



UNDERGRADUATE MODULES FOR 2016-2017

Full Year

Module	Module Code	Level
Software Engineering Group Project	G52GRP	2
Algorithms Correctness and Efficiency	G52ACE	2
Development Experience	G53DEV	3
Industrial Experience	G53IND	3
Schools Experience	G53SCE	3
Individual Dissertation Single/Joint Honours	G53IDS/J	3

Autumn Semester – Computer Science Modules

Module	Module Code	Level
Computer Fundamentals	G51CSF	1
Mathematics for Computer Scientists	G51MCS	1
Programming and Algorithms	G51PGA	1
Systems and Architecture	G51SYS	1
Software Maintenance	G52SWM	2
Operating Systems and Concurrency	G52OSC	2
Professional Ethics in Computing	G53PEC	3
Software Quality Metrics	G53SQM	3
Compilers	G53CMP	3
Machine Learning	G53MLE	3
Mobile Device Programming	G53MDP	3

Autumn Semester – Compulsory Business Modules for Joint Honours

Module	Module Code	Level
Marketing Management	N12412	2
Human Resource Management	N12425	2
Management: Content and Analysis	N12410	2
Strategic Management I	N13410	3
Human Resource Management I	N13425	3

Spring Semester – Computer Science Modules

Module	Module Code	Level
Programming Paradigms	G51PGP	1
Databases and Interfaces	G51DBI	1
Introduction to Software Engineering	G51FSE	1
Fundamentals of Artificial Intelligence	G51FAI	1
Artificial Intelligence Methods (20cr)	G52AMI	2
Artificial Intelligence Methods (10cr)	G52AIM	2
Languages and Computation	G52LAC	2
C++ Programming	G52CPP	2
Introduction to Human Computer Interaction	G52HCI	2
Introduction to Image Processing	G52IIP	2
Software Specification	G52SOF	2
Computer Security	G53SEC	3
Computer Vision	G53VIS	3
Parallel and Distributed Computing	G53PDC	3
Fundamentals of Information Visualisation	G53FIV	3
Information Visualisation Project	G53IVP	3

Spring Semester – Compulsory Business Modules for Joint Honours

Module	Module Code	Level
Technology and Organisation	N12435	2
Strategic Management II	N13418	3
Human Resource Management II	N13426	3

Notes:

1. Modules offered in any semester are subjected to change as they depend on staff availability and sufficient number of student's enrolments.
2. The descriptions of the offered modules are current as and when this document is prepared but they may be subjected to modifications or additions by the module convenors.
3. Students may take modules offered by other Schools provided appropriate approval has been obtained from the Course Director of the School of Computer Science and the module convenor of the offering School, subjected to the condition that there is no clash in the timetables and that all prerequisites and corequisites of the selected module are met. A maximum of 20 credits of such modules are allowed in each academic year.
4. This document provides summaries as well as important details of Computer Science modules that are only relevant to the Malaysia Campus. Other information not included in this document e.g. education aims, learning outcomes as well as descriptions of other non-Computer Science modules, can be viewed at the Nottingham's Module Catalogue web site below:

<http://modulecatalogue.nottingham.ac.uk/Malaysia/> // Malaysia Campus
<http://modulecatalogue.nottingham.ac.uk/Nottingham/> // UK Campus

5. Module course notes, lecture handouts, laboratory instructions, courseworks and their submission procedure are available in:

<https://moodle.nottingham.ac.uk/login/index.php>



G52GRP – Software Engineering Group Project (20 Credits) – Full Year 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: G52SEM; A: Coursework 100%

2. Lecturer

KR. Selvaraj (Mr)

Contact: 03-89248139 (Office Phone); BB60 (Room)

E-mail: Kr.selvaraj@nottingham.edu.my

3. Summary of Content

Working in groups of around five to six people, you'll be assigned a supervisor who will provide you with a short written description of a computer application to be designed, programmed, and documented during the course of the module. Each group will meet regularly with and without its supervisor; you'll also have several introductory one hour lectures.

4. Lecture Programme

Lecture No	Lecture Topic
1	Overview: Aims, Organisation, Assessment
2	Team Working and Group Meetings
3	Version Control
4	Characteristics of a good project
5	Course Information Review
6	Code Quality, Maintainability, Reusability, Debugging and Testing
7	Report Writing
8	Giving an Effective Presentation

5. Resources

Reference texts as relevant to the project topics.

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=501894&year_id=000116



G52ACE – Algorithms Correctness and Efficiency (20 Credits) – Full Year 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Exam 50%; Coursework1 25%, In-class Exam 1 (Practical) 25%

2. Lecturer

Abdur Rakib (Dr); Chew Sze-Ker (Mr)

Contact: 03-89248137 (Office Phone), BB72 (Room); 03-89248140 (Office Phone), BB59 (Room)

E-mail: Abdur.Rakib@nottingham.edu.my; Chew.Sze-Ker@nottingham.edu.my

3. Summary of Content

This module covers important aspects of algorithms, namely their correctness and efficiency. To address correctness, we use a mathematically rigorous approach to formal verification using an interactive proof system. You'll study topics such as: proofs in propositional logic and predicate logic; classical vs. intuitionistic reasoning; basic operations on types; verification of list based programs; and introduction to program specification and program correctness. To address the issue of efficiency we cover the use of mathematical descriptions of the computational resources needed to support algorithm design decisions. You'll study topics such as: sorting algorithms, heaps, binary search trees, hash maps, and graph algorithms. The emphasis is upon understanding data structures and algorithms so as to be able to design and select them appropriately for solving a given problem.

