# ICT205e System Modelling in Object Oriented Design and Analysis

**Level:** 2

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY SEMESTER

**E-Learning:** BLENDED - Learning is done MAINLY online using interactive study materials in Canvas. Students receive guidance and support from online instructors via discussion forums and emails. This is supplemented with SOME face-to-face sessions. If the course has an exam component, this will be administered on-campus.

**Synopsis:**

This course introduces the skills in analysing requirements and performing system modelling for an application using the object-oriented paradigm. It will focus strongly on the practical aspects of object-oriented analysis and design. Topics include developing the initial structural model from a set of requirements, performing the dynamic modelling to produce the basic design of a system, implementing a dynamic model in Java, testing the implementation of a basic system, and using some of the features of a modelling language. As this is a practical course, working knowledge of an object-oriented programming language is essential. The language that will be used in the course is Java.

**Topics:**

- The fundamentals of structural analysis in object-oriented system design: producing the class association diagram and the class description
- Dynamic modelling of the behaviour of an individual object: analysing changes of state
- Dynamic modelling of the behaviour of a system: performing walkthroughs with use cases and class diagrams
- Dynamic modelling of the behaviour of a system: analysing system behaviour with sequence diagrams
- System implementation: producing the program codes from design
- System integration: combining user interfaces with application functions

**Learning Outcome:**

- identify the classes, their attributes and hierarchical relationships from a set of requirements
- outline the associations among a set of classes as part of a structural processing
- develop the initial structural model from a set of requirements
- test the implementation of a basic system
- diagram essential components of a system with a modelling language
- develop a structural model with the Unified Modelling Language
- construct dynamic models of a system with a modelling language
- implement a dynamic model in Java

**Assessment Strategies:**

| Continuous Assessment Component | Weightage (%) |
|---|---|
| PRE-CLASS QUIZ | 2 |
| QUIZ | 6 |

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|---|---|
| TUTOR-MARKED ASSIGNMENT | 18 |
| PRE-CLASS QUIZ | 2 |
| PRE-CLASS QUIZ | 2 |
| **Sub-Total** | **30** |

| **Examinable Component** | **Weightage (%)** |
|---|---|
| Written Exam | 70 |
| **Sub-Total** | **70** |

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| **Weightage Total** | **100** |