UNIVERSITY OF LEICESTER

Module Specification

CO1101 Computing Fundamentals

Academic Year: 2019/0
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: Jan Oliver Ringert
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; 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 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

-

Guided Independent Study: Indicative Activities

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

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO1102 Programming fundamentals

Academic Year: 2019/0
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: 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 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, 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 module note-based summaries. Use of web-based coding tutorials/videos.

UNIVERSITY OF LEICESTER

Module Specification

CO1103 Mathematics Fundamentals

Academic Year: 2019/0
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: 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.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO1104 Computer Architecture

Academic Year: 2019/0
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: 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

Period: Semester 1
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
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful students should be able to:
- Solve simple problems on: number systems (such as binary), 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; outline how it fits within a computer
- Explain, and solve simple problems on, fundamental hardware circuits such as ALUs, multiplexors, and register files.
- Explain high level views of current processor hardware or detailed views of simple model processor hardware, including the ISA.
- Solve simple problems, and write simple ISA programs.

Teaching and Learning Methods

Lectures, Tutorials for examples and feedback.

Assessment Methods

Coursework (20%), Exam (80%)

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Last Published: 17 November 2019

CO1104 Computer Architecture

Guided Independent Study: Indicative Activities

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

UNIVERSITY OF LEICESTER

Module Specification

CO1105 Introduction to Object Oriented Programming

Academic Year: 2019/0
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: 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				
002	Examination	100		2		Y

Intended Learning Outcomes

On completion of the module, successful students should be able to:
- Define, create, and manipulate classes and objects using standard-object oriented programming concepts.
- 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, Tutorials for 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: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO1106 Requirements Engineering and Professional Practice

Academic Year: 2019/0
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: Nervo Verdezoto
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.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO1107 Algorithms, Data Structures and Advanced Programming

Academic Year: 2019/0
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: 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 module note-based summaries.

UNIVERSITY OF LEICESTER

Module Specification

CO1108 Foundations of Computation

Academic Year: 2019/0
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: 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

On completion of the module, successful 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 (40%) and final examination (60%).

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: 2019/0
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 completion of the 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.

UNIVERSITY OF LEICESTER

Module Specification

CO2101 Operating Systems, Networks and Distributed Systems

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	100
Demonstration	
Supervised time in studio/workshop	20
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: 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				

Intended Learning Outcomes

On completion of the module, successful students should be able to:
- Describe the basic functions of an operating system.
- Explain the basics of processes and memory management, and analyse simple problems involving these concepts.
- Describe the notions data storage and persistence. Work out problems involving these topics.
- Analyse concurrent code and explain how it works.
- Describe the main mechanisms for inter-process communication (IPC). Explain how they differ. Answer simple questions about IPC.
- Explain the basics of networking protocols and APIs for communication between computers, and be able to work out simple questions on these topics.

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.

UNIVERSITY OF LEICESTER

Module Specification

CO2102 Databases and Domain Modelling

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	100
Demonstration	
Supervised time in studio/workshop	20
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 1
Occurence: 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	Examination	60				
002	Coursework	40				

Period: Semester 1
Occurence: E2
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:
- Discuss and illustrate relational database management systems.
- Apply appropriate notation for modelling database schemas.
- Explain and demonstrate data definition language (DDL) to create and manipulate simple database solutions.
- Explain and demonstrate data manipulation language (DML) to create and manipulate simple database solutions.
- Define and utilise data control language (DCL) to create and manipulate simple database solutions.
- 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 (40%), Final Exam (60%).

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: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO2102 Databases and Domain Modelling

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO2103 Software Architecture & System Development

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 30

Student Workload (hours)

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

Period: Academic Year
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
001	Coursework	100				
002	Examination	100		2		Y

Intended Learning Outcomes

On completion of the module, successful students should be able to:
- Construct software architectures from customer requirements following an agile methodology.
- Demonstrate software modelling notation for consistent specification of software systems.
- Demonstrate appropriate techniques for developing and testing a system following an architectural style.
- Demonstrate techniques for software reuse.
- Incorporate security aspects into a software architecture.
- Construct relational databases from object-oriented designs.

Transferable skills:
- Solve abstract and concrete problems (both routine seen, and simple unseen).

Teaching and Learning Methods

Lectures, lecture notes, recommended textbooks, worksheets/programming exercises, screencasts/videos, supervised laboratories, VLE discussion board, formative feedback and web resources

Assessment Methods

Coursework (100%).

