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| C:\Users\TEMP.WDC.013\Downloads\VIT logo.png  **Version 08/06-6** |  | **Consolidated Academic Administration Plan for the Course**  ***IT12T & CS12T Software Engineering with WDL (core) Sem. V –***  ***Program Information Technology & Computer Engineering***  ***2024-25 –ODD Semester Faculty – Prof.Bushra Shaikh & Dr. Sachin Bojewar(Cluster Mentor)*** |

**The academic resources available in VIT –**

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| **VMIS (ERP)** | **V-Refer and V-Live** | **VIT Library** | **VAC & MOOC Courses** |
| Institute & Department Vision and Mission | Former IA question papers and solutions (prepared by faculty) | Former IA question papers solutions - hardcopy | Value Added Courses (VAC) are conducted throughout the semester & in the semester break -  Enrol for the VACs |
| Program Educational Objectives (PEO) | MU end semester examination  question papers and solutions (prepared by faculty) | MU end semester exam question paper & solutions  - by faculty, hardcopy |
| Program Specific Outcome (PSO) | Class notes and Digital Content for the subject (scanned / typed by faculty) | All text books, reference books, e -books mentioned in the syllabus  & AAP | Online courses from NPTEL, Coursera etc. are pursued throughout the semester - Register for the course & get certified |
| Program Outcome (PO) | Comprehensive question bank,  EQ, GQ, PPT, Class Test papers | Technical journals and  magazines for reference |
| Departmental Knowledge Map | Academic Administration Plan & Beyond Syllabus Activity report | VIT library is member of IIT Bombay Library | Watch former lectures captured in LMS at VIT |

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| **1.a** | **Course Objectives (Write in detail – as per NBA guidelines)** |

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| Cognitive | What do you want students to know? | To understand Concepts, processes and standards used in software  development |
| Affective | What do you want students to think about? | To think about the proper process model to be applied and create user friendly software |
| Behavioural | What do you want students to be able to do? | To design, test and implement software as per user requirements |

# Advice to Students:

Attend every class!!! Missing even one class can have a substantial effect on your ability to understand the course. Be prepared to think and concentrate, in the class and outside. I will try to make the class very interactive. Participate in the class discussions. Ask questions when you don’t understand something. Keep up with the class readings. Start assignments and homework early. Meet me in office hour to discuss ideas, solutions or to check if, what you understand is correct.

The v-Refer Link -

Creation of microsite or teams link [SEWDL-ODD2024-25 | General | Microsoft Teams](https://teams.microsoft.com/l/channel/19%3AhV4R8Z2-W_nrwfP4gZPN0DhXCN0YM19fwvkXWnxObrU1%40thread.tacv2/General?groupId=56c67b79-2b22-4461-8586-815049950dfe&tenantId)

# Collaboration Policy:

We encourage discussion between students regarding the course material. However, no discussion of any sort is allowed with anyone on the assignment and homework for the class. If you find solution to some problems in a book or on the internet, you may use their idea for the solution; provided you acknowledge the source (name and page in the book or the website, if the idea is found on the internet). Even though you are allowed to use ideas from another source, you must write the solution in your own words. If you are unsure whether or not certain kinds of collaboration is possible please ask the teacher.

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| **1.b** | **Course Outcome (CO) Statements and Module-Wise Mapping (follow NBA guideline)** |

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| **CO No.** | **Statements** | **Related Module/s** |
| CO1 | Define various software application domains and remember different process models used in software development. | 2 |
| CO2 | Explain needs for software specifications; also, they can classify different types of software requirements and their gathering techniques. | 3 |
| CO3 | Justify the role of SDLC in Software Project Development and they can evaluate the importance of Software Engineering in PLC. | 2, 4 |
| CO4 | Apply testing to assure quality in software solution and Identify risks, manage the change to assure quality in software projects. | 6 |
| CO5 | Understand the core concepts and features of Web Technology | 1 |
| CO6 | Design static web pages using HTML5 and CSS3 | 1, 5 |

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| **1.c** | **Course Outcome (CO) Statements and Module-Wise Mapping (follow NBA guideline)** |

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| **COs** | **Mapped to Learning Outcomes** |
| CO1 | 1.1, 1.2, 2.1, 2.3 |
| CO2 | 2.2, 2.3, 3.1, 3.2, 3.3, 5.1 |
| CO3 | 1.1, 1.2, 1.3, 1.4, 5.2, 5.3 |
| CO4 | 2.2, 2.4, 4.1, 4.2, 5.1 |
| CO5 | 6.1, 6.2, 6.3 |
| CO6 | 1.3, 1.4, 4.3, 4.4, 6.4 |

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| **1.d** | **Mapping of COs with POs (mark S: Strong, M: Moderate, W: Weak, Dash ‘–’: not mapped)**  **(List of POs is available in V-refer)** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COs** | **PO 1** | **PO 2** | **PO 3** | **PO 4** | **PO 5** | **PO 6** | **PO 7** | **PO 8** | **PO 9** | **PO 10** | **PO 11** | **PO 12** |
| CO 1 | S | W | W | W | W | W | S | W | W | W | W | S |
| CO 2 | W | W | W | S | W | W | W | W | W | S | W | S |
| CO 3 | W | S | S | W | W | W | W | W | S | W | W | W |
| CO 4 | M | W | W | W | S | W | W | W | W | W | S | W |
| CO 5 | W | W | W | M | W | W | S | W | W | W | W | S |
| CO6 | W | W | W | W | W | S | W | S | W | W | W | W |