4. Weekly Programme

Lecture No	Lecture Topic (Provisional)
1	Introduction
2&3	Recursion relations, induction, and runtime analysis
4&5	Abstract data types and big-O analysis
6&7	Sorting algorithms and big-O analysis
8,9&10	Tree data structure
11&12	Graph Algorithms Coursework 1 due
13&14	String algorithms and string matching
15&16	Propositional and first order logic
17&18	Algorithm correctness
19&20	Advanced data structures including Hashing
21	Revision Coursework 2 due

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Mark Allen Weiss	2012	Data Structures and Algorithm Analysis in Java	3 rd	Pearson	978-0-273-75211-0
2	Robert Sedgewick	2003	Algorithms in Java Part 1-4/Part 5	3 rd	Addison Wesley	0201361205/ 0201361213

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026683&year_id=000116



G53DEV – Development Experience (10 Credits) – Full Year 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 100%

2. Lecturer

Michael Chung (Mr)

Contact: 03-89248142 (Office Phone); BB58 (Room)

E-mail: michael.chung@nottingham.edu.my

3. Summary of Content

Students taking part in activities relating to Programming experience such as developing apps in their spare time, contributing to open source projects, or building things in hackathons may receive academic credit for showing they have experience and are an excellent developer. The emphasis of this experience module, is that you provide evidence of your significant extra-curricular software development experience. Students will only be able to register for this module with the approval of the convenor/School, once the material for assessment has been checked.

4. Lecture Programme

Not Applicable

5. Resources

Reference texts as relevant to the project topics.

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=025815&year_id=000116



G53IND – Industrial Experience (10 Credits) – Full Year 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 100%

2. Lecturer

Chen ZhiYuan (Dr)

Contact: 03-89248141 (Office Phone); BB71 (Room)

E-mail: Zhiyuan.Chen@nottingham.edu.my

3. Summary of Content

Students taking part in activities relating to industrial experience in a Computer Science or Software Engineering enterprise may obtain academic credit for them. Activities will be related to demonstration of involvement in development of complex software in a team situation, subject to quality control procedures of an industrial or business practice. Evidence of working to and completing tasks relating to targets set by an employer and directly related to software development/programming will be required. Students will have undertaken an agreed number of hours on the activities, identified personal goals and targets in relation to these activities and maintained a reflective portfolio as a record of evidence of their competence and achievements. The nature of the activities undertaken will be subject to the approval of the module convenor before acceptance on the module.

4. Lecture Programme

Lecture No	Lecture Topic
1	Preliminary Portfolio
2	Enrol on the module
3	Submit a final portfolio
4	
5	
6	
7	
8	

5. Resources

Reference texts as relevant to the project topics.

1	G53IND - Coursework Issue Sheet	Moodle
2	G53IND Guidance File	Moodle

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/nottingham/asp/ModuleDetails.asp?crs_id=025816&year_id=000116



G53SCE – Schools Experience (10 Credits) – Full Year 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 100%

2. Lecturer

Behrang Parhizkar (Hani) (Mr)

Contact: 017 330 1824 (Mobile), BB47 (Room)

E-mail: Hani.Parhizkar@nottingham.edu.my

3. Summary of Content

Students taking part in activities relating to Computing in Schools may obtain academic credit for them. Students taking part in approved activities, such as running code clubs in schools, organising school computing activity days, or becoming active STEM ambassadors may receive academic credit for demonstrating they have actively contributed. Students will have undertaken an agreed number of hours on the activities, identified personal goals and targets in relation to these activities and maintained a reflective portfolio as a record of evidence of their competence and achievements. Students will only be able to register for this module with the approval of the convenor/School, once the material for assessment has been discussed.

4. Weekly Programme

Week No	Lecture Topic
1	
2	
3	
4	
5	
6	
7	
8	
9	

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1						

Reference texts recommended by the supervisors as relevant to the project topics.

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=025817&year_id=000116



G53IDS/J – Individual Disseration (40/20 Credits) – Full Year 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Dissertation 75%, Practical (Demo) 15%, Interim Report (Autumn) 10%

2. Lecturer

KR Selvaraj (Mr)

Contact: 03-89248139 (Office Phone); BB60 (Room)

E-mail: kr.selvaraj@nottingham.edu.my

3. Summary of Content

Students are required to perform an individual project on a topic in computer science. Each student has a supervisor who is a member of the academic staff. The topic can be any area of the subject which is of mutual interest to both the student and supervisor. Through a one hour lecture and a tutorial with your supervisor each week, you'll develop your own independent research project and written report. Topics can range from purely theoretical studies to practical work building a system for some third party, although most projects aim to provide a balance between the theoretical and practical aspects of the subject. Guidelines on word length of dissertation are flexible to accommodate differing types of project work (e.g. balance between theory and practice) undertaken.

4. Weekly Programme

Week No	Lecture Topic
1	Project Planning
2	Information Skills
3	Literature Review
4	Plagiarism
5	Research Methodology
6	Dissertation Report Preparation
7	Software Demonstration Process
8	TBA
9	TBA

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Dawson, Christian W	2000	The essence of computing projects: a student's guide		Prentice Hall	

Reference texts recommended by the supervisors as relevant to the project topics.

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=501902&year_id=000116



G51CSF – Computer Fundamentals (10 Credits) – Autumn 2016/17

1. Pre-requisites & Co-requisites; Assessment Details

P: Students who have previously taken G51PRG cannot take this module;

C: G51PGA; A: Coursework 1 30%, Coursework 2 20%, Written Examination 50%

2. Lecturer

Chen ZhiYuan (Dr)

Contact: 03-89248141 (Office Phone); BB71 (Room)

E-mail: Zhiyuan.Chen@nottingham.edu.my

3. Summary of Content

This module gives a basic understanding of the fundamental architecture of computers and computer networks. This module will introduce how the simple building blocks of digital logic can be put together in different ways to build an entire computer. It will also show how modern computer systems and networks are constructed of hierarchical layers of functionality which build on and abstract the layers below.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Boolean Logic
3	Boolean Arithmetic
4	Sequential Logic and Machine Language
5	Computer Architecture
6	Assembler
7	Introduction to Networks
8	Virtual Machine I: Stack Arithmetic
9	virtual machine II: Program Control
10	High Level Language
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book (Primary)	Edition	Publisher	ISBN
1	N. Nisan & S. Schocken	2005	The Elements of Computing Systems: Building a Modern Computer from First Principles		The MIT Press	0-262-64068-6

