UNIVERSITY OF LEICESTER

Module Specification

CO1101 Computing Fundamentals

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	8
Fieldwork	
Project Supervision	
Guided Independent Study	102
Demonstration	
Supervised time in studio/workshop	16
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator:
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:
- Explain and discuss an overview of modern Computer Science at honours level. Discuss detailed overviews of operating systems; computer architecture; software engineering; databases; 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 and critique 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 supprt progression across the programme and lead into employment. Write a short summary essay as teamwork, including work time-planning. Peer assess the essay.

Teaching and Learning Methods

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

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.

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

CO1102 Programming fundamentals

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	8
Fieldwork	
Project Supervision	
Guided Independent Study	102
Demonstration	
Supervised time in studio/workshop	16
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator:
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:
- Explain the fundamentals of imperative programming and write elementary programs (eg in Scratch)
- 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 graphics interfaces, 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, 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.

Last Published: 28 September 2020

Module Specification

CO1103 Mathematics Fundamentals

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	32
Fieldwork	
Project Supervision	
Guided Independent Study	94
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator:
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

At the end of this module, students should be able to:
- Translate basic logical propositions to and from English. Discuss basic logic and solve very simple problems. Describe the relevance to Computer Science.
- 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

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.

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

CO1104 Computer Architecture

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	16
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator:
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

At the end of this module, students should be able to:
- Explain and discuss an overview of datapath and control of a modern processor; outline how it fits within a computer
- Explain fundamental binary systems, digital hardware and logic and solve simple problems
- Discuss and critique a high level view of current processors or a detailed view of a simple model processor, including the ISA. Solve simple problems.

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.

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

CO1105 Introduction to Object Oriented Programming

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	8
Fieldwork	
Project Supervision	
Guided Independent Study	102
Demonstration	
Supervised time in studio/workshop	16
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: E
Coordinator:
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

At the end of this module, students should be able to:
- Define, discuss and explain classes and objects, inheritance, abstraction and interfaces; write simple programs.
- Define and explain topics such as dynamic despatch, message passing, encapsulation, information hiding and polymorphism; write simple programs.
- Analyse program behaviour using exceptions and testing. Write programs using integrated development environments, tool support and debuggers.
- Solve small scale computing problems that are suited to OO development by designing solutions and then coding the design.

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.

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

CO1106 Requirements Engineering and Professional Practice

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	16
Fieldwork	
Project Supervision	
Guided Independent Study	104
Demonstration	
Supervised time in studio/workshop	6
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: E
Coordinator:
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:
- Motivate the need of requirements engineering for successful software projects, describe the problems when requirements are omitted, and 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, etc.
- Distinguish and choose between various modelling techniques for requirements documentation (such as conceptual and behavioural models).
- Describe the role of professional bodies in the IT industry; appraise the value of membership of professional bodies both in terms of benefit for one's career and the responsibility for professional conduct in accordance with the code of such bodies.

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.

UNIVERSITY OF LEICESTER

Module Specification

CO1107 Algorithms, Data Structures and Advanced Programming

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	8
Fieldwork	
Project Supervision	
Guided Independent Study	102
Demonstration	
Supervised time in studio/workshop	16
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: E
Coordinator:
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		1		Y

Intended Learning Outcomes

At the end of this module, students should be able to:
- Explain and critique high level overviews of programming paradigms
- Define and explain advanced datatypes such as stacks, queues, lists, trees and graphs; write simple programs
- Define, discuss and explain the main algorithms and techniques (such as sorting, searching, hashing, traversal and recursion) and write programs using these algorithms.
- Solve problems by designing programs in a range of advanced topics such as XML tools, threading, sockets, GUIs and elementary games

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.

UNIVERSITY OF LEICESTER

Module Specification

CO1108 Foundations of Computation

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	16
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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				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.

UNIVERSITY OF LEICESTER

Module Specification

CO1109 Business and Financial Computing

Academic Year: 2018/9
Module Level: Year 1
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	
Tutorials	16
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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 successful completion of this module, 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 applcations 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.

UNIVERSITY OF LEICESTER

Module Specification

CO2001 User Interfaces and HCI

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 10

Student Workload (hours)

Lectures	17
Seminars	8
Practical Classes & Workshops	18
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	57
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 1
Occurence: 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 (Qualifying element) (Final)	100				

Intended Learning Outcomes

Students should be able to:
• demonstrate an understanding of advanced object-orientated techniques such as Graphical User Interface concepts, and the event-driven model of programming, and threading.
• construct GUI based applications and applets in Java.
• demonstrate a knowledge of and be able to apply basic HCI concepts.

