University of the West of Scotland

Postgraduate Programme Specification

Session: 2022/23

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Named Award Title:	MSc Advanced Computer Systems Development

Award Title for Each Award:	MSc Advanced Computer Systems Development PG Cert Advanced Computer Systems Development PG Dip Advanced Computer Systems Development

Awarding Institution/Body:	University of the West of Scotland
Language of Instruction & Examination:	English
Award Accredited By:	British Computer Society (BCS)
Maximum Period of Registration:	3 years full-time, up to 4 years part-time
Mode of Study:	Full Time Part Time
Campus:	Paisley

School:	School of Computing, Engineering and Physical Sciences
Programme Leader:	Dr Ying Liang

Admission Criteria

Candidates must be able to satisfy the general admission requirements of the University of the West of Scotland as specified in Chapter 2 of the University Regulatory Framework together with the following programme requirements:

Appropriate Undergraduate Qualification
Applicants should have an Honours degree (normally 2.2 or above) in Computing, IT or a relevant discipline, from a UK academic institution or an equivalent international degree qualification. Applicants who have other academic, vocational or professional qualifications deemed to be equivalent or have at least 3 years of relevant industrial experience may also be considered.
Other Required Qualifications/Experience

Further desirable skills pre-application

General Overview

This programme is intended to act as a specialist course for Computing and IT graduates and IT professionals who wish to develop, update or refocus their skills in advanced computer systems development. The taught component of the programme has a small core of modules on modern approaches to computer systems development, on contemporary professional issues in computing, and on research methods relevant to knowledge creation in computing and IT. This is complemented by a range of optional modules, some of an advanced research-oriented nature and some focussing on specific practical development technologies, which allow students to pursue their particular interests and acquire skills relevant to their career aspirations. The Masters dissertation work is undertaken once the taught component of the programme has been completed and allows the student to demonstrate that they are capable of advanced independent postgraduate project work in computer systems development and the technologies that it uses.

This programme may lead to studies for a higher degree (MPhil and PhD).

The approach adopted within the programme to teaching, learning and assessment incorporates a blended learning style promoting the objectives of the school's eLearning strategy. Blended learning is supported by use of the Moodle Virtual Learning Environment. As well as allowing staff to provide resources online for students such as lecture notes, online quizzes etc. Moodle is used extensively to communicate with students: via email e.g. to provide individual feedback for both formative and summative assessment purposes; via discussion boards to supplement tutorials; and via an electronic notice board to convey module administration information. Staff also make use of Moodle to allow students to electronically submit assignments, thus allowing both staff and students to make use of software tools such as Turnitin and Moss to check for plagiarism. The programme views the student as being at the centre of the learning process and students are expected to take responsibility for their own learning, to further develop skills acquired at postgraduate level and to construct knowledge through active engagement of learning resources. Students are expected to undertake independent study both to supplement and consolidate what is being taught and to broaden their individual knowledge and understanding of the subject. Assessment - In each module, scheduled exercises will be used to enable students to monitor their own progress. The assessment methods are specified in the individual module descriptors and are identified against specific module learning outcomes, the precise split between continuous assessment (CA) exercises and examination being dependent on the nature of individual modules. The assessment methods used will provide a variety of assessments to ensure that assessments for individual modules are effective and meaningful. Knowledge and understanding is explicitly assessed through a combination of written examinations and assessed coursework, or coursework assignments only. Coursework assignments are also used to assess practical skills.

Graduate Attributes, Employability & Personal Development Planning

Graduates of the programme will be universal, work ready and successful across three dimensions (academic, personal and professional) which encapsulate the breadth of the learning experience at University level.

