| *Pre-Requisite Modules code(s)* | *Co-Requisite Modules code(s)* | *ECTS Credits* | *Module Code* | *Module Title* |
|---|---|---|---|---|
| *None* | *None* | *5* | *CMPU1028* | *Programming with Persistent Data* |

### 8.1.10. Programming with Persistent Data

**Module author:** Programming and Algorithms Group

**Module Description:**

This module introduces the fundamental programming techniques required for the efficient storage and retrieval of data.

**Module aim**

The aim of this module is to

- Teach the fundamentals of data storage methods and file formats
- Teach the procedural programming techniques to implement various storage methods and formats.

**Learning Outcomes:**

On successful completion of this module, the student will be able to:

- Distinguish between various data storage methods and formats,
- Choose the most appropriate data storage method for a specified requirement
- Design and write procedural programs to store and retrieve data in an efficient manner

**Learning and Teaching Methods:**

The module will be delivered primarily through lectures, tutorials, self-directed learning and practical laboratory exercises. A Virtual Learning Environment (VLE ) is used extensively in this module.

**Module content:**

- *File Structure:* bytes, fields, records, attributes, rows, columns.
- *File Types:* ASCII, Binary, Relational
- *File Access:* Serial, Sequential, Random, Indexed, Index Sequential.
- *Data Manipulation*: Creating persistent data, Retrieving persistent data, Updating persistent data, Deleting persistent data.
- *File Design*: Efficient design of file structure and content.
- *Common File Techniques:* Multiple-file matching, sorting, merging, filtering.
- *File Security:* Reading and writing file permissions.
- *Programming with Common File Formats:* Reading and writing using common propriety software formats, e.g. spreadsheet, database, HTML

| *Pre-Requisite Modules code(s)* | *Co-Requisite Modules code(s)* | *ECTS Credits* | *Module Code* | *Module Title* |
|---|---|---|---|---|
| *None* | *None* | *5* | *CMPU1028* | *Programming with Persistent Data* |

### Module Assessment

Assessment of the module will be as follows:

Continuous Assessment (30%):

- Individual assignment
- Lab test

Written examination (70%): One two hour, end of module examination.

### Essential Reading:

Depending on the procedural language used in this module, specific reading lists will be specified in advanced of the start of the module.

### Supplemental Reading:

Born, Gunter,1995, *The File Formats Handbook,* Wadsworth Publishing Company,
ISBN 978-1850321170

### Further Details:

class size is expected to be 80, broken into groups for labs and tutorials. Semesters: 1

Contact hours: one lecture, one laboratory hour and one tutorial hour.

### Date of Academic Council approval ……