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026182&year_id=000116



G51MCS – Mathematics for Computer Scientists (10 Credits) – Autumn 2016/17

1. Pre-requisites & Co-requisites; Assessment Details

P: None; C: None; A: Coursework 25%; Written Examination 75%

2. Lecturer

Iman Yi Liao (Dr)

Contact: 03-87253438 (Office), BB63 (Room)

E-mail: Iman.Liao@nottingham.edu.my

3. Summary of Content

You'll cover the basic concepts in mathematics which are of relevance to the development of computer software. Topics which will be covered include: boolean algebra; simple number theory; sets, functions and relations; sum and product; and simple induction on natural numbers. You'll spend around three hours per week in lectures and tutorials for this module

4. Weekly Programme

Week No	Lecture Topic
1	Introduction
2	Boolean algebra (1)
3	Boolean algebra (2)
4	Sets
5	Functions
6	Number theories
7	Matrices
8	Induction
9	Counting techniques (1)
10	Counting techniques (2)
11	Relations
12	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book (Primary)	Edition	Publisher	ISBN
1	Kenneth H. Rosen	2007	Discrete Mathematics and Its Applications	6 th	McGraw-Hill	0-007-124474-3

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/malaysia/asp/moduledetails.asp?crs_id=501884&year_id=000116



G51PGA – Programming and Algorithms (20 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: G51CSA; A: Coursework 75%, Written Examination 25%

2. Lecturer

Chew Sze-Ker (Mr)

Contact: 03-89248140 (Office Phone); BB59 (Room)

E-mail: chew.sze-ker@nottingham.edu.my

3. Summary of Content

You'll cover the basic concepts of programming including: problem solving; debugging; elementary programming; functions and procedures; memory and pointers; and data structures. You'll spend around six hours per week in lectures, computer classes and tutorials. The basic concepts of programming including: problem solving, compiling, editing, debugging, elementary programming, conditionals, loops, functions and procedures, arrays and strings, direct and indirect access, memory and pointers, iteration and recursion and data structures.

Please note: This is a non-compensatable module.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction to C compiler/Getting started with GCC
2	Procedures, Parameters, Values and Variables
3	Operators and Precedence, Conditionals and Loops
4	Pointers and scanf()
5	Arrays and Strings, Linked List, Structures
6	Introduction to Algorithms, Big O Notation
7	String Processing
8	File Input/Output
9	Data Structures (Tree, heaps)
10	Data Structures (Sorting)

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Kernighan, Brian W., Dennis M. Ritchie	1988	The C programming language	2 nd	Prentice Hall	0-131-10362-8
2.	Thomas H. Cormen et al.	2009	Introduction to Algorithms	3 rd	MIT Press	0-262-03384-4

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026180&year_id=000116



G51SYS – Systems and Architecture (20 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: G51CSF; A: Coursework 1 (50%), Exam 1: Written exam (25%), Exam 2: Online exam (25%).

2. Lecturer

KR Selvaraj (Mr)
Contact: 03-89248139 (Office Phone); BB60 (Room)
E-mail: kr.selvaraj@nottingham.edu.my

3. Summary of Content

This module builds upon the basic understanding of the fundamental architecture of computers and computer networks obtained in G51CSF, to show how it applies in real systems. It will cover the principles of the lower level implementation of I/O using polling and interrupts, and the use of exceptions and how the Operating System uses these to manage resources, particularly as computers become inherently more parallel. It will show how large networks such as the Internet are constructed. It will consider how non-numeric data is represented in computer systems. You will spend around five hours per week in tutorials, lectures and computer classes for this module.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction and Networking
2	Networking
3	Routing and Forwarding in a network
4	Overview of Operating Systems and Operating System Principles
5	Digital logic and digital systems
6	Machine level representation of data
7	Assembly level machine organisation
8	Memory system organisation and architecture
9	I/O and Interrupts
10	Parallel Decomposition, Communication and Coordination, Parallel Architecture
11	Analog and Digital representation of data, image and image compression techniques.
12	Revision

5. Resources

No	Name of Author(s)	Year	Title of Book	Ed	Publisher's Name	ISBN
1	Hohl, William	2009	ARM Assembly Language: Fundamentals and techniques		CRC	

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=504550&year_id=000116



G52SWM – Software Maintenance (20 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G51FSE; C: None; A: Coursework 75%, Written Examination 25%

2. Lecturer

Behrang Parhizkar (Hani) (Mr)

Contact: 017 330 1824 (Mobile), BB47 (Room)

E-mail: Hani.Parhizkar@nottingham.edu.my

3. Summary of Content

This module aims to cover the following:

- A broad overview of the development programming ability and experience
- Ability to develop and understand a large piece of software
- Ability to build user interface and follow a realistic design
- Conduct software testing and maintenance

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Overview of Software Engineering
3	Object Oriented Analysis and Design
4	Object Oriented UML
5	Software Implementation
6	Software testing
7	Unit Test, Integration Test, Usability Test
8	Software Maintenance and Different Type of Software Maintenance
9	Software Maintenance metrics and case studies
10	Software GUI
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	David Parsons	2012	Fundamental Java: Key Elements and Practical Programming	3 rd	Springer	9781447124788
2	Alain April	2012	Software Maintenance Management	6 th	Wiley Interscience	978-0470-14707-8

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026822&year_id=000116



G52OSC – Operating Systems and Concurrency (20 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: Knowledge of programming/OOP, C: None; A: CW 25% & Final Exam 75%

2. Lecturer

KR Selvaraj (Mr)

Contact: 03-89248139 (Office Phone); BB60 (Room)

E-mail: kr.selvaraj@nottingham.edu.my

3. Summary of Content:

This course covers the fundamental principles that underpin operating systems and concurrency. Topics in operating systems that are covered include the architecture of operating systems, process and memory management, storage, I/O, and virtualisation. The principles of concurrency will be introduced from both the perspective of an operating system and user applications. Specific topics on concurrency include: hardware support for concurrency; mutual exclusion and condition synchronisation; monitors; safety and liveness properties of concurrent algorithms, and the use of threads and synchronisation.

