

Course descriptor F21SF

Course code	F21SF
Course title	Software Engineering Foundations
Credits	15
School	Mathematics and Computer Sciences
SCQF Level	11
Semester	1
Aims	<p>This course aims to:</p> <ul style="list-style-type: none"> • To equip students with an understanding of the object oriented paradigm and the process of object oriented design. • To support the development of object oriented programs in the Java programming language. • To develop an understanding of window-based systems and their development
Syllabus	<ul style="list-style-type: none"> • Programming in Java: Objects, classes, encapsulation, inheritance, aggregation, polymorphism, abstract classes, and interfaces. Constants and variables, primitive data types, reference variables, strings, collection classes, arrays, control structures for selection and iteration • Methods: Signatures, parameters, return types. I/O File handling. Exceptions. • Graphical user interface design and implementation: labels, buttons, text fields, sliders, panels, frames; menus & lists; file selection; state-based design. • Object-oriented design including UML notation: CRC cards, Use cases, Activity diagrams, Interaction diagrams.
Learning Outcomes	
Subject Mastery	<ul style="list-style-type: none"> • Knowledge and understanding of the Java programming model. • Theoretical and practical knowledge of the design and implementation of object oriented solutions to problems. Skill in the use of Java programming language. • Demonstration of skill in design and implementation of practical GUI based applications.
Personal Abilities	<ul style="list-style-type: none"> • Critical appreciation of the object oriented approach to software engineering. • Ability to develop creative solutions to complex problems using the Java programming language. • Ability to critically reflect on and refine a proposed solution. • Design, implement and evaluate an object oriented solution to a problem. Awareness of role of interface in mediating between user and system.
Assessment method	60% examination, 40% coursework