Teaching and Learning Methods

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

Assessment Methods

Continuous assessment, class tests, mini-project

Pre-Requisites

CO1003, CO1005, CO1012

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO2002 Financial and Business Computing

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 10

Student Workload (hours)

Lectures	15
Seminars	5
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	80
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 2
Occurence: E
Coordinator:
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 2
Occurence: E2
Coordinator:
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

The students should be able to:
• be aware of some of the fundamental concepts, terminology and processes of the business/financial domain.
• understand the categories and functions of business systems and applications.
• be aware of the different roles and functions of IT professionals within such organizations.

Teaching and Learning Methods

Class sessions, course notes, recommended reading, worksheets, additional hand-outs, and web support.

Assessment Methods

Assessed coursework; traditional written exam.

Pre-Requisites

CO1003, CO1005, CO1012 essential; CO1019 desirable

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO2006 Software Engineering and System Development

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	14
Seminars	10
Practical Classes & Workshops	20
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

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

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

Intended Learning Outcomes

The students should be able to:
• Explain the main phases in a software development process.
• Elicit and analyse customer requirements following an agile methodology.
• Produce object-oriented system designs, by applying design patterns and architectural styles.
• Use UML for consistent specifications of software systems and business processes.
• use appropriate techniques for software development and testing, including mechanisms for software reuse.
• incorporate security into specifications and designs by following a flexible security specification process.

Teaching and Learning Methods

Lectures, lecture notes, surgeries, problem classes, recommended textbooks, worksheets, supervised laboratories, formative feedback and web resources.

Assessment Methods

Formative coursework, assessed class tests, take-home assignment and mini project.

Pre-Requisites

CO1003, CO1005, CO1019 essential; CO1001, CO1012 desirable

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO2008 Functional Programming

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 10

Student Workload (hours)

Lectures	15
Seminars	5
Practical Classes & Workshops	10
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	70
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 2
Occurence: E
Coordinator: Fer-Jan de Vries
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 2
Occurence: E2
Coordinator: Fer-Jan de Vries
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

Students will be able to demonstrate:
• skilled use of basic functions and techniques to solve simple problems, with some practical applications;
• detailed knowledge of numbers, lists, recursion, and patterns;
• some understanding of higher order functions;
• the ability to apply Haskell's mechanism for defining new data types.

Students will also be able to:
• break down simple problems to identify essential elements;
• create a plan to solve a problem;
• implement a planned solution and evaluate the implementation.

Teaching and Learning Methods

Class sessions together with lecture slides, recommended textbook, Class sessions together with lecture slides, recommended textbook, worksheets, printed solutions, and some additional hand-outs and web support.

Assessment Methods

Marked coursework, traditional written examination.

Pre-Requisites

CO1001, CO1003, CO1005, CO1012

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO2011 Automata, Languages and Computation

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	49
Seminars	4
Practical Classes & Workshops	
Tutorials	5
Fieldwork	
Project Supervision	
Guided Independent Study	142
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Irek Ulidowski
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

By the end of the module students should be able to:
• describe some abstract models of the process of computation such as finite automata, pushdown automata and Turing machines.
• construct basic arguments couched in terms of these models.
• solve problems and produce reasoned arguments about the power of the computational models studied in the course (using their understanding of these models to solve the problems).
• write such arguments clearly and correctly with a proper use of formal notation where appropriate.

Teaching and Learning Methods

Class sessions together with course notes, exercises and web support. Recommended textbooks for extra information and supplementary reading.

Assessment Methods

Class tests and take-home coursework.

Pre-Requisites

CO1012 (or equivalent) essential; CO1003 (or equivalent) desirable

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

CO2012 Software Project Management and Professionalism

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 10

Student Workload (hours)

Lectures	11
Seminars	
Practical Classes & Workshops	16
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	73
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 1
Occurence: E
Coordinator: Richard Craggs
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

At the end of the module a student should be able to:
• demonstrate a broad understanding of the development processes involved in producing a large software system;
• apply the techniques acquired in the companion module CO2006 in a small team in the course of a web engineering mini project;
• demonstrate the need for quality assurance, project and risk management techniques, and the ability to apply suitable strategies in simple cases;
• demonstrate what professionalism means in the context of the software industry;
• demonstrate awareness of ethical and legal issues, like the Data Protection Act, likely to affect every professional in the software industry.
• formulate technical problems and their solution in a methodical way;
• justify solutions;
• research an issue and present their findings in writing in a balanced manner.