4. Weekly Programme

Week No	Lecture Topics
1	Introduction and background, Operating Systems Structures
2	Memory Management Part I
3	Memory Management Part II
4	Processes Scheduling Part I
5	Processes Scheduling Part II
6	Concurrency & OS, Concurrent Programming, Threads
7	Critical Section, Hardware support for concurrency, Mutual Exclusion
8	Deadlock, Semaphores, Monitors
9	Properties of Concurrent Algorithms, Java and Concurrency
10	File Systems
11	Input/output Processes
12	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Andrew S. Tanenbaum	2009	Modern Operating Systems	3rd	Pearson Prentice Hall	
2	M.Ben-Ari	2006	Principles of Concurrent Programming	2nd	Addison-Wesley	

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=504363&year_id=000116



G53PEC – Professional Ethics in Computing (10 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Exam 50%; Coursework 1 25%; Coursework 2 25%

2. Lecturer

Chen Zhiyuan (Dr) [Co-ordinator for Group Teaching]

Contact No: 03-89248141 (Office Phone); BB71 (Room)

E-mail: Zhiyuan.Chen@nottingham.edu.my

3. Summary of Content

The module looks broadly into professional ethics within the scope of the computing discipline. It covers a range of professional, ethical, social and legal issues in order to study the impact that computer systems have in society and the implications of this from the perspective of the computing profession. In particular, the module covers topics such as introduction to ethics, critical thinking, professionalism, privacy, intellectual and intangible property, cyber-behaviour, safety, reliability accountability, all these within the context of computer systems development.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction & Overview
2	Computer Crimes
3	Privacy
4	Intellectual Property Issues
5	Software Safety
6	Ubiquity of Computers, New Developments & Rapid Changes
7	Poster Presentation
8	Professional Ethics
9	Free Speech & Miscellaneous
10	Exam Guidance & Reasoning
11	

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Sarah Baase	2008	A gift of fire	3 rd	Prentice Hall	0-13-600848-4
2	K. Bowyer	2001	Ethics & Computing	1 st	Wiley-IEEE Press	0-7803-6019-2

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/nottingham/asp/ModuleDetails.asp?crs_id=026784&year_id=000116



G53SQM – Software Quality Metrics (10 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 40%, 1.5 Hour Written Examination 60%

2. Lecturer

Michael Chung (Mr)

Contact: 03-89248142 (Office Phone); BB58 (Room)

E-mail: michael.chung@nottingham.edu.my

3. Summary of Content

Through a two hour lecture each week, you'll be introduced to concepts and techniques for software testing and will be given an insight into the use of artificial and computational intelligence for automated software testing. You'll also review recent industry trends on software quality assurance and testing.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction
2	Software Tools: Git and JUnit
3-4	Software Quality Assurance, Measurement and Control
5-6	Test-Driven Development and Continuous Integration
7-8	Software Metrics
9	Software Testing
10	GUI Testing
11	Test Planning
12	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Ian Sommerville	2011	Software Engineering	9 th	Pearson	9780137035151
2	Roger Pressman	2010	Software Engineering: A Practitioner's Approach	7th	McGraw-Hill	0073375977
3	Daniel Galin	2004	Software Quality Assurance: From Theory to Implementation		Pearson	9780201709452

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=022254&year_id=000116



G53CMP – Compilers (10 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G51FUN, G52MAL; C: None; A: Coursework 25%, Written Examination 75%

2. Lecturer

Tomas Maul (Dr)

Contact: 03-89248232 (Office Phone); BB64 (Room)

E-mail: Tomas.Maul@nottingham.edu.my

3. Summary of Content

You'll examine aspects of language and compiler design by looking at the techniques and tools that are used to construct compilers for high level programming languages. Topics covered include: parsing; types and type systems; run-time organisation; memory management; code generation; and optimisation. You'll spend around four hours each week in lectures and computer classes for this module.

4. Weekly Programme

Week No	Lecture Topic
1	Administrative Details and Introduction
2	Overview & Lexical Analysis
3	Syntax Analysis 1
4	Syntax Analysis 2
5	Semantic Analysis
6	Intermediate Code Generation 1
7	Intermediate Code Generation 2
8	Run-Time Organisation
9	Code Generation
10	Code Optimisation
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	Aho, Lam, Sethi and Ullman	2003	Compilers: Principles, Techniques & Tools	2 nd	Prentice Hall	0-201-10194-7

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=503591&year_id=000116



G53MLE – Machine Learning (20 Credits) – Spring 2016/17

1. Pre-requisites & Co-requisites; Assessment Details

P: G51PRG, G51MFC or equivalent; C: None; A: 2 hour written examination 70%, Group programming assignment 30%

2. Lecturer

Chen ZhiYuan (Dr)
Contact: 03-89248141 (Office); BB71 (Room)
E-mail: Zhiyuan.Chen@nottingham.edu.my

3. Summary of Content

Providing you with an introduction to machine learning, pattern recognition, and data mining techniques, this module will enable you to consider both systems which are able to develop their own rules from trial-and-error experience to solve problems, as well as systems that find patterns in data without any supervision. In the latter case, data mining techniques will make generation of new knowledge possible, including very big data sets. This is now fashionably termed 'big data' science. You'll cover a range of topics including: machine learning foundations; pattern recognition foundations; artificial neural networks; deep learning; applications of machine learning; data mining techniques and evaluating hypotheses.

