

PART TWO PROGRAMME SPECIFICATION

Awarding body/institution	Glyndŵr University This programme is also available on a full time basis at the University's London campus
Teaching institution (if different from above)	Glyndŵr University This programme is also available to study on a full time basis at LondonTec City Campus, Sri Lanka
Details of accreditation by a professional, statutory or regulatory body (including link to relevant website)	N/A
What type of accreditation does this programme lead to?	N/A
Is accreditation in some way dependent on choices made by students?	N/A
Final award/s available eg BSc/DipHe/CertHE	MSc Computing PGDip Computing PGCert Computing
Award title	Computing
JACS 3 code	I100
UCAS code (available from Admissions)	N/A
Relevant QAA subject benchmark statement/s	<p>The Quality Assurance Agency for Higher Education 2011 (ISBN 978 1 84979 284 4) defines Computing as:</p> <p>“Computing is the discipline associated with the structuring and organisation of information as well as the automatic processing and communication of that information. The application of ideas from computing underpins innovation across a wide range of activity, including engineering, business, education, science and entertainment”.</p> <p>Additionally it defines taught Masters programmes as:</p> <p>“The range of possible master's degree programmes in computing includes: degree programmes which build very directly on undergraduate honours degrees in some aspect of computing</p>

	and provide a focus on some particular technology or aspect of computing in greater depth, e.g. as preparation for research”.
Other external and internal reference points used to inform the programme outcomes	
Mode/s of study <i>(p/t, f/t, distance learning)</i>	Part Time and Full Time at GU Wrexham Full Time only at GU London Full time only at LondonTec City Campus, Sri Lanka
Language of study	English
Date at which the programme specification was written or revised	September 2014 Updated October 2018 to include details of delivery at LondonTec City Campus, Sri Lanka

Criteria for admission to the programme

The MSc Computing programme is primarily designed to provide an opportunity for postgraduate study for those whose first degree is not in computing or for those whose degree in Computing was awarded some years ago. Graduates with some previous industrial experience in the computer field can also broaden their horizons through this MSc programme, by gaining a sound knowledge of the theoretical basis and practical applications of computing.

General Academic Requirements

The standard entry requirement for the MSc programme is an Honours Degree of at least 2:2 classification or an overseas qualification of an equivalent standard in a subject other than Computer Science.

In some cases a non-graduate candidate may be accepted provided that the applicant has substantial commercial or industrial experience or held a responsible position which is relevant to the programme to be pursued for a minimum of two years, within the previous five years. This is subject to interview and references.

Applicants whose first language is not English, or whose Bachelor degree is not from a university in an English speaking country, are required to provide evidence of proficiency in English by having attained an IELTS certificate or its equivalent:

English test & Minimum score:

Postgraduate study	IELTS 6.5 (no band lower than 6.0)
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Students should have achieved IELTS scores within the previous 2 years.

Pre-sessional English language courses are available at the University Second Language Learning Centre for students who wish to improve their language skills prior to commencing their studies.

AP(E)L

In some cases it may be appropriate to provide students with an exemption form studying certain modules. This will be done in line with the Glyndŵr University AP(E)L procedures.

Glyndŵr University London

Glyndŵr University London run the MSc Computing programme and are responsible for admitting students to the programme in accordance with this Programme Specification and Glyndŵr University Admissions Regulations and this process should be monitored by the overall programme leader based at the Wrexham campus. Recruitment of appropriately qualified students to the programme is essential to the maintenance of quality.

All Admissions offers are approved by the University including requests for direct entry and AP(E)L claims. Advice on borderline candidates and direct entrants will be sought from the overall programme leader. Any AP(E)L claims will be managed according to University regulations and procedures.

Glyndŵr University's Graduate Office will ensure that enrolment forms are completed correctly and submitted to the University in timely fashion, and liaise with Student Data Services regarding this.

Aims of the programme

This programme is primarily designed to provide an opportunity for postgraduate study for those whose first degree is not in computing or for those whose degree in Computing was awarded some years ago. Graduates with some previous industrial experience in the computer field can also broaden their horizons through this MSc programme, by gaining a sound knowledge of the theoretical basis and practical applications of computing.

Students exiting the programme are equipped with a knowledge of theoretical, academic, evaluative, and vocational expertise. Students will develop their critical thinking skills and their ability to have the foresight to deal with the increasingly challenging and changing nature of the field. The programme is designed to provide the skills to meet industrial and commercial needs, and enable students to practice as computing and IT professionals. A selection of modules is available which enables a choice to be made from a range of topics to put together a programme that suits the interests and experience of the student base.

The programme aims to provide the students with the following:

- provide an opportunity for postgraduate study for those whose first degree is not in computing
- provide specialist, technical skills in the areas of Networking, or Web and Mobile development, or Professional Issues and Professional Practice;
- produce practitioners with an advanced understanding of and competence with, the hardware and software available and/or needed for the development and use of computer systems
- enable students to access, critically appraise and disseminate research results;

- provide students with a sound basis for further research and / or professional development.

Distinctive features of the programme

The programme combines core modules in essential postgraduate research, futurology and the computing skills of programming and database. These core modules are then enhanced with specialist themes, which reflect contemporary areas of demand. In this way students can match their portfolio of modules to both their existing academic discipline and their preferred career path.

The MSc in Computing focuses on the practical computing skills rather than abstract concepts of Computer Science. Although the necessary background is introduced as appropriate, the course on the whole deals with problem-solving and the provisioning of real computing services using current and emergent technologies. In addition to developing an understanding of underlying principles, students are engaged in the practical application of design, implementation, trouble-shooting and management for real-world problems. The practicalities of troubleshooting are embedded deeply. At all stages of the programme, appropriate reflection on their progress and development will be a requirement of progress. For their dissertations/theses, students will be expected to investigate cutting-edge technologies, implement and test novel solutions or develop or analyse original applications.

