Computing Department

XFX1061-2021

Software Design

MODULE HANDBOOK

Level: IY1

NQF Level: 3

Academic Year: 2020/21

Table of Contents

1. Key Information

Module Leader: Alamina, Iyalla John

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Module Tutors (MT): You can find information about MT who will be teaching this module this academic year in the 'Staff Profiles' area in Brightspace (BS).

Academic Regulations:

All modules delivered by Huddersfield International Study Centre are governed by the *University of Huddersfield Assessment Regulation*. You can find the *Assessment Regulations* for reference in your *ISC Student Handbook*.

You can also view the full regulations directly in the Students' Handbook of Regulations Section 4 at the following link: http://www.hud.ac.uk/registry/regulationsandpolicies/studentregs/

All modules studied on this programme must be passed in order to achieve an overall pass at the end of the programme. For more details as to what is required to achieve a 'pass' grade refer to Section 8 'Assessment' in this guide.

2. Introduction to the Module

Module Outline

Two aspects of Software design involve high level specifications using UML and low-level algorithm design using flowcharts. You are expected to implement these two aspects using online graphical tools and then, in your project implement the C++ programs of your designs. Module topics consist of the following:

- Data modelling (primitive and user-defined types).
- The basic components of algorithms described in a suitable language-independent notation: basic data structures – arrays, lists, trees; concepts for the modularisation of algorithms; spanning tree and shortest distance algorithms for graphs; basic searching and sorting algorithms.
- Encapsulated types - introduction to objects, including inheritance, encapsulation, and Use Case modelling, Use Case descriptions for requirements capture, Sequence Diagrams and system structure.
- Procedures, functions, parameter passing, variable scope.
- Entities, attributes, and relationships.
- Classes, fields, and methods.
- class diagrams.
- Structured Programming (sequence, selection, and iteration).
- Event / response modelling.

3. Attendance

Attending all your classes is **very important** and one of the best ways to help you succeed in this module. You are expected to arrive on time and take an active part in all your timetabled classes. If you are unable to attend a class, please contact the ISC admin staff on level 14. Tel: 01484 472969, or isc@hud.ac.uk. For more information on what is expected from you in terms of attendance see the relevant section of your *ISC Student Handbook*.

4. Learning Outcomes

Modules are taught based on intended 'Learning Outcomes'; that is to say, you are expected to acquire certain knowledge and skills throughout the module and on successful completion you will be expected to demonstrate that you have met these learning objectives by completing a final project.

Knowledge and Understanding Learning Outcomes

On completion of this module students will be able to:

K1. Formulate a range of algorithms for manipulating data structures.

K2. Recognise the concept of correctness and verification and validation in testing computer programs.

K3. Describe the semantic concepts of a variety of abstract modelling techniques relevant to modern computing.

Ability Learning Outcomes

On completion of this module students will be able to:

A1. Apply abstract modelling techniques to a problem scenario to build models from several perspectives, to capture information and to devise appropriate event-driven and algorithmic solutions.

A2. Analyse problems and develop algorithms using a design approach (e.g. functional decomposition or object-oriented design).

A3. Develop basic object-oriented program, applying designed techniques and algorithms

5. Learning Strategy:

The curriculum at Huddersfield International Study Centre is validated by the University of Huddersfield and as such, has been guided by the Teaching and Learning Strategy of the University as well as the Provider, or Study Group. As a result of COVID 19, a blended approach to learning, teaching and assessment has been adopted. This follows the University's pledge to the Office for Students and the commitment to deliver 30-50% of each pathway face to face with the remainder being taught online.

The International Study Centre encourages students to be academic citizens who are self-directed and motivated learners. Key research skills such as critical thinking, self-reflection and good academic practice are an integral part of teaching, learning and assessment activity.

The development of personal learning and thinking skills, professionalism and employability skills are also fundamental to curriculum content and delivery.

To facilitate independent learner, teaching and learning will mainly take place through small interactive group sessions where students are encouraged to explore content, ask questions, contribute to discussions and reflect on their progress. These sessions wherever possible will be delivered face to face and will comply with social distancing regulations. Emphasis is placed on individualised learning. Therefore, student-focus teaching methods have been employed.

Learning will also take place through formal lectures to larger groups. These will be online and delivered both synchronously and asynchronously. Synchronous learning will take place via Zoom or Teams video conferencing. Each teaching session/lecture is supported by learning and assessment resources on the Virtual Learning Environment (VLE); Brightspace. Asynchronous learning will also be facilitated through the VLE.

VLE resources include weekly objectives, words to learn and student guidance on topics covered each week. Students will also have access to slides/learning resources, screencasts, and interactive activities including assessments, quizzes, discussion forums, online chat, useful videos and independent study.

For students with special learning needs, personal learning support plans are produced in collaboration with the University's Wellbeing and Disability Services and through these, reasonable adjustments for teaching, learning and assessment are planned in advance for the duration of the student journey.

6. Learning Resources

Refer to the Computing Module on BS under 'reading list', you will find there under the sub-title 'Key Items'.

All additional material which may include videos, reading journal articles, hand-outs and so on, are saved on BS. Your Module Tutor (MT) will advise you on the use of these resources.