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| **1.e** | **Mapping of COs with PSOs (mark S: Strong, M: Moderate, W: Weak, Dash ‘–’:not mapped)** |

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| --- | --- | --- | --- |
|  | PSO 1 | PSO 2 | PSO 3 |
| CO 1 | S | M | M |
| CO 2 | W | W | W |
| CO 3 | M | M | M |
| CO 4 | S | M | W |
| CO 5 | M | W | M |
| CO6 | S | M | M |

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| **1.f** | **Teaching and Examination Scheme (As specified by the University) for the Course** |

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| Categories | Humanitiesand Social Sciences | Basic Science | Engineering Science | Professional Core | General Education | Professional Elective | Project/ Internship | Open Elective |
| Tick suitable category |  |  |  | √ |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Subject Code | Subject Name | **Teaching Scheme** | | | Credits Assigned | | | |
| Theory | Practical | Tutorial | Theory | TW/Practical | Tutorial | Total |
| IT12T | Software Engineering with WDL | 2 | - | - | 2 | - | - | 3 |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Subject Code | Subject Name | **Examination Scheme** | | | | | |
| **Theory** | | | **Practical/Oral** | | Total |
| ISA | MSE | ESE | ISA | ESE |
| IT12T | Software  Engineering with WDL | 15 | 20 | 40 |  | - | 75 |

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| --- | --- | --- | --- | --- |
| Subject Code | Subject Name | **MSE-1\*** | | |
| Q, No | Module wise % Distribution | Relevant to Bloom Taxonomy |
| IT12T | Software  Engineering with WDL | 1 | 50% from Module2 based on assignments with slightly enhance difficulty /complex    25% from Module 3 based on assignments with slightly enhance difficulty /complex | L1, L2, L3, L4 |
| 2 | 25% from Module 2 based on Assignments  25% from Module 1 based on Assignments | L2, L3, L4, L5 |

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| Subject Code | Subject Name | **MSE-2\*** | | |
| Q, No | Module wise % Distribution | Relevant to Bloom Taxonomy |
| IT12T | Software  Engineering with WDL | 1 | 50% from Module5 based on assignments with slightly enhance difficulty /complex  25% from Module 6 based on assignments with slightly enhance difficulty /complex | L2, L3 ,L4 ,L5 |
| 2 | 25% from Module 5 based on Assignments  25% from Module 4 based on Assignments | L2, L3 ,L4 |

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| --- | --- | --- | --- | --- |
| Subject Code | Subject Name | **ESE#** | | |
| Q, No | Distribution | Relevant to Bloom Taxonomy |
| IT12T | Software  Engineering with WDL | 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |

**\* Recommended distribution: -** 30 Marks from Assignments, 40 marks based on assignments with slightly enhance difficulty /complex, 30 marks from thought provoking

**# Recommended distribution: -** 30 Marks from Assignments, 40 marks based on assignments/MSE with slightly enhance difficulty /complex, 30 marks from thought provoking

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| **1.g** | **Faculty-Wise Distribution of all Lecture-Practical-Tutorial Hours for the Course** |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Divisions | Lecture  (Hrs.) | Practical (Hrs.) | | | | Tutorial (Hrs.) | | | |
| Batch 1 | Batch 2 | Batch 3 | Batch 4 | Batch 1 | Batch 2 | Batch 3 | Batch 4 |
| **A** | DSJ-2 | DSJ-2 | DSJ-2 | DSJ-2 |  |  |  |  |  |
| **B** | DSJ-2 | DSJ-2 | DSJ-2 | DSJ-2 |  |  |  |  |  |
| **C** | BS-2 |  |  |  |  |  |  |  |  |

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| **1.g** | **Office Hours (Faculty will be available in office in this duration for solving students’ query)** |

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| --- | --- | --- | --- |
| Division | Day | Time (at least 1 Hr. / Division) | Venue (Office Room No.) |
| A | Wednesday | 4 PM – 5 PM | DSJ E105 |
| B | Wednesday | 4 PM – 5 PM | DSJ E105 |
| C | Tuesday | 4 PM – 5 PM | BS |

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| **2.a** | **Syllabus : Module Wise Teaching Hours and % Weightage in University Question Paper** |

