MATH 2013 OBJECT ORIENTED ANALYSIS (WSTC)

Credit Points 10

Legacy Code 700039

Coordinator Kritika Gupta (https://directory.westernsydney.edu.au/search/name/Kritika Gupta/)

Description The core strength of this subject is to analyse and model business objectives and critical requirements of software systems to be developed using object-oriented (OO) approaches. The system analysis is taken to greater depths within the context of object orientation. The Unified Modelling Language version 2.0 (notably use cases, activity diagrams, class diagrams and sequence diagrams) is used as a modelling standard for creating OO models in the problem space. The subject also covers the rational unified process methodology and applications of design patterns for software development through practical case studies.

School Computer, Data & Math Sciences

Discipline Systems Analysis and Design

Student Contribution Band HECS Band 2 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 2 subject

Pre-requisite(s) Students enrolled in 7004 Diploma in Information and Communications Technology Fast Track 7005 Diploma in Information and Communications Technology 7067 Diploma in Information and Communications Technology Extended 7134 Diploma in Information and Communications Technology Extended – ICT 7138 Diploma in Information and Communications Technology Extended - ICT 7139 Diploma in Information and Communications Technology Extended 7140 Diploma in Information and Communications Technology Extended - Information Systems 7163 Diploma in Information and Communications Technology 6035 DiplomaBachelor of Information and Communications Technology 6036 Diploma in Information and Communications TechnologyBachelor of Information Systems 6039 DiplomaBachelor of Information and Communications Technology and 6040 Diploma in Information and Communications Technology Bachelor of Information Systems must pass INFS 1007 Systems Analysis and Design before enrolling in this unit

Equivalent Subjects INFS 2006 Object Oriented Analysis INFS 2011 Object Oriented Analysis (WSTC)

Restrictions Students must be enrolled at Western Sydney University, The College. Students enrolled in Extended Diploma programs must have passed 40 credit points of preparatory subjects in order to enrol in this subject. Students enrolled in the combined Diploma/Bachelor programs listed below must pass all College Preparatory subjects listed in the program structure before progressing to the Year 2 subjects.

Assumed Knowledge

General understanding of what an information system is and how information systems development is undertaken and Introductory knowledge about system analysis and design, including
- basic problem solving experience in computerised information systems
- ability to derive systems requirements from problem definitions

- ability to produce system models using process, data, object and network modelling.
- understanding design and implementation issues include, (but may not be limited to), elementary database design, input, output and user interface design and prototyping.

Learning Outcomes

On successful completion of this subject, students should be able to:
1. Explain the theoretical fundamentals underpinning Object Oriented Analysis.
2. Identify Unified Modelling Language (UML) of the Object Management Group (OGM) for analysing software requirements,
3. Outline an object oriented lifecycle and explain the process of object oriented analysis, especially within the context of iterative and incremental nature of the process,
4. Apply the iterative and adaptable process frame work of RUP in software development
5. Construct well-documented UML-based artefacts from the early phases of the development process for the case study,
6. Construct the Model of the Problem Space based on the analysis in an industrial CASE tool,
7. Apply team work skills in a small development team, including: distributing the development workload, resolving disputes, running meetings, and taking minutes,
8. Identify and create operational (non functional) requirements of a system including performance and security,
9. Develop a report based on verbal and written instructions about the performance of software development tasks and associated administrative duties,
10. Illustrate quality assurance, quality control and user-expectations via reports and theoretical explanation.
11. Explore possibilities of applying design patterns in software design.

Subject Content

1. The concepts of Object Orientation including the fundamentals, processes and application of the concepts to practical modelling and object-oriented analysis techniques,
2. Three modelling spaces: Problem, Solution and Background; Roles in Requirement Analysis,
3. Critical Requirement Analysis and Business Evaluation to arrive at high-level requirements and their prioritisation,
4. Package Diagrams and high-level slicing of packages as sub-systems,
5. Four phases of Rational Unified Process (RUP): Inception, Elaboration, Construction and Transition
6. Documenting Actors and Use Cases,
7. Introduction to Use Case Diagrams, Use Case Notations, Relationships, Analysis & Testing,
8. Activity Diagrams as mechanisms to document the flow of the system/use case,
9. Class Notations and definition of a class including attributes and operations,
10. Documenting Class Diagram and Relationships between various classes such as Association and Inheritance,
11. Documenting Sequence Diagrams and the persistence design with Class and Sequence Diagrams,
12. Major Ingredients and Creation of State Chart Diagrams,
13. Prototypes and Operational (Non-Functional) Requirements including Performance, Scalability, Security & Volume,
14. Quality assurance, management and testing aspects of a system,
15. Emerging technologies and design.
16. Introduction to Creational, Structural and Behavioural design patterns.

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Participation	10 marked sessions x 1.0% each Approx. 2 hours each	10	N	Individual	N
Quiz	90 mins	15	N	Individual	N
Applied Project	30-40 hours each member	25	N	Group	N
Report	3 hours	50	N	Individual	N