

**ITNP01
Principles and Practice of Programming****Prerequisites**

None.

Credits

15 credits at SCQF Level 11.

Learning Outcomes

At the end of the module, students will be able to write, compile and test Java programs. The programs will involve classes and methods, and will demonstrate a significant range of skills and good practice in program construction, including modularity and good internal documentation. Students will have a practical knowledge of programming with data structures, graphical user interfaces, and files.

Students will have demonstrated the ability to apply theory and techniques to unseen problems without references to notes, to work independently, and to work under a time constraint.

Students will have developed transferable skills in seeing how repertoires of standard techniques and methods, such as the resources of a particular programming language, can be used to solve complex problems. Students will have learned how to review, consolidate and extend their knowledge of programming (in Java), and their skills and practices in programming.

Contents***Imperative, Object-Oriented, Event Driven Programming Concepts* 20 Lectures**

- Event-driven applications
- Graphical user interface components using the Swing libraries
- Variables, types, assignment, expressions
- Control by sequencing, selection and repetition
- Methods and parameters
- Classes and inheritance
- Program construction by incremental development
- Testing, debugging, documenting

***Structures in Java* 10 Lectures**

- Data structures: records, arrays, strings
- Files: sequential access, readers and writers
- Graphical structures : frames, boxes, layout managers, layout, menus, windows
- Packages: Import and packages, Java class libraries

Assessment

Lab Checkpoints: 10%

Assignment 1: 20%

Assignment 2: 30%

Examination: 40% (closed book).

In this module the prescribed classes are the tutorials and practicals. Failure to attend at least two-thirds of prescribed classes will be reported to the Examiners' Meeting.

To achieve a grade 3C or better in this module, you must achieve at least grade 4C in an examination. If you are unable to attend the main examination, you must apply promptly to Student Programmes for a deferred examination. If this is not granted, the examiners may allow a repeat examination. The grade awarded following a repeat examination is capped at 3C.

Coursework will be accepted up to five days after the submission date (or expiry of any agreed extension) but the grade will be lowered by one grade point per day or part thereof (e.g. if you are three days late and the assignment is graded as 2A, then you will receive 2D to penalise lateness). After five days the piece of work will be deemed a non-submission and will receive an X (no grade), resulting in No Grade for the module overall.

Work which is submitted for assessment must be your own work. All students should note that the University has a formal policy on plagiarism. Plagiarism means presenting the work of others as though it were your own. The University takes a very serious view of plagiarism, and the penalties can be severe. Specific guidance on computing assignments may be found in the Postgraduate Student Handbook.

Textbooks

D. Bell and M. Parr. *Java for Students* (sixth edition), Prentice Hall, 2010, ISBN 027373122X = ISBN 0273731221 (this is an essential purchase). **Note:** Editions earlier than the fourth are not suitable.