

ICT340 Application Analysis and Design

Level: 3

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY SEMESTER

Synopsis:

ICT340 Application Analysis and Design provides students with the foundations for the analysis and design of application systems using the object-oriented paradigm. It introduces the key concepts necessary for subsequent practical object-oriented analysis and design in the real world that begins with a structural model and then proceeds with dynamic modeling. At the end of the course, students would be able to develop object oriented analysis design and implement the design in modeling and programming languages. Students use Python as the implementation language and UML as the modeling language. A case study will allow students to demonstrate what they learned in mainstream software application systems.

Topics:

- User requirements gathering via user stories and interview
- Translation of user requirements to categories of objects
- Structural Object Oriented Modelling
- Dynamic Object Oriented Modeling
- UML Class, Object, Use Case and Sequence diagrams with code samples
- Design principles 1: abstraction, encapsulation, generalisation, decomposition, coupling, and cohesion
- Design principles 2: separation of concerns, information hiding and conceptual integrity
- Design patterns: common structural, behavioural and creational patterns.
- UML modeling and code samples for design principles and patterns
- Object Relational Modeling (ORM) and persistent store
- SQL Query through persistent store
- Case study of application analysis and design

Textbooks:

Ian Sommerville: Software Engineering, Global Edition (eTextbook) 10th edition ©2016 Pearson
ISBN-13: 9781292096148

Learning Outcome:

- Analyse user requirements for non-ambiguity, correctness, completeness and consistency for system design
- Develop the structural and dynamic models based on system design
- Appraise the associations among a set of classes as part of a structural processing
- Demonstrate the application of design patterns in system design
- Formulate report to document design analysis well
- Construct components of a system with a modelling language
- Implement structural and dynamic model in Python

Assessment Strategies (Evening Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	PRE-CLASS QUIZ 1	2
	PRE-CLASS QUIZ 2	2
	PRE-CLASS QUIZ 3	2
	QUIZ 1	6
	TUTOR-MARKED ASSIGNMENT 1	18
Overall Examinable Components	ECA	70
Total		100