



## Course information 2011–12

### IS1129 Introduction to programming (half course)

This half course investigates approaches to the development of computer programmes. It takes the perspective that it is not enough to simply ‘code’ but to use the development of code to solve a problem. It reinforces the view that care must be taken to understand the problem that the computer program is being developed to solve and to select the appropriate programming language, world view and approach to create a solution.

#### Prerequisite

None apply.

#### Aims and objectives

The main aims and objectives of this course are to:

- introduce students to programming languages and their world views
- develop understanding of software development lifecycles
- develop understanding of how a programming problem is recognised and how a solution to the problem can be designed
- develop understanding of primitive and complex data structures
- develop understanding of programming structures
- develop understanding of how programs can be tested
- develop understanding of how programs can be documented.

#### Essential reading

For full details, please refer to the reading list

Sprankle, M. *Problem Solving and Programming Concepts*. (Upper Saddle River, New Jersey, USA: Pearson Education, Inc)

#### Learning outcomes

At the end of this half course and having completed the essential reading and activities students should be able to:

- ✓ compare the merits of various approaches to programming
- ✓ recognise, design and produce a solution to a programming problem
- ✓ identify and use fundamental program structures
- ✓ identify and use primitive data types to store information
- ✓ manipulate data using algorithmic expressions
- ✓ produce efficient solutions by using control structures and conditional statements
- ✓ compile, run and effectively debug a simple program
- ✓ design data structures to store more complex information
- ✓ write a clearly annotated program with meaningful identifier names
- ✓ develop and use software testing methods that help to improve the quality of programs.

#### Assessment

This half course is assessed by a two hour unseen written examination.

## Syllabus

This is a description of the material to be examined, as published in the *Regulations*. On registration, students will receive a detailed subject guide which provides a framework for covering the topics in the syllabus and directions to the essential reading.

**Selecting a programming language and world view.** This topic briefly addresses the most common programming language world views (functional, modular, procedural and object-oriented) and investigates how to choose the most appropriate for a given problem.

**Designing a solution.** This topic discusses how a programming problem can be analysed to create an abstract, machine-independent solution design. The methods for the refinement of the abstract solution into a language-dependent solution are also investigated.

**Implementing your solution.** This topic investigates the program structures, control structures and selection structures that are available to the programmer to implement a given solution. The concepts of primitive and complex data structures are presented and discussed. As part of the implementation process, the programmer should produce programs that are understandable to other programmers. This investigates how a program can be documented to do this.

**Testing your solution.** Errors can occur during the design and implementation of a solution. This topic investigates such errors and what techniques can be used to rectify them. The use of a test plan to identify logical programming errors will also be discussed.

Students should consult the *Programme Regulations for degrees and diplomas in Economics, Management, Finance and the Social Sciences* that are reviewed annually. The Prerequisites, Exclusions, and Syllabus are subject to confirmation in the *Regulations*. Notice is also given in the *Regulations* of any courses which are being phased out and students are advised to check course availability.