Pre-Requisites

-

Co-Requisites

CO2102.

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Worksheets, guided reading, study of other information sources, study groups, collaborative tools.

UNIVERSITY OF LEICESTER

Module Specification

CO2104 User Interface Design and Evaluation

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	100
Demonstration	
Supervised time in studio/workshop	20
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: E
Coordinator: Nervo Verdezoto
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

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: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO2105 Software and Technology in Large Organisations

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	100
Demonstration	
Supervised time in studio/workshop	20
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

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	60		2		
002	Coursework	40				

Intended Learning Outcomes

On completion of the module, successful students should be able to:
- Explain and discuss the organisation, management and other structures of large organisations
- Explain the problems and issues arising from legacy software in organisations
- Discuss the deployment, maintenance and testing protocols for new software systems.
- Solve realistic scenario based problems in the specification and selection of new software systems

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.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO2106 Data Analytics

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	100
Demonstration	
Supervised time in studio/workshop	20
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

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	40				
002	Examination	60		2		
003	Examination	100		2		Y

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.

Transferable skills:
- Develop problem-solving skills.

Teaching and Learning Methods

Lectures, notes, supervised laboratory work, tutorials, coursework, model answers, handouts.

Assessment Methods

Coursework (40%) and final examination (60%).

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

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

UNIVERSITY OF LEICESTER

Module Specification

CO2107 Functional Programming

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	20
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	100
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	Coursework	100				

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

On completion of the module, successful students should be able to:
- Demonstrate skilled use of basic functions and techniques to solve simple problems.
- Explain in detail definitions of numbers, lists, recursion, and patterns.
- Explain higher-order functions and mechanisms for defining new datatypes.
- Explain advanced functional programming constructs.
- Solve simple and complex programming problems using functional programming.
- Demonstrate skilled use of functional programming in mainstream programming languages for developing web applications.

Teaching and Learning Methods

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

Assessment Methods

Coursework (40%), Exam (60%)

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: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO2114 Foundations of Artificial Intelligence

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	100
Demonstration	
Supervised time in studio/workshop	20
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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)	60		2		
002	Coursework	40				
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.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO2201 Software Engineering Project

Academic Year: 2019/0
Module Level: Year 2
Scheme: UG
Department: Informatics
Credits: 30

Student Workload (hours)

Lectures	25
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	235
Demonstration	
Supervised time in studio/workshop	30
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	300

Period: Academic Year
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
001	Coursework	100				

Intended Learning Outcomes

On completion of the module, successful 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.

UNIVERSITY OF LEICESTER

Module Specification

CO3002 Analysis and Design of Algorithms

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	
Practical Classes & Workshops	
Tutorials	20
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

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.
- Aapply 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

Marked coursework, class test, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Guided reading and other information sources.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO3007 Communication and Concurrency

Academic Year: 2019/0
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

-

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO3007 Communication and Concurrency

Guided Independent Study: Indicative Activities

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Module Specification

CO3014 Computer Science Semester Project

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	5
Fieldwork	
Project Supervision	
Guided Independent Study	195
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

On completion of the module, successful students should be able to:
- Demonstrate the ability to 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.

Transferable skills:
- Demonstrate general problem solving skills.
- Prepare and deliver an oral presentation.
- Produce a plan of timescales for project work.
- Produce a substantial written report.

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

-

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO3014 Computer Science Semester Project

Guided Independent Study: Indicative Activities

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO3015 Computer Science Project

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 40

Student Workload (hours)

Lectures	5
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	10
Guided Independent Study	383
Demonstration	
Supervised time in studio/workshop	2
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

On completion of the module, successful students should be able to:
- Demonstrate the ability to 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.

Transferable skills:
- Demonstrate general problem solving skills.
- Prepare and deliver an oral presentation.
- Produce a plan of timescales for project work.
- Produce a substantial written report.

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: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 40

Student Workload (hours)

Lectures	5
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	10
Guided Independent Study	383
Demonstration	
Supervised time in studio/workshop	2
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

On completion of the module, successful students should be able to:
- Demonstrate the ability to 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.

Transferable skills:
- Demonstrate general problem solving skills.
- Prepare and deliver an oral presentation.
- Produce a plan of timescales for project work.
- Produce a substantial written report.

