

The following module specifications reflect the most current planning for module delivery in the 2021/22 academic year. In planning for module delivery in 2021/22 the University will continue to respond to the UK government's projected road map, and also to any further relevant national developments and public health requirements relating to the coronavirus pandemic. The University will continue to develop our approach to delivery and assessment in 2021/22 and these specifications may be subject to change in the event of updating national guidance or public health requirements. The specifications will be updated as soon as practically possible to reflect changes as they arise.

CO1101 Computing Fundamentals

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	24
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	102
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Uraz Turker
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Explain and discuss an overview of modern Computer Science at honours level;
- Discuss detailed overviews of operating systems; computer architecture; the internet and WWW (in Linux and Windows) and mobile computing;
- Explain files, directories, memory, the command line and fundamental structures;
- Write scripts and useful but simple command line programs;
- Operate basic tools such as editors, search engines and similar technologies; hence identify, retrieve, organise/analyse and present information including generation of web pages and use of text processors;
- Explain the basics of computer and internet security, including HTML, CSS, W3C standards and other technologies;
- Explain and discuss the concepts of assessment and feedback, methods of teaching and learning, and how these support progression across the programme and lead into employment. Write a short summary essay as teamwork, including work time-planning;
- Reflect on and articulate motivations, strengths and experience of developing one or more transferable skills.
- Students will demonstrate academic integrity in their submitted work through appropriate use of academic citation and referencing conventions in their discipline (for example in directly quoting or paraphrasing the work of others).

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback, Laboratory based Learning Support.

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

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Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO1102 Programming Fundamentals

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	20
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	20
Synchronous Other	4
Asynchronous Lectures/Presentations	
Asynchronous Other	4
Guided Independent Study	102
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Mohammad Reza Zare
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Explain the fundamentals of imperative programming and write elementary programs;
- Analyse simple problems and write solution programs using variables, types, expressions and basic operators, conditional and looping control structures, functions and I/O and exceptions;
- Describe techniques for simple software design and development using very simple algorithms and data structures;
- Write simple programs involving text and file I/O, and data types such as strings, numbers, lists, tuples;
- Make use of editors and development environments;
- Describe fundamentals of OO programming and write simple OO programs using classes and objects.

Teaching and Learning Methods

Lectures, coursework, practical lab-based sessions, online resources (e.g. module webpage, electronic notes, Q+A forum, video tutorials).

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing note-based summaries, use of web-based coding tutorials/videos.

CO1103 Mathematics Fundamentals

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	36
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	14
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	100
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Michael Hoffmann
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				
002	Examination	100		2		Y

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Translate basic logical propositions to and from English;
- Discuss basic logic and solve very simple problems;
- Describe the relevance of set theory and mathematical logic to Computer Science and Software Engineering;
- Explain basic set notation and solve simple problems concerning sets;
- Solve simple problems on set-theoretic functions, including problems concerning partiality and composition;
- Define relations and graphs, specify the matrix representation of a graph or a relation, and perform basic operations on matrices;
- Solve problems involving exponentials, logarithms, factorials, combinatorics, order notation;
- Recall and explain basic statistics for Computer Science and Software Engineering.

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback.

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO1104 Computer Architecture

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures
 Synchronous Small Group Teaching
 Synchronous Practical Classes/
 Workshops/Professional Placements
 Synchronous Other
 Asynchronous Lectures/Presentations 32.5
 Asynchronous Other
 Guided Independent Study 117.5
 Total Module Hours 150

Period: Semester 1
Occurrence: E
Coordinator: Roy Crole
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Examination	80		2		
003	Examination	100				Y

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Solve simple problems on: number systems (such as binary and hexary), elementary hardware and logic, and ALU correctness;
- Explain, and solve problems on: a high-level view of a datapath and control of a modern processor; running simple assembly programs;
- Explain, and solve problems on: fundamental hardware circuits - ALUs, multiplexors, and register files;
- Explain, and solve problems on: fundamental software - assembly and machine language and programs (ISAs), translations between the two.
- Solve problems on: detailed views of simple model processor hardware, running ISAs such as MIPS and ARM.

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback.