When designing this curriculum the programme team based the decisions on the previous 5 years' experience of running this course. In particular discussions have taken place with Universities who provide students for the programme and the Computing Industrial Liaison Group. When re-validating MSc Computing it has been decided to be flexible by offering a number of optional routes. There are options available which consist of 4 themes each containing two 20 credit modules. The themes being:

Option A: Professional Issues and Professional Practice Theme

Option B: Networking Theme

Option C: Web and Mobile Application Design and Development Theme

Option D: Scientific and Technical English and Writing for Publication (STWEP)

Programme structures and requirements, levels, modules, credits and awards

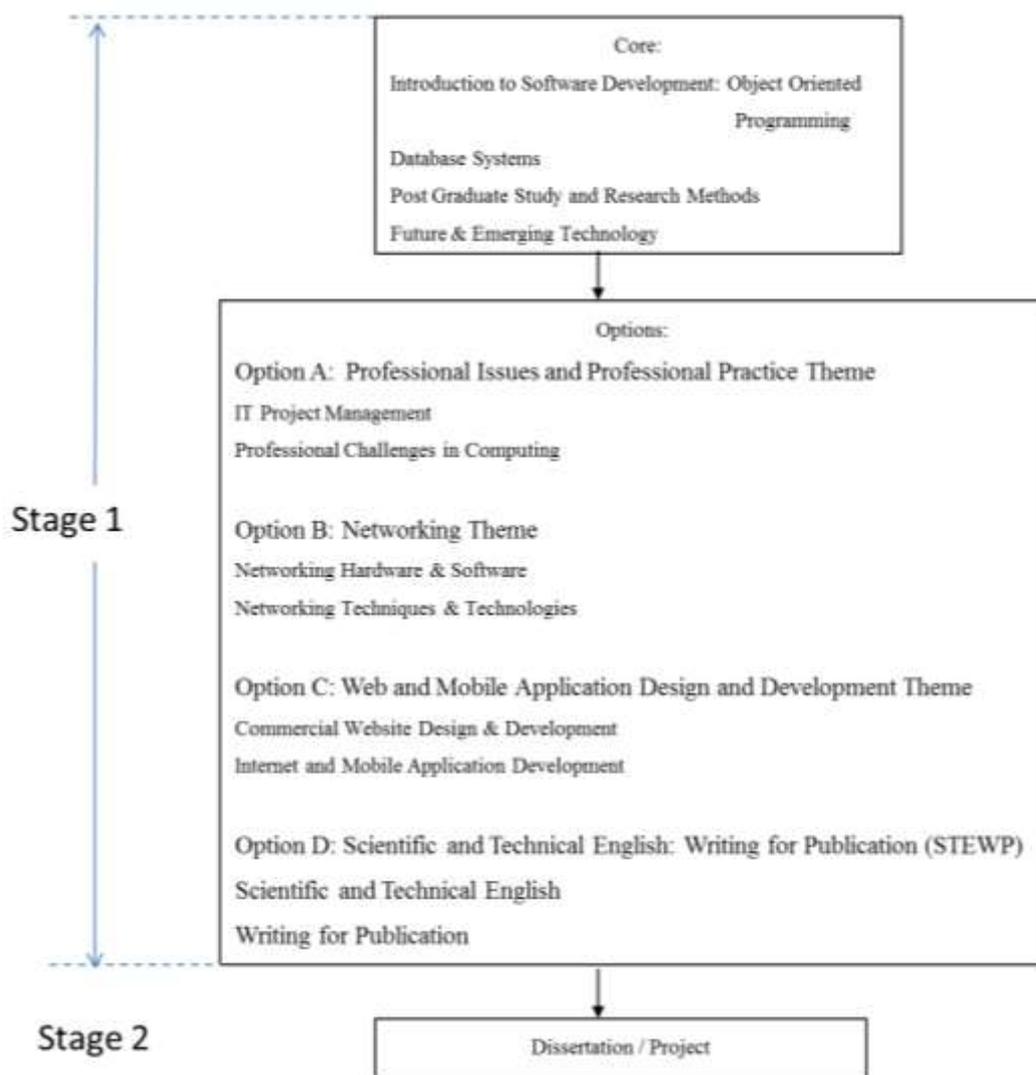
The MSc Computing is offered in full-time and part-time mode (part time only available at the Wrexham campus).

As with most masters programmes the MSc in Computing has 2 parts, a taught part and then the dissertation. Students study 120 credits taught modules made up of 6 20 credit modules followed by a 60 credit dissertation making a total of 180 credits. The modules can be seen in the table below.

Module Title	Level	Credits	Module Code
Post Graduate Study and Research Methods	7	Core/20	COMM50
Future & Emerging Technologies	7	Core/20	COMM51
Software Development: Object Oriented Programming	7	Core/20	COM701
Database Systems	7	Core/20	COM702