The statement of general objectives identifies the ways in which the students' transferable intellectual skills are developed and evaluated, particularly their ability to:

(i) communicate in speech, writing and other appropriate ways: this is achieved through the inclusion in modules of assessments where the students make a presentation, or complete an assignment, or answer examination or class test questions, or participate in the work of groups, and in other ways more specific to individual modules.
(ii) argue rationally and draw independent conclusions based on a rigorous, analytical and critical approach to data, demonstration and argument: this is required in all examinations and class tests, and is a particular feature of the Master's project.
(iii) apply what has been learned: in all modules there are requirements for students to exercise problem-solving and simulation studies, in which they apply the principles covered in the course to situations that model, to some degree, realistic problems in computer systems.
(iv) use the development technologies and skills taught to create computer systems as solutions to the problems identified from users.
(v) demonstrate an awareness of the programme of study in a wider context: many modules contain aspects where the wider organisational context are referred to.

The Programme Leader is assigned as the personal tutor for each student. Students are expected to meet their personal tutors on a regular basis, at least once per term, to discuss issues relating to academic progress etc.

Work Based Learning/Placement Details

N/A

Engagement and Attendance

Attendance text

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS
Equality and Diversity Policy

**Programme structures and requirements, SCQF level, term, module name and code, credits and awards (
Chapter 1, Regulatory Framework)**

A. PG Cert
Learning Outcomes (Maximum of 5 per heading)

Knowledge and Understanding	
A1	Demonstrate a systematic understanding of a range of current technologies and methods and the role of these in the effective design, implementation and usability of computer-based systems
A2	Identify and use suitable research methodologies in the exploration and evaluation of software development approaches.
Practice - Applied Knowledge and Understanding	
B1	Systematically apply software development methods in the production of a software system and evaluate the system's fitness for purpose.
Communication, ICT and Numeracy Skills	
C1	Make effective use of a range of information technologies to communicate with others.
C2	Effectively use a range of software tools to support software development and project management activities.
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Evaluate information from a variety of sources including printed and online academic journals on Computing and Information Systems.
Autonomy, Accountability and Working With Others	
E1	Demonstrate a reflective understanding of, and be able to participate within, the professional, legal and ethical framework of computing.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
11	COMP11042	Service Oriented Development	20	✓			

* Indicates that module descriptor is not published.

Footnotes

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
10	COMP10062	Decision Support Systems	20		✓		
11	COMP11001	Ethics for the IT Professional	10	✓	✓		
11	COMP11071	Intelligent Systems	20		✓		
11	COMP11015	Interactive Design for Smart Devices	10		✓		
11	COMP11061	Internet of Things (IoT) and Applications	20		✓		

11	COMP11051	Mobile Business Technology and Design	20		✓	
11	COMP11062	Mobile Networks and Smartphone Applications	20	✓		
11	COMP11012	Oracle Database Development	20		✓	
11	COMP11057	Security for the Mobile Web	10	✓		
11	COMP11013	Technologies for Business Intelligence	10		✓	

* Indicates that module descriptor is not published.

Footnotes
1. The Postgraduate Certificate is an exit award only and it is not guaranteed that students enrolled on the Postgraduate Diploma will be offered all the modules of the Postgraduate Certificate in their first trimester of study.
2. Another module can be selected where there is up to a 20 credit deficit of optional modules and where the programme learning outcomes can be met and in discussion with the PL.

Criteria for Progression and Award

Award: Postgraduate Certificate (PgC) in Advanced Computer Systems Development.

For a PgCert ACSD, 60 credits are required by passing the above core module and selected optional modules.

The criteria for award are defined in the University Regulatory Framework.

