|  |
| --- |
| **UG Detailed Syllabus Template**  **Software Testing and Project Management** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Course Code** | **21CS61** | **Course type** | **BSC** | **Credits L-T-P** | 3 – 0 - 0 |
| **Hours/week: L - T- P** | 3 – 0 – 0 | | | **Total credits** | 3 |
| **Total Contact Hours** | L = 40 Hrs; T = 0 Hrs; P = 0 Hrs  Total = 40 Hrs | | | **CIE Marks** | 100 |
| **Flipped Classes content** | 10 Hours | | | **SEE Marks** | 100 |

|  |  |
| --- | --- |
| **Course learning objectives** | |
| 1. | To introduce the terminology, testing, test-case, pseudo-codes algorithms /flowcharts of  Triangle, Next Date & Commission programs. |
| 2. | To develop the skill of analyzing the Triangle, Next Date & Commission programs, with the perspective of Boundary Value Analysis, Equivalence Class Testing paradigms. |
| 3. | Prepare test cards to measure project performance accomplishing specified requirements. |
| 4. | Evaluate software quality based on industry perspectives and relevant versions. |

|  |
| --- |
| **Pre-requisites :** Software Engineering, Graph Theory, C Programming |

|  |  |
| --- | --- |
| **Unit – I** | **Contact Hours = 8 Hours** |
| **A perspective on Testing**  Basic definitions, Test cases, Insights from Venn diagram, Identifying Test Cases, Error and fault taxonomy, Levels of Testing.  **Examples:** Generalized pseudocode, The Triangle problem, The Next Date function, The Commission Problem, The SATM (Simple Automatic Teller Machine) system, The currency  convertor, Saturn Windshield Wiper Controller. | |

|  |  |
| --- | --- |
| **Unit – II** | **Contact Hours = 8 Hours** |
| **Boundary Value Testing**  Boundary Value Analysis, Robustness Testing, Worst Case Testing, Special Value Testing, Examples, Random Testing, Guidelines for Boundary Value Testing.  **Case Study:** Analysis of Banking application using Boundary Value Analysis | |

|  |  |
| --- | --- |
| **Unit – III** | **Contact Hours = 8 Hours** |
| **Equivalence Class Testing:**  Equivalence classes, Equivalence Class Test Cases for the Triangle Problem, Equivalence Class Test Cases for the NextDate Function, Equivalence Class Test Cases for the Commission Problem, Guidelines and Observations.  **Case Study:** Analysis of Amazon E-Commerce application by using Equivalence class testing. | |

|  |  |
| --- | --- |
| **Unit – IV** | **Contact Hours = 8 Hours** |
| **Project management:** Risk management, Managing people, Teamwork  **Configuration management:** Change management, Version management, System building, Release management  **Case study: GitHub** | |

|  |  |
| --- | --- |
| **Unit – V** | **Contact Hours = 8 Hours** |
| **Project Planning**: Software pricing, Plan-driven Development: Project Plans, Planning process, Project scheduling: Schedule Representation, Agile Planning, Estimation techniques: Algorithmic Cost Modeling. The COCOMO II Model. Project Duration and Staffing. | |

**Flipped Classroom Details**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Unit No.** | **I** | **II** | **III** | **IV** | **V** |
| **No. for Flipped Classroom Sessions** | **1** | **2** | **2** | **2** | **1** |

|  |  |
| --- | --- |
| **Books** | |
|  | **Text Books:** |
| 1. | Paul C. Jorgensen: Software Testing, ACraftsman’s approach, 3rd Edition, Auerbach  Publications, 2008. |
| 2. | Ian Sommerville: Software Engineering, Pearson Education, 9th Edition onwards. |
|  | **Reference Books:** |
| 1. | Aditya P. Mathur: Foundations of Software Testing, Pearson Education, 2008. |
| 2. | Srinivasan Desikan, Gopalaswamy Ramesh, : Software Testing Principles and Practices, 2nd  Edition, Pearson Education, 2007. |
|  | **E-resources (NPTEL/SWAYAM.. Any Other)- https://onlinecourses.nptel.ac.in/** |
| 1. | **https://onlinecourses.nptel.ac.in/** |
| 2. |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Course delivery methods** | | **Assessment methods** | |
| 1. | Chalk and Talk | 1. | IA tests |
| 2. | PPT and Videos | 2. | Online Quizzes (Surprise and Scheduled) |
| 3. | Flipped Classes | 3. | Open Book Tests (OBT) |
| 4. | Online classes | 4. | Course Seminar |
|  |  | 5. | Semester End Examination |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Outcome (COs)**  At the end of the course, the student will be able to (Highlight the **action verb** representing the learning level.) | | | | |
| **Learning Levels: Re - Remember; Un - Understand; Ap - Apply; An - Analysis; Ev - Evaluate; Cr - Create** | | **Learning Level** | **PO(s)** | **PSO(s)** |
| 1. | **Define** the test case, testing and error taxonomy. | Re | 1 | 1 |
| 2. | **Illustrate** Test Cases for Triangle, Next Date and Commission Problem for Boundary Value Analysis. | Un | 2 | 1 |
| 3. | **Design** Test Cases for Triangle, Next Date and Commission Problem for Equivalence Class Testing. | Ap | 3 | 2 |
| 4. | **Prepare** Test cards and Project schedule models for the given scenarios. | Ap | 3 | 2 |

**Scheme of Continuous Internal Evaluation (CIE):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Components | Addition of two IA tests | Online Quiz | Addition of two OAs/ Course project | Course Seminar | Total  Marks |
| Marks | 25+25 = 50 | 4\* 5 marks = 20 | 10+10 =20 | 10 | 100 |
| **OBA - Open Book Assignment**  **Minimum score to be eligible for SEE: 40 OUT OF 100** | | | | | |

|  |  |
| --- | --- |
| **Scheme of Semester End Examination (SEE):** | |
| 1. | It will be conducted for 100 marks of 3 hours duration. |
| 2. | **Minimum marks required in SEE to pass:**Score should be > 35%, however overall score of CIE + SEE should be > 40%. |
| 3. | Question paper contains 3 parts - A,B & C, wherein students have to answer any 5 out of 7 questions in part A, 5 out of 10 questions choosing 1 question from each unit in part B & 1 out of 2 questions in part C. |

|  |  |
| --- | --- |
| **Rubrics:Levels** | **Target** |
| **1 (Low)** | **60% of the students score Less than 50 % of the total marks.** |
| **2 (Medium)** | **60% of the students score 50 – 70 % of the total marks.** |
| **3 (High)** | **60% of the students score More than 70 % of the total marks.** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CO-PO Mapping (Planned)** | | | | | | | | | | | | | **CO-PSO Mapping (Planned)** | | |
| **CO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO 10** | **PO 11** | **PO 12** | **PSO1** | **PSO2** | **PSO3** |
| **1** | **√** |  |  |  |  |  |  |  |  |  |  |  | **√** | **√** |  |
| **2** |  | **√** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **3** |  |  | **√** |  |  |  |  |  |  |  |  |  |  |  | **√** |
| **4** |  |  |  | **√** |  |  |  |  |  |  |  |  |  |  |  |
| **5** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Tick mark the CO, PO and PSO mapping** | | | | | | | | | | | | |  |  |  |

Name & Signature of Faculty members Name & Signature of Faculty members

involved in designing the syllabus verifying/approving the syllabus