**First Semester 2020-2021**
**Course Handout Part-II**

**Date:** Aug 15, 2020

In addition to Part I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

*Course No.*         : **CS G514 / SS G514**
*Course Title*        : **Object Oriented Analysis and Design**
*Instructor-in-Charge*  : **YASHVARDHAN SHARMA**
*Email*            : **yash@pilani.bits-pilani.ac.in**       *Chamber*: **6111-C**
*Course web page*     : **Course page on Nalanda, the on-campus learning management system**
               *(https://nalanda.bits-pilani.ac.in)*

## Scope and Objective of the Course:

The course covers the object oriented analysis and design methodology, requirements-analysis using a use case model, use interaction models to capture the requirements and the design of the solution, in sufficient detail. The course will also cover topics like design patterns, implementation, testing, and architecture with respect to object oriented systems. After completion of the course the students will have good understanding of object oriented analysis and design using the unified process and will be able to apply the methodology to typical cases. The course aims at imparting a good understanding of the main UML models used in the use case driven unified process and their application to given problems.

**Textbook:**
**T1.** Applying UML and Patterns, Craig Larman, Pearson Education, Third Edition, 2008

**Reference Books:**
**R1.** Object Oriented Systems Development using Unified Modeling Language, Ali Behrami, McGraw Hill International Edition, 1999
**R2.** Object Oriented Modeling and Design using UML, Second Edition, Michael Blaha and James Rumbaugh, Pearson Education, Second Edition, 2007
**R3.** Object Oriented Analysis and Design with Applications, Grady Booch et.al., Addison-Wesley, Third Edition, 2007
**R4.** Design Patterns, Gamma et. al., Pearson Education, 2006.

**Lecture Plan:**

| Lecture No. | Topics to be covered | Reference |
|---|---|---|
| 01 - 03 | Introduction, Object Oriented Information systems Overview-Object Orientation | T1.Ch 1 + Class Notes |
| 03 - 04 | Software Development Life Cycle, Object Oriented Systems Development, Iterative, Evolutionary, Agile | T1.Ch 2 + Class Notes |
| 05 - 07 | Object Oriented Methodologies Unified Approach | T1.Ch 2 |
| 08 - 09 | Unified Modeling Language UML Notations | T1.Ch 22 + Class Notes |
| 10 - 15 | Object Oriented Analysis, Requirements Analysis, Use Case Model, Class Identification, CRC cards, Domain Model, Activity Diagrams, System Design | T1.Ch 4,5,6,7,8,9,10,11 and Case Studies |
| 16 - 17 | UML Activity Diagrams and Modeling | T1.Ch 28 + Class Notes |

| Lecture No. | Topics to be covered | Reference |
|---|---|---|
| 18 - 24 | Object Oriented Design, Class Design, Advanced Class Modeling, Design Axioms and GRASP Patterns, Class Diagram Interaction Diagrams, Advanced Interaction Modeling | T1.Ch 12,13,14,15,16,17, 18,19, 25 and Case Studies |
| 25 - 26 | State Modeling, UML State Charts, Advanced State Modeling | T1.Ch 29 |
| 27 - 28 | Access Layer and View Layer, Object Persistence, UI Design | R1.Ch 11, 12 , R2.Ch 19 |
| 29 - 30 | Implementation: Implementation Modeling | T1.Ch 20 + Class Notes |
| 31 - 35 | Application of GoF Design Patterns | T1.Ch 26,  R4 |
| 36 - 37 | Architecture and Framework, Object Oriented Systems Architectures Frameworks | T1.Ch 22 + Class Notes |
| 38 - 40 | Software Quality Assurance Object Oriented Testing | R1.Ch 13 + Class Notes |

**Evaluation Scheme:**

| S. No. | Evaluation Component | Duration | Weightage | Date & Time | Nature |
|---|---|---|---|---|---|
| 1. | Test 1 | 30 Minutes | 15% | 14/09 M 5 | Closed Book |
| 2. | Test 2 | 30 Minutes | 15% | 12/10 M 5 | Closed Book |
| 3. | Test 3 | 30 Minutes | 15% | 16/11 M 5 | Closed Book |
| 4. | Assignments, Projects | | 20% | | Open Book |
| 5. | Comprehensive Examination | 120 Minutes | 35% | 7/12 AN | Partly Closed Book |

**Assignments and Projects**

Assignments/projects will be evaluated through a Viva-Voce.

Details of assignments/projects including problem specifications, deliverables, team sizes, deadlines, and Viva-voce schedule will be posted on the course website.

**Make-up Policy**

- No Make-up will be available for any of the assignments.
- Prior Permission of the Instructor-in-Charge is required to take a make-up for a test.
- A make-up test shall be granted only in genuine cases where - in the Instructor's judgment - the student would be physically unable to appear for the test.

**Chamber Consultation Hours**  Thursday 5:00 – 6:00pm

**Notice**

All the notices of this course will be displayed at (*https://nalanda.bits-pilani.ac.in*) only

**Instructor-in-Charge**

**CS/SS G514**