Module	Systems Analysis and Design
Credits	5
Important notes	Please note this module is not intended for first year students
Allocation of marks	70% Continuous assessment 30% Final examination

Intended Module Learning Outcomes

On successful completion of this module learners will be able to:

1. Develop the analytical skills necessary to apply abstract concepts in an object oriented manner
2. Express system solutions in a formal manner and implement the derived formalization
3. Select and apply appropriate design techniques to system solutions
4. Produce correct software designs
5. Analyse a problem, produce high quality software designs using Universal Modelling Language (UML) notation and relate the software designs to the implementation
6. Develop a comprehensive set of testing routines for software and document the results.

Module Objectives

This module introduces you to the fundamental concepts of object oriented program design and how to use modelling for constructing complex software systems.

Module Curriculum

The Object Paradigm

- Classification: Objects and object types (classes);

- Abstraction;
- Encapsulation: Data and behaviour
- Information hiding: Access specifiers;
- Inheritance and polymorphism
- Aggregation and association

Unified Modelling Language

- Rationale and history of UML;
- Use case analysis;
- Structural view: Class and object diagrams
- Behavioural view: Sequence, collaboration, state chart, activity diagrams
- Environment view

Object Oriented Design

- Implementation options;
- Object oriented methodologies
- Use of iterative development;
- Introduction to patterns and anti-patterns

Software Testing

- Software verification and validation
- Unit Testing, Integration testing, System testing
- User acceptance testing

Project Management

- Role of project manager
- Life Cycle Model, Phases and deliverables,
- The project Team
- Tools: CPA, Gannt