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

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Module Specification

CO3090 Distributed Systems and Applications

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	18
Seminars	7
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	161
Demonstration	
Supervised time in studio/workshop	14
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.

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

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

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO3091 Computational Intelligence and Software Engineering

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	29
Seminars	
Practical Classes & Workshops	
Tutorials	11
Fieldwork	
Project Supervision	
Guided Independent Study	155
Demonstration	
Supervised time in studio/workshop	5
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: 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	60		3		
002	Coursework	40				

Period: Semester 1
Occurence: 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 completion of the module, successful 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

-

Last Published: 17 November 2019

CO3091 Computational Intelligence and Software Engineering

Guided Independent Study: Indicative Activities

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

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Module Specification

CO3093 Big Data and Predictive Analytics

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	20
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				

Period: Semester 2
Occurence: E2
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:
- 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.

Transferable skills:
- Write a report on the data analysis carried out.
- Use statistical techniques to analyse data.

Teaching and Learning Methods

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

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

-

Excluded Combinations

-

Last Published: 17 November 2019

CO3093 Big Data and Predictive Analytics

Guided Independent Study: Indicative Activities

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

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Module Specification

CO3095 Software Measurement and Quality Assurance

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

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

Period: Semester 1
Occurence: 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		3		
002	Coursework	40				

Period: Semester 1
Occurence: 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
004	Coursework (Final)	100				

Intended Learning Outcomes

On completion of the module, successful students should 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;
- Choose and apply appropriate strategies for software testing and validation, and discuss when and how to implement them;
- Research 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

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

Last Published: 17 November 2019

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Module Specification

CO3095 Software Measurement and Quality Assurance

Last Published: 17 November 2019

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Module Specification

CO3096 Compression Methods for Multimedia

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	35
Seminars	
Practical Classes & Workshops	
Tutorials	10
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 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		1		

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

On completion of the module, successful 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

-

Last Published: 17 November 2019

CO3096 Compression Methods for Multimedia

Guided Independent Study: Indicative Activities

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

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Module Specification

CO3098 Web Technologies

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	20
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:
- Demonstrate a knowledge of the architectural foundations for Web Technologies.
- Use data-interchange formats and techniques appropriately to create documents and handle data.
- Solve security and session handling issues and use supporting techniques.
- Use server and client-side scripting languages and web frameworks to create a web application.
- Demonstrate understanding of the technologies behind web services and create a simple web service.

Teaching and Learning Methods

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

Assessment Methods

Assessed coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Podcasts.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO3099 Foundations of Cybersecurity

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	10
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

On completion of the module, successful students should 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 authorisation, 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, worksheets, printed solutions, and web support.

Assessment Methods

Marked coursework, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Last Published: 17 November 2019

CO3099 Foundations of Cybersecurity

Guided Independent Study: Indicative Activities

Guided reading and other information sources.

UNIVERSITY OF LEICESTER

Module Specification

CO3105 C++ Programming

Academic Year: 2019/0
Module Level: Year 3
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	14
Seminars	
Practical Classes & Workshops	
Tutorials	7
Fieldwork	
Project Supervision	
Guided Independent Study	165
Demonstration	
Supervised time in studio/workshop	14
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	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 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

Lecture recordings, recommended book chapters and web resources.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4015 MComp Project

Academic Year: 2019/0
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

On completion of the module, successful students should be able to:
- Demonstrate the ability to 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.

Transferable skills:
- Demonstrate general problem solving skills.
- Prepare and deliver an oral presentation.
- Produce a plan of timescales for project work.
- Produce a substantial written report.

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 or CO3016 or CO3120.

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

-

UNIVERSITY OF LEICESTER

Module Specification

CO4105 Advanced C++ Programming

Academic Year: 2019/0
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 20

Student Workload (hours)

Lectures	14
Seminars	
Practical Classes & Workshops	
Tutorials	7
Fieldwork	
Project Supervision	
Guided Independent Study	165
Demonstration	
Supervised time in studio/workshop	14
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	Coursework (Final)	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.
- Design solutions for complex applied problems using appropriate design methodology incorporating advanced C++ programming constructs.

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, recommmended book chapters and web resources.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4200 Algorithms for Bioinformatics

Academic Year: 2019/0
Module Level: Year 4
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: 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

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.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4203 Advanced C++ Programming

Academic Year: 2019/0
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

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

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	Coursework (Final)	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.
- Design solutions for complex applied problems using appropriate design methodology incorporating advanced C++ programming constructs.

