Induction Lecture
MSc in Advanced Computer Science

Dr Anton Setzer
Director Postgraduate Recruitment, Admission and Retention
Coordinator MSc in Advance Computer Science
Coordinator Specialisation in Safe and Secure Systems

Wednesday, 28 September 2011
Disclaimer Regarding Regulations

- The following contains rules and regulations as we understand it at this moment.
- Some of the following is simplified as appropriate for a presentation (but not for a legal document).
- Some of the rules might change slightly, or might not be reflected correctly in this document.
- Please refer to the university regulations for the precise wording, especially if you are going to the limit of the regulations, or are a special cases.
Welcome
Who’s Who

Structure of the Course, Rules, and Support

MSc Pathways

Open Specialisation
Specialisation in Safe and Secure Systems
Specialisation in Visual Computing
Specialisation in Human Computer Interaction
Specialisation in Web Science
Specialisation in Software Technology
Who’s Who

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MSc Pathways
Open Specialisation
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College Leadership

Prof. Steve Wilks
Head of College of Science

Dr John Sharp
College Chair of Learning and Teaching
Department Leadership

Prof. Matt Jones
Head of Department
CS-M29 Mobile Interaction Design

Dr Neal Harman
Deputy Head of Department
Director of Teaching
Chair of Exam Boards
CS-M58 Distributed and Object Oriented Programming
MSc Coordinator

Dr Anton Setzer
Director Postgraduate Recruitment, Admission and Retention
Coordinator MSc in Advanced Computer Science
Coordinator Specialisation in Safe and Secure Systems
CS-M00 Research Methodology (Coordinator)
CS-M50 Safe and Secure Systems Project Development (Coordinator)
CS-M13 Critical Systems
Specialisation Coordinators

Dr Roger Stein
Coordinator Open Specialisation
Coordinator Specialisation in Software Technology
CS-M10 Computer Science Project Development (Coordinator)
CS-M20 MSc Project (Coordinator)
CS-M40 Software Technology Project Development (Coordinator)
CS-M89 Advanced Database Systems
Specialisation Coordinators

Dr Max Wilson
Coordinator Specialisation in Web Science
Coordinator Specialisation in Human Computer Interaction
CS-M80 Web Science Project Development (Coordinator)
CS-M90 Human-Computer Interaction Project Development (Coordinator)
CS-M49 Interaction Technologies: Lab and Field Work
CS-M69 Interaction Technologies: Information Retrieval
Specialisation Coordinators

Dr Xianghua (Jason) Xie
Coordinator Specialisation in Visual Computing
CS-M70 Visual Computing Project Development (Coordinator)
CS-M77 Computer Vision and Pattern Recognition
Lecturers

Dr Arnold Beckmann
CS-M88 Embedded Systems

Dr Ulrich Berger
CS-M75 Logic for Computer Science
CS-M85 Modelling and Verification Techniques
Lecturers

Dr Rita Borgo
CS-M78 High-Performance Computing in C/C++

Dr Parisa Eslambolchilar
CS-M79 Interaction Technologies: Hardware and Devices
Lecturers

Dr Phil Grant
CS-M65 Artificial Intelligence Applications

Dr Bob Laramee
CS-M07 Data Visualisation
CS-M24 Software Team Project (joint)
Lecturers

Dr Ben Mora
CS-M24 Software Team Project (joint)
CS-M67 Graphics Processor Programming

Prof Peter Mosses
CS-M61 Concepts of Programming Languages
Lecturers

Dr Markus Roggenbach
CS-M84 Software Testing

Prof Harold Thimbleby
Lecturers

Mr Chris Whyley
CS-M59 Relational and Object-Oriented Database Systems
CS-M68 Writing Web and Web Service Applications
CS-M71 Design Patterns and Generic Programming
Lecturers (Other Departments)

Prof. Tom Chen (Engineering)
CS-M18 IT Security: Theory and Practice

Dr William Merrin (Arts and Humanities)
MSDM01 Thinking about digital media
Lecturers (Other Departments)

Prof Peter Raynor (Law)
ASCM17 Understanding Crime

Dr Panayiota Tsatsou (College of Arts and Humanities)
POM58 New Media Technologies, Society and Politics
Lecturers (Other Departments)

Dr Kevin Rees (Geography)
GEGM13 Urban Networks and the Knowledge Economy

Dr Jon Howden-Evans (Law)
LALM121 Contract and E-commerce Law
Lecturers (Other Departments)