Teaching and Learning Methods

Class sessions together with course notes, video material, worksheets, supervised labs for mini project group work.

Assessment Methods

Marked coursework, including a written essay, a mini-project and lab or class tests. The coursework on this module cannot be re-sat.

Pre-Requisites

CO1003, CO1005, CO1007, CO1019 essential; CO1001, CO1012 desirable

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO2015 Software Engineering Project

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	5
Seminars	
Practical Classes & Workshops	1
Tutorials	
Fieldwork	
Project Supervision	9
Guided Independent Study	185
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Richard Craggs
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

At the end of this course, successful students should be able to:
• demonstrate participation, according to a role description, in the elicitation and specification of functional and nonfunctional requirements for a medium-size software system; design, validation and verification of an object-oriented system; construction and testing of specific modules of the system; documentation and demonstration of the system.
• recognise important dependencies between the activities mentioned above;
• critically assess the software life cycle in terms of general quality attributes and viable trade-offs presented within the given problem;
• employ a configuration management system effectively;
• schedule and manage a variant of the Unified Process for software development;
• identify and address risks in the software life cycle;
• apply appropriate practices within a professional, legal and ethical framework.
• work as a member of a development team, recognising the different roles within a team;
• conduct significant background research;
• retrieve information from different sources and manage it effectively;
• work with uncertain, limited and possibly contradictory information;
• solve complex problems with other members of the team;
• communicate in electronic as well as written and oral form;
• apply management techniques to allocate resources to projects;
• undertake a risk assessment for a medium-scale team-based software project, especially for risks arising from the use of the resulting software, and to specify appropriate security requirements;
• formulate and apply suitable tests to assess the security of their software in relation to its requirements;
• manage their own learning and development including time management and organisational skills as the foundation of on-going professional development.

Teaching and Learning Methods

Class sessions, lab session, workshop, group discussions, meetings with supervisor, recommended textbooks, additional hand-outs and web support.

Assessment Methods

Project deliverables, presentation, and demonstration of the software system. The coursework on this module cannot be re-sat.

Pre-Requisites

CO2006, CO2012, CO1003, CO1005, CO1019 essential; CO1012 desirable

Co-Requisites

-

Excluded Combinations

-

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

CO2015 Software Engineering Project

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO2016 Multimedia and Computer Graphics

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 10

Student Workload (hours)

Lectures	15
Seminars	
Practical Classes & Workshops	15
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	70
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 2
Occurence: 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	Examination (Final)	60		2		
002	Coursework	40				

Period: Semester 2
Occurence: E2
Coordinator: Roy Crole
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

Students should be able to demonstrate understanding of:
• explain, discuss and solve simple problems in the basic representation and handling of multimedia data (sound, pictures and animation);
• the basic components of a 3D-environments.

Students will also be able to:
• write programs involving different multimedia formats.
• create simple 2D animations.
• write Java 3D components and reason about their behaviour.
• create dynamic 3D environments.

Teaching and Learning Methods

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

Assessment Methods

Marked coursework, written examination.

Pre-Requisites

CO1003, CO1005

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO2017 Operating Systems, Networks and Distributed Systems

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	10
Practical Classes & Workshops	20
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	140
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: 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	Examination (Final)	60		3		
002	Coursework	40				

Period: Semester 2
Occurence: E2
Coordinator: Gilbert Laycock
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

Students should be able to:
• describe the fundamentals of current computer operating systems, and communications between computers;
• use the Unix operating system;
• describe key operating system features such as processes, threads, scheduling and synchronization;
• solve simple problems concerning the benefits and costs of distribution of computer systems;
• give detailed accounts of the structure and organization of network hardware and software;
• describe the common physical attributes of networks;
• write short, clear summaries of technical knowledge;
• solve abstract and concrete problems (both routine seen, and simple unseen), including numerical data.

Teaching and Learning Methods

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

Assessment Methods

Marked lab practicals, marked coursework, traditional written examination.

Pre-Requisites

CO1003 essential; CO1005, CO1016 desirable

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3002 Analysis and Design of Algorithms

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	31
Seminars	10
Practical Classes & Workshops	
Tutorials	9
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

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

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

Intended Learning Outcomes

Students should be able to:
• demonstrate how the worst-case time complexity of an algorithm is defined;
• compare the efficiency of algorithms using asymptotic complexity;
• design efficient algorithms using standard algorithm design techniques;
• demonstrate a number of standard algorithms for problems in fundamental areas in computer science and engineering such as sorting, searching, and problems involving graphs.
• solve problems which are algorithm based by using various design techniques;
• apply prior knowledge of standard algorithms to solve new problems, and mathematically evaluate the quality of the solutions;
• produce concise technical writing for describing the solutions and arguing for their correctness.