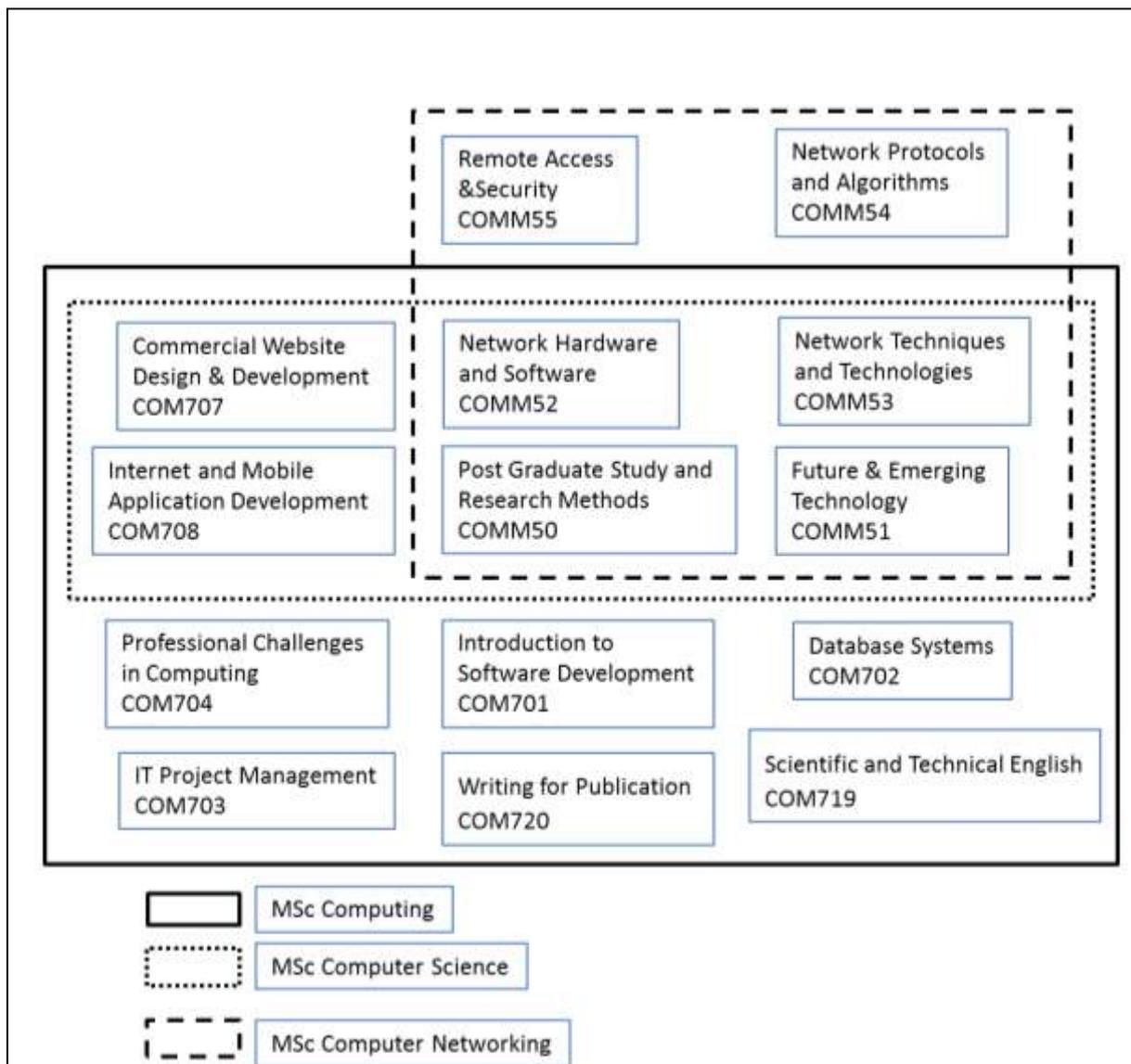
IT Project Management	7	Optional/20	COM703
Professional Challenges in Computing	7	Optional/20	COM704
Networking Hardware and Software	7	Optional/20	COMM52
Networking Techniques and Technologies	7	Optional/20	COMM53
Commercial Website Design & Development	7	Optional/20	COM707
Internet and Mobile Application Development	7	Optional/20	COM708
Writing for Publication	7	Optional/20	COM720
Scientific and Technical English	7	Optional/20	COM719
Dissertation	7	Core/60	COMM56

The structure and the modules can be seen in the diagram below.



It is possible to undertake the dissertation as a work placement at Wrexham, but this isn't the normal mode due to the time constraints of the programme.

The intermediate qualifications of PGCert (Postgraduate Certificate) in Computing and PGDip (Postgraduate Diploma) in Computing may be awarded after completing three (60 credits) or six (120 credits) modules respectively.



Full Time

In full-time mode, the entire MSc syllabus may be completed in 12 months. Modules are equivalent to 20 credits. Typically, a full-time student studies modules equivalent to 60 credits per trimester (normally 3 modules), with 14 weeks of teaching, revision and assessment activities for each module. These are normally studied in semesters 1 and 2. The full degree scheme, including submission of the dissertation is normally completed in trimester 3.

Students are expected to attend lectures, tutorials and practical session as specified in the Glyndŵr University timetables.

Typical Full time delivery September start at the London Campus

Level 7 Part 1	Tri 1	Post Graduate Study and Research Methods COMM50 20 Credits - Core Mod Leader: Y Liu	Software Development: Object Oriented Programming COM701 20 Credits - Core Mod Leader: O Folorunsho	Database Systems COM702 20 Credits - Core Mod Leader: TBC
	Tri 2	Future & Emerging Technologies COMM51 20 Credits - Core Mod Leader: Y Liu	Theme A, B, C or D 20 Credits – Option 1	Theme A, B, C or D 20 Credits – Option 2
Level 7 Part 2	Tri 3	Dissertation COMM56 60 Credits – Core S Shiakh		

Note: Option D may not be available each year at the London campus, this will be reviewed for each cohort.

The optional modules and tutors are seen in the table below:

Theme	Option	Code	Module	Tutor
A	1	COM703	IT Project Management	J Cartmel
	2	COM704	Professional Challenges in Computing	S Shiakh
B	1	COMM52	Networking Hardware & Software	A Satti
	2	COMM53	Networking Techniques & Technologies	A Satti
C	1	COM707	Commercial Website Design & Development	I Doumanis
	2	COM708	Internet and Mobile Application Development	I Doumanis
D	1	COM720	Writing for Publication	N/A
	2	COM719	Scientific and Technical English	N/A

At the London campus, the Full Time MSc Computing programme has a second start which is in January/February, the duration of which will still be 12 months.