4. Weekly Programme

Week No	Lecture Topic
1	Machine Learning Preliminaries
2	Classification
3	Clustering
4	Regression and Association Rules
5	Anomaly Detection
6	Introduction to Data Preprocessing and Data Quantification
7	Preprocessing-discretisation, missing value
8	Feature and prototype selection, Dimensionality Reduction
9	Image Processing
10	Text Mining
11	Deep Learning & 'Big Data'

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book (Primary)	Edition	Publisher's Name	ISBN
1	Tom M. Mitchell	1997	Machine Learning		McGraw-Hill	0070428077
2	Chris Bishop	2006	Pattern Recognition and Machine Learning		Springer	0387310738

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/nottingham/asp/ModuleDetails.asp?crs_id=021211&year_id=000116



G53MDP – Mobile Device Programming (20 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G51CSA, G51PRG, G51ISO (2014-15); C: None; A: Coursework 1 – 30%, Coursework 2 – 40%, 1 hour written examination – 30%

2. Lecturer

Michael Chung (Mr)

Contact: 03-89248142 (Office Phone); BB58 (Room)

E-mail: michael.chung@nottingham.edu.my

3. Summary of Content

You'll look at the development of software applications for mobile devices, with a practical focus on the Android operating system. You'll consider and use the software development environments for currently available platforms and the typical hardware architecture of mobile devices. You'll spend around three hours per week in lectures and computer classes for this module.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction
2	Mobile Phone Architecture/Android Internals
3	Android Application Components – Activities
4-5	Thread and Services
6	IPC and Storage
7	Databases, Content Providers and Permissions
8-9	Broadcasts, Touch, Gestures
10	Power and Batteries
11	iOS, Cross-platform
12	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	TBA					

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026206&year_id=000116



G51PGP – Programming Paradigms (20 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G51MCS, G51PGA; C: None; A: Coursework 1 – 10%, Coursework 2 – 15 %, 2.5 Hour Written Examination 75%

2. Lecturer

Abdur Rakib (Dr); Michael Chung (Mr)

Contact: 03-89248137 (Office), BB72 (Room); 03-89248142 (Office), BB58 (Room)

E-mail: abdur.rakib@nottingham.edu.my; michael.chung@nottingham.edu.my

3. Summary of Content

In this module you'll learn the basic principles of the object-oriented and functional approaches to programming, using the languages Java and Haskell. You'll also see how they can be used in practice to write different kinds of programs.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction
2	From C to Java
3	Methods, classes and objects
4	Inheritance, Polymorphism, Interfaces and abstract classes
5	Strings, exception and files
6	Haskell Platform and Type Information
7	Defining functions, list comprehension
8	Recursive functions, higher-order functions
9	Interactive programs
10	Defining types and classes
11	Lazy evaluation
12	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Graham Hutton	2007	Programming in Haskell	1 st	CUP	0-521-69269-5
2	Judith Bishop	2001	Java Gently	3 rd	Pearson	978-0201710502

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/ModuleDetails.asp?crs_id=026243&year_id=000116



G51DBI – Databases and Interfaces (20 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G51MCS; C: None; A: Coursework 50%, Written Examination 50%

2. Lecturer

Behrang Parhizkar (Hani) (Mr)

Contact: 017 330 1824 (Mobile), BB47 (Room)

E-mail: Hani.Parhizkar@nottingham.edu.my

3. Summary of Content

This module is part of the Software Engineering theme in the School Computer Science. It introduces database management systems, the design and use of database systems. The relational database model and the structured database query language (SQL) are covered. Throughout the module students are given instruction in the use of a relational database management system. Topics covered include: the relational model; entity-relationship modelling, normalisation, and database security.

4. Weekly Programme

Week No	Topics
1	Introduction, overview and module contents
2	Introduction to Database Systems, The Relational Model
3	Database Models & Relational Database
4	Relational Algebra & Entity Relationship Modelling
5	Normalisation
6	SQL Data Definition
7	More SQL – Data Definition Language
8	Data Administration and Security
9	Object-relational & Object-oriented Databases, XML and databases
10	Good and Bad 'Modern' Databases
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Clare Churcher	2012	Beginning Database Design	3 rd	Apress	1430242108
2	Thomas Connolly and Carolyn Begg,	2005	Fundamentals of Database Systems	4 th	Addison Wesley	0- 3212- 0448- 4

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026177&year_id=000116



G51FSE – Introduction to Software Engineering (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: Knowledge of C as in G51PRG; C: None; A: Coursework 50%; Exam 50%

2. Lecturer

Behrang Parhizkar (Hani) (Mr)
Contact: 017 330 1824 (Mobile), BB47 (Room)
E-mail: Hani.Parhizkar@nottingham.edu.my

3. Summary of Content

This module aims to cover the following:

- A broad overview and general understanding of software engineering
- Understand the typical phases of the software lifecycle with particular reference to practical specification, design and testing techniques
- Learn the software engineering methodologies and large-scale system design. Understand Agile methodology

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Foundamental of Software Engineering
3	Software methodologies
4	From Requirements to Specifications
5	Effective Software Design
6	Software Implementation
7	Software Prototyping
8	Version Control
9	Software Debugging
10	Software Methodologies: Agile & XP
11	Test Driven Development

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Ronald J. Leach	2016	Introduction to Software Engineering	2nd	CRC Press	978-1-4987-0528-8
2						

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=021236&year_id=000116



G51FAI – Fundamentals of Artificial Intelligence (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 25%; Written Examination 75%

2. Lecturer

Chew Sze Ker (Mr)

Contact: 03-89248140 (Office Phone); BB59 (Room)

E-mail: chew.sze-ker@nottingham.edu.my

3. Summary of Content

This module aims to cover the following:

- a broad overview of the fundamental theories and techniques of AI.
- key milestones of AI developments, combinatorial explosion problems, use of Turing Test and the Chinese Room thought experiment etc.
- common AI search techniques, game playing with its associated algorithms, e.g. minimax, alpha-beta pruning and their implementations.
- introduction to supervised and unsupervised learning, examples of classification algorithms - nearest neighbour, decision trees and neural networks.
- probabilistic reasoning and knowledge representation.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Reasons for AI; History of AI; Philosophy of AI
3	Problem formulation (Labs on search algorithms with Java)
4	Uninformed search – BFS, DFS, UCS, DLS, IDS (Labs – continued)
5	Heuristic search techniques – BFS, GFS and A* (Labs – continued)
6	Courseworks discussion – (Labs on machine learning with R)
7	Game playing techniques (Labs – continued)
8	Introduction to machine learning (Labs continued)
9	Neural networks (Labs continued)
10	Probabilistic reasoning & knowledge representations
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	S. J. Russell & Peter Norvig	2010	AI :A Modern Approach	3 rd	Prentice Hall	0-13-604259-7
2	George F Luger	2008	AI:Structures and strategies for Complex Problem Solving	6 th	Addison Wesley	0-321-54589-3