Teaching and Learning Methods

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

Assessment Methods

Marked coursework, class test, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3007 Communication and Concurrency

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	40
Seminars	10
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Irek Ulidowski
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
Occurence: E2
Coordinator: Irek Ulidowski
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

Students should be able to:
• demonstrate understanding of the notions of concurrency, communication, and concurrent systems; and CCS and its operational and axiomatic semantics;
• develop informal and formal specifications of simple concurrent systems;
• produce systems' designs from specifications;
• reason about the behaviour of simple concurrent systems using the techniques of equational reasoning and bisimulation, including bisimulation games;
• solve abstract and concrete problems (both routine seen, and simple unseen);
• write short summaries of technical material.

Teaching and Learning Methods

Lecture and class sessions together with course notes (available on the Web and in the printed form), Bisimulation Games workshop, recommended textbooks, class worksheets, printed solutions, and Web support.

Assessment Methods

Marked problem-based worksheets, class test and traditional problem-based written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3014 Computer Science Semester Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	5
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	5
Guided Independent Study	190
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: 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 (Final)	100		0		

Period: Semester 2
Occurence: 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 (Final)	100		0		

Intended Learning Outcomes

Students will be able to:
• establish the nature of the deliverables to be produced by the project;
• plan the timescales involved in developing these;
• identify the design issues involved;
• undertake appropriate specification and design;
• implement an end product;
• test and evaluate the end product;
• demonstrate general problem solving skills;
• write a substantial written report on the project.

Teaching and Learning Methods

Individual research, meetings with supervisors.

Assessment Methods

Software, viva, effort, and final report. The coursework on this module cannot be re-sat.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

CO3015 Computer Science Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 40

Student Workload (hours)

Lectures	5
Seminars	
Practical Classes & Workshops	2
Tutorials	
Fieldwork	
Project Supervision	10
Guided Independent Study	383
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	400

Period: Academic Year
Occurence: 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 (Final)	100		0		

Intended Learning Outcomes

Students will be able to:
• demonstrate that they can carry out significant background research which underpins project work;
• work out the nature of the deliverables to be produced;
• identify the specification and design issues involved;
• undertake appropriate specification and design work;
• implement the end (software) product according to their design work;
• test and evaluate the end product;
• produce a substantial written dissertation;
• produce a plan of timescales for project work;
• prepare and deliver an oral presentation'
• produce a short interim report on progress made to date and any revisions made to their original plan;
• demonstrate general problem solving skills;
• write substantial written reports.

Teaching and Learning Methods

Individual research, meetings with supervisors.

Assessment Methods

Assessed by a project plan; oral presentation; interim report; two interviews; effort; viva; software and final report (dissertation).
The coursework on this module cannot be re-sat.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

CO3016 Computing Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 40

Student Workload (hours)

Lectures	5
Seminars	
Practical Classes & Workshops	2
Tutorials	
Fieldwork	
Project Supervision	10
Guided Independent Study	383
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	400

Period: Academic Year
Occurence: E
Coordinator: Emmanuel Tadjouddine
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

Students will be able to:
• demonstrate that they can carry out background research which underpins project work;
• work out the nature of the deliverables to be produced;
• identify the specification and design issues involved;
• undertake appropriate specification and design work;
• implement the end (software) product according to their design work;
• test and evaluate the end product;
• produce a substantial written dissertation;
• prepare and deliver an oral presentation;
• produce a short interim report on progress made to date and any revisions made to their original plan;
• demonstrate general problem solving skills;
• write substantial written reports.

Teaching and Learning Methods

Individual research, meetings with supervisors.

Assessment Methods

Assessed by a project plan; interim report; two interviews; viva; effort, participation and organization; and final report (dissertation). The coursework on this module cannot be re-sat.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3090 Distributed Systems and Applications

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	18
Seminars	7
Practical Classes & Workshops	
Tutorials	14
Fieldwork	
Project Supervision	
Guided Independent Study	161
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: 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		3		
002	Coursework	40				

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

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

Intended Learning Outcomes

Students should be able to:
• tackle distributed programming issues and analyse problems that require distribution of resources/computations;
• analyse and choose among the middleware models described
in the course;
• understand and tackle issues like multi-threading and transactional interactions in distributed application;
• apply principles of component-based distributed programming (e.g., with respect to technologies like Java RMI, J2EE, etc).

Teaching and Learning Methods

Class sessions, textbook, worksheets, additional hand-outs and web support.