Typical Full time delivery January/February start at the London Campus

Level 7 Part 1	Tri 2	Post Graduate Study and Research Methods COMM50 20 Credits - Core Mod Leader: Y Liu	Software Development: Object Oriented Programming COM701 20 Credits - Core Mod Leader: O Folorunsho	Database Systems COM702 20 Credits - Core Mod Leader: TBC
	Tri 3	Future & Emerging Technologies COMM51 20 Credits - Core Mod Leader: Y Liu	Theme A, B, C or D 20 Credits – Option 1	Theme A, B, C or D 20 Credits – Option 2
Level 7 Part 2	Tri 1 (Next year)	Dissertation COMM56 60 Credits – Core S Shiakh		

Note: Option D may not be available each year at the London campus, this will be reviewed for each cohort.

Combining January/February start cohorts with September start cohorts would be possible but will only be considered should the class sizes enable the practical work to be undertaken appropriately.

Delivery schedule at LondonTec City Campus, Sri Lanka (full time)

September Intake - MSc Computing

Dissertation (May – August) (60 Credits) – Mr.Kamal Wijesekara (CV – 01)	Module Title	Name of the Assessor
	September-January Post Graduate Study and Research Methods (20 Credits) Software Development: Object Oriented Programming (20 Credits) Database Systems (20 Credits)	Mr. Sanjeewa Ekanayake (CV – 04) Mr. Nihal Perera (CV – 03) Mr. Kamal Wijesekara (CV – 01)
	January-May Future & Emerging Technologies (20 Credits) Module 5 (20 Credits) Module 6 (20 Credits)	TBC

February Intake –MSc Computing

Dissertation (September – January) (60 Credits) – Mr.Kamal Wijesekara (CV – 01)	Module Title	Name of the Assessor
	February-May Future & Emerging Technologies (20 Credits) Module 5 (20 Credits) Module 6 (20 Credits)	TBC
	June-August Post Graduate Study and Research Methods (20 Credits) Software Development: Object Oriented Programming (20 Credits) Database Systems (20 Credits)	Mr. Sanjeewa Ekanayake (CV – 04) Mr. Nihal Perera (CV – 03) Mr. Kamal Wijesekara (CV – 01)

Part Time

At Wrexham only, the MSc Computing programme may also be taken as a Part Time programme, see diagram below.

Typical Part Time Block Mode delivery for MSc in Computing at the Wrexham Campus

Year 1				
Level 7	February Half Term	Future & Emerging Technologies COMM51 20 Credits – Core Mod Leader V. Grout	Software Development: Object Oriented Programming COM701 20 Credits Mod Leader: J Worden	Database Systems COM702 20 Credits Mod Leader: J Davies
	Easter			
	Spring Bank Holiday			
	End of Term September			

Year 2				
Level 7	October Half Term	Post Graduate Study and Research Methods COMM50 20 Credits - Core Mod Leader S Cunningham	Theme A, B, C or D 20 Credits – Option 1	Theme A, B, C or D 20 Credits – Option 2
	Xmas			
	February Half Term			
Level 7	Easter	Dissertation COMM56 60 Credits - Core Mod Leader R Picking		
	Spring Bank Holiday			
	Summer			
	End of Term September			

Intended learning outcomes of the programme

On successful completion of the programme a graduate should demonstrate knowledge and skills as follows:

PG Certificate Computing

A: Knowledge and Understanding

A1 Demonstrate comprehensive, detailed, state-of-the-art knowledge of the specialist area(s) (Networking, Web and Mobile development, Professional Issues and Professional Practice) covered by the programme within the context of the broader discipline of computing, including the ability to present the work to a publishable standard.

B: Intellectual Skills

B1. Work autonomously or with minimal guidance where appropriate, carry out confident and accurate selection and application of principles and procedures appropriate to the resolution of a range of situations and professional problems associated with the specialist area(s) covered by the programme.

B2. Work autonomously or with minimal guidance where appropriate, identify and classify principles and ideas in contemporary information sources and situations to professional standards; analyse rigorously, effectively, critically and creatively; cope with complexity.

C: Subject Skills

C1 : Make effective use of a range of theories, techniques, programming languages, operating systems, design support tools and development environments

C2 : Specify, design, implement, test and document a computer-based system

D: Practical, professional and employability skills

D1. Engage effectively in a range of independent roles; debate in a confident, professional manner; produce detailed critiques and coherent project reports to professional standards; give confident, high-quality oral and other presentations in a wide range of contexts appropriate to the specialist area(s) covered by the programme.

D2. Practise and demonstrate professional competence in the full range of numerical/mathematical skills associated with the specialist area(s) covered by the programme.

D3. Practise and demonstrate professional competence in the full range of IT skills associated with the specialist area(s) covered by the programme.

D4. Work autonomously or with minimal guidance where appropriate, directing and managing own learning using the full range of resources and study techniques appropriate to the specialist area(s) covered by the programme.

PG Diploma Computing

Students will be expected in addition to the skills developed at the PG Certificate stage to:

A: Knowledge and understanding

A2. Demonstrate knowledge of research methodology appropriate to this level of work.

A3. Demonstrate clear and confident understanding of the theoretical and empirical limits and boundaries of the specialist area(s), and of the range of methods of study and types of judgements employed by advanced practitioners.

B: Intellectual Skills

B3. Work autonomously or with minimal guidance where appropriate, bring together facts/ideas/elements in support of an argument or case presented to professional standards; confidently evolve alternative solutions and concepts.

B4. Work autonomously or with minimal guidance where appropriate, confidently integrate theory with professional/vocational practice; evaluate theories, processes, solutions and outcomes critically and effectively; use the evaluations of others critically, reflectively and constructively.

B5. Work autonomously or with minimal guidance where appropriate, identify, define and resolve a range of problems associated with the specialist area(s) covered by the programme, work to professional standards.