Assessment Methods

Coursework (20%), Exam (80%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO1105 Introduction to Object Oriented Programming

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	18
Synchronous Other	9
Asynchronous Lectures/Presentations	24
Asynchronous Other	
Guided Independent Study	99
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Gilbert Laycock
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				
002	Examination	100		2		Y

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Analyse the use of object-oriented design principles in standard design patterns;
- Explain object-oriented design principles using inheritance, abstraction, overriding and polymorphism;
- Demonstrate the use of exceptions for implementing fault recovery strategies;
- Represent object models using standard notation;
- Solve small scale computing problems that are suited to object-oriented development by designing solutions, coding them and deploying them using appropriate techniques.

Teaching and Learning Methods

Lectures, coursework, practical lab-based sessions, online resources (e.g. module webpage, electronic notes, Q+A forum, video tutorials).

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading, problem sets, writing module note-based summaries. Use of web-based coding tutorials/videos.

CO1106 Requirements Engineering and Professional Practice

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	24
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	104
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Mohammad Reza Zare
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Motivate the need of requirements engineering for successful software projects, describe the problems when requirements are omitted;
- Explain requirements change management process;
- Differentiate between different types of requirements;
- Demonstrate a knowledge of security and data protection issues in storage and usage of data;
- Critique the value of a number of requirements engineering techniques, such as stakeholder analysis, use cases, interviews, prototyping;
- Distinguish and choose between various modelling techniques for requirements documentation;
- Describe the role of professional bodies in the IT industry.

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback, Laboratory based Learning Support, Group discussions.

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO1107 Algorithms, Data Structures and Advanced Programming

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	24
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	102
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Thomas Ridge
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				
002	Examination	100		2		Y

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Show how to solve simple problems involving common datatypes such as arrays, strings, lists, stacks, queues, trees, graphs;
- Describe standard algorithms such as sorting, searching, hashing, and tree and graph traversal. Work out problems which involve these algorithms;
- Write programs that use recursive programming techniques;
- Answer questions on supplementary topics such as data storage and file I/O, sockets, and threads.

Teaching and Learning Methods

Lectures, coursework, practical lab-based sessions, online resources (e.g. module webpage, electronic notes, Q+A forum, video tutorials).

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing note-based summaries.

CO1108 Foundations of Computation

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures 24
 Synchronous Small Group Teaching
 Synchronous Practical Classes/
 Workshops/Professional Placements
 Synchronous Other
 Asynchronous Lectures/Presentations
 Asynchronous Other
 Guided Independent Study 110
 Total Module Hours 150

Period: Semester 2
Occurrence: E
Coordinator: Mohammadreza Mousavi
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	40				
002	Examination	60		2		
003	Examination	100				Y

Intended Learning Outcomes

At the end of this module, students should be able to:

- Explain in broad terms the idea of foundations and theory in Computer Science;
- Discuss and classify grammars and formal languages; solve simple problems;
- Define and explain models of computation such as register and Turing machines, simple automata;
- Construct simple models to solve problems.

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback.

Assessment Methods

Coursework (20%) and final examination (80%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO1109 Business and Financial Computing

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures 24
 Synchronous Small Group Teaching
 Synchronous Practical Classes/
 Workshops/Professional Placements
 Synchronous Other
 Asynchronous Lectures/Presentations
 Asynchronous Other
 Guided Independent Study 110
 Total Module Hours 150

Period: Semester 2
Occurrence: E
Coordinator:
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	40				
002	Examination	60		2		
003	Examination	100		2		Y

Intended Learning Outcomes

On completion of this module, successful students should be able to:

- Explain some of the fundamental concepts, terminology and processes of the business/financial domain;
- Explain the categories and functions of business and information systems and applications and solve simple problems;
- Outline the functional and architectural properties of these systems;
- Explain the different roles and functions of IT professionals within organisations.

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback.

Assessment Methods

Coursework and Examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO2101 Operating Systems and Networking

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	20
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	100
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Thomas Ridge
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Describe the basic functioning of an operating system such as Linux;
- Explain the basics of processes and memory management, and analyse simple problems involving these concepts;
- Describe the basic functioning of a file system. Work out problems involving file system topics;
- Analyse concurrent code and explain how it works;
- Describe the main protocols used to communicate over the internet, and answer simple questions about them.