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026195&year_id=000116



G52AMI – Artificial Intelligence Methods (10cr) (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 0%, Written Examination 100%

2. Lecturer

Tomas Maul (Dr); Zhiyuan Chen (Dr)

Contact: 03-89248232 (Office), BB64 (Room); 03-89248141 (Office), BB71 (Room)

E-mail: Tomas.Maul@nottingham.edu.my; Zhiyuan.Chen@nottingham.edu.my

3. Summary of Content

This module builds on the first year Introduction to AI, which covers the ACM learning outcomes, and introduces new areas. The emphasis is on building on the AI research strengths in the School. As a Launchpad it gives brief introductions to topics including AI techniques, fuzzy logic and intelligent agents, and modern search techniques such as Genetic Algorithms, Tabu Search, Simulated Annealing, and Genetic Programming, etc.

4. Weekly Programme

Note: This preliminary/tentative outline is for general guidance, and is likely to change before the start of lectures.

Week No	Topics
1	Introduction, overview and module contents
2	Mathematical preliminaries. Intelligence. Overview of techniques.
3	Optimisation 1.
4	Optimisation 2.
5	Representation. Fuzzy logic.
6	Machine learning
7	Graphical models
8	Neural networks 1
9	Neural networks 2
10	Applications
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	S. J. Russell & Peter Norvig	2010	AI :A Modern Approach	3 rd	Prentice Hall	0-13-604259-7
2	George F Luger	2008	AI:Structures and strategies for Complex Problem Solving	6 th	Addison Wesley	0-321-54589-3

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/malaysia/asp/moduledetails.asp?crs_id=504729&year_id=000116



G52AIM – Artificial Intelligence Methods (20cr) (20 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 25%, Written Examination 75%

2. Lecturer

Tomas Maul (Dr); Zhiyuan Chen (Dr)

Contact: 03-89248232 (Office), BB64 (Room); 03-89248141 (Office), BB71 (Room)

E-mail: Tomas.Maul@nottingham.edu.my; Zhiyuan.Chen@nottingham.edu.my

3. Summary of Content

This module builds on the first year Introduction to AI, which covers the ACM learning outcomes, and introduces new areas. The emphasis is on building on the AI research strengths in the School. As a Launchpad it gives brief introductions to topics including AI techniques, fuzzy logic and intelligent agents, and modern search techniques such as Genetic Algorithms, Tabu Search, Simulated Annealing, and Genetic Programming, etc. In contrast to G52AMI, this module includes a significant proportion of practical work.

4. Weekly Programme

Note: This preliminary/tentative outline is for general guidance, and is likely to change before the start of lectures.

Week No	Topics
1	Introduction, overview and module contents
2	Mathematical preliminaries. Intelligence. Overview of techniques.
3	Optimisation 1.
4	Optimisation 2.
5	Representation. Fuzzy logic.
6	Machine learning
7	Graphical models
8	Neural networks 1
9	Neural networks 2
10	Applications
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	S. J. Russell & Peter Norvig	2010	AI :A Modern Approach	3 rd	Prentice Hall	0-13-604259-7
2	George F Luger	2008	AI:Structures and strategies for Complex Problem Solving	6 th	Addison Wesley	0-321-54589-3

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/malaysia/asp/moduledetails.asp?crs_id=502777&year_id=000116



G52LAC – Languages and Computation (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 25%, Written Examination 75%

2. Lecturer

Tomas Maul (Dr)

Contact: 03-89248232 (Office Phone); BB64 (Room)

E-mail: Tomas.Maul@nottingham.edu.my

3. Summary of Content

You'll investigate classes of formal language and the practical uses of this theory, applying this to a series of abstract machines. You'll focus in particular on language recognition, but will study a range of topics including: finite state machines; regular expressions; context-free grammars; and Turing machines and computability theory. You'll spend around two hours per week in lectures studying for this module.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Alphabets, words and languages.
3	Automata Theory; Deterministic and Non-deterministic Finite Automata (DFAs and NFAs).
4	NFA & DFA equivalence and other matters.
5	Regular Expressions.
6	DFA Minimization and Proving Languages to be Not Regular.
7	Pushdown Automata (PDA).
8	Context-free Grammars (CFG).
9	Context-sensitive grammars, Turing machines and Decidability.
10	More Turing Machines.
11	Computability Theory.

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher's Name	ISBN
1	John Hopcroft, Rajeev Motwani, Jeffrey.D.Ullman	2007	Introduction to Automata Theory, Languages and computation	3 rd	Addison Wesley	0-3214-7617-4

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/malaysia/asp/moduledetails.asp?crs_id=504730&year_id=000116



G52CPP – C++ Programming (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: Knowledge of C (e.g. from G51PRG Introduction to Programming up to 2014-15) and of object oriented Java programming (e.g. from G51ISO 2014-15); C: None; A: Exam 60%, CW 40%

2. Lecturer

Abdur Rakib (Dr)
Contact: 03-89248137 (Office), BB72 (Room)
E-mail: abdur.rakib@nottingham.edu.my

3. Summary of Content

We will cover the programming material and concepts necessary to obtain an understanding of the C++ programming language. We will spend around four hours per week in lectures and computer classes for this module and will be expected to take additional time to practice and to produce your coursework.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction
2&3	Pointers, Functions, The stack, Local, global and static variables, Variable shadowing
4	Structs and unions, Dynamic memory allocation, Linked lists
5	The C pre-processor, Linkage and visibility, Class-preliminary
6&7	The this pointer, new and delete, Inheritance, Virtual functions
8&9	Function pointers, Overridden function, Virtual, non-virtual , and Pure virtual functions, various forms of constructors
10&11	File organization, C++ Templates, C++ Exceptions, STL, Vectors, Lists, Algorithms, and dynamic memory
12	Revision Coursework due