Assessment Methods

Marked coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3091 Computational Intelligence and Software Engineering

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	29
Seminars	6
Practical Classes & Workshops	5
Tutorials	5
Fieldwork	
Project Supervision	
Guided Independent Study	155
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Leandro Minku
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 1
Occurence: E2
Coordinator: Leandro Minku
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

Computational intelligence is a field of artificial intelligence concerned with so-called heuristic algorithms, which aim to produce good solutions to problems in a reasonable amount of time. These algorithms are widely used for several real world applications, e.g., routing problems; assignment and scheduling problems; medical, biomedical and bioinformatics problems; forecasting problems; etc. More recently, they have also started to be used to help solving software engineering problems. In particular, due to the increased size and complexity of software systems, software engineering tasks such as software project planning, software testing and maintenance have become increasingly time consuming and error prone. Computational intelligence techniques can be used as decision support tools in order to produce higher quality software faster, helping to overcome the challenges posed by large and complex software systems. This module explains computational intelligence approaches that can be used for solving problems from several different domains. It also explores the synergies between computational intelligence and software engineering, explaining how computational intelligence approaches can be used to help solving software engineering problems.

By completion of this module, students should be able to: recognise which software engineering problems can be formulated as computational intelligence optimisation or machine learning problems; formulate such software engineering 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 software engineers; build models able to support software engineering learning tasks; use optimisation algorithms to support software engineering optimisation problems; evaluate, analyse and critique computational intelligence approaches for software engineering. It is also expected that students will be able to use their knowledge to non-software engineering problems.

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

Last Published: 28 September 2020

CO3091 Computational Intelligence and Software Engineering

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3093 Big Data and Predictive Analytics

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	22
Seminars	5
Practical Classes & Workshops	20
Tutorials	5
Fieldwork	
Project Supervision	
Guided Independent Study	148
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: 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	Examination (Final)	40		2		
002	Coursework	60				

Intended Learning Outcomes

As we increasingly rely upon the online environment for our daily routines, we leave behind a vast amount of information about us. Commercial organisations or even governments can use this information to predict our behavior. This module aims to study methods and tools enabling us to identify variables of interest and their relationships from an existing data and develop a model that can predict values of variables of interest for missing or future data points. This kind of analysis should give us an insight into individual preferences, and most importantly, what someone is likely to do in a given scenario. Some of the applications include credit bank approval, marketing, stock price predictions, demand forecasting or polical campaining. In this course, we will also study the importance of good quality data and will rely upon open libraries to implement basic models with much less programming effort. We will also learn how to compare and contrast different models for the same data and objective.

By completion of this course, students will be able to: analyse possibly large amount of data; use Map-Reduce in processing data; develop and back-test a predictive model; compare and contrast different types of predictive models; and evaluate a given predictive model. Students are also expected to gain an appreciation of niche applications wherein predictive analytics can be useful; write a technical report based on design and experiments and solve abstract and concrete problems involving possibly a vast amount of (structured or unstructured) data.

Teaching and Learning Methods

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

Assessment Methods

Marked coursework and written examination. Marked coursework will be a mix of written homework, programming tasks and class tests

Pre-Requisites

-

Co-Requisites

CO2006, CO2015

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3095 Software Measurement and Quality Assurance

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	34
Seminars	
Practical Classes & Workshops	10
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	146
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Neil Walkinshaw
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
Occurence: E2
Coordinator: Neil Walkinshaw
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

Students will be able to:
• describe how quality issues affect each aspect of the software development life-cycle;
• choose appropriate strategies for software testing and validation, and discuss how to implement them;
• demonstrate understanding of the theory of software metrics and make software measurements in practice;
• relate quality to the current standards for process improvement;
• research a a given topic using a variety of sources including books, current articles and research papers and web-resources;
• give a written account of their findings (suitable for inclusion in a company report).

Teaching and Learning Methods

Class sessions together with course notes; recommended textbooks; worksheets; additional hand-outs including articles, case studies and research papers; web resources.

Assessment Methods

Marked coursework, written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3096 Compression Methods for Multimedia

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	5
Practical Classes & Workshops	
Tutorials	5
Fieldwork	
Project Supervision	
Guided Independent Study	157
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Rajeev Raman
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- re-assessment by exam	50		2		

Period: Semester 2
Occurence: E2
Coordinator: Rajeev Raman
Mark Scheme: UG Module Mark Scheme

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

Intended Learning Outcomes

Students should be able to:
• demonstrate broad knowledge of compression techniques as well as the mathematical foundations of data compression;
• demonstrate factual knowledge about existing compression standards or commonly-used compression utilities;
• demonstrate understanding of the ubiquity and importance of compression technologies in today's environment;
• demonstrate an elementary understanding of the need for modelling data and the underlying issues;
• describe various models of data;
• demonstrate understanding of the basic data compression algorithms;
• show how these algorithms work on a particular input, and implement them;
• compare their efficiency in terms of speed and compression ratio.