Teaching and Learning Methods

Lectures, notes, textbooks, laboratory work, coursework, model answers, handouts, online support (eg videos, Q+A forum, webpages etc).

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing note-based summaries, worksheets.

CO2102 Databases and Domain Modelling

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	20
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	20
Synchronous Other	5
Asynchronous Lectures/Presentations	
Asynchronous Other	5
Guided Independent Study	100
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Karim Mualla
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Utilize and design Relational Database Management Systems;
- Apply appropriate notation for modelling Database schemas using Entity Relational Diagrams;
- Normalize and Improve Database designs and performance, via Normalization;
- Utilize Data Definition Language (DDL) to create and manipulate simple Databases;
- Define and Utilize Data Manipulation Language (DML) to create and manipulate simple Databases;
- Understand Data Control Language (DCL) to create and manipulate simple Databases;
- Explain the principles of Database security;
- Construct data models from customer requirements.

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback, Laboratory based Learning Support.

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries. Use of web-based coding tutorials/videos.

CO2104 User Interface Design and Evaluation

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	24
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	24
Synchronous Other	12
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	90
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Genovefa Kefalidou
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Design and develop interactive, responsive user interfaces;
- Demonstrate visualisation techniques for user interfaces;
- Assess accessibility in user interfaces;
- Demonstrate user interface design and prototyping following a user-centred design process;
- Discuss principles of human-computer interaction;
- Evaluate usability of user interfaces with direct/indirect heuristics;
- Discuss the role of ethics in empirical evaluation.

Teaching and Learning Methods

LIVE Lectures, tutorials for coursework examples and feedback, Online workshops and seminars, Laboratory based Learning Support.

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries. Use of web-based coding tutorials/videos.

CO2106 Data Analytics

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	10
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	20
Synchronous Other	10
Asynchronous Lectures/Presentations	10
Asynchronous Other	
Guided Independent Study	100
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Emmanuel Tadjouddine
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
002	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Collect, preprocess, and visualise data;
- Calculate basic probabilities and apply statistical tests to datasets;
- Analyse datasets to derive insights;
- Build-up a data-driven recommender system;
- Build-up and evaluate basic supervised learning models;
- Explain data ethics, privacy, and security.

Teaching and Learning Methods

Blended learning including online lectures, notes, guided laboratory work, tutorials, and model answers.

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading of resources (e.g. notes, books) and online videos, guided laboratory work, online support (e.g. videos, Q+A forum, webpages etc).

CO2114 Foundations of Artificial Intelligence

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures 20
 Synchronous Small Group Teaching
 Synchronous Practical Classes/
 Workshops/Professional Placements
 Synchronous Other
 Asynchronous Lectures/Presentations
 Asynchronous Other
 Guided Independent Study 100
 Total Module Hours 150

Period: Semester 2
Occurrence: E
Coordinator: Mohammadreza Mousavi
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	50		2		
002	Coursework	50				
003	Examination	100		2		Y

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Translate an AI problem to a specification of the agent's task environment;
- Provide a precise problem formulation for a problem-solving agent;
- Explain and discuss different algorithms for uninformed search, and identify the most suitable approach for a given problem;
- Explain and discuss different algorithms for informed search, explain the effect of heuristics on performance, demonstrate familiarity with methods for constructing good heuristics;
- Formulate optimisation problems for AI agents, and be able to apply an array of out-of-the-box methods and tools for solving optimisation problems;
- Identify the appropriate type of environment for a given problem, and the corresponding methods for solving search problems within this environment;
- Implement and apply AI techniques to typical application domains such as video games and robotics.

Teaching and Learning Methods

Lectures, lecture notes, recommended textbooks, supervised laboratories, hands-on experience programming robots, robot contest with. results from mini-project.

Assessment Methods

Coursework and Examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading, use of web-based tutorials.