C: Subject skills

C3 : Work as a member of a development team, contributing to the planning and execution of a shared design and implementation task

C4 : Propose, plan, undertake and report a self-directed individual programme of investigation, design and implementation

D: Practical, professional and employability skills

D5. Interactive and Group Skills: Interact confidently and effectively within a range of learning and professional groups, as appropriate to the specialist area(s) covered by the programme; demonstrate appropriate negotiating, role, leadership and group-support skills to professional standards.

MSc Computing

The 'Masters' stage of the programme will build upon the knowledge and understanding developed at the PG Certificate/PG Diploma stages by providing knowledge and understanding of those aspects of research methodology that are appropriate to the specialist area(s) covered by the programme. It will also require the student to develop detailed knowledge and understanding of the particular area in which the advanced independent-study project associated with the 'Masters' stage of the programme is carried out. Students will again be expected in addition to the understanding developed at the PG Certificate/PG Diploma stage:

A: Knowledge and understanding

- A4. Utilise information resources and demonstrate how to access these to obtain state-of-the-art knowledge of current computer systems technology.
- A5. Demonstrate a sufficiently detailed knowledge of research methods appropriate specifically to their 'Masters' advanced independent-study project, together with detailed knowledge of the particular area in which the project is carried out.
- A6. Demonstrate clear and confident understanding of appropriate research methodology and detailed understanding of the particular area in which the 'Masters' project is carried out.

B: Intellectual Skills

- B6. Application: Demonstrate mastery of the principles, techniques and procedures associated with the advanced independent-study project carried out during the 'Masters' stage, including the ability to work effectively from information provided , with little or no guidance.
- B7. Demonstrate mastery of the analytical skills associated with the 'Masters' stage project, again working autonomously or with minimal guidance where appropriate.
- B8. Demonstrate the full range of skills needed to plan and manage a 'Masters'-level project and produce a report/dissertation/thesis or other suitable research output on same working to a detailed specification and to professional standards.
- B9. Demonstrate the full range of evaluative skills associated with the 'Masters' stage project, including the effective exercise of judgement based on incomplete and/or contradictory information.
- B10. Demonstrate professional competence in participating in the identification of a suitable 'Masters' project task and seeking a satisfactory solution that meets the specific requirements of the problem.

C: Subject Skills

C5 : Undertake a significant computing related thesis which involves an analytical, rigorous and critical approach to problem identification, solution and evaluation;

C6 : Synthesise the knowledge, skills and theories from the computing areas covered by the programme in order to solve a complex problem that may require the integration of different computing techniques and / or technologies

D: Practical, professional and employability skills

D6. Produce a detailed, professional research report/dissertation/thesis or other suitable research output to the specification laid down for the advanced independent-study project; present and defend this against in-depth examination in an appropriate live context.

D7. Demonstrate mastery of the specialist numerical/mathematical skills associated with the particular area in which the 'Masters' stage advanced independent-study project is carried out, including appropriate data analysis/statistical skills.

D8. Demonstrate mastery of the specialist IT skills required to carry out the 'Masters' stage project, including search skills, data-analysis skills, data-presentation skills and document-production skills.

D9. Work autonomously or with minimal guidance where appropriate, direct and manage own development of mastery of the various research-methodology skills associated with the 'Masters' stage project.

D10. Demonstrate the various skills required to work effectively with a research supervisor and with any other support staff

CURRICULUM MATRIX

Curriculum Matrix - Computing												
Module Title		Post Graduate Study and Research Methods	Future and Emerging Technology	Software Development: Object Oriented Programming	Database Systems	Professional Challenges in Computing	IT Project Management	Networking Hardware and Software	Networking Techniques and Technologies	Commercial Website Design & Development	Internet and Mobile Application Development	Dissertation
Level 7	A1		x	x	x	x	x	x	x	x	x	
	A2	x	x						x			
	A3			x	x	x	x	x	x	x	x	
	A4											x
	A5											x
	A6											x

Module Title		Post Graduate Study and Research Methods	Future and Emerging Technology	Software Development: Object Oriented Programming	Database Systems	Professional Challenges in Computing	IT Project Management	Networking Hardware and Software	Networking Techniques and Technologies	Commercial Website Design & Development	Internet and Mobile Application Development	Dissertation
Level 7	B1	x	x	x	x	x	x	x	x	x	x	
	B2	x	x	x	x	x	x	x	x	x	x	
	B3					x	x			x		
	B4	x	x			x	x	x		x		
	B5			x	x			x	x	x	x	
	B6											x
	B7											x
	B8											x
	B9											x
	B10											x

Module Title		Post Graduate Study and Research Methods	Future and Emerging Technology	Software Development: Object Oriented Programming	Database Systems	Professional Challenges in Computing	IT Project Management	Networking Hardware and Software	Networking Techniques and Technologies	Commercial Website Design & Development	Internet and Mobile Application Development	Dissertation
Level 7	C1			x	x			x	x	x	x	
	C2	x	x	x	x	x	x	x	x	x	x	
	C3	x	x					x	x	x	x	
	C4				x	x	x	x	x	x	x	
	C5											x
	C6											x

Module Title		Post Graduate Study and Research Methods	Future and Emerging Technology	Software Development: Object Oriented Programming	Database Systems	Professional Challenges in Computing	IT Project Management	Networking Hardware and Software	Networking Techniques and Technologies	Commercial Website Design & Development	Internet and Mobile Application Development	Dissertation
Level 7	D1	x	x			x	x					
	D2	x		x	x	x	x	x	x	x	x	
	D3	x	x	x	x	x	x	x	x	x	x	
	D4	x	x	x	x	x	x	x	x	x	x	
	D5		x				x					
	D6											x
	D7											x
	D8											x
	D9											x
	D10											x

Learning and teaching strategy used to enable outcomes to be achieved and demonstrated

The Computing subject area has a Learning, Teaching and Assessment implementation plan as part of wider Institute and University developments. This seeks to assist the student to become an independent learner whilst still supporting the students in their transition to higher education. The curriculum is designed to encourage an appreciation for learning. Learning is enriched by appropriate underpinning, current research, industrial applications and the development of transferable skills

Postgraduate teaching focuses on depth of study, and critical awareness and evaluation, in selected areas of current research and advanced scholarship within the academic discipline of Computing; while at the same time ensuring a more general all round ability. In addressing these aims, the postgraduate MSc programme in Computing includes material on the theory, design and implementation of large computer systems while at the same time focusing on particular specialist areas of research within the academic discipline of Computing.