Dr Mike Tait (Interprofessional Studies)
SHIM12 Communication Systems in Health Care
Administrators

Mrs Jill Edwards
Room 206
Teaching Administrator

Mrs Julie Pellard
Room 313
Technician
ID cards etc
Computer Specialists

Mr Damien Theobald
Room 407 Head of College Computer Specialist Support Team

Mr Paul Robert-Davies
Room 407 Computing Support
Who’s Who

Structure of the Course, Rules, and Support

MSc Pathways

Open Specialisation
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Overview

- October - May: 120 Credits Taught Modules
- Exams January and May/June
- Project 60 credits over summer (deadline 30 September)
- Possibility of Resit Exams in August
Tutors/Supervisors

- Academic Tutorials in Semester 1.
  - Attendance compulsory
- Personal Tutor.
- Project Supervisor from Semester 2.
Assessment

- **Coursework**
  - Needs to be strictly your own work.
  - Academic Integrity will be strictly enforced.
  - Academic Integrity Lecture by Chris Whyley in CS-M00.

- **Some Group work.**

- **Unseen written exams.**
  - No notes or books.
  - University Dictionary.

- **Project Dissertation**
  - Includes Demonstration/Viva.
Progression Rules

- Part One: 120 Credits pursued, 80 credits must be passed.
  - Pass mark: 50 %
- Remaining modules must be above 40 %.
- Overall average must be above 50 %.
- In order to get a MSc with Specialisation in X, the pathway specific modules as specified must be taken and 40 credits of these must be passed (above 50 %).
- Project (60 credits) must be passed.
Distinction/Merit

- Distinction
  - Either 70% or more in both Part One and in project
  - Or 65% or more in Part One and an average of 70% in Part One and Project.

- Merit
  - Either 60% or more in both Part One and in project
  - Or 57% or more in Part One and an average of 60% in Part One and Project.
If you don’t reach the standards required for progression to the project you may be given an opportunity to redeem failure by resitting an exam in August or submitting new coursework for each failed module.

If you don’t complete the MSc you can still be awarded either

- A Postgraduate Diploma (120 credits passed, up to 40 credits tolerated)
- A Postgraduate Certificate (60 credits passed).
- Both may be awarded with Distinction (≥ 70 %) or Merit (≥ 60 %).
Attendance

- Tutorials are compulsory – registers taken.
- Lecture attendance is compulsory – registers taken.
- Absence:
  - 3 or more consecutive days: absence form.
  - 7 or more consecutive days: medical certificate.
- Exams: Attendance compulsory, medical certificate required.
- Coursework deadlines are fixed – can apply for a penalty waiver.
Facilities

- Library and Information Centre (LIS)
  - PCs and Books.
- Careers in LIS.
- Collect your ID card and then go to 313.
- Departmental Labs
  - Windows PCs in 216.
  - Linux PCs 217
  - Project Lab (various PCs) 218.
English Language Classes

- Free classes provided by English Language Training Service.
- Details handed out at Enrolment.
Student Support

- Student Support Services
  - Kier Hardie Building.

- Annual Induction Event for Postgraduate Students on Thursday, 29 September at 4.00pm in the Faraday Lecture Theatre.
  - http://www.swansea.ac.uk/study/current/studentsupportservices/isas/pre-arrivalinformation/orientation/

- International Office
Course Representatives

- 2 Students per year (1st year, 2nd year, 3rd year, MSc)
- Staff-Student Meeting once per semester.
- Student Representatives elected in CS-M00.
Upgrading to Master of Research, Master by Research

- If you have a degree equivalent to a 2 (i) or above, and aim at a PhD you might consider changing to either an Master Research Degree (MRes)
  - MRes in Logic and Computation (coordinator: Dr. Oliver Kullmann)
  - MRes in Visual Computing (Coordinator: Dr. Xianghua (Jason) Xie)
  - MRes in Computing and Future Interaction Technologies (Coordinator: Dr Max Wilson)

or to a MSc by Research
- MSc by Research in Theoretical Computer Science
- MSc by Research in Visual and Interactive Computing
- MSc by Research in Human Computer Interaction
- MSc by Research in Computer Science
Upgrading to Master of Research, Master by Research

- Please contact us if you are interested in those options.
- Although these research degrees are more streamlined towards a PhD, many students of our taught MSc degrees have in the past continued successfully with a PhD.
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Pathways