| Module No. | Module Title and Brief Details | Teaching Hrs. for each module | % Weightage in autonomous syllabus Question Papers | | | Performance Indicator Mapping |
| --- | --- | --- | --- | --- | --- | --- |
| ISA | MSE | ESE |
| 1 | **Introduction to Web Programming and Concepts**  Introduction to HTML, HTML Document Structure ,Text Elements, Images and Attributes, Hyperlinks, Semantic HTML, complex image maps, tables and nested tables, Inserting web page, Setting & modifying field properties, Validating HTML CSS: Internal and External CSS, CSS Grid Overview, Sizing Grid Columns and Rows, Building a Simple CSS Grid Layout Javascript & Document Object Model: Introduction to JavaScript, Variables and Objects, Decision Making Statement, Loops, Arrays, Functions & Prototypes, Core JavaScript Objects, DOM Introduction, Event  Model, Function | 08 | 10 | 25 | 25 | PI 1.1.6, PI 1.3.3  PI 2.1.2, PI 2.1.3  PI 5.1.3, PI 5.2.3, PI 3.2.3  PI 5.1.3, PI 5.2.3, PI 3.2.3, PI 3.3.4 |
| Learning Outcome-1.1 | Remember the structure and syntax of an HTML document including DOCTYPE. | | | | | |
| Learning Outcome-1.2 | Understand the role of text formatting tags, image embedding with attributes | | | | | |
| Learning Outcome-1.3 | Understand and create grid-based CSS layouts. | | | | | |
| Learning Outcome-1.4 | Develop dynamic and interactive web components using JavaScript and DOM concepts | | | | | |
| 2 | **The Software Process**  Generic view of Process, Prescriptive Models: Waterfall Model, Incremental-RAD Model, Evolutionary Process Model-Prototyping, Spiral Agile Methodology, Scrum and Extreme Programming | 04 | 20 | 50 | 50 | PI 2.1.2, PI 2.1.4 , PI 3.1.4, PI 2.2.4, PI 3.1.2, PI 2.2.2  PI 3.3.4, PI 3.3.5 |
| Learning Outcome-2.1 | Understand the structure of the software engineering process. | | | | | |
| Learning Outcome-2.2 | Learn to analyze project requirements and choose an appropriate process model based on project scope, complexity, and constraints. | | | | | |
| Learning Outcome-2.3 | Understand the principles and concepts underlying different software engineering models. | | | | | |
| Learning Outcome-2.4 | Compare traditional and agile software models to evaluate their suitability for specific project needs. | | | | | |
| 3 | **Requirements Engineering and Analysis**  Requirement, Types of Requirements, Requirement Gathering, Requirement Engineering Task, SRS (Software Requirement Specification) | 04 | 20 | 25 | 25 | (PI 2.1.2, PI 3.1.2) PI 2.2.2, PI 2.2.4), PI 3.1.2, PI 3.2.2) |
| Learning Outcome-3.1 | Understand the importance and classification of software requirements, including functional and non-functional types. | | | | | |
| Learning Outcome-3.2 | Describe and compare various requirement gathering techniques such as interviews, questionnaires, and observations. | | | | | |
| Learning Outcome-3.3 | Explain the components and significance of a Software Requirement Specification (SRS) document and its role in the requirements engineering process. | | | | | |
| 4 | **Software Estimation and Scheduling**  Management Spectrum, 4Ps (people, product and process), Process and Project metrics, Software Project Estimation: LOC, FP, Empirical Estimation Models - COCOMO Model, Project scheduling: WBS, defining a Task Set for the Software Project, Timeline charts, Tracking the Schedule | 05 | 10 | 25 | 25 | PI 11.2.3, PI 11.2.4, PI 11.1.3, PI 11.1.5, PI 11.3.3, PI 11.3.3, PI 11.3.5 |
| Learning Outcome-4.1 | Describe the elements of the management spectrum and analyze the impact of the 4Ps on software project success. | | | | | |
| Learning Outcome-4.2 | Apply estimation techniques like LOC, Function Points, and the COCOMO model to estimate project effort and cost. | | | | | |
| Learning Outcome-4.3 | Develop a project schedule using WBS, timeline charts, and apply methods to monitor and track project progress. | | | | | |
| Learning Outcome-4.4 | Interpret and create basic timeline charts (like Gantt charts) to visualize project schedules and dependencies based on task set for a software project based on scope, milestones, and deliverables. | | | | | |
| 5 | **Design Engineering**  Software Design Concepts, Interaction Design, Golden Rules and Heuristics. | 03 | 10 | 50 | 50 | PI 2.2.3, PI 3.3.2, PI 3.1.2, PI 3.2.2, PI 3.3.4, PI 3.4.4 |
| Learning Outcome-5.1 | Understand core software design concepts such as modularity, abstraction, and separation of concerns. | | | | | |
| Learning Outcome-5.2 | Explain the principles of interaction design and their role in user experience. | | | | | |
| Learning Outcome-5.3 | Apply design heuristics and golden rules to evaluate and improve user interface quality. | | | | | |
| 6 | **Software Testing and Risk Management**  Testing: Software Quality, Testing: Strategic Approach, Strategic Issues- Testing: Strategies for Conventional Software. Risk Management: Risk Identification, Risk Assessment, Risk Projection, RMMM, Software Configuration management, SCM process- Version Control, Change Control | 06 | 30 | 25 | 25 | PI 6.2.3, PI 4.1.1, PI 7.1.1, PI 7.2.3, PI 4.1.3, PI 4.1.4, PI 5.2.4, PI 5.3.4 |
| Learning Outcome-6.1 | Define software quality attributes and describe strategic approaches to software testing. | | | | | |
| Learning Outcome-6.2 | Explain risk management activities including identification, assessment, projection, and mitigation using RMMM. (CO5) | | | | | |
| Learning Outcome-6.3 | Apply software testing strategies to conventional software systems to ensure reliability. | | | | | |
| Learning Outcome-6.4 | Describe the software configuration management process and use version and change control practices. | | | | | |
| **\* Insert rows for more modules in the Course Total** | | **30** | **100** | **100** | **100** |  |

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| **2.b** | **Prerequisite Courses NIL** |

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| --- | --- | --- | --- |
| No. | Semester | Name of the Course | Topic/s |
| 1 |  |  |  |
| 2 |  |  |  |

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| **2.c** | **Relevance to Future Courses** |

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| --- | --- | --- |
| No. | Semester | Name of the Course |
| 1 | VII&VIII | Final Year Project |
| 2 | VII | STQA |

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| **2.d** | **Identify real life scenarios/examples which uses the knowledge of the subject (Discussion on how to prepare examples and case studies e.g.** [**“Boeing Plane”: C**](https://www.youtube.com/watch?v=ix5jPkxsr7M)[**Programming Language – Intro to Computer Science – Harvard’s CS50 (2018) – Bing video**](https://www.youtube.com/watch?v=ix5jPkxsr7M)**)** |