CO2201 Software Engineering Project

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 30

Student Workload (hours)

Synchronous Lectures	13
Synchronous Small Group Teaching	3
Synchronous Practical Classes/ Workshops/Professional Placements	24
Synchronous Other	12
Asynchronous Lectures/Presentations	18
Asynchronous Other	48
Guided Independent Study	182
Total Module Hours	300

Period: Academic Year
Occurrence: E
Coordinator: Richard Craggs
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

At the end of this module, students should be able to:

- Apply project management techniques to plan a small project;
- Compare and evaluate software development lifecycle methodologies;
- Describe how configuration management of documents and source code supports successful project execution;
- Work collaboratively within a group to deliver a software project;
- Evaluate the outcomes of a project including social, legal and ethical considerations;
- List the characteristics of a project and the responsibilities of a project manager;
- Reflect on and articulate motivations, strengths and skills in relation to a future, work-related learning opportunity (e.g. placement, internship, employer-led project).

Teaching and Learning Methods

Lectures, supporting videos, group teaching, group supervisions. Industry consultation.

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

CO2103.

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Team meetings and study groups, guided reading and study of other information sources.

CO3002 Analysis and Design of Algorithms

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	15	22
Synchronous Small Group Teaching		
Synchronous Practical Classes/ Workshops/Professional Placements	20	
Synchronous Other		
Asynchronous Lectures/Presentations	35	
Asynchronous Other		
Guided Independent Study	80	106
Total Module Hours	150	150

Period: Semester 2
Occurrence: E
Coordinator: Stanley Fung
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		2		
002	Coursework	40				
003	Examination	100		2		Y

Period: Semester 2
Occurrence: E2
Coordinator: Stanley Fung
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Analyse and evaluate the efficiency of algorithms in terms of asymptotic complexity;
- Demonstrate a number of standard algorithms for problems in fundamental areas in computer science and engineering such as sorting, searching, and problems involving graphs;
- Apply a number of standard algorithm design techniques to design efficient algorithms for new problems;
- Produce concise technical writing for describing the solutions and arguing for their correctness.

Teaching and Learning Methods

Class sessions together with lecture notes, lecture slides, recommended textbooks, worksheets, printed solutions, and web support.

Assessment Methods

Coursework (40%) and exam (60%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Guided reading and videos, other web resources.

CO3090 Distributed Systems and Applications

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	18
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	111
Total Module Hours	150

Period: Semester 2
Occurrence: E2
Coordinator: Yi Hong
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Tackle distributed programming issues and analyse complex problems that require distribution of resources/computations;
- Analyse and choose among the middleware models described in the course;
- Demonstrate the ability to solve issues like multi-threading and transactional interactions in distributed application;
- Apply principles of component-based distributed programming (e.g., with respect to technologies like RMI, JavaEE, etc);
- Solve practical distributed computing problems using distributed computation frameworks such as Hadoop MapReduce.

Teaching and Learning Methods

Class sessions, textbook, worksheets, additional hand-outs and web support. Marked coursework, traditional written examination

Assessment Methods

Marked coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO3091 Computational Intelligence and Software Engineering

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	20	24
Synchronous Small Group Teaching		
Synchronous Practical Classes/ Workshops/Professional Placements	20	
Synchronous Other	20	
Asynchronous Lectures/Presentations		
Asynchronous Other		
Guided Independent Study	90	110
Total Module Hours	150	150

Period: Semester 1
Occurrence: E
Coordinator: Eugene Yudong Zhang
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		3		
002	Coursework	40				

Period: Semester 1
Occurrence: E2
Coordinator: Eugene Yudong Zhang
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Recognise problems (and specially software engineering problems) that can be formulated as computational intelligence optimisation or machine learning problems;
- Formulate such problems as optimisation or machine learning problems;
- Demonstrate an understanding of the core techniques used in the computational intelligence approaches to solve such problems; communicate such core techniques to non-experts;
- Build models able to support practitioners in performing machine learning tasks; use optimisation algorithms to support practitioners in solving optimisation problems;
- Evaluate, analyse and critique computational intelligence approaches for software engineering.

Teaching and Learning Methods

Class sessions together with lecture slides; recommended book chapters, articles and research papers; web resources; worksheets.

Assessment Methods

Marked coursework and written examination.

