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| **Course Code** | CSU4302 | | | | | |
| **Level** | 4 | | | | | |
| **Course Title** | System Analysis and Software Engineering | | | | | |
| **Credit value** | 3 credits | | | | | |
| **Core/Optional** | Core | | | | | |
| **Prerequisites** | (CSU3200+CSU3301+CSU3302) (EL/CR) | | | | | |
| **Hourly breakdown** | **Theory** | | **Practical**  **hours** | **Independent Learning** | **Assessments** | **Total hrs.** |
| 24 Sessions X 2 = **48 hrs.** | 6 DS x 3 hrs. = **18 hrs.** | 2 Lab x 3 hrs. =  **06 hrs.** | * Sessions (24 x 3)   = 72 hrs.   * Online = 3 hrs. * Lab (06 x 0.5) = 3 hrs.   Total = **78 hrs.** | * Continuous Assessments (CA) : **02 hrs.** | **152 hrs.** |
| **Course Aim/s.** | To provide software solutions for the real world problem while applying the theories in the software engineering. | | | | | |
| **PLOs addressed by course** | **PLO1: Knowledge:** Explain the fundamental, principles and broader knowledge pertaining to the chosen science disciplines offered for the degree.  **PLO2: Practical Knowledge and Application**. Demonstrate the competency to use the knowledge and practical skills appropriately.  **PLO3: Communication**: Demonstrate the competency in communicating efficiently and effectively to present information, ideas and concepts to the scientific community as well as to the wider society.  **PLO4: Individual Work, Team Work and Leadership**: Demonstrate the competency in working independently and in groups in addressing issues in multi-disciplinary environments and completing the tasks on time through collaborative learning while exhibiting leadership.  **PLO5: Creativity and Problem Solving:** Identify and analyze problems using quantitative and/or qualitative approaches using scientific methodology to provide valid conclusions.  **PLO7: Information and Communication Technology Literate**: Demonstrate the competency of using Information and Communication Technology for numerical and statistical analysis, and in day to day applications.  **PLO8**: **Vision for Life:** Develop the capacity to project for future through identifying self-directed goals and continuously targeting towards them for self-improvement by undertaking further studies.  **PLO9: Lifelong Learning**: Develop the capacity to foresee new trends and their impacts and continuously update knowledge and develop skills willingly to meet those future challenges. | | | | | |
| **Course Learning Outcomes (CLO)** | At the completion of this course student will be able to:  CLO1: Define what software engineering is (PLO1).  CLO2: Define the key concerns that are common to all software development processes (PLO1, PLO2).  CLO3: Model the structure and the behavior of a software system using UML diagrams (PLO1, PLO4, PLO5, PLO7).  CLO4: Analysis and design software for an organization using appropriate tools (PLO1, PLO2, PLO3, PLO4, PLO5, PLO7, PLO8, PLO9). | | | | | |
| **Content**  **(Main topics, sub topics)** | Introduction to Software Engineering, Software Processes, Software Requirements and Requirements Engineering Process, System Models, Critical Systems, Introduction to Software Design, Object- Oriented Design and Introducing UML, Use Case Diagrams, Class Diagrams, State Diagrams, Sequence Diagrams, Activity Diagrams, Component Diagrams, Software Development, Rapid Application Development, Component-Based Software Engineering, Software Testing, Software System Implementation, Software Maintenance, Software Cost Estimation, Software Quality Management, Configuration Management, Project Management, Computer Aided Software Engineering Tools | | | | | |
| **Teaching Learning methods (TL)** | Self-learning/independent learning of self - study (IL)   * Learning the course contents in course materials in print and web-based materials (SS) * Learning through practical exercises (PR) * Additional reading materials/ recommended reading (RE)   Contact sessions   * Day schools (discussion sessions) (Non-compulsory) * Laboratory practical exercises (PR) (compulsory) | | | | | |

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| **Assessment strategy** | Overall Continuous Assessment Mark (OCAM): 40% | Final Assessment: 60 % |
| Details: Continuous Assessment (CA I) : **01 hr.**  Continuous Assessment (CA II): **01 hr.**    OCAM computation:  OCAM= 60% of best CA I/CA II+ 40% of other CA I/CA II | Final Evaluation  Theory: **02 hrs.** |
| **Recommended**  **Readings:** | 1. Sommerville, I. (2015). *Software Engineering* . (10th ed.). : Person. 2. Schmuller, J (2004).*Sams Teach Yourself UML in 24 Hours*. (3rd ed.).: Sams Indianapolis. 3. Schach, S. (2001).*Object Oriented Software Engineering* (1st ed.).: Person | |