- There is one MSc in Advanced Computer Science (open) with no specialisation.
- Furthermore there exist MSc in Advanced Computer Science with a specialisation in five different areas:
  - Software Technology,
  - Visual Computing,
  - Safe and Secure Systems,
  - Human-Computer Interaction,
  - Web Science.
Legacy MSc Degrees

- There exists still the
  - MSc Computing and Software Technology (CAST)
  - MSc in Future Interaction Technology (FIT)
- Those who are enrolled on this scheme will have to option to change to the new MSc in Advanced Computer Science (with Specialisation in X).
- (CAST MSc has BSC accreditation).
Choice of Specialisations

▶ Each of you should have received a Scheme Transfer Form.
  ▶ If you want to transfer, please hand in a scheme transfer form by Friday 7 October 2011 in the student office (Room 206).
  ▶ If you want to stay in your scheme, please indicate this by Friday 7 October 2011 in the student office (Room 206) as well.

▶ Your choice determines the miniproject for CS-M00.
▶ You can still change your specialisation during Semester 1, provided you have taken the required pathway modules from Semester 1.
▶ All scheme transfers are subject to approval by the pathway coordinator.
General Structure for all Degrees

All students must take

**20 credits compulsory Modules:**
CS-M00 Research Methodology 10 credits Semester 1
Pathway specific Project Development Module 10 credits Semester 2

**40 credits of other pathway specific modules**

**60 credits of other modules**
(includes current and other pathways, and other optional modules)

**60 credits CS-M20 MSc project (over Summer)**

For CAST MSc the number of pathway specific modules is different.
For the open specialisation there is no restriction on pathway specific modules.
Modules from other Departments

- Students with specialisation in Web Science have to take between 30 or 40 credits of selected non-Computer Science modules.
- Students in other pathways (including the open specialisation) can take up to 20 credits of those modules with permission of the department concerned and the pathway co-ordinator.
- CS-M18 “IT Security: Theory and Practice” counts as computer science module although it is taught by Tom Chen from Engineering.
Restrictions for BSc graduates in Swansea

Graduates from our BScs in Computer Science in Swansea are usually not allowed to take modules of which they have already taken the level 3 version.

This applies to the following modules:

- CS-337/CS-M07 Data Visualisation
- CS-313/CS-M13 Critical/High Integrity Systems
- CS-318/CS-M18 IT Security
- CS-349/CS-M29 Mobile Interaction Design
- CS-338/CS-M58 Internet Computing/Programming
- CS-311/CS-M61 Concepts of Programming Languages
- CS-345/CS-M65 Artificial Intelligence Applications
- CS-348/CS-M68 Web Applications
- CS-371/CS-M71 Design Patterns and Generic Programming
- CS-375/CS-M75 Logic for Computer Science
- CS-377/CS-M77 Computer Vision and Pattern Recognition
- CS-368/CS-M88 Embedded Systems
Restrictions for BSc graduates in Swansea

- If that affects modules required for your specialisation, talk with the pathway coordinator in order to identify other modules to replace them.
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MSc Pathways

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Specialisation in Software Technology
MSc in Advanced Computer Science (open)

- No restrictions on pathway specific modules.
- Project Development module called CS-M10 Computer Science Project
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Specialisation in Web Science
Specialisation in Software Technology
MSc in Advanced Computer Science with Specialisation in Safe and Secure Systems
Nuclear Power
Medical Devices
Railways
Embedded Systems in Automobile Industry
Challenging Problems

- State space too big to be covered by tests.
  - Automated and interactive verification techniques required.
- Interaction between hardware, software and a difficult environment.
- Modelling of the notions of safety and security.
  - Very difficult to express these formally.
- Embedded systems with high degree of parallelism.
- Automated verification cheaper than testing.
Swansea Railway and Verification Group

- The department of Computer Science has a big group working on logic, theoretical computer science and applications to of hardware and software verification.
- Long experience in working with verification of software and hardware.
- Industrial connections with Rolls Royce, Developers of Electronic Payment Systems.
- Well established collaboration with Invensys Railsystems (Chippenham) on modelling and verification of new generations of railway interlocking systems.
  - Currently working on radio controlled moving block systems (ERTMS).
MSc in Advanced Computer Science with a Specialisation in Safe and Secure Systems

- Project Development module called CS-M50 Safe and Secure Systems Project Development
- The 40 credits of pathway specific modules are taken from:
  