Pre-Requisites

-

Co-Requisites
Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries. Use of web-based coding tutorials/videos.

CO3093 Big Data and Predictive Analytics

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	10	18
Synchronous Small Group Teaching		
Synchronous Practical Classes/ Workshops/Professional Placements	20	
Synchronous Other	12	
Asynchronous Lectures/Presentations	10	
Asynchronous Other		
Guided Independent Study	98	104
Total Module Hours	150	150

Period: Semester 2
Occurrence: E
Coordinator: Emmanuel Tadjouddine
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Period: Semester 2
Occurrence: E2
Coordinator: Emmanuel Tadjouddine
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Analyse possibly large amount of data;
- Develop and back-test a predictive model;
- Compare and contrast different types of predictive models;
- Evaluate a predictive mode;
- Use a Map-Reduce approach in processing data;
- Write a report on the data analysis carried out.

Teaching and Learning Methods

Blended learning including Lectures, Notes, Tutorials, Laboratory based Learning Support; Model answers for Lab/tutorials; all include online delivery.

Assessment Methods

Coursework.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets and sample solutions; learning support including online. Use of web-based coding tutorials/videos.

CO3095 Software Measurement and Quality Assurance

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	11	32
Synchronous Small Group Teaching		
Synchronous Practical Classes/ Workshops/Professional Placements	18	
Synchronous Other	18	
Asynchronous Lectures/Presentations	11	
Asynchronous Other		
Guided Independent Study	92	102
Total Module Hours	150	150

Period: Semester 1
Occurrence: E
Coordinator: José Miguel Rojas Siles
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		2		
002	Coursework	40				

Period: Semester 1
Occurrence: E2
Coordinator: José Miguel Rojas Siles
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

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

- Describe how quality issues affect each aspect of the software development life-cycle;
- Relate quality to the current standards for process improvement;
- Demonstrate understanding of the theory of software metrics and make software measurements in practice;
- Critically evaluate, choose and apply appropriate strategies for software testing and validation.
- Design and implement test suites for different types and levels of testing using relevant tools and technologies.
- Explain and discuss advanced software testing topics, considering contextual aspects such as costs, effectiveness and tool-support.

Teaching and Learning Methods

Class sessions together with lecture slides, recommended material (book chapters, articles, research papers, web resources), lab worksheets and solutions, web support, assessed coursework, help sessions for coursework, traditional written problem-based examination.

Assessment Methods

Marked coursework, written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Guided reading and videos, problem sets, writing module note-based summaries. Use of web-based coding tutorials/videos.

CO3099 Foundations of Cybersecurity

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	15	22
Synchronous Small Group Teaching		
Synchronous Practical Classes/ Workshops/Professional Placements	20	
Synchronous Other		
Asynchronous Lectures/Presentations	30	
Asynchronous Other	5	
Guided Independent Study	80	106
Total Module Hours	150	150

Period: Semester 2
Occurrence: E
Coordinator: Stanley Fung
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		3		
002	Coursework	40				

Period: Semester 2
Occurrence: E2
Coordinator: Stanley Fung
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	100		3		

Intended Learning Outcomes

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

- Describe the working principles of modern cryptosystems including public key cryptography;
- Design and implement secure network applications using standard cryptographic libraries;
- Describe the fundamental principles of security and be able to identify the needed design principle;
- Explain the importance of security requirements in system design;
- Explain the concepts of authentication and authorization, and discuss and compare commonly used methods for each of them;
- Identify common attack vectors, and implementation issues that can result in potential security problems;
- Be able to identify and prevent common client- and server-side attacks in web applications;
- Describe the concepts of privacy and anonymity, and be able to apply mechanisms for achieving database privacy;
- Demonstrate familiarity with secure communication protocols (such as, for example, TLS) and some attacks on them.

Teaching and Learning Methods

Class sessions together with lecture slides, recommended textbooks, problem sets with solutions and feedback, laboratory based learning support.

Assessment Methods

Marked coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Guided reading and videos, other web resources.