7. Outline Delivery

The table below gives a brief outline of the module topics. You may find the order of the topics delivery slightly different from the table below. The topics' learning content including teaching materials can be found on BS under the subtitle 'Learning Content'. Your MT will advise on how to use them:

Week	content
1	Review of C++, datatypes, arrays, enumerations
2	Algorithms and flowcharts and Object-oriented programming
3	Use-case diagrams and determining classes from use cases
4	Activity diagrams and review of control structures and functions
5	Sequence diagrams and wireframe modelling
6	User interface modelling using ncurses

7	Package diagrams and event modelling part 1
8	Event modelling Part 2
9	Test-Driven Development
10	Searching and basic sort algorithm

8. Assessment

Formative assessment

Formative assessment will be means of weekly observation of performance, quizzes, mock assessment and feedback from your MT. The materials for this assessment are saved for you in BS under the title 'Assessment'. See your MT for more specific details.

A range of class-based and homework assignments of relatively short duration are set on a weekly basis with an appropriate content at the MT's discretion. This provides regular and detailed feedback to students so that they can build an awareness of their rate and level of progress and of their strengths and weaknesses. You should never miss any requested activities, speak up if you feel overwhelmed or cannot keep up with your studies. On-going discussions with your MT and Progress Coach (PC) if needed; should provide you with excellent workload management techniques and strategies for improvement.

Summative Assessment

Assessment tasks (including assessment weightings)

Assessment	LO's to be met	Type of assessment	Weighting
1	K1, K2, K3 A1	Coursework	50%
2	K1, A2-A3	Logbook	50%

Deadlines for submission of coursework/tasks will be confirmed by your MT and where and how to submit your work is decided by your MT.

All coursework assignments and other forms of assessment must be submitted by the deadline set by your MT. It is your responsibility to know when work is due to be submitted – ignorance of the deadline date will not be accepted as a reason for late or non-submission. See *ISC Students Handbook* of regulations for information on *submission deadlines*. You can request extensions from your MT if you have a valid reason supported with evidence. The MT have the right to decide whether the reason is valid or not.

MT re-assessment is available for all elements of assessment. The assessments will be marked anonymously where practical. The final coursework will be a project and will be assessed under the normal formal assessment regulations and therefore subject to University regulations.

PLEASE NOTE: Only Microsoft packages i.e. Word, Excel, PowerPoint, source code files, images, zip files and links are acceptable for your assignments.

Assessment Criteria

In order to pass the module, you must achieve a minimum of 40% overall in the summative assessments. Ask your MT or PC for more details.

9. Feedback

All assessments and course work will be marked within two weeks. This may be slightly longer between terms due to holidays. Course work will be returned to you during class time so you can see what you did well and what could be improved on. For some assessment, you will be able to see the scripts added by the assessor, but for others, you will be provided with feedback to help you understand any errors.

For assignments submitted on the VLE, feedback will be provided on Brightspace. Weekly drop-in sessions will be arranged to provide support and feedback.

You cannot keep the work as it has to be moderated (i.e. checked over by a second marker to ensure accurate marking). You will be given more information on this when you are given your assignments. Your PC is available to support you if feedback from several MTs indicate that common themes are emerging across your work on the programme that you may need help to stay on track and succeed.

10. How is your work marked?

After you have handed your work in or you have completed a TTA, Study Group Huddersfield ISC undertakes a series of activities to ensure your work is marked fairly, honestly and consistently. These include:

- Anonymous marking – for some tasks your name is not attached to your work so, at the point of marking, the MT does not know whose work he/ she is considering. When you undertake an assessment task where your identity is known (eg: a presentation or Major Project), it is marked by more than one MT at the same time (known as double marking).
- Internal moderation – a sample of all work for each assessment task in each module is moderated by MTs, Head of Department and External Examiners to check the standards and consistency of the marking.

11. Academic Impropriety

You are reminded that you must be the original owner of any work you submit on this module. When you are preparing your work for submission, it is important that you understand the various academic conventions that you are expected to follow to make sure that you do not leave yourself open to accusations of plagiarism, collusion or cheating and that your work maintains its academic integrity. Please refer to the section in your *ISC Student Handbook* relating to 'Academic Impropriety' for further details on this or see structured HB of regulations, section 4.

Use of 'Turnitin'

You may be asked to submit any assessed coursework on Turnitin®UK. This is a digital system that will produce a report which clearly shows if any passages in your work have been matched with another source. Originality of assessment is an academic judgement and there is no generally acceptable upper or lower similarity score.

You may talk about the matched-text in the 'Turnitin®UK' report with a member of academic staff to see where you may need to improve your academic practice. If you are not sure whether the way you are working meets our requirements, you should talk to your PC, MT or other member of academic staff. They will be able to help you and tell you about other resources that will help you develop your academic skills.

We have a variety of resources, advice and guidance to help you develop good academic skills. We will ensure to provide you with information on what is expected of you to succeed in your learning journey with us. Contact your MT/or PC on how to use the work of others by properly referencing them authors.

12. Module Evaluation

During the second half of the delivery of this module, you will be asked to complete a module evaluation questionnaire to help us obtain your views on all aspects of the module.

Please help us to help you and other students at Huddersfield ISC by completing the Module Evaluation survey. We very much value our students' views and it is very important that you provide feedback to help us make improvements.

Enjoy your studies on this module!