Teaching and Learning Methods

Class sessions together with course notes, recommended textbooks, problem classes with worksheets and model solutions, web support.

Assessment Methods

Marked coursework, class tests, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3098 Web Technologies

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	20
Seminars	10
Practical Classes & Workshops	20
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: 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)	50		2		
002	Coursework	50				

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

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

Intended Learning Outcomes

At the end of the course the student should be able to:
• Understand the architectural foundations for Web Technologies;
• use XML based techniques appropriately to create documents and handle data;
• demonstrate awareness of security and session handling issues and use supporting techniques;
• use Java servlet technology to create web applications;
• demonstrate understanding of the technologies behind web services and create a simple web service;
• Solve abstract and concrete problems (both routine seen, and simple unseen).

Teaching and Learning Methods

Class sessions, tutorials and practical sessions together with course notes, recommended reading, worksheets, and some additional hand-outs.

Assessment Methods

Assessed coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3099 Cryptography and Internet Security

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	10
Practical Classes & Workshops	10
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

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

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

Intended Learning Outcomes

Students will be able to:
• describe the working principles of modern public-key cryptosystems;
• write cryptographically secure network applications using Java's cryptographic libraries;
• describe the basic security principles of some internet applications relying on cryptographic mechanisms.

Teaching and Learning Methods

Class sessions together with lecture slides, recommended textbook, worksheets, printed solutions, and some additional hand-outs and web support.

Assessment Methods

Marked coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO3105 C++

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	16
Seminars	7
Practical Classes & Workshops	12
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	165
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Nir Piterman
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

Over the past 20 years C++ has become one of the world's most popular programming languages, due to its potential for producing effcient and compact code. As such any programmer wishing to develop effcient programs should be familiar with the use of its central features.
This module is intended to give the student a basic grasp of the usage of C++.

The module will introduce C++ and the basic usage of the Standard Template Librairy (STL). We will touch upon the usage of classes, constructors, and destructors. A special emphasis will be put on memory management and the useage of pointers, arrays, and references. We will also cover templates and inheritance. As part of the STL we will also cover the usage of exceptions and smart pointers. If we have enough time we will also cover the usage of lambda functions.

By completion of this course, students will be able to: develop design, analysis and problem solving skills. Students should be able to understand the components of a C++ program, the structures required to write advanced programs, and the ideas of object orientation.

Teaching and Learning Methods

Class sessions together with lecture slides; Labs; recommended book chapters; web resources; worksheets.

Assessment Methods

Marked coursework. Marked coursework will be programming tasks. Students' programs wil lbe automatically evaluated by a test suite.

Pre-Requisites

-

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

CO4015 Computer Science Project

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 30

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	10
Guided Independent Study	290
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	300

Period: Academic Year
Occurence: 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 (Final)	100				

Intended Learning Outcomes

Students will be able to:
• demonstrate that they can carry out significant background research which underpins project work;
• work out the nature of the deliverables to be produced;
• identify the specification and design issues involved;
• undertake appropriate specification and design work;
• implement the end (software) product according to their design work;
• test and evaluate the end product;
• produce a substantial written dissertation of near-research level quality at minimum;
• produce a plan of timescales for project work;
• prepare and deliver a lecture style oral presentation;
• produce a short interim report on progress made to date and any revisions made to their original plan;
• demonstrate general problem solving skills, and write substantial written reports.

Teaching and Learning Methods

Individual research, meeting with supervisors.

Assessment Methods

Assessed by a project plan; oral presentation; interim report; effort; viva; software and final report (dissertation). The coursework on this module cannot be re-sat.

Pre-Requisites

CO2006, CO2015, CO3015

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

CO4105 Advanced C++ Programming

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	14
Seminars	7
Practical Classes & Workshops	14
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	165
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Nir Piterman
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 components of a C++ program, the structures required to write advanced programs, and the ideas of object orientation;
• apply their C++ skills to solve computing problems.

Teaching and Learning Methods

Class sessions, recommended textbook and worksheets.