CO3101 Computers, Society & Professionalism

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	22
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	106
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Uraz Turker
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	50		3		
002	Coursework	50				

Intended Learning Outcomes

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

- Describe the Information Society and Information Revolution. Explain the effect that computers and IT have had on employment in general and both individuals' jobs and corporate organisations; analyse and evaluate example scenarios.
- Describe the impact of the computer revolution on the conditions of work and life in contemporary society such as the usage of social networking sites. Discuss, in depth, topics such as equality and inclusivity in this context, and the impacts computers have on the economy and society.
- Describe human-computer interaction issues and their impacts on different IT-enhanced sectors such as healthcare, education, electronic commerce and environment;
- Discuss, explain and analyse social, legal and ethical issues in the realm of Informatics. Explain issues of access such as privacy and security, the inequality that can arise, and the impacts on society. Discuss issues surrounding information access rights. Solve problems related to these topics.
- Outline a history of digital computing and analyse events and consequences.

Teaching and Learning Methods

Lectures, web-based learning materials, supporting videos. Tutorials.

Assessment Methods

Coursework and exam.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries.

CO3102 Mobile and Web Applications

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

2021/2	Student Workload (hours)	
Synchronous Lectures	15	24
Synchronous Small Group Teaching	10	
Synchronous Practical Classes/ Workshops/Professional Placements	20	
Synchronous Other		
Asynchronous Lectures/Presentations	25	
Asynchronous Other		
Guided Independent Study	80	102
Total Module Hours	150	150

Period: Semester 1
Occurrence: E
Coordinator: Yi Hong
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		2		
002	Coursework	40				
003	Examination	100		2		Y

Period: Semester 1
Occurrence: E2
Coordinator: Yi Hong
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination	100		2		Y

Intended Learning Outcomes

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

- Explain the architectural foundations for web technologies;
- Use data formats appropriately to create documents and handle data;
- Solve security and session handling issues and use supporting techniques;
- Explain the technologies behind web services and create a simple web service;
- Explain and analyse the architecture of mobile applications;
- Design and develop web/native apps using a chosen development framework;
- Work with software tools to develop, test and debug apps.

Teaching and Learning Methods

Lectures, Tutorials for coursework examples and feedback, Laboratory based Learning Support.

Assessment Methods

Coursework and exam

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem sets, writing module note-based summaries. Use of web-based coding tutorials/videos.

CO3103 Technology Management

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	20
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	20
Synchronous Other	5
Asynchronous Lectures/Presentations	
Asynchronous Other	5
Guided Independent Study	100
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Karim Mualla
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	50				
002	Coursework	50				
003	Examination	100		2		Y

Intended Learning Outcomes

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

- Define the Innovation Management Process across the fast-evolving ICT industry;
- Undertake a classification of enterprise innovation studies, and describe and analyse models of the innovation process;
- Demonstrate state-of-the-art techniques of ICT product development;
- Formulate strategies, teams, and illustrate the power of product concept;
- Define Networked Organisations and explore dissimilar innovative procedures and complex decision-making strategies to facilitate innovation;
- Create and manage novel ICT product ideas, and hybrid management techniques.

Teaching and Learning Methods

Lectures, Seminars for coursework examples and feedback.

Assessment Methods

Essay/Project.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Directed reading and videos, problem case-studies, writing module note-based summaries.

CO3105 C++ Programming

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	10
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	10
Synchronous Other	20
Asynchronous Lectures/Presentations	10
Asynchronous Other	20
Guided Independent Study	80
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Stanley Fung
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

- On completion of the module, successful students should be able to:
- Explain the components of a C++ program, the structures required to write advanced programs, and the ideas of object orientation;
 - Apply C++ skills to solve complex computing problems.

Teaching and Learning Methods

Class sessions with lecture slides and web resources; problem sets with feedback sessions; laboratory based learning support.

Assessment Methods

Coursework.

Pre-Requisites

-

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Guided reading and videos, web-based coding tutorials, problem sets.

