| FACULTY OF ENGINEERING & TECHNOLOGY Programme Bachelor of Technology Branch/Spec. Computer Science and Business Systems Semester V Version 1.0.0.0 Effective from Academic Year 2023-24 Effective for the Batch admitted in July 2021 Course Code 2CSBS5101 Course Name Software Design with UML Teaching Scheme Examination Scheme (Marks) Credit 1. TU P TW Examination Scheme (Marks) Credit 2. 0 1 - 3 Theory 40 60 100 Pre-requisites Concept of object oriented programming. Course Outcomes On successful completion of the course, the students will be able to: CO1 understand the importance of modelling in the software development life cycle. apply Unified Modelling Language for creating software development life cycle. apply Unified Modelling Language for creating software development life cycle. apply Unified Modelling Language for creating software development life cycle. apply Unified Modelling Language for creating software development life cycle. apply their knowledge of component modelling and deployment modelling for covering aspects (like database, network etc.) other than the basic software features in analysis and design. Theory Syllabus Unit Content History Content Content Cethologies and the UML Method: Software development process: The Waterfall Model vs. The Spiral Model: The Software Crisis, description of the real world using the Objects Model; Classes, inheritance and multiple configurations; Quality software characteristics; Description of the Object-Oriented Analysis process vs. the Structure Analysis Model. Introduction to the UML Language: Standards; Elements of the language; General description of Various models; The process of Object-Oriented software development; Description of Design Patterns; Technological Description of Distributed Systems. A Requirements Analysis Using Case Modeling: Analysis of System requirements; Actor definitions; Writing a case gool. Use Case Diagrams; Use Case Relationships. Transfer from Analysis to Design in the Characterization Stage: Interface, Clas | GANPAT UNIVERSITY | | | | | | | | | | | | | |
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| Programme | | | | | | | | | | | | | | |
| Semester V | | | | | | | | | Business | | | | | |
| Effective from Academic Year 2023-24 Effective for the Batch admitted in July 2021 | 8 | | | | | | | 1 | | | | | | |
| Course Code 2CSBS5101 Course Name Software Design with UML | | | • | | | | | | | | | | | |
| Teaching Scheme Core Cor | | | | | | | | 1 | | | | | | |
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| Pre-requisites Concept of object oriented programming. Course Outcomes On successful completion of the course, the students will be able to: Understand the importance of modelling in the software development life cycle. CO2 apply Unified Modelling Language for creating software design models with object oriented approach. differentiate and create static as well as dynamic models of any software problem to solve. apply their knowledge of component modelling and deployment modelling for covering aspects (like database, network etc.) other than the basic software features in analysis and design. Theory Syllabus Unit Content Introduction to on Object Oriented Technologies and the UML Method: Software development process: The Waterfall Model vs. The Spiral Model; The Software Crisis, description of the real world using the Objects Model; Classes, inheritance and multiple configurations; Quality software characteristics; Description of the Object-Oriented Analysis process vs. the Structure Analysis Model. Introduction to the UML Language: Standards; Elements of the language; General description of various models; The process of Object-Oriented software development; Description of Vesign Patterns; Technological Description of Distributed Systems. Requirements Analysis Using Case Modeling: Analysis of system requirements; Actor definitions; Writing a case goal; Use Case Diagrams; Use Case Relationships. Requirements Analysis to Design in the Characterization Stage: Interaction Diagrams: Description of goal; Defining UML Method, Operation, Object Interface, Class; Sequence Diagram; Finding objects from Flow of Events; Describing the process of finding objects using a Sequence Diagram; Descriptions descriptions; Connections descriptions in the Static Model; Arsociation, Generalization, Aggregation, Dependency, Interfacing, Multiplicity. The Logical View Design Stage: The Static Structure Diagrams: The Class Diagram; Pattern of the Activity Diagram: Exercise in State Machines. The Logical View Design of the Activity | | | | | | - | _ | • | | | | | | |
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| CO3 | | | | | | | | | | | | | | |
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| 1. Class Diagram | | | | lowing 9 | diagran | ns: | | | | | | | | |
| 2. Object Diagram | | | | | _ | | | | | | | | | |
| | 2. | Object | Diag | ram | | | | | | | | | | |

- 3. Use Case Diagram
- 4. Sequence Diagram
- 5. Collaboration Diagram
- 6. State Chart Diagram
- 7. Activity Diagram
- 8. Component Diagram
- 9. Deployment Diagram

For the following Applications:

- ATM Systems
- Stock Maintenance System
- Remote Procedure Call Implementation

Draw the UMLS diagrams.

Text Books

The Unified Modelling Language User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.

Reference Books

Design Patterns: Elements of Reusable Object-Oriented Software by Erich Gamma, Richard Helm, Ralph Johnson, and John M. Vlissides.

ICT/MOOCs Reference https://nptel.ac.in/courses/106105153 2 https://nptel.ac.in/courses/106105224 3 https://nptel.ac.in/courses/106105153 4 https://www.edx.org/course/uml-class-diagrams-for-software-engineering-course-v1-kuleuvenxumlx-3t2022 5 https://www.classcentral.com/course/software-engineering-modeling-software-systems-us-81469 6 https://www.udemy.com/course/djeyamala-ooad-uml/ https://www.udemy.com/course/oo-analysis-design-programming/ 8 https://www.udemy.com/course/uml-the-complete-uml-unified-modeling-language-reference/ 9 https://www.udemy.com/course/uml-fundamentals/ 10 https://in.coursera.org/learn/software-engineering-modeling-software-systems-using-uml

| | Mapping of CO with PO and PSO: | | | | | | | | | | | | | | |
|-----|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | P O 1 | P O 2 | P O 3 | P O 4 | P O 5 | P O 6 | P O 7 | P O 8 | P O 9 | P O 1 0 | P O 1 1 | P O 1 2 | P S O 1 | P S O 2 | P S O 3 |
| CO1 | 3 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 3 | 3 | 3 | 1 | 3 | 2 | 0 |
| CO2 | 3 | 3 | 3 | 2 | 2 | 0 | 1 | 0 | 2 | 3 | 3 | 1 | 2 | 3 | 0 |
| CO3 | 3 | 2 | 3 | 3 | 2 | 0 | 1 | 0 | 2 | 2 | 3 | 1 | 3 | 3 | 0 |
| CO4 | 2 | 2 | 3 | 2 | 2 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 1 | 2 | 0 |