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| Real Life Scenario | Concept Used |
| Payroll management system | Analysis, Design, implementation, Testing and maintenance |
| Online shopping system | Analysis, Design, implementation, Testing and maintenance |
| Online banking | Analysis, Design, implementation, Testing and maintenance |

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| **3** | **Past Results – Division Wise** |

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| --- | --- | --- |
| Details | Target – Dec 2024 | May 2024 |
| Course Passing % – Average of 2 Divisions | 100% | 100% |
| Marks Obtained by Course Topper (mark/100) | 75 | 71 / 75 |

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| --- | --- | --- | --- | --- |
|  | Division A | | Division B | |
| Year | Initials of Teacher | % Result | Initials of Teacher | % Result |
| May 2024 | DSJ | 100% | DSJ | 100% |

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| **4** | **All the Learning Resources – Books and E-Resources** |
| **4.a** | **List of Textbooks (T – Symbol for Textbooks) to be Referred by Students** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sr. No | Textbook Titles | Author/s | Publisher | Edition | Module Nos. |
| 1 | Software Engineering: A Practitioner ‘s  Approach | Roger Pressman | McGraw-Hill  Publications | - | 1,2,3,4,5,6 |
| 2 | Software Engineering | Ian Sommerville, | Pearson Education | (9th edition) | 2,4 |
| 3 | Software Engineering Fundamentals | Ali Behfrooz and  Fredeick J.Hudson | Oxford  University Press | - | 1,2,3,4,5,6 |
| 4 | HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP,  jQuerY) |  | DT Editorial Services | 2ND  Edition | 1 |

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| **4.b** | **List of Reference Books (R – Symbol for Reference Books) to be Referred by Students** |

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| --- | --- | --- | --- | --- | --- |
| Sr. No | Reference Book Titles | Author/s | Publisher | Edition | Module Nos. |
| 1 | Software Engineering – Concepts and  Practices | Ugrasen Suman | Cengage  Learning | - | 1,2,3,4,5,6 |
| 2 | An integrated approach to Software Engineering | Pankaj Jalote, | Springer/ Narosa | - | 1,2,3,4,5,6 |
| 3 | Software Engineering | Jibitesh Mishra and Ashok Mohanty, | Pearson | - | 1,2,3,4,5,6 |
| 4 | Fundamentals of Software Engineering | Rajib Mall | Prentice Hall  India | - | 1,2,3,4,5,6 |

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| **4.c** | **List of E - Books (E – Symbol for E-Books) to be Referred by Students** |

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| --- | --- | --- | --- | --- | --- |
| Sr. No | E- Book Titles | Author/s | Publisher | Edition | Module Nos. |
| 1 | Software Engineering: A Practitioner‘s  Approach | Roger Pressman | McGraw-Hill  Publications | 7th | 1,2,3,4,5,6 |
| 2 | The Complete Reference – HTML CSS | Thomas Powell | McGraw-Hill Publications | 5th | 1 |

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| **4.d** | **Reading latest / top rated research papers (at least 5papers)** | | | |
| Name of Paper | | Name of Authors (Background) | Published in | | | Problem Statement |
| Date | Journal | |
| [SPRINT](https://github.com/sea-lab-wm/sprint_issue_report_assistant_tool): [An Assistant for Issue Report Management](https://www.themoonlight.io/file?url=https%3A%2F%2Farxiv.org%2Fpdf%2F2502.04147) | | Ahmed Adnan  University of Dhaka  Dhaka, Bangladesh  Antu Saha  William & Mary  Williamsburg, Virginia, USA  Oscar Chaparro  William & Mary  Williamsburg, Virginia, USA | 7 Feb 2025 | <https://arxiv.org/abs/2502.04147> | | An intelligent, automated solution that can assist in managing issue reports by leveraging machine learning to enhance accuracy and efficiency in issue similarity detection, severity prediction, and code localization. |
| [Privacy-Preserving Methods for Bug Severity Prediction](https://github.com/drvshavva/EASE2025-Privacy-Preserving-Methods-for-Bug-Severity-Prediction) | | Havvanur Dervi¸soglu, Ru¸sen Halepmollası ˘ Istanbul Technical University ˙Istanbul, Türkiye  Elif Eyvaz Scientific and Technological Research Council of Turkey - TÜB˙ITAK Kocaeli, Türkiye | 28 Jun 2025 | [https://arxiv.org/abs/2506.22752](https://www.arxiv.org/pdf/2506.22752) | | Explore privacy-preserving machine learning techniques, such as federated learning and synthetic data generation, to enable effective bug severity prediction without requiring organizations to share sensitive code or defect data. |
| ChatGPT Prompt | | Jules White, Sam | 2023 | arXiv:2303.07839 | | NLP interface to query ChatGPT |
| Patterns for Improving | | Hays, Quechan |  |  | |  |
|  | |  |  |  | |  |
| Code Quality, | | Fu, Jesse |  |  | |  |
| Refactoring, | | Spencer-Smith, |  |  | |  |
| Requirements | | Douglas C. |  |  | |  |
| Elicitation, and | | Schmidt |  |  | |  |
| Software Design | |  |  |  | |  |