CO4105 Advanced C++ Programming

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	10
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	10
Synchronous Other	20
Asynchronous Lectures/Presentations	10
Asynchronous Other	20
Guided Independent Study	80
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Stanley Fung
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

- On completion of the module, successful students should be able to:
- Demonstrate understanding of the syntax of C++, its design features, and the ideas of object orientation
 - Write C++ programs solve practical problems

Teaching and Learning Methods

Class sessions together with lecture slides; recommended book chapters, web resources; worksheets. Marked coursework. Marked coursework will be programming tasks. Students' programs will be automatically evaluated by a test suite.

Assessment Methods

Marked coursework.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, recommended book chapters and web resources.

CO4200 Algorithms for Bioinformatics

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures 24
 Synchronous Small Group Teaching
 Synchronous Practical Classes/
 Workshops/Professional Placements
 Synchronous Other
 Asynchronous Lectures/Presentations
 Asynchronous Other
 Guided Independent Study 110
 Total Module Hours 150

Period: Semester 2
Occurrence: E
Coordinator: Thomas Erlebach
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		1.5		
002	Coursework	40				

Period: Semester 2
Occurrence: E2
Coordinator: Thomas Erlebach
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
003	Coursework (Final)	100				

Intended Learning Outcomes

- On completion of the module, successful students should be able to:
- Describe a number of computational problems arising in bioinformatics;
 - State and discuss algorithmic approaches to the solution of such problems;
 - Discuss and apply probabilistic models underlying computational tasks in bioinformatics;
 - Design and implement efficient algorithms;
 - Apply modelling and algorithm design techniques to the solution of bioinformatics problems.

Teaching and Learning Methods

Class sessions together with course notes, recommended textbooks, worksheets, and some additional hand-outs and web support.

Assessment Methods

Marked problem-based worksheets and programming assignments, traditional written problem-based examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, screencasts, guided reading lists.

CO4203 Advanced C++ Programming

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Synchronous Lectures	10
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	10
Synchronous Other	20
Asynchronous Lectures/Presentations	10
Asynchronous Other	20
Guided Independent Study	130
Total Module Hours	200

Period: Semester 1
Occurrence: E
Coordinator: Stanley Fung
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

Students should be able to:

- Demonstrate understanding of the syntax of C++, its design features, and the ideas of object orientation
- Write C++ programs solve practical problems

Teaching and Learning Methods

Class sessions together with lecture slides; recommended book chapters, web resources; worksheets. Marked coursework. Marked coursework will be programming tasks. Students' programs will be automatically evaluated by a test suite.

Assessment Methods

Marked coursework.

Pre-Requisites
Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, recommended book chapters and web resources.

CO4207 Generative Development

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	20
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	104
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Jan Oliver Ringert
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
003	Coursework (Final)	100				

Intended Learning Outcomes

- On completion of the module, successful students should be able to:
- Demonstrate knowledge of the main approaches for model-based software development;
 - Critically evaluate the role of modelling and code generation in software development;
 - use modelling languages for designing views of software systems;
 - Check the consistency of the models of an application;
 - Use techniques for generative software development;
 - Explain concepts of software product line development and apply them.

Teaching and Learning Methods

Lectures, problem classes, laboratory sessions, recommended textbooks, worksheets, programming exercises, web support.

Assessment Methods

Individual and group coursework assignments, in-class tests. Re-assessment via traditional written examination.

Pre-Requisites

Desirable: UML, Java, Eclipse

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, screencasts, guided reading lists.

CO4210 Personal and Group Skills

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	3
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	135
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Thomas Erlebach
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Period: Semester 2
Occurrence: E
Coordinator: Thomas Erlebach
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Locate, organise and marshal evidence, report on findings, analyse complex ideas and construct sophisticated critical arguments;
- Demonstrate knowledge of how and when to draw on the knowledge and expertise of others;
- Contribute and comment on ideas in syndicate groups;
- Reflect on and write up results;
- Plan and present research clearly and effectively using appropriate IT resources;
- Deliver oral presentations to professional standard;
- Respond to questioning;
- Write cogently and clearly.

Teaching and Learning Methods

Seminars by guest speakers, handouts and recommended texts, moderated group discussions, oral presentation, collective writing, workshops on transferrable skills.

Assessment Methods

Moderated group discussions, 4,000 word collective essay, 10 minute oral presentation. The coursework on this module cannot be re-sat.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Guided reading, workshop recordings, group discussions, literature search, essay writing, presentation preparation.