The broad nature of the programme including common and specialist elements necessitates the use of a broad range of teaching techniques. Lectures are used as the main delivery mechanism, typically supplemented by supervised problem and lab classes, and group discussion. Some modules include group and small-scale project work, with student-led seminars and presentations. Blackboard and a range of other online tools are used to support teaching. The Department also operates a number of specialist computer labs, with teaching based around the lab facilities.

(i) Lecture

This is usually a formal discourse for the purposes of dissemination of information, the demonstration of techniques and the discussion of supporting ideas and consequences. The lecture is supported by a full range of equipment including blackboard, whiteboard, OHP, video and computer projection facilities where appropriate. Although this type of presentation is suitable for a one-sided discourse ample opportunity exists for questions, interaction and discussion.

(ii) Seminar and Tutorials

These activities encompass a wide range of activities, each suited to the particular module. On the one hand, some tutorials will consist of the staff supporting students engaged in problem solving. On the other hand a tutorial may involve group exercises where each group is encouraged to allocate responsibilities, allocate tasks, etc.

Generally, this type of teaching is used to support the lecture, clarify the material and experiment with the techniques and skills required.

(iii) Laboratory

The nature of the computing elements of all courses requires students to gain practical skills in the use of a personal computer. This activity takes place in one of the Department's four computer laboratories and consists of the student, supported by a staff member, practising skills in the use of sophisticated software applications and including software development and systems analysis and design tools.

(iv) Group Work

On some modules, students are encouraged to work in groups to achieve set objectives. Assessment of these activities includes both group and individual elements. In this way, students learn to work as a team to achieve a common goal whilst at the same time individual contribution is recognised and evaluated.

Part 2 Project

The MSc Project serves the primary purpose of integrating technological and research strands, which are developed in the preceding PgD stage, and does so in the context of a substantial research or information systems development project.

The project typically involves the development and evaluation of the solution to a problem, which occurs within a relatively unstructured domain. The problem is original to the student and its solution therefore requires the innovative application of knowledge and techniques either studied in the previous PgD stage or acquired through independent research of recent and relevant literature.

The MSc Project provides a vehicle for integrating specialist knowledge with analytic, problem solving, managerial and communication skills. All of these are exercised and evidenced through the execution and outcomes of the project, which include a project proposal, dissertation, final oral presentation and project "viva" (demonstration).

It is possible to undertake the COMM56 Dissertation as a work placement but this isn't the normal mode due to the time constraints of the programme. In particular the GUL students are mainly International and this is problematic due to their visa considerations.

Welsh Medium Provision

There is currently no opportunity for any part of the programme to be delivered through the medium of Welsh, but in line with the University's Welsh Language Scheme, students are entitled to submit assessments in Welsh if they so wish. Where a qualified tutor is available, students will then be allocated to a tutor who is able to assess the work in Welsh. At present, the Department does not have enough bilingual tutors or full-time academic staff capable of assessing through the medium of Welsh. Where a need for Welsh medium assessment has been identified and no appropriate Welsh speaking tutor/assessor is available, the written assessment will be translated into English. This translation will be conducted by University qualified translators.

Assessment strategy used to enable outcomes to be achieved and demonstrated

The Department has an agreed Assessment Strategy for all computing programmes which provides a framework for the assessment of students' competence, knowledge and understanding, and the grading of students for progression and the conferring of awards. It allows staff to give feedback to students and to evaluate the effectiveness of their own teaching. This strategy will be closely adhered to in the delivery of the programme and is guided by QAA Code of Practice- Section 6: Assessment of Students, National Qualifications Framework, and Glyndŵr University Assessment Guidelines.

Students will receive formative assessment, particularly during the practical and self-study elements of the programme to ensure they can keep track of their progress and development. This will also be a key factor in ensuring student engagement and retention on the programme of study. In the case of practical assessment, this may be a final summative assessment, so more frequent formative assessment provides academic rigour and increases student awareness and confidence in the subject.

There will be emphasis placed upon students to undertake independent study and research activities, in particular when completing the Dissertation/Project element of the programme. This Dissertation/Project will be facilitated by a traditional summative assessment approach at the culmination of the work, however, there will be extensive use of formative feedback, milestones,

and guidance from staff during this, and other, independent-study and research-based assessment undertaken by students. This is common practice for such modes of study and is in-line with the approach taken by postgraduate programmes in other HE institutions.

On submission of the dissertation the supervisor marks the work using a standard mark sheet allocating marks for specified areas. Where appropriate a student may be asked to demonstrate their work to the supervisor and second marker. All dissertations are second marked and if there is a dispute in the mark then it is moderated by a third person. On completion of this process and before the module board the External Examiner comments on all the marking.