B. PG Dip
Learning Outcomes (Maximum of 5 per heading)

Knowledge and Understanding	
A1	Demonstrate a systematic understanding of a range of current technologies and methods and the role of these in the effective design, implementation and usability of computer-based systems.
A2	Demonstrate a critical understanding of the models, metrics and standards for software project and quality management.
A3	Identify and use suitable research methodologies in the exploration and evaluation of software development approaches.
Practice - Applied Knowledge and Understanding	
B1	Systematically apply software development methods in the production of a software system and evaluate the system's fitness for purpose.
B2	Critically evaluate and advise on the appropriateness of software packages, languages and techniques in the context of a problem situation.
B3	Produce work which is informed by research at the forefront of software development methods and/or tools.
Communication, ICT and Numeracy Skills	
C1	Make effective use of a range of information technologies to communicate with others.
C2	Effectively use a range of software tools to support software development and project management activities.
Generic Cognitive Skills - Problem Solving, Analysis, Evaluation	
D1	Be able to critically evaluate methods, techniques and technologies used for computer systems development and apply them in problem identification and in creatively forming solutions for complex computer systems.
D2	Evaluate information from a variety of sources including printed and online academic journals on Computing and Information Systems.
Autonomy, Accountability and Working With Others	
E1	Demonstrate an ability to manage a range of self-directed learning resources.
E2	Demonstrate a reflective understanding of, and be able to participate within, the professional, legal

and ethical framework of computing.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
11	COMP11042	Service Oriented Development	20	✓			

* Indicates that module descriptor is not published.

Footnotes

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
10	COMP10062	Decision Support Systems	20		✓		
11	COMP11001	Ethics for the IT Professional	10	✓	✓		
11	COMP11071	Intelligent Systems	20		✓		
11	COMP11015	Interactive Design for Smart Devices	10		✓		
11	COMP11061	Internet of Things (IoT) and Applications	20		✓		
11	COMP11051	Mobile Business Technology and Design	20		✓		
11	COMP11062	Mobile Networks and Smartphone Applications	20	✓			
11	COMP11012	Oracle Database Development	20		✓		
11	COMP11017	Research Design and Methods	10	✓	✓		
11	COMP11057	Security for the Mobile Web	10	✓			
11	COMP11013	Technologies for Business Intelligence	10		✓		

* Indicates that module descriptor is not published.

Footnotes
Another module can be selected where there is up to a 20 credit deficit of optional modules and where the programme learning outcomes can be met and in discussion with the PL.

Criteria for Progression and Award

Award: Postgraduate Diploma (PgD) in Advanced Computer Systems Development

For a PgDip ACSD, 120 credits are required by passing the above core module and selected optional modules.

The criteria for award are defined in the University Regulatory Framework.

C. Masters
Learning Outcomes (Maximum of 5 per heading)

Knowledge and Understanding	
A1	Demonstrate a systematic understanding of a range of current technologies and methods and the role of these in the effective design, implementation and usability of computer-based systems.
A2	Demonstrate a critical understanding of the models, metrics and standards for software project and quality management.
A3	Identify and use suitable research methodologies in the exploration and evaluation of software development approaches.
A4	Demonstrate the ability to write a detailed, well argued and coherent report of a sustained independent work of high quality that fulfils an agreed specification.

A5	Demonstrate a systematic and critical understanding of the underlying theoretical assumptions and concepts of the approaches available to address problems within a chosen IT/Computing subject area.

Practice - Applied Knowledge and Understanding

B1	Systematically apply software development methods in the production of a software system and evaluate the system's fitness for purpose.
B2	Critically evaluate and advise on the appropriateness of software packages, languages and techniques in the context of a problem situation.
B3	Produce work which is informed by research at the forefront of software development methods and/or tools.
B4	Demonstrate the use of advanced research or development skills in a specific theme that furthers academic interests.
B5	Critically and reflectively plan and execute an IT/Computing related project to develop an artefact that is fit for purpose in addressing the chosen problem.

Communication, ICT and Numeracy Skills

C1	Make effective use of a range of information technologies to communicate with others.
C2	Effectively use a range of software tools to support software development and project management activities.
C3	Produce a coherent, reflective and evaluative report of a sustained piece of project work related to software development.

Generic Cognitive Skills - Problem Solving, Analysis, Evaluation

D1	Be able to critically evaluate methods, techniques and technologies used for computer systems development and apply them in problem identification and in creatively forming solutions for complex computer systems.
D2	Evaluate information from a variety of sources including printed and online academic journals on Computing and Information Systems.
D3	Carry out a programme of research related to computer systems development.
D4	Identify novel features of specific IT technologies, methods or theory.
D5	Demonstrate an ability to creatively apply a range of approaches in addressing the chosen problem area, together with a practical understanding of how established research or development techniques may be used to create knowledge and useful artefacts in the application domain.

