Module Specification

Programming in C++

Version: 2023-24, v2.0, 27 Jul 2023

Contents

Part 1: Information

Module title: Programming in C++

Module code: UFCFGL-30-1

Level: Level 4

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: Introduction to computer programming

Systems programming, differences between languages like Java/Javascript and

C/C++

C:

Data types

Iteration (for and while)

Selection (if and switch)

Functions

Structs

Boolean logic and bit fields

Pointers and memory management

Linked lists, stacks, and queues (in C style)

C++:

Introduction to object-oriented programming

Classes, objects, and data-encapsulation

Linked lists, stacks, and queues (in C++ style)

Function objects and Anonymous functions

Generic programming (templates)

Generic linked list

Object-oriented design, introduction to UML

Testing and debugging

Open Source software---examples, licenses, and ethics

Part 3: Teaching and learning methods

Teaching and learning methods: Laboratory exercises will allow the student to gain familiarization with the tools and techniques required for the implementation and verification of systems built with C++.

Students will be expected to demonstrate self-direction and originality in their learning which will be facilitated through student directed tutorials.

Scheduled learning: in the form of lectures, tutorials, demonstrations and practical classes will comprise 1/3 of the total study time for this module.

Independent learning: will constitute the remaining study time with an expectation that approximately 92 hours will be spent on self-directed study, a further 80 hours in support of the coursework and 32 hours preparation for the presentation.

Contact time: 72 hours
Assimilation and skill development: 140 hours
Undertaking coursework: 88 hours
Total: 300 hours

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Develop and implement C++/C programmes using suitable language features.

MO2 Manage software development using a suitable source control tool, for example Git.

MO3 Select suitable programming languages based on an understanding of the underlying programming model.

MO4 Evaluate contextual issues related to software development, for example, security issues, the use of open source software, legal and ethical issues.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 204 hours

Face-to-face learning = 96 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufcfgl-30-1.html

Part 4: Assessment

Assessment strategy: At both first sit and resit, summative assessment is achieved through a set exercise that consists of a logbook and the documentation related to an innovative solution to a design problem The documentation will include a program implementation, design (e.g. UML), and testing. Students will also be expected to demonstrate their effective use of validation and verification tools etc.

At main sit, students will be supported in this work through formative assessment, provided as oral feedback throughout the laboratory sessions particularly with respect to the design development and the log-book entries.

The final piece of summative assessment will be an oral presentation of the software implemented, reflecting back to the log book.

Assessment tasks:

Presentation (First Sit)
Description: Depending on circumstances, the presentation will either be in person or as a submitted video.
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO3, MO4

Set Exercise (First Sit)
Description: Logbook and demonstration of final product
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Presentation (Resit)

Description: Depending on circumstances, the presentation will either be in person or as a submitted video.
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO3, MO4

Set Exercise (Resit)
Description: Logbook and demonstration of final product
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Cyber Security and Digital Forensics [Frenchay] BSc (Hons) 2023-24

Cyber Security and Digital Forensics [NepalBrit] BSc (Hons) 2023-24

Cyber Security and Digital Forensics {Foundation} [Frenchay] BSc (Hons) 2022-23