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| --- | --- | --- | --- | --- |
| Methods for Automatic Web Page Layout Testing and Analysis: A Review | Irfan Prazina, Šeila Bećirović, Emir Cogo, and Vensada  Okanović | 2023 | IEEE | Web page layout testing with feedback to improve User experience. |
| User Interface Factors of Mobile  UX: A Study with an Incident Reporting Application | Lasse Einfeldt1 and Auriol Degbelo2 | February 2021 | HUCAPP 2021  - 5th International Conference on Human Computer Interaction Theory and  Applications | The way of interacting with mobile phones and the shortcuts used in the interaction. |
| A Survey on Web Application Penetration Testing | Abrar Alismail andMounir Frikha | February 2023 | https://[www.](http://www/) mdpi.com/jour  nal/electronics | Penetration Testing techniques and processes for web apps |

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| **4.e** | **Based on research paper an identify the current Problem statement** |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Problem Statement |  | | Used in | | | | |
| Quiz | Assignment | Lab | Mini Project | Poster Presentation | Test | Any Other |
| An intelligent, automated solution that can assist in managing issue reports by leveraging machine learning to enhance accuracy and efficiency in issue similarity detection, severity prediction, and code localization. |  |  |  |  | √ |  |  |
| Explore privacy-preserving machine learning techniques, to enable effective bug severity prediction |  |  |  |  | √ |  |  |
| Integrating ChatGPT with MSOffice |  |  |  |  | √ |  |  |
| Web page layout testing with feedback to improve User experience. |  |  |  |  | √ |  |  |
| The importance of User Interface for the efficient interaction and usability of the system. |  |  |  |  |  |  | √  Paper review |
| The way of interacting with mobile phones and the shortcuts used in the interaction. |  |  |  |  |  |  | √  Paper Review |
| Penetration Testing techniques and processes for web apps |  |  |  |  | √ |  |  |

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| **4.f** | **Identify Companies / Industries which use the knowledge of the subject and thus may provide Internships and final Placements** |

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| --- | --- | --- | --- |
| Name of the Company | To be / Contacted for | | |
| Student Internship | Student Final Placement | Faculty Internship |
| TCS | √ | √ | √ |
| Google | √ | √ | √ |
| Microsoft | √ | √ | √ |

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| **4.g** | **Identify suitable relevant TOP Guest Speakers from Industry (CS50 Lecture by Mark Zuckerberg - 7 December 2005 - YouTube)** |

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| --- | --- | --- |
| Name of the Identified Guest Speaker | Designation | Name of the Company |
| Mr. Aniket Mahala | Global Head, Devop | Oracle |
| Dr. Ninad Chaudhary | Instructor | Albany University |
| Mr. Anand Kelkar | Sr. Tech Program Manager | Amazon |

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| **4.h** | **Identify relevant Technical competitions to participate [Competitions -Paper Presentations, Projects, Hackathons, IVs etc..]** |

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| Name of the Relevant Technical Competition Identified to  participate | Organized by | Date of the Event |
| SIH | AICTE | As per announcement |
| ICSED 2025 -International Conference on Software Engineering and Development (ICSED 2025) | ACM | October 29-31, 2025 |

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| **4.i** | **Identify faculty in TOP schools / Universities who are teaching same / similar subject and**  **develop rapport e.g. Exchange Lecture Material (Assignments / Tests / Project etc..), Joint Paper Publication** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| University | Name of the Course | Name of Faculty | Type of Collaboration | | |
| Exchange of Lecture Material | Joint Publication/ Research | Other |
| IIT Kanpur | Software Engineering | Mr.Pankaj Jalote | https://onlinecourses.n  ptel.ac.in/noc24\_cs127/ preview | - | Book reference |
| Albany University | Software Engineering | Dr. Ninad Chaudhary | Exchange of Lecture Material |  |  |

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| **4.j** | **Module Best Available in - Title best resource [from *4.a* to *4.d* in this AAP] & give details** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Modu le No. | Title of the Module | Web Link | Mention the Tile | | | |
| Journal | E-Journal | Magazine | Other Resource |
| 1 | Introduction to Web Programming and Concepts | https://[www.dcpehvpm.org/E-](http://www.dcpehvpm.org/E-) Content/BCA/BCA- II/Web%20Technology/the- complete-reference-html-css-  fifth-edition.pdf |  |  |  | Textbook 4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 2 | The Software Process | https://[www.mlsu.ac.in/econte](http://www.mlsu.ac.in/econte) nts/16\_EBOOK- 7th\_ed\_software\_engineering\_ a\_practitioners\_approach\_by\_roger\_s.\_pressman\_.pdf |  |  |  | Textbook 1,2 |
| 3 | Requirements Engineering and Analysis |  |  |  |  | Textbook 1 |
| 4 | Software Estimation and Scheduling |  |  |  |  | Textbook 1 |
| 5 | Design Engineering |  |  |  |  | Textbook 1 |
| 6 | Software Testing and Risk Management |  |  |  |  | Textbook 1 |

|  |  |
| --- | --- |
| **4.k** | **Referred to any top-rated university in that subject for content** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| University | Name of the Course | Name of Faculty | Date of Delivery of the Course | Remarks |
| Massachusetts Institute of  Technology (MIT) | Software Engineering |  |  | Not available for external students <https://www.mit.edu/> |
| Carnegie Mellon University | Software Engineering |  |  | Not available for external students <https://www.cmu.edu/> |

**Faculty received any certification related to this subject. List of Certifications Identified / Done**

**4.l**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Course | Certifying Agency | No. of Hours | Level of the Course | | Certification | | Remarks |
| Introductory | Advance Skill Development | Done on | Proposed to be on |
| Full Stack Developer- Summer Internship Program 2024 | Meta Craftlab |  |  | √ | 31/07/2024 |  |  |
| Version Control using Git | Coursera |  | √ |  | 03/08/2021 |  | - |