  **20 credits compulsory Modules:**
  CS-M13 Critical Systems Semester 1
  CS-M18 IT Security: Theory and Practice Semester 2

  **20 credits from the following Modules:**
  CS-M68 Writing Web and Web Service Applications Semester 2
  CS-M75 Logic for Computer Science Semester 1
  CS-M84 Software Testing Semester 2
  CS-M85 Modelling and Verification Techniques Semester 2
  CS-M88 Embedded Systems Semester 1
Induction Lecture
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  Director
  Postgraduate Recruitment, Admission and Retention Coordinator MSc in Advanced Computer Science Coordinator Specialisation in Safe and Secure Systems

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**MSc Pathways**
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- Specialisation in Web Science
- Specialisation in Software Technology
MSc in Advanced Computer Science with a Specialisation in Visual Computing

- Project Development module called
  CS-M70 Visual Computing Project Development

- The 40 credits of pathway specific modules are taken from:

  **20 credits compulsory Modules:**
  - CS-M07 Data Visualisation Semester 1
  - CS-M77 Computer Vision and Pattern Recognition Semester 1

  **20 credits from the following Modules:**
  - CS-M69 Interaction Technologies: Information Retrieval Semester 1
  - CS-M78 High Performance Computing in C/C++ Semester 2
  - CS-M79 Interaction Technologies: Hardware & Devices Semester 2
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Specialisation in Software Technology
MSc in Advanced Computer Science with a Specialisation in Human-Computer Interaction

- Project Development module called
  CS-M90 Human Computer Interaction Project Development

- The 40 credits of pathway specific modules are taken from:

**20 credits compulsory Modules:**
- CS-M49 Interaction Technologies: Lab and Field Work Whole Ses.
- CS-M79 Interaction Technologies: Hardware & Devices Semester 2

**20 credits from the following Modules:**
- CS-M07 Data Visualisation Semester 1
- CS-M29 Mobile Interaction Design Semester 2
- CS-M69 Interaction Technologies: Information Retrieval Semester 1
MSc Computing and Future Interaction Technology

▶ Project Development module called
   CS-M90 Human Computer Interaction Project Development

▶ Students have to take 40 credits of pathway specific modules:
   CS-M29 Mobile Interaction Design Semester 2
   CS-M49 Interaction Technologies: Lab and Field Work Whole Ses.
   CS-M69 Interaction Technologies: Information Retrieval Semester 1
   CS-M79 Interaction Technologies: Hardware & Devices Semester 2

▶ Students choose further 60 credits of optional modules.
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MSc in Advanced Computer Science with a Specialisation in Web Science

- Project Development module called CS-M80 Web Science Project Development
- The 40 credits pathway specific modules are taken from:

**10 credits compulsory Modules:**
CS-M68 Writing Web and Web-Service Applications Semester 2

**30 - 40 credits from Modules from other Departments/Colleges**
MSDM01 Thinking about Digital Media 20 credits – Media Stud., Sem. 1
ACM17 Understanding Crime 20 credits – Law, Sem. 1
POM58 New Media Technologies, Society, and Politics 20 credits – Arts/Hum, Sem 2
GEGM13 Urban Networks & the Knowledge Economy 20 credits – Geography, Sem. 1
MSc in Advanced Computer Science with a Specialisation in Web Science

LALM121 Contract and E-Commerce Law 10 credits – Law, Sem. 1
SHIM12 Communications systems 20 credits – Health Sciences, Sem. 1
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MSc in Advanced Computer Science with a Specialisation in Software Technology

- Project Development module called
  CS-M40 Software Technology Project Development
- The 40 credits of pathway specific modules are taken from:

  **10 credits compulsory:**
  CS-M24 Software Team Project Semester 2

  **10 credits from one of the following modules:**
  CS-M58 Distributed & Object-Oriented Programming Semester 1
  CS-M78 High Performance Computing in C/C++ Semester 2

  **20 credits from the following:**
  CS-M58 or CS-M78 if not already taken
  CS-M13 Critical Systems Semester 1
  CS-M68 Writing Web and Web Service Applications Semester 2
  CS-M71 Design Patterns and Generic Programming Semester 2
  CS-M84 Software Testing Semester 2
  CS-M89 Advanced Database Systems Semester 2
MSc Computing and Software Technology

- Project Development module called CS-M40 Software Technology Project Development
- Students have to take the following pathway specific module: CS-M24 Software Team Project Semester 2