying the acquired knowledge of Science, Mathematics and Engineering, providing technical leadership for their business, profession and community. |
| PEO2 | Establish themselves as entrepreneur, work in research and development organization and pursue higher education. |
| PEO3 | Exhibit commitment and engage in lifelong learning for enhancing their professional and personal capabilities. |

| Program Specific OutComes(PSOs) | |
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| PSO1 | Exhibit attitude for continuous learning and deliver efficient solutions for emerging challenges in the computation domain. |
| PSO2 | Apply standard software engineering principles to develop viable solutions for Information Technology Enabled Services (ITES). |

| Program OutComes(POs) | |
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| PO1 | dsfdsf dsfdsf dsf df ds fdsfdsf dsfds fdsfds dsfdsf ds fds |
| PO1 | Engineering knowledge: Apply the knowledge of Mathematics, Science, Engineering fundamentals and computer science fundamental and strategies which have the solution of complex computer science engineering problems. |
| PO2 | Problem analysis: Identify, formulate, research literature, and analyse complex computer science engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| PO3 | Design/development of solutions: Design solutions for complex database and software engineering problems and design system components or processes that meet the specified needs with appropriate considerations for the public health and safety, and the cultural, societal, and environmental considerations. |
| PO4 | Conduct investigations of complex problems: Use research-based knowledge and research methods including design of software engineering & networking-based experiments, analysis and Interpretation of data, and synthesis of the information to provide valid conclusions. |
| PO5 | Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern Computer science engineering and IT tools including prediction and modelling to complex database or software engineering activities with an understanding of the limitations. |
| PO6 | The engineer and society: Apply reasoning informed by the contextual knowledge to assess.Social, health, safety, legal and cultural issues and the consequent responsibilities relevant to the Professional Computer Science & Engineering practice. |

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| PO7 | Environment and sustainability: Understand the impact of the professional computer science and engineering solutions in social and environmental contexts, and demonstrate the knowledge of, and need for sustainable development goals. |
| PO8 | Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of computer science engineering practice PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| PO9 | Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| PO10 | 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. |
| PO11 | 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. |
| PO12 | 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. |

**Text Books**

| Sr No | Title of the Book | Author Name | Volume/Edition | Publish Hours | Years |
|---|---|---|---|---|---|
| 1 | Introduction to Algorithms" | homas H. Cormen, Charles E. Leiserson | 3 | The MIT Press | 2013 |
| 2 | Algorithms Unlocked | Thomas H. Cormen | 2 | The MIT Press | 2013 |
| 3 | Data Structures and Algorithms ade Easy: Data Structures and Algorithmic Puzzles | Narasimha Karumanchi | 2 | Career Monk | 2011 |

**Reference Books**

| Sr No | Title of the Book | Author Name | Volume/Edition | Publish Hours | Years |
|---|---|---|---|---|---|
| 1 | Grokking Algorithms: An illustrated guide for programmers and other curious people" | Aditya Bhargava | 1 | Manning | 2016 |

**Course OutCome**

| SrNo | OutCome |
|---|---|
| CO1 | Interpret the problem and find out better approach to solve particular problem. |
| CO2 | Build the logic to find out the solution of problem and achieve all test cases |
| CO3 | Apply appropriate approaches to solve specific problem. |
| CO4 | To gain critical understanding of problem solving on hackerrank platform |
| CO5 | To acquire proficiency in developing and implementing efficient solutions of given problems by using different approaches and achieve desirable results |

**Lecture Plan Preview-Practical**

| Unit No | ExperimentNo | Experiment Name | Text/ Reference Books | Pedagogical Tool** | Mapped with CO Numer(s) |
|---|---|---|---|---|---|
| 1 | 1 | To implement the concept of Dynamic Array. | ,T-Algorithms Unlocked ,T-Data Structures and Algorithms,T-Introduction to Algorithms" ,R-Grokking Algorithms: An illus | Hand On Activity based | CO1,CO2 |
| 1 | 2 | To implement the concept of Stack and Queues | ,T-Algorithms Unlocked ,T-Data Structures and Algorithms,T-Introduction to Algorithms" ,R-Grokking Algorithms: An illus | Hand On Activity based | CO1,CO2 |