**Completed subject wise/cluster wise training with cluster mentor. List of relevant Refresher Course Identified / Done**

**4.m**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Course | Certifying Agency (As suggested by DAB/Cluster Mentor/Industry/ University other  than MU) | Certification | | Remarks |
| Done on | Proposed to be on |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pedagogy |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| PBL |  | 01/07/25 |  |  |
|  |  |  |  |
| Sub. Content Training |  |  |  |  |
|  |  |  |  |

**4.n Best Practices Identified and adopted**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Item | Best Practices Identified | |
| Oxford | CMU |
| 1 | Microsite |  | https://[www.cs.cmu.edu/~ckaestne/17313/2018/](http://www.cs.cmu.edu/~ckaestne/17313/2018/) |
| 2 | Video Lectures |  |  |
| 3 | Assignments |  | Yes |
| 4 | Mini Project |  |  |
| 5 | Assessment Metric |  |  |
| 6 | Quizzes | Yes | Yes |
| 7 | Labs/ Practical (PBL) |  | Yes |
| 8 | Tests |  |  |
| 9 | Peer Assessment | Yes |  |
| 10 | Any Other |  |  |

|  |  |
| --- | --- |
| **4.o** | **Web Links for Online Notes/YouTube/VIT Digital Content/VIT Lecture Capture/NPTEL Videos** |

Students can view lectures by VIT professors, captured through LMS ‘Lecture Capture’ in VIT campus for previous years.

|  |  |  |
| --- | --- | --- |
| No. | Websites / Links | Module Nos. |
| 1 | <http://freevideolectures.com/Course/2318/Software-Engineering> | 2,3,4,5,6 |
| 2 | <https://freevideolectures.com/subject/web-designing/> | 1 |

|  |  |
| --- | --- |
| **4.p** | **Recommended MOOC Courses like Coursera / NPTEL / MIT-OCW / edX/VAC etc.** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sr.  No. | MOOC Course Link | Course conducted by – Person  / University / Institute / Industry | Course Duration | Certificate (Y / N) |
| 1 | ChatGPT for Beginners https://[www.mygreatlearning.com/academy/learn-](http://www.mygreatlearning.com/academy/learn-)  for-free/courses/chatgpt-for-beginners | Great Learning | 2 hrs | Y |
| 2 | Git: Become an Expert in Git & GitHub in 4 Hours | [Udemy](https://www.udemy.com/course/git-expert-4-hours/?srsltid=AfmBOoo2ERpU0RwDUm8N0UsjhdFJu72qS7vBnuDurXtFU0ghQCo3JA39) | 4 hrs | Y |
| 3 | Learn HTML: Fundamentals | [Codecademy](https://www.codecademy.com/learn/learn-html-fundamentals) | 3 hrs | Y |

|  |  |
| --- | --- |
| **5** | **Consolidated Course Lesson Plan** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | From (date/month/year) | From (date/month/year) | Total Number of Weeks |
| Semester Duration | 10-07-2024 | 18-10-2024 |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| W  ee k | Lect ure no. | M  o du le N  o. | Lecture Topics / IA 1 and IA 2 / BSA planned to be covered | Actual date of Completion (Hand written) | COs Map ped | Mapping Bloom Taxonomy level | Recommended | |
| Prior Viewing /  Reading | |
| Lecture No. (on LMS) | Chapter No./ Books/ Web  Site |
| 1 | 1 2 | 2 | Generic view of Process, Prescriptive Models: Waterfall  Model, Incremental-RAD Model, Evolutionary Process Model-Prototyping, Spiral |  | 5 6 |  |  | T4 / CH2/31 |
| 2 | 3 4 | 2 | Agile Methodology, Scrum and Extreme Programming |  | 5 6 |  |  | T4 / |
| CH2/31 |
| 3 | 5 6 | 3 | Requirement, Types of Requirements, Requirement Engineering Task, |  | 5 6 |  |  | T4 / CH18  /465 |
| 4 | 7 8 | 3 | Requirement Gathering , SRS (Software Requirement Specification) |  | 5 6 |  |  | T4 / part  4/265 |
| 5 | 9  10 | 4 | Management Spectrum, 4Ps (people, product and  process) ,Process and Project metrics, Software Project Estimation: LOC, FP, |  | 1 3 |  |  | T1/ch- 1/3 |
| 6 | 11 | 4 | Empirical Estimation Models - COCOMO Model, |  | 1 3 |  |  | T1/ch- |
| 12 | 3/65 |
| 7 | 13-  14 | 4 | Project scheduling: WBS, Defining a Task Set for the Software Project, Timeline charts, Tracking the  Schedule |  | 2 |  |  | T1/ch- 5/128 |
| 8 | 15-  16 | 5 | Software Design Concepts, Interaction Design , Design  Golden Rules and Heuristics. |  | 2 |  |  | T1/ch-  5/128 |
| 9 | 17-  18 | 6 | Testing: Software Quality, Testing: Strategic Approach, Strategic Issues- Testing: Strategies for Conventional  Software. |  | 3 |  |  | T1/ch- 26/692 |
| 10 | 19-  20 | 6 | Risk Management: Risk Identification, Risk Assessment, Risk Projection, RMMM, Software  Configuration management, |  | 3 |  |  | T1/ch- 27/721 |
| 11 | 21-  22 | 6 | SCM process- Version Control , Change Control |  | 3 |  |  | T1/ch-  27/721 |
| 12 | 232  4 | 1 | Introduction to HTML, HTML Document Structure Text  Elements, Images and Attributes, Hyperlinks, Semantic HTML, |  | 6 |  |  | T1/ch- 9/242 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13 | 252  6 | 1 | complex image maps, tables and nested tables, Inserting web page, Setting & modifying field  properties, Validating HTML |  | 4 |  |  | T1/ch- 17/449 |
| 14 | 272  8 | 1 | CSS: Internal and External CSS, CSS Grid Overview, Sizing Grid Columns and Rows, Building a Simple CSS  Grid Layout |  | 4 |  |  | T1/ch- 28/744 |
| 15 | 29-  30 | 1 | Javascript & Document Object Model: Introduction to JavaScript, Variables and Objects, Decision Making Statement, Loops, Arrays, Functions & Prototypes, Core JavaScript Objects, DOM Introduction, Event  Model, Function |  | 4 |  |  | T1/ch- 22/584 |