Assessment Methods

Marked coursework

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

CO4200 Algorithms for Bioinformatics

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	12
Practical Classes & Workshops	
Tutorials	4
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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
Occurence: 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

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 probabilistic models underlying computational tasks in bioinformatics;
• design and implement efficient algorithms;
• apply modelling and algorithm design 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

UNIVERSITY OF LEICESTER

Module Specification

CO4203 Advanced C++ Programming

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	14
Seminars	
Practical Classes & Workshops	14
Tutorials	7
Fieldwork	
Project Supervision	
Guided Independent Study	115
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator: Nir Piterman
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 components of a C++ program, the structures required to write advanced programs, and the ideas of object orientation;
• apply their C++ skills to solve computing problems.

Teaching and Learning Methods

Class sessions, recommended textbook and worksheets.

Assessment Methods

Marked coursework.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

CO4205 Advanced System Design

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	8
Practical Classes & Workshops	8
Tutorials	2
Fieldwork	
Project Supervision	
Guided Independent Study	108
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator: Emilio Tuosto
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

At the end of the module, students should be able to:
• demonstrate understanding of the basic concepts and role of software architectures, including the separation between computation and coordination concerns;
• demonstrate understanding of the relations between models and implementations of distributed applications;
• apply techniques to support the modelling, testing, and programming of distributed applications;
• decompose system requirements according to the principles of message-based distributed applications;
• modularise applications by identifying the dependencies that interactions have on distributed parties;
• model service orchestrations;
• model the protocols that coordinate service interactions.

Teaching and Learning Methods

Class sessions, tutorials and practical sessions together with course notes, recommended reading, worksheets, printed solutions, and some additional hand-outs.

Assessment Methods

Assessed coursework. Re-assessment by traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

CO4206 System Re-Engineering

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	7
Practical Classes & Workshops	14
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	109
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator: Neil Walkinshaw
Mark Scheme: UG Module Mark Scheme

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

Period: Semester 1
Occurence: E2
Coordinator: Neil Walkinshaw
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

By the end of the module, students should be able to:
• understand software ageing phenomenon and the issues related to it;
• understand the challenges in renovating and maintaining legacy software systems and the available methods for dealing with them;
• make reasoned decisions on which reengineering methods to apply for certain types of legacy system renovation tasks.

Teaching and Learning Methods

Class sessions, tutorials and lab sessions together with course notes, course readings, assignments and class tests.

Assessment Methods

Marked coursework.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

CO4207 Generative Development

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: E
Coordinator:
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

At the end of this module the students should be able to:
• Demonstrate a knowledge of the main approaches for automating software development;
• Critically evaluate the role of modelling and code generation in software development;
• Use UML and OCL for designing views of software systems;
• Check the consistency of the UML design of an application;
• Use techniques for model-driven development;
• Explain concepts of aspect-oriented programming and apply them.
• Explain concepts of software product line development and apply them.

Teaching and Learning Methods

Class sessions together with course notes, textbooks, printed solutions, and some additional hand-outs and 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

UNIVERSITY OF LEICESTER

Module Specification

CO4209 Software Reliability

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	23
Seminars	
Practical Classes & Workshops	16
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	111
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator: Alexander Kurz
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
Occurence: E2
Coordinator: Alexander Kurz
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

At the end of this module students should be able to:
• Discuss techniques and tools for verifying that computer systems are reliable in the sense that they have the properties intended;
• Discuss languages for modelling systems and their properties, model checking and algorithms, and a selection of tools (e.g. SPIN);
• Demonstrate understanding of specification, verification and validation of typical properties of reactive systems;
• Discuss the relationship to software testing techniques (black-box checking);
• Use tools (e.g. SPIN) to verify and debug small-scale systems;
• Explain the principles and algorithms behind those tools;
• Discuss the application of the tools to different domains, and the limitations of current verification techniques (e.g. the state explosion problem) and efforts to overcome them.

Teaching and Learning Methods

Class sessions, tutorials and laboratory sessions together with course notes, recommended reading, worksheets, printed solutions, and some additional hand-outs.

Assessment Methods

Assessed coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO4210 Personal and Group Skills

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	3
Seminars	8
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	4
Guided Independent Study	135
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: 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
Occurence: E
Coordinator: Alexander Kurz
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

At the end of the module, 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 transferable skills and career planning.

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

UNIVERSITY OF LEICESTER

Module Specification

CO4211 Discrete Event Systems

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	22
Seminars	8
Practical Classes & Workshops	
Tutorials	4
Fieldwork	
Project Supervision	
Guided Independent Study	116
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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	Examination (Final)	100		2		

Period: Semester 2
Occurence: E2
Coordinator: Michael Hoffmann
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

At the end of this module, students should be able to:
• employ some basic formalisms of behavioural modelling (such as automata and Petri nets) to model real-world examples.