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, recommmended book chapters and web resources.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4205 Advanced System Design

Academic Year: 2019/0
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

On completion of the module, successful 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

-

UNIVERSITY OF LEICESTER

Module Specification

CO4206 System Re-Engineering

Academic Year: 2019/0
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: Hongji Yang
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: Hongji Yang
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:
• 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

-

UNIVERSITY OF LEICESTER

Module Specification

CO4207 Generative Development

Academic Year: 2019/0
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	104
Demonstration	
Supervised time in studio/workshop	16
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	150

Period: Semester 2
Occurence: 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 modeling languages for designing views of software systems.
- Check the consistency of the models of an application.
- Use techniques of 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

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, screencasts, guided reading lists.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4210 Personal and Group Skills

Academic Year: 2019/0
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: 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 transferable 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

-

Last Published: 17 November 2019

CO4210 Personal and Group Skills

Guided Independent Study: Indicative Activities

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

UNIVERSITY OF LEICESTER

Module Specification

CO4211 Discrete Event Systems

Academic Year: 2019/0
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

On completion of the module, successful 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: 2019/0
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24
Seminars	
Practical Classes & Workshops	8
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

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

Assessment Methods

Marked problem-based worksheets, class tests, traditional written examination.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, guided reading lists.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4214 Service-Oriented Architectures

Academic Year: 2019/0
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

-

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4214 Service-Oriented Architectures

Guided Independent Study: Indicative Activities

-

UNIVERSITY OF LEICESTER

Module Specification

CO4215 Advanced Web Technologies

Academic Year: 2019/0
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

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

-

Last Published: 17 November 2019

Module Specification

CO4215 Advanced Web Technologies

Guided Independent Study: Indicative Activities

-

UNIVERSITY OF LEICESTER

Module Specification

CO4216 Semantic Web

Academic Year: 2019/0
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	24	4
Seminars		
Practical Classes & Workshops	10	10
Tutorials	8	8
Fieldwork		
Project Supervision		
Guided Independent Study	108	108
Demonstration		
Supervised time in studio/workshop		
Work Based Learning		
Placement		
Year Abroad		
Total Module Hours	150	130

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

On completion of the module, successful 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.
- Use ontology languages and associate technologies for knowledge representation and search.
- Apply the principles of ontological engineering in modelling.

Teaching and Learning Methods

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

Assessment Methods

Assessed coursework; traditional written exam

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, guided reading lists.

Last Published: 17 November 2019

Module Specification

CO4217 Agile Cloud Automation

Academic Year: 2019/0
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	16
Seminars	
Practical Classes & Workshops	16
Tutorials	3
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: 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 DSLs using formal meta-language.
- Explain and employ the relation between their surface characterization and semantics for verification purposes.
- Apply model transformations for the effective design and implementation of meta-data environments in heterogeneous software ecosystems.
- Defend a critical awareness of state-of-the-art model-driven software development principles, standards and practices and their relevance to software engineering and to cloud-based computing.

Teaching and Learning Methods

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

Assessment Methods

Assessed coursework.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Lecture recordings, screencasts, guided reading lists.

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4218 Financial Services Information Systems

Academic Year: 2019/0
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

On completion of the module, successful students 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

-

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4218 Financial Services Information Systems

Last Published: 17 November 2019

UNIVERSITY OF LEICESTER

Module Specification

CO4219 Internet and Cloud Computing

Academic Year: 2019/0
Module Level: Year 4
Scheme: UG
Department: Informatics
Credits: 15

Student Workload (hours)

Lectures	29
Seminars	
Practical Classes & Workshops	
Tutorials	9
Fieldwork	
Project Supervision	
Guided Independent Study	110
Demonstration	
Supervised time in studio/workshop	2
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

On completion of the module, successful students should 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; evaluate the outcomes.
- Demonstrate understanding of the principles, components, architecture and fault-tolerance mechanisms in cloud computing.
- Discuss issues and evaluate solution approaches for questions of privacy and security in the context of cloud computing.
- Design scalable distributed computations on large amounts of data using the MapReduce programming model for application areas such as data analytics, data mining, and information retrieval, and implement such computations in Java using hadoop.

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

-

Last Published: 17 November 2019

CO4219 Internet and Cloud Computing

Guided Independent Study: Indicative Activities

Lecture recordings, screencasts, guided reading lists.