Autonomy, Accountability and Working With Others

E1	Demonstrate an ability to manage a range of self-directed learning resources.
E2	Demonstrate a reflective understanding of, and be able to participate within, the professional, legal and ethical framework of computing.
E3	Self-critically evaluate the effectiveness of the approach taken in addressing a significant problem in the computing domain.

Core Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
11	COMP11024	Masters Project	60	✓	✓	✓	
11	COMP11042	Service Oriented Development	20	✓			

* Indicates that module descriptor is not published.

Footnotes
The choice of topic for the MSc Project is made by the student in consultation with the MSc Project coordinator and academic staff that the student may have consulted with. The topic is normally related to the subjects and content

covered during the PgC/PgD stage of the programme. At the start of the MSc Project the student will be allocated a specific supervisor and moderator with experience and expertise in the student's chosen topic for the duration of the MSc project module.

A student is expected to reach three specific milestones during the MSc project:

1. To produce an MSc Project Specification that meets the approval of supervisor and moderator.

2. To produce an interim report approximately at the half-way point of the project, containing an early draft of the literature review as well as comprehensive description of the project methodology to be used, and forward plan for the completion of the project.

3. To submit a dissertation up to 18,000 words in which the following areas are typically expected to be addressed: subject literature is critically reviewed, full project methodology is described, collected data and results are published, or prototype systems are developed and evaluated, and a critique incorporating recommendations suggested by the research results, a self-assessment and recommendations for further work on the topic are included.

Optional Modules

SCQF Level	Module Code	Module Name	Credit	Term 1	Term 2	Term 3	Footnotes
10	COMP10062	Decision Support Systems	20		✔		
11	COMP11001	Ethics for the IT Professional	10	✔	✔		
11	COMP11071	Intelligent Systems	20		✔		
11	COMP11015	Interactive Design for Smart Devices	10		✔		
11	COMP11061	Internet of Things (IoT) and Applications	20		✔		
11	COMP11051	Mobile Business Technology and Design	20		✔		
11	COMP11062	Mobile Networks and Smartphone Applications	20	✔			
11	COMP11012	Oracle Database Development	20		✔		
11	COMP11017	Research Design and Methods	10	✔	✔		
11	COMP11057	Security for the Mobile Web	10	✔			
11	COMP11013	Technologies for Business Intelligence	10		✔		

* Indicates that module descriptor is not published.

Footnotes
Another module can be selected where there is up to a 20 credit deficit of optional modules and where the programme learning outcomes can be met and in discussion with the PL.

Criteria for Award

Award: Master of Science (MSc) in Advanced Computer Systems Development

For a MSc ACSD, 180 credits are required by passing the above core modules and selected optional modules.

The criteria for award are defined in the University Regulatory Framework.

Regulations of Assessment
Candidates will be bound by the general assessment regulations of the University as specified in the University Regulatory Framework.
An overview of the assessment details is provided in the Student Handbook and the assessment criteria for each module is provided in the module descriptor which forms part of the module pack issued to students. For further details on assessment please refer to Chapter 3 of the Regulatory Framework.
To qualify for an award of the University, students must complete all the programme requirements and must meet the credit minima detailed in Chapter 1 of the Regulatory Framework.

Combined Studies

There may be instances where a student has been unsuccessful in meeting the award criteria for the named award and for other more generic named awards existing within the School. Provided that they have met the credit requirements in line with the SCQF credit minima (please see Regulation 1.21), they will be eligible for an exit award of PgCert/ PgDip in Combined Studies.

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Combined Studies

There may be instances where a student has been unsuccessful in meeting the award criteria for the named award and for other more generic named awards existing within the School. Provided that they have met the credit requirements in line with the SCQF credit minima (please see Regulation 1.21), they will be eligible for an exit award of PgCert/ PgDip in Combined Studies.