Teaching and Learning Methods

Lectures, surgeries, problem classes, worksheets, course notes and textbook.

Assessment Methods

Traditional written examination.

Pre-Requisites

Basic knowledge of discrete mathematics.

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO4212 Game Theory in Computer Science

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	8
Practical Classes & Workshops	
Tutorials	8
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: E
Coordinator: Fer-Jan de Vries
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 2
Occurence: E2
Coordinator: Fer-Jan de Vries
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

Students should be able to:
• describe different mathematical models of games;
• state and discuss basic concept from game theory, such as Nash equilibria;
• calculate Nash equilibria of game trees and strategic form games;
• list a number of application areas of computer science where game theoretical models are relevant;
• apply methods from algorithmic game theory to the modelling and analysis of real-world 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, class tests, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

CO4214 Service-Oriented Architectures

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	8
Practical Classes & Workshops	
Tutorials	8
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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
Occurence: 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

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 ad 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

UNIVERSITY OF LEICESTER

Module Specification

CO4215 Advanced Web Technologies

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	17
Seminars	3
Practical Classes & Workshops	18
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	112
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: E
Coordinator: Stephan Reiff-Marganiec
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
Occurence: E2
Coordinator: Stephan Reiff-Marganiec
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

At the end of the course the student 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

UNIVERSITY OF LEICESTER

Module Specification

CO4216 Semantic Web

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	26
Seminars	8
Practical Classes & Workshops	8
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	108
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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				

Period: Semester 2
Occurence: E2
Coordinator: Yi Hong
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

At the end of the module the students should be able to:
• discuss fundamental concepts, advantages and limits of the semantic web;
• demonstrate understanding of and use ontologies in the context of Computer Science and the semantic web;
• use the RDF framework and associated technologies such as RDFa;
• demonstrate understanding of the relationship between Semantic Web and Web 2.0;
• model and query domain knowledge as ontologies defined using standards such as RDF and OWL;
• apply the principles of ontological engineering to modelling exercises.

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

Module Specification

CO4217 Agile Cloud Automation

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	16
Seminars	8
Practical Classes & Workshops	16
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: 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

At the end of this module, students will be able to:
• demonstrate a systematic understanding of the specification of DSLs using the Meta-Object Facility and the Object Constraint Language;
• explain and employ the relation between their surface characterization and semantics for verification purposes;
• consistently produce modelling environments with textual and/or graphical facilities and with decision procedures for checking the correctness of program representations using a DSL under study, combining both formal meta-languages, such as (Extended) Backus-Naur Form, and EMF-based based technology;
• apply model transformations for the effective design, implementation and usability of meta-data environments in heterogeneous software ecosystems;
• defend a critical awareness of state-of-the-art model-driven principles, standards and practices and their relevance to software engineering.

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

UNIVERSITY OF LEICESTER

Module Specification

CO4218 Financial Services Information Systems

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	25
Seminars	8
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	117
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: E
Coordinator:
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 2
Occurence: E2
Coordinator:
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

At the end of the module a typical student should be able to:
• demonstrate understanding of some of the fundamental concepts and terminology of the Financial Services domain;
• demonstrate awareness of the key organisational units and their respective functions in Financial Services organisations;
• differentiate categories of financial systems and applications and discuss their characteristics and their relationships from different perspectives, namely business, functional, architectural and technological;
• demonstrate understanding of the role and key functions of the IT departments within Financial Services and awareness of the issues and challenges that they currently face.

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

UNIVERSITY OF LEICESTER

Module Specification

CO4219 Internet and Cloud Computing

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	29
Seminars	6
Practical Classes & Workshops	2
Tutorials	3
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: 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		2		
002	Coursework	40				

Period: Semester 1
Occurence: 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

At the end of the module students will be able to:
• discuss the layered architecture, routing mechanisms and main protocols used in the Internet;
• perform calculations to predict performance metrics of data transfers in different network scenarios;
• demonstrate understanding of the principles, components and architecture of cloud computing;
• discuss issues and solution approaches for questions of privacy and security in the context of cloud computing
• demonstrate understanding of mechanisms for enhancing fault-tolerance in cloud computing
• discuss scalable approaches to distributed computing on large amounts of data, especially the MapReduce programming model, including application areas such as data analytics, data mining, and information retrieval;
• design and implement scalable computations in Java using the Hadoop framework

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

UNIVERSITY OF LEICESTER

Module Specification

Last Published: 28 September 2020