CO4214 Service-Oriented Architectures

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	24
Synchronous Small Group Teaching	8
Synchronous Practical Classes/ Workshops/Professional Placements	
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	110
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Reiko Heckel
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		2		
002	Coursework- re-assessed by exam	40		1		

Period: Semester 2
Occurrence: E2
Coordinator: Reiko Heckel
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
003	Coursework (Final)	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Demonstrate familiarity with the conceptual and technological foundations of Service-Oriented Architectures (SOA), i.e. the motivation, basic mechanisms, and open problems of SOA;
- Be able to design service-oriented systems and express these designs in appropriate modelling notations based on object-oriented and component-based concepts;
- Understand the relationship between high-level models and their implementation-level languages and technologies such as XML, WSDL and SOAP as well as JSON and REST;
- Be able to exercise this relationship by mappings in both directions in simple examples;
- Understand the use of model-based testing of services; be able to generate test cases and assess test results based on models.

Teaching and Learning Methods

Lectures, surgeries and lab classes; lecture and surgery recordings; course notes, lab and surgery assignments; recommended textbooks and online materials.

Assessment Methods

Marked coursework based on theoretical and lab-based problem solving task, class or lab tests, written examination.

Pre-Requisites

Desirable: UML, XML, Java.

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

CO4215 Advanced Web Technologies

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	17
Synchronous Small Group Teaching	3
Synchronous Practical Classes/ Workshops/Professional Placements	18
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	112
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Stephan Reiff-Marganec
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		2		
002	Coursework	40				

Period: Semester 1
Occurrence: E2
Coordinator: Stephan Reiff-Marganec
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
003	Coursework (Final)	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Define the fundamental ideas and standards underlying Web Service Technology;
- Define the fundamental principles for cloud applications;
- Discuss concepts at the frontier of industrial practice and emerging standards;
- Differentiate the major frameworks allowing to develop web services and cloud applications and assess their suitability for specific usage scenarios;
- Explain the link between the concepts of services and business processes and discuss and critique related standards;
- Develop business processes using the Workflow foundation;
- Develop and deploy web services and cloud applications using appropriate Microsoft technologies.

Teaching and Learning Methods

Lectures, tutorials and practical sessions together with course notes, recommended reading, worksheets and some additional handouts.

Assessment Methods

Assessed coursework; traditional written exam

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

CO4217 Agile Cloud Automation

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	16
Synchronous Other	8
Asynchronous Lectures/Presentations	16
Asynchronous Other	
Guided Independent Study	110
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Artur Boronat
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
003	Coursework (Final)	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:

- Demonstrate understanding of NoSQL principles and technology
- Discuss issues and solution approaches for questions of scalability and consistency
- Explain agile principles and practices for developing cloud systems
- Demonstrate a systematic understanding of the specification of low-code development platforms using model-driven software development
- Model domain-specific languages and build associated tooling for parsing their programs
- Apply model transformations for the effective design and implementation of low-code development platforms

Teaching and Learning Methods

Lectures, practical sessions, recommended reading, worksheets and some additional handouts.

Assessment Methods

Assessed coursework; traditional written examination.

Pre-Requisites

Desirable: UML, Java, Eclipse

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, screencasts, guided reading lists, worksheets.

CO4219 Internet and Cloud Computing

Academic Year: 2021/2
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	12
Synchronous Other	12
Asynchronous Lectures/Presentations	24
Asynchronous Other	
Guided Independent Study	102
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Ashiq Anjum
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

- On completion of the module, successful students should be able to:
- Analyse distributed systems and provide a technical review of their strengths and weaknesses
 - Produce system specifications taking into account scalability and performance
 - Design and demonstrate distributed systems according to specifications
 - Develop analytical skills in independently reviewing and improving the design of cloud systems

Teaching and Learning Methods

Lectures, tutorials and practical sessions together with course notes, recommended reading, worksheets and some additional handouts.

Assessment Methods

Assessed coursework; traditional written exam.

Pre-Requisites

Java programming knowledge.

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, screencasts, guided reading lists.