Indicative submission dates MSc Computing

Core modules

Module	Core/ optional	Level	Assessment	Assessment loading	Approx submission
Post Graduate Study and Research Methods	Core	7/20	50% Coursework	2,000 words	Week 4
			50% Case Study	1,500 words	End of Tri 1
Database Systems	Core	7/20	60% Coursework	3,000 words	Week 4
			40% Coursework	2,000 words	Week 13
Software Development: Object Oriented Programming	Core	7/20	50% Coursework	Programmes	Week 9
			50% Coursework	Programmes	Week 12
Future and Emerging Technologies	Core	7/20	100% Coursework	20min Presentation + 2,000 words	Week 4-11 End of tri 2
Option 1	Option	7/20	See Below		
Option 2	Option	7/20	See Below		
Dissertation	Core	7/60	Dissertation	15,000 words	End of tri 3

Optional Modules:

Module	Core/ optional	Level/ Credit	Assessment type and weighting	Assessment loading	Approx submission
IT Project Management	Option	7/20	100% Coursework	Group	Week 12
Professional Challenges in Computing	Option	7/20	100% Coursework		End of tri 2

Networking Hardware and Software	Option	7/20	10% Online theory exam 1 10% Online theory exam 2 30% Practical exam 50% Coursework	1.15 hrs 1.15 hrs 2 hrs 2,000 words	Week 3 Week 6
Networking Techniques and Technologies	Option	7/20	10% Online theory exam 1 10% Online theory exam 2 30% Practical exam 50% Coursework	1.15 hrs 1.15 hrs 2 hrs 2,000 words	Week 9 Week 12 End of tri 1
Internet and Mobile Application Development	Option	7/20	100% Coursework	4,000 words	End of tri 2
Commercial Website Design & Development	Option	7/20	50% Coursework 50% Coursework	2,000 words	Week 9 Week 12
Scientific and Technical English	Option	7/20	50% Literature Review 50% Case Study	2,000 words 2,000 words	Week 9 Week 12
Writing for Publication	Option	7/20	Research Proposal	4,000-5,000 words	End of tri 2

Assessment regulations that apply to the programme

The assessment regulations that apply to the MSc Computing is the Glyndŵr University Taught Masters.

All modules except for Future and Emerging Technologies would be eligible for trailing.

Programme Management

Wrexham Programme Team

Prof Vic Grout – Head of Department

John Davies – Programme Leader

John Worden

Dr. Stuart Cunningham

Dr. Rich Picking

Denise Oram

GUL Programme Team

O Folorunsho

Y Liu

J Cartmel

S Shiakh

A Satti

I Doumanis

Supporting team

Prof. P. Excell
Bindu Jose
Nigel Houlden
J. Matthews

Programme Management

The programme will be managed under the auspices of the Institute for Arts, Science and Technology Department of Computing and the programme will develop and operate within the terms of the overall management of curriculum within the Institute.

However, there will be a designated MSc Programme Leader for the MSc Computing who will be responsible for the day-to-day running of the programme, including the following:

- The management and development of curriculum and the course portfolio
- Student tracking and student records
- Collation of assessment data and presentation of data at assessment boards
- Management/co-ordination of overall assessment activities across the programme
- Liaison with external bodies and agencies,
- Quality assurance and annual monitoring, including compilation of the Annual Monitoring Report
- Co-ordination of admissions activities and other recruitment activities, including relevant publicity activities

At module level there is devolved responsibility for the following:

- The maintenance and development of teaching and learning materials for all students enrolled on the module,
- The publishing and updating of module timetables, which shall include a weekly schedule of module sessions and required reading, to be distributed to students at the start of all modules
- The setting, marking and collation of marks for all module assessments and examination papers, including resit assessments, and submission of student results to the Programme Leader
- Tutorial support for students taking the module which they are responsible
- Quality monitoring, including processing of annual student feedback questionnaires and, where appropriate, student feedback for individual modules
- Liaison with part-time members of staff involved in module teaching

Since the same programme is being offered at the Wrexham and London campus then the overall programme management is under the control of the Wrexham team. Module options delivered at Wrexham will be selected by the Wrexham Postgraduate Programme Leader in conjunction with the module leaders for the specific modules. At the London campus module selection will be selected by the London campus Postgraduate Programme Leader in consultation with the Wrexham Postgraduate Programme Leader. The Wrexham programme team will provide assignments for the modules that are run at Wrexham. Assignments for other modules will be generated by the London team but must be approved by the Wrexham team. The Graduate Office based at Wrexham will be responsible for the coordination of documents associated with the assessment boards

Student Feedback

The University has procedures in place for the regular review of its educational provision, including the annual review of both modules and programmes which draw on feedback from such sources as external examiners' reports, student evaluation, student achievement and progression data. In addition, programmes are subject to a programme periodic review (PPR) and re-validation in year 5 that includes external input.

Feedback from students plays a critical part in informing the Department's strategic thinking. It also allows the Department to evaluate how its service provision is viewed by its most important group of stakeholders, its students.

Students can provide feedback in a number of ways:

Staff-Student Consultative Committee – SSCCs, chaired by a member of academic staff from outside the programme, will be held at least once per trimester. The Chair will minute student feedback for action/response by the Programme Leader. Minutes of the SSCCs and the response from the Programme Leader will be posted on the programme pages of Moodle. The MSc Computing has a representative on the Computing Student Staff Consultative Committee.

Student Evaluation of Module (SEM) - Module Leaders will distribute SEMs at the end of each module. A summary of the analysis of the SEMs, along with any other feedback (e.g. from the student suggestion box), will be passed to the Programme Leader for action/response.

Students submit work in a number of different ways depending on the module being studied. Wherever possible Moodle is used for electronic submission and Turnitin to check the similarity score and feedback is given via this interface within 2 weeks. However due to the nature of Computing it is not possible to do this with programming modules and networking modules. As part of the networking modules a number of on-line tests are taken and their score is given immediately and the supervisor can highlight the areas where problems occur. Also practical work in both networking and the programming modules are implemented by getting the student to demonstrate their work, again immediate feedback is given. At the end of a module overall feedback is provided along with a clear indication of what area the student needs, if necessary, resubmit work or what areas were good and which areas can be improved on.