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| **6** | **Rubric for Grading and Marking of Term Work (inform students at the beginning of semester)** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Theory ( ISA=15 ) | | | Practical (ISA= 25 ) | | Total |
| Class  Participation Assignments | Certification Course | POP QUIZ | Lab Participation EXPTS | MINI PROJECT |  |
| 10 | 2 | 3 | 15 | 10 |  |

|  |  |
| --- | --- |
| **7** | **Assignments / Tutorials Details** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Assignment/ Tutorial No. | Title of the Assignments / Tutorials | CO Map | Assignment/ Tutorials  given to Students on | Week of Submission |
| 1 | Compare and contrast all software engineering process models | 2 | Week 1 | Week 2 |
| 2 | **Agile vs Waterfall in Government Projects”**  Evaluate failed government software projects that use the wrong model.  --> books case study /paper  Propose how Agile or Spiral might have improved outcomes. | 2 | Week 2 | Week 3 |
| 3 | **Need Analysis**- identify an idea for which you feel a digital platform can be created. Do some research and find out if any digital solution is available for your ideas. | 1-6 | Week 3 | Week 4 |
| 4 | **“Create a Complete SRS Document”**  Based on a given problem statement given in Lab sessions, prepare a full Software Requirements Specification including functional, non-functional, and diagrams. | 3 | Week 4 | Week 6 |
| 5 | **Redesigning an NGO Website for Accessibility and Usability**  Analyze an existing NGO's website.  Identify HTML/CSS/UX issues.  Provide a redesign plan with code snippets using semantic HTML and responsive CSS Grid. | 1 | Week 5 | Week 5 |
| 6 | “**Estimate and Schedule a Mobile App Project”**  Estimate using LOC, FP, and COCOMO models.  What are the challenges in estimation using LOC in the era of Low /No code | 4 | Week 6 | Week 8 |
| 7 | Create a WBS and Gantt Chart with milestones for an app like a to-do list or budgeting tool. | 5 | Week 7 | Week 8 |
| 8 | Compare and Contrast Different software testing techniques / Types. | 6 | Week 8 | Week 9 |
| 9 | **“Test Plan and Risk Management for a WhatsApp Application”**  Develop a basic test plan (unit, integration, system tests) and a risk mitigation table using RMMM. | 6 | Week 9 | Week 10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 10 | List version control tools and explain any one of them in detail. How does a change control process happen in any application? Suggest any real-life example | 5 | Week 10 | Week 11 |
| 11 | Identify the risk of generative AI in software developer jobs. Prepare an RMMM plan for the same. |  | Week 11 | Week 12 |

# Analysis of Assignment / Tutorial Questions and Related Resources

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Assignment  / Tutorial | Week No. | Type\* (√) | | | Module No. | Based on # | | | Question Type (√) | |
| R | PQ | OBT | Text Book | Reference Book | Other Learning  Resource | MU EQ | Thought Provoking |
| 1 | Week 1 |  |  |  |  |  |  | √ |  | √ |
| 2 | Week 2 |  |  |  |  |  |  | √ |  | √ |
| 3 | Week 3 |  |  |  |  |  |  | √ |  | √ |
| 4 | Week 4 |  |  |  |  |  |  | √ |  |  |
| 5 | Week 5 |  |  |  |  |  |  | √ |  |  |
| 6 | Week 6 |  |  |  |  |  |  | √ |  | √ |
| 7 | Week 7 |  |  |  |  |  |  | √ |  | √ |
| 8 | Week 8 |  |  |  |  |  |  | √ |  | √ |
| 9 | Week 9 |  |  |  |  |  |  | √ |  |  |
| 10 | Week 10 |  |  |  |  |  |  | √ |  |  |
| 11 | Week 11 |  |  |  |  |  |  | √ |  | √ |

\* Tick (√) the Type of the Assignment: Regular (R); Pop Quiz (PQ) ; Open Book Test for TE/BE/ME (OBT)

# Write number for text book, reference book, other learning resource from this AAP – *from Points 4.a to 4.d*

|  |  |
| --- | --- |
| **8** | **In Semester Assessment (ISE) / Other Class Test / Open Book Test (OBT)/Take Home Test (THT) Details** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tests | Test Dates | Module No. | CO Map | MSE Question Paper Pattern | Policy |
| ISE |  | 1-6 |  |  |  |
| Pop Quiz |  | 1-6 |  |  |  |
| Take Home Test |  | 4 |  |  |  |