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Herbert Schildt	2003	C++: the complete reference	4 th	McGraw-Hill	0072226803
2	Bjarne Stroustrup	2013	The C++ programming language	4 th	Addison-Wesley	9780321563842
3	Scott Meyers	2003	Effective C++: 50 specific ways to improve your programs and designs	2 nd	Addison-Wesley	0201924889

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/ModuleDetails.asp?crs_id=022258&year_id=000116



G52HCI – Human Computer Interaction (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Coursework 100%

2. Lecturer

Marina Ng (Dr)

Contact: 03-89253412 (Office); DB06 (Room)

E-mail: marina.ng@nottingham.edu.my

3. Summary of Content

This module is part of the Human-Computer Interaction theme in the School of Computer Science.

The module provides an overview of the field of Human Computer Interaction, which aims to understand people's interaction with technology and to apply this knowledge in the design of usable interactive computer systems. The module will introduce the concept of usability, examine different design approaches and evaluation methods and illustrate the principles through an exploration of a number of case studies.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Understanding Users - The Cognitive Perspective
3	Understanding users - Ethnography
4	Gathering requirements
5	Designing GUIs
6	Participatory design and prototyping
7	Mobile and ubiquitous computing
8	Communication and collaboration
9	Evaluating Interfaces
10	The Future of the Interface
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Helen Sharp, Yvonne Rogers & Jenny Preece	2007	Interaction Design: Beyond Human Computer Interaction	2 nd	Wiley	0-4700-1866-6
2	Ben Schneiderman & Catherine Plaisan	2010	Designing the User Interface: Strategies for Effective Human-Computer Interaction	5 th	Addison-Wesley	0-3215-3735-1

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/ModuleDetails.asp?crs_id=018255&year_id=000116



G52IIP – Introduction to Image Processing (10 Credits) – Autumn 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G51MCS, G51PRG; C: None; A: Coursework 40%, Written Examination 60%

2. Lecturer

TBA

Contact: 03-8924XXXX (Office Phone); BBXX (Room)

E-mail: TBA@nottingham.edu.my

3. Summary of Content

This module includes the following topics:

- overview of image processing and its applications, relations between image processing and other related fields e.g. computer vision, computer graphics, image analysis and digital photography
- fundamentals of digital images, elements of visual perception and human visual system, digital image formation and acquisition, colour models and processing
- point processing, spatial filtering, image transforms and frequency domain processing, edge detection, image segmentation, image coding and compression

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Digital image fundamentals
3	Point and histogram processing
4	Spatial domain image filtering
5	Image sharpening, edge detection and Hough transform
6	Frequency domain & Fourier transform
7	Image filtering in the frequency domain
8	Image segmentation & representation
9	Object representation
10	Image coding and image compression
11	Revision and discussion of past exam papers

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Gonzalez & Woods	2008	Digital Image Processing	3 rd	Prentice Hall	0-13-168728-X
2	Efford	2000	Digital Image Processing Using Java	1 st	Addison-Wesley	0-20-159623-7

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/ModuleDetails.asp?crs_id=021218&year_id=000116



G52SOF – Software Specification (10 Credits) – Spring 2016/17

1. Pre-requisites & Co-requisites; Assessment Details

P: None; C: None; A: Coursework 50%, Written Examination 50%

2. Lecturer

Chew Sze-Ker (Mr)

Contact: 03-89248140 (Office Phone); BB59 (Room)

E-mail: chew.sze-ker@nottingham.edu.my

3. Summary of Content

This module aims to cover the following:

- software engineering process in depth: requirements and design
- modern approaches to large scale requirements and engineering and specification, and approaches to systems and architectural design.

4. Weekly Programme

Week No	Lecture Topic
1	Revision on Software Processes and Activities
2	Revision on Agile Software Development
3	Requirement Engineering (functional, non-functional, document)
4	Requirement Engineering (specification, processes, elicitation and analysis)
5	System Modelling (context, interaction and structural)
6	System Modelling (behavioral and model-driven engineering)
7	Architectural Design (design and views)
8	Architectural Design (patterns and application architectures)
9	Design and Implementation (UML)
10	Design and Implementation (design patterns)
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Ian Sommerville	2011	Software Engineering	9 th	Pearson	0-137-05346-0
2	Roger Pressman, Bruce Maxim	2015	Software Engineering: A Practitioner's Approach	8 th	McGraw Hill Education	0-078-02212-6
3	Kenneth Kendall, Julie Kendall	2014	System Analysis and Design	9 th	Pearson	0-273-78710-1

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=026687&year_id=000116



G53SEC – Computer Security (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G52CCN (2015/16) or equivalent; C: None; A: Coursework - 40%, 1-hr Written Examination - 60%

2. Lecturer

Michael Chung (Mr)
Contact: 03-89248142 (Office), BB58 (Room)
E-mail: michael.chung@nottingham.edu.my

3. Summary of Content

Spending four hours a week in lectures and computer classes, you'll cover the following topics: security of the computer; network security; internet security; software and hardware security; mobile security; and cryptography. You will gain familiarity with the most common attacks on modern computer systems, and defences against these.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, Foundations of Security
2	Foundations of Security
3	Cryptography I, II
4	Cryptography III, Authentication
5	Access Control, Reference Monitors
6	Software Vulnerabilities, Exploits
7	Network Security, Firewalls
8	Internet Security, Windows Security
9	Windows Security
10	Database Security
11	Intrusion Detection
12	Revisions

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Dieter Gollman	2011	Computer Security	3rd	Wiley	978-0-470-74115-3
2	Ross Anderson	2007	Security Engineering	2 nd	Wiley	978-0-470-06852-6

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=018176&year_id=000116



G53VIS – Computer Vision (20 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: G51PRG or equivalent; C: None; Recommended: G52IIP
A: Coursework 40%, Written Examination 60% (2 hrs)

2. Lecturer

Iman Yi Liao (Dr)
Contact: 03-87253438 (Office Phone); BB63 (Room)
E-mail: Iman.Liao@nottingham.edu.my

3. Summary of Content

You'll examine current techniques for the extraction of useful information about a physical situation from individual and sets of images. You'll cover a range of methods and applications, with particular emphasis being placed on the detection and identification of objects, recovery of three-dimensional shape and analysis of motion. You'll learn how to implement some of these methods in the industry-standard programming environment MATLAB. You'll spend around four hours a week in lectures, tutorial and laboratory sessions.