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| 1 | 3 | Demonstrate the concept of Linked List. | T-Algorithms Unlocked ,T-Data Structures and Algorithms,T-Introduction to Algorithms" | Hand On Activity based | CO2,CO3 |
| 1 | 4 | Implement the concept of Searching and Sorting tec | T-Algorithms Unlocked ,T-Introduction to Algorithms" | Hand On Activity based | CO2,CO3 |
| 2 | 5 | To implement the concept of Graphs. | ,T-Data Structures and Algorithms,R-Grokking Algorithms: An illus | Hand On Activity based | CO4 |
| 2 | 6 | To implement the concept of Tree Data Structure | ,T-Introduction to Algorithms" ,R-Grokking Algorithms: An illus | Hand On Activity based | CO3,CO4 |
| 2 | 7 | Demonstrate the concept of string. | ,T-Algorithms Unlocked ,T-Introduction to Algorithms" ,R-Grokking Algorithms: An illus | Hand On Activity based | CO3,CO4 |
| 3 | 8 | Implement the problems based on Dynamic Programmin | ,T-Algorithms Unlocked ,T-Introduction to Algorithms" ,R-Grokking Algorithms: An illus | Hand On Activity based | CO4 |
| 3 | 9 | Implement the problems based on Backtracking. | T-Algorithms Unlocked ,T-Data Structures and Algorithms,T-Introduction to Algorithms" | Hand On Activity based | CO5 |
| 3 | 10 | Implement the problems based on Branch and Bound. | ,T-Algorithms Unlocked ,T-Data Structures and Algorithms,T-Introduction to Algorithms" ,R-Grokking Algorithms: An illus | Hand On Activity based | CO4,CO5 |

| Assessment Model | | | |
|---|---|---|---|
| Sr No | Assessment Name | Exam Name | Max Marks |
| 1 | 20PRAC01 | External Viva / Voce | 40 |
| 2 | 20PRAC01 | Experiment-1 | 30 |
| 3 | 20PRAC01 | Experiment-2 | 30 |
| 4 | 20PRAC01 | Experiment-3 | 30 |
| 5 | 20PRAC01 | Experiment-4 | 30 |
| 6 | 20PRAC01 | Experiment-5 | 30 |
| 7 | 20PRAC01 | Experiment-6 | 30 |
| 8 | 20PRAC01 | Experiment-7 | 30 |
| 9 | 20PRAC01 | Experiment-8 | 30 |
| 10 | 20PRAC01 | Experiment-9 | 30 |
| 11 | 20PRAC01 | Experiment-10 | 30 |
| 12 | 20PRAC01 | Mid-Term Test | 15 |

| CO vs PO/PSO | PO13 | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO1** | NA | 3 | NA | 3 | 2 | 3 | NA | NA | 1 | 1 | NA | NA | NA | NA | NA |
| **CO2** | NA | 3 | NA | NA | 3 | 2 | 3 | NA | NA | NA | NA | NA | NA | NA | NA |
| **CO3** | NA | 3 | 2 | NA | 3 | 2 | NA | NA | NA | NA | NA | NA | 3 | 3 | NA |
| **CO4** | NA | 3 | 3 | NA | NA | 3 | 2 | NA | NA | 2 | NA | NA | 3 | 3 | NA |
| **CO5** | NA | 3 | NA | NA | NA | NA | NA | NA | 1 | 2 | 3 | 2 | 3 | NA | 2 |
| **Target** | NA | 3 | 2.5 | 3 | 2.67 | 2.5 | 2.5 | NA | 1 | 1.67 | 3 | 2 | 3 | 3 | 2 |