Research and Scholarship underpinning the curriculum

The Subject area believes that students learn best in a research oriented environment taught by people working at the forefront of their disciplines. The skills and expertise in the Department are augmented by the presence of the Centre for Applied Internet Computing (CAIR) which has now been encompassed into the Creative and Applied Research for the Digital Society (CARDS) research Centre, where staff are researching in the areas of Computer Programming and Software Engineering, Science and Internet Technologies, Mobile Communications, Web systems, Security and Computer Forensics, Computer Graphics, Media Technologies, E-Commerce and business impact. Current research projects include:

- Computer Music and Audio
- Metrics for determining network stability
- Social and Behavioural Algorithms
- Computational mathematics

- Combinatorial optimisation and network algorithms
- Information Systems Failure
- Intelligent user interface design and adaptive tutoring systems
- Games Technology
- Routing algorithms and protocols
- Database optimisation
- Search engines
- Holistic visualisation of distributed knowledge
- Security and security visualization
- Complex decision analysis
- Wireless network optimisation
- Standardisation of reusable interface components
- Computing and Internet Ethics
- e-Learning/Business/Commerce
- Teaching and learning in IT
- Domotics and Remote-Controlled Home Automation Systems
- Document compression and transmission.

The Research Centre - Creative and Applied Research for the Digital Society (CARDS) has taken over the Centre for Applied Internet Research (CAIR) which has built up its activities very impressively over the past four years. The commitment and enthusiasm of the staff is very evident and significant outputs have been achieved over a whole range of activities, covering publications, grant winning, conference organisation, industrial engagement etc.

Significant achievements during the recent past include the very professional organisation of a conference to the highest international standards; the development of a large-scale EU-funded research project, the steady production of conference publications, in addition to a sound proportion of academic journal publications; the setting up of a usability laboratory - a relatively unique facility in Wales; the importing of a substantial new base of specialism in wireless technologies and a success in a radio frequency identification tagging (RFID) project, which is intended to be rapidly grown into an additional research theme. This particular success formed part of an undergraduate student project, emphasising the integration of teaching and research.

Staff on this programme team are very active in undertaking research, scholarship and professional activities, as reflected in an expanding published output, a significant grant-funded research project (and bids for new examples), growing numbers of Knowledge Transfer Partnerships, and the very successful conference series organised within the Research Centre. For their dissertations/theses, students will be expected to investigate cutting-edge technologies, implement and test novel/innovative science or commercial solutions or develop or analyse original Computing applications/ techniques. A series of lectures are provided to introduce students to the process and students are encouraged to select their own topic with help from a supervisor. In previous years some excellent publishable work has been produced in particular in the last 3 years in excess of 10 papers have been published based on the dissertation work.

Particular support for learning

Students on the programme will receive the following forms of student support and guidance:

- Admissions. All students on the programme will have the opportunity to discuss their application with staff, and receive appropriate advice and guidance prior to admission. This will include review of expectations of the programme and clarification of workload and requirements.

- Induction. New students on the programme will undergo an induction programme which will provide them with a full introduction to the programme, and will include elements of work on study skills and professional development.
- Student Handbook. All students on the programme will receive a Student Handbook which will contain details and guidance on all aspects of the programme and forms of student support and guidance, programme-based, Department-based and institutional
- Progress Review and Attendance Monitoring. Student attendance will be subject to regular monitoring through registers, and this will be a means of addressing issues of student support. There will also be regular reviews for each student with personal tutors.

Student Support

Every student is allocated a personal tutor in the first weeks of the programme. The personal tutor is someone students can contact to discuss any problems of a non-academic nature. These may relate to special needs or personal problems that may affect the student's academic performance.

Academic problems should first be addressed to the lecturer concerned. If the problem is not resolved or it does not relate to a specific module, then the Programme Leader should be contacted. A more detailed complaints procedure is given in the Student Handbook

Another forum for discussion is the Staff Student Consultative Committee. Student representatives, who are elected by the students, meet lecturing staff on the programme once a trimester to exchange ideas about the programme. This allows students to communicate their shared concerns in an informal manner, and for the staff to react and respond speedily to address their concerns.

Additional support for International students

There is network of support that is available at many different levels within the University and these combine to provide a supportive framework for the international students. Specifically, this includes three main activities:

- Language provision designed to ensure that the international students have achieved a minimum level of language skills before they embark on their chosen degree programme. This is a six-week pre-session intensive English Language for Academic Study course that aims to bring students to an IELTS (International English Language Testing System) level of 6.5 – the standard demanded for entry into master's degree programmes.
- Glyndŵr University (Wrexham campus) offers English language classes alongside studies that improve not only spoken and written English but also academic English. Classes take place weekly and are delivered by the University's English language tutors also to help students to integrate into the life of the local community as well as helping them develop transferable skills such as practical, research and report-writing skills.
- An induction/orientation course that precedes the start of formal teaching and that allows the international students to become familiar with the University and studying at the University whilst at the same time outlining some of the cultural differences that exist between their country of origin and the UK.

Facilities

There are 4 specialist IT labs used for Computing students at Wrexham campus and in addition, students have access to the University open-access computing labs and other University wide services, including the wireless network.

There is comprehensive Virtual Learning Environment (Moodle) containing a range of advice and guidance. Module lecture notes and programme content are available online through Moodle and it is used for all the modules within the programme. This enables students to gain access to tutorial

work and assignments set for the various modules. Many study materials are available via Moodle such as online databases; e-journals and library catalogue information are also available.

Equality and Diversity

The University has adopted a policy of providing equal opportunities for all its students, staff, applicants and others involved in its work. One aspect of this policy is its intention to prevent, as far as possible, the harassment of one person by another, whether on the basis of gender, sexual orientation, sexuality, race or ethnic origin, religion, disability, or any other personal attributes or views held by the person harassed.

As part of the University's Disability Policy, students with a physical disability or learning difference are encouraged to contact the University Disability Adviser to ensure their needs are acknowledged formally. The outcome of such an assessment could result, for example, in additional time being allowed for examinations, or the provision of further learning support.