4. Weekly Programme

Week No	Lecture Topic
1	Introduction to Computer Vision
2	Edge Detection
3	Image Segmentation
4	Stereopsis: Correspondence, correlation
5	Stereopsis: Dense Correspondence, Multiview
6	Motion Estimation: Optical Flow
7	Performance Evaluation: Optical Flow & Segmentation
8	Visual Tracking: Meanshift, Condensation
9	Visual Tracking: Particle Filters, MCMC
10	Event Recognition: Hidden Markov Model
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	David A. Forsyth, Jean Ponce	2012	Computer Vision: A Modern Approach	2 nd	Pearson	0-273-76414-4
2						

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Nottingham/asp/moduledetails.asp?crs_id=018192&year_id=000116



G53PDC – Parallel and Distributed Computing (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: Knowledge of programming/Concurrent Programming, C: None; A: None
Final Exam 100%

2. Lecturer

KR Selvaraj (Mr)
Contact: 03-89248139 (Office Phone); BB60 (Room)
E-mail: kr.selvaraj@nottingham.edu.my

3. Summary of Content

This module charts the broad spectrum of approaches that are used to increase the performance of computing tasks by exploiting parallelism and/or distributed computation. It then considers in more detail a number of contrasting examples. The course deals mainly with the principles involved, but there is the chance to experiment with some of these approaches in the supporting labs.

4. Weekly Programme

Week No	Lecture Topic
1	Background of Parallel Computing
2	Programming Environments for Parallel and Distributed Programming
3	Common applications of Parallel and Distributed computing
4	Visualizing Concurrent and Distributed System Design
5	Parallel Machine Architectures including Single Instruction Multiple Data (SIMD), Multi-core and Multi-processor shared memory
6	Vector Algorithms and Architectures, Distributed Memory Multiprocessors
7	Custom co-processors including DSPs and GPUs
8	Cluster and grid computing; Distinction from Parallel Systems. Distinctions from Distributed Systems.
9	Programming approaches including parallelising compilers
10	Work Breakdown Structure for the MPI, Message Passing Program. Using Template Functions to Represent MPI Tasks
11	Specialised Co-processor programming
12	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Cameron Hughes, Tracey Hughes	2004	Parallel and Distributed Programming Using C++		Addison-Wesley Professional	
2						

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=504749&year_id=000116

G53FIV – Fundamentals of Information Visualisation (10 Credits) – Spring 2016/17

1. Pre-requisites (P) & Co-requisites (C); Assessment Details (A)

P: None; C: None; A: Written Examination 100%

2. Lecturer

Marina Ng (Dr)

Contact: 03-87253412 (Office Phone); DB06 (Room)

E-mail: Marina.Ng@nottingham.edu.my

3. Summary of Content

This module aims to cover the following:

- A broad overview of the fundamental theories and techniques of Information Visualisation
- Psychological theories that help explain how humans process information
- Application and delivery mechanisms for visualisations of information
- Scientific and creative approaches to construction visualisations
- Important challenges such as representation of ambiguous or time-based data
- Interaction methods to help people understand data

4. Weekly Programme (Subject to Change)

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Visual communications and design basics
3	Storytelling in Information Visualisation
4	Representation of Data 1
5	Representation of Data 2
6	Information Visualisation Systems and Toolkit
7	Design Prototyping
8	Interaction
9	Values / Benefits of visualisation
10	Casual Information Visualisation
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book	Edition	Publisher	ISBN
1	Colin Ware	2012	Information Visualisation: Perception for Design	3 rd	Morgan Kaufmann	9780123814647
2	Tamara Munzner	2015	Visualization Analysis and Design	1st	CRC Press	9781466508910

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=504745&year_id=000116



G53IVP – Information Visualisation Project (10 Credits) – Spring 2016/17

1. Pre-requisites & Co-requisites; Assessment Details

P: None; C: G53FIV; A: Coursework 100%

2. Lecturer

Marina Ng (Dr)

Contact: 03-87253412 (Office Phone); DB06 (Room)

E-mail: Marina.Ng@nottingham.edu.my

3. Summary of Content

This module aims to cover the following:

- Knowledge, understanding and practical experience of the application of and technologies that support the design and delivery of information visualisations
- Knowledge, understanding and practical experience of the process of designing and evaluating information visualisations
- Algorithms for extracting information from data
- Design aesthetics

4. Weekly Programme

Week No	Lecture Topic
1	Introduction, overview and module contents
2	Visualisation critiques
3	Project proposal
4	Design studies
5	Visualisation Design
6	Information Visualisation Systems and Toolkit
7	Design Prototyping
8	Interaction
9	Evaluation
10	Project presentations
11	Revision

5. Resources

No	Name of Author(s)	Year of Publication	Title of Book (Primary)	Edition	Publisher's Name	ISBN
1	Colin Ware	2012	Information Visualisation: Perception for Design	3 rd	Morgan Kaufmann	9780123814647
2	Tamara Munzner	2015	Visualization Analysis and Design	1st	CRC Press	9781466508910

6. Learning Outcomes

http://modulecatalogue.nottingham.ac.uk/Malaysia/asp/moduledetails.asp?crs_id=504748&year_id=000116