**\* Failures of IA test (IA1+IA2) shall appear for IA test in the next semester. There is no provision for re-test in the same semester.**

|  |  |
| --- | --- |
| **9.a** | **Practical Activities** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Practical No. | Module No. | Title of the **Experiments** | Type of Experiment | | Topics to  be highlighted | CO  Map |
| PBL | Newly Added |
| 1 | 2 | Project Selection and Conceptualization.  **Scenario**  Students brainstorm and finalize a real-world project idea such as “Online Bookstore” or “College Event Management System.”  **Expected Outcome:** A clearly defined project topic with defined goals, scope, and justification. |  |  | Project Selection | CO1 |
| 2 | 3 | Prepare SRS for the Project topic (Private study/Homework)  **Scenario**  Based on the selected project, students draft an SRS document including functional and non-functional requirements.  **Expected Outcome:** A well-structured Software Requirements Specification document following IEEE format. |  |  | SRS | CO2 |
| 3 | 1 | Create Simple web page using HTML5 |  |  | HTML | CO5 |
| 4 | 1 | Design a web page using CSS (Cascading Style Sheets) which includes the following: |  |  | CSS | CO6 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  |  | Use different font, styles: In the style definition you define how each selector should work (font, color etc.). Then, in the  body of your pages, you refer to these selectors to activate the styles. |  |  |  |  |
| 5 | 3 | Write JavaScript to validate the following fields on the Registration page.   1. First Name (Name should contain alphabets and the length should not be less than 6 characters). 2. Password (Password should not be less than 6 characters in length). 3. E-mail id (should not contain any invalid characters and must follow the standard pattern [name@domain.com)](mailto:name@domain.com) 4. Mobile Number (Phone number should contain 10 digits only). 5. Last Name and Address (should not be Empty). |  |  | Java Script | CO6 |
| 6 | 5 | Prepare DFD-Data flow diagram for the Project topic |  |  | DFD | CO3 |
| 7 | 5 | Prepare Use case diagram for the Project topic  Prepare Sequence Activity diagram for the Project topic |  |  | UML DIAGRAMS | CO3 |
| 8 | 5 | Prepare Component and Deployment diagram for the Project topic |  |  | UML DIAGRAMS | CO3 |
| 9 | 4 | Prepare WBS and Gantt Chart for the Project topic |  |  | WBS | CO3 |
| 10 | 6 | Prepare Test Case plan for Project topic |  |  | TESTING | CO4 |
| 11 | 6 | Prepare RMMM Document for Project topic |  |  | RISK | CO4 |
| 12 | 1-6 | Mini project |  |  |  | CO1-6 |

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| --- | --- |
| **10** | **Beyond Syllabus Activities for Gap Mitigation** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Type of the Activity | Activities | Number of beneficiaries | Other Details – Guest profile, feedback, mark sheet, report |
| 1 | **Experiential learning/Interaction with Outside World** | 1- **Guest Lectures** by Industry Expert |  | Guest Session by - Mr. Shivraj Marathe |
| 2- Workshops |  |  |
| 3- **Mini Project** |  | In WDL lab |
| 4- Industrial Visit |  |  |
| 5- Any other activity |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2 | **Collaborative & Group Activity** | **6- Poster Presentation** |  | Poster in a group 2 students |
| 7- Minute Papers |  |  |
| 8- **Students Seminars** |  | In group of 2 |
| 9- Students Debates |  |  |
| 10- Panel Discussion / Mock GD |  |  |
| 11- Mock Interview |  |  |
| 12- Any other activity |  |  |
| 3 | **Co-Curricular Activity** | 13- Informative videos (**NPTEL**/Youtube  /TEDx/ MIT OW/edX) |  | NPTEL videos on Testing topic |
| 14- Lecture Capture Usage |  |  |
| 15- Any other activity |  |  |
| 4 | **Tests & Assessments** | 16- Class Tests/ Weekly Tests |  |  |
| **17- Pop Quiz** |  | Pop Quiz designed in MS-Form |
| 18- Mobile App Based Quiz |  |  |
| 19- Open Book Test |  |  |
| 20- **Take Home Test** |  | Take Home Test |
| 21- Any other activity |  |  |

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| --- | --- |
| **11** | **AAP/ Lecture Guide** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Programme | Course | Uploaded on V-refer | Date |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |

**\* Do not delete any activity. Give details for planned events. Write ‘NA’ for activity Not Planned.**

Consolidated Academic Administration Plan Prepared by (mention all theory teaching faculty names with signature) Please write below your name and sign with date of the external cluster mentor meeting

Deepali Shirkhande

Bushra Shaikh

Faculty 3

|  |  |  |  |
| --- | --- | --- | --- |
| External Industry Mentor | External Academic Mentor | VIT Cluster Mentor | Program HOD |

**Annexure:**

**Assessment Criteria of Learning Outcomes:**

|  |  |  |
| --- | --- | --- |
| **Learning Outcomes:**  The Learner will: | **Assessment Criteria:**  The Learner can: | **Evaluated under ISA/MSE/ESE/LAB** |
|  |  | ISA, LAB, MSE,ESE |
|  | ISA,LAB |
|  | ISA,LAB |
|  |  | ISA,LAB,MSE,ESE |
|  | ISA, LAB |
|  | ISA, LAB |
|  | ISA,LAB, MSE |
|  |  | ISA,LAB,MSE,ESE |
|  | ISA,LAB,MSE. ESE |
|  | ISA,LAB, MSE,ESE |
|  | ISA,MSE,LAB |
|  |  | ISA,LAB,MSE,ESE |
|  | ISA,LAB,MSE, ESE |
|  |  | ISA, MSE |
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|  |  | ISA,LAB,MSE, ESE |
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|  | ISA, LAB |
|  |  | ISA, LAB, MSE, ESE |
|  | LAB |