

<b>OFFICE USE ONLY</b>	
Date of validation event:	26 April 2018
Date of approval by Academic Board:	28 November 2018
Approved Validation Period:	<i>5 years from September 2019</i>
Date and type of revision:	<p><i>APSC approved standard part-time delivery routes 29/4/19.</i></p> <p><i>Dec 2019 Partner approval appendix added for LondonTec</i></p> <p><i>Sep 2020 APSC approved module replacement in MSc Computing and MSc Computer Science, COM741 replaced by COM744 17/03/20</i></p> <p><i>June 2020 Partner approval appendix added for IST Independent Science and Technology College 22 July 2020</i></p> <p><i>Validation of MSc Data Science and Big Data Analytics, panel approved module replacement in MSc Computing and MSc Computer Science, COM701 replaced by COM713</i></p> <p><i>23/9/20 AB approval of Advanced Practice routes</i></p> <p><i>12 April 2021 Partner approval appendix added for Global Pathways Academy</i></p>

## **PART TWO PROGRAMME SPECIFICATON**

**MSc Computer Science**  
**MSc Computing**  
**MSc Computer Networking**  
**MSc Cyber Security**

**MSc Computer Science with Advanced Practice**  
**MSc Computing with Advanced Practice**  
**MSc Computer Networking with Advanced Practice**  
**MSc Cyber Security with Advanced Practice**

**1 Awarding body**

Glyndŵr University

**2 Programme delivered by**

Glyndŵr University

**3 Location of delivery**

Plas Coch Campus, Wrexham  
 Independent Science and Technology (IST) College-MSc Computing  
 Londontec City Campus-MSc Computing  
 Global Pathways Academy (refer to Partner Appendix)

**4 Faculty / Department**

Faculty of Arts, Science and Technology / Computing

**5 Exit awards available**

Pg Dip Computer Science

Pg Dip Computing  
Pg Dip Computer Networking  
Pg Dip Cyber Security  
Pg Dip Computer Science with Advanced Practice  
Pg Dip Computing with Advanced Practice  
Pg Dip Computer Networking with Advanced Practice  
Pg Dip Cyber Security with Advanced Practice

Pg Cert Computing

6 **Professional, Statutory or Regulatory Body (PSRB) accreditation**

The programme has been designed to align with the requirements of the British Computer Society (BCS) and accreditation will be requested post approval.  
**The information above is correct at the point of programme validation, refer to university PSRB register and university website for current details of programme accreditation.**

7 **Accreditation available**

See above.

8 **Please add details of any conditions that may affect accreditation (e.g. is it dependent on choices made by a student?)**

Students must have studied all years at the Wrexham Glyndŵr University campus.

9 **JACS3 code**

MSc Computer Science: I100  
MSc Computing: I100  
MSc Computer Networking: I120  
MSc Cyber Security: I190

10 **UCAS code**

N/A

11 **Relevant QAA subject benchmark statement/s**

Computing (2016)  
Master's degrees in computing (2011)  
Master's degree characteristics (2015)

12 **Other external and internal reference points used to inform the programme outcomes**

BCS: Additional requirements for CITP  
BCS: Additional requirements for CEng/CSci

13 **Mode of study**

Full & part time, part-time option only available to Home/EU students

14 **Normal length of study**

Standard Route: Full-time: 1 year/Part-time: 2 years  
Advanced Practice Route: Full-time 20 months/Part-time: 40 months

16 **Language of study**

English

## 17 Criteria for admission to the programme

### Standard entry criteria

Entry requirements are in accordance with the University's admissions policy <https://www.glyndwr.ac.uk/en/media/FINAL%20ADMISSIONS%20POLICY%202017.pdf>

The University's entry requirements are set out at <http://www.glyndwr.ac.uk/en/Undergraduatecourses/UCASstariffchange2017/>

International entry qualifications are outlined on the [National Academic Recognition and Information Centre \(NARIC\)](#) as equivalent to the relevant UK entry qualification.

In addition to the academic entry requirements, all applicants whose first language is not English or Welsh must demonstrate English language proficiency.

European students are able to provide this evidence in a number of ways (please see <http://www.glyndwr.ac.uk/en/Europeanstudents/entryrequirements/> for details), including IELTS.

International students require a UKVI Approved Secure English Language Test (SELT) (please see <http://www.glyndwr.ac.uk/en/Internationalstudents/EntryandEnglishLanguageRequirements/> for details).

### DBS Requirements

N/A

### Non-standard entry criteria and programme specific requirements

N/A

## 18 Recognition of Prior (Experiential) Learning

Applicants may enter the programme at various levels with Recognition of Prior Learning (RPL) or Recognition of Prior Experiential learning (RPEL) in accordance with the [University General Regulations](#). Any programme specific restrictions are outlined below

### Programme specific restrictions

N/A

## 19 Aims of the programme

These programmes aim to provide a platform for more advanced studies, acquisition of higher-level skills and knowledge, increased employability, and professionalism. The intention of our master's level suite of programmes is to build upon the experiences and achievements of our students and take them to the next level of personal development.

The suite of programmes has overarching aims, which will provide students with:

- A deepened and specialist knowledge in a specific field of computing;
- Higher-level technical and professional skills;
- Awareness of emerging trends and technologies in their specialist field;
- The ability to critically appraise and disseminate research results;
- A sound basis for further research and/or professional development.

At programme specific level, the additional aims are:

### MSc Computer Science

- To provide specialist, advanced technical skills in the areas of networking, web and mobile development and software development.

### MSc Computing

- To provide a rapid introduction to the field of computing at master's level for students who have had limited experience in the subject discipline, producing competent and energised graduates.

### MSc Computer Networking

- To provide a systematic understanding and critical awareness of network structure and data communications principles, current technologies, existing and emerging technological difficulties and new technological insights.

### MSc Cyber Security

- To provide a deep and specialist set of knowledge and high-level practical abilities in the field of cyber security, incorporating techniques for the development and analysis of secure systems and technology platforms.

The Advanced Practice route enables students to advance their knowledge and skills in terms of professional and personal development in the workplace from a practitioner's perspective.

## 20 Distinctive features of the programme

### MSc Computer Science

The MSc in Computer Science focuses on the practical science of computer programming with a commercial slant, the development of applications for up to date mobile devices as well as the concepts in data communications. In addition, the programme seeks to develop advanced software development and programming skills and expertise, making graduates ready for challenging and high-paced software development employment. Although the necessary background is introduced as appropriate, the course deals with problem solving and the provisioning of real computer based services and applications using current and emerging technologies. In addition to developing an understanding of underlying principles, students are engaged in the practical application of programme design, modern web technologies, network design, implementation, trouble-shooting and

management for real- world problems. The practicalities of troubleshooting applications are embedded deeply within the programme.

### MSc Computing

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 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.

### MSc Computer Networking

The MSc in Computer Networking focuses on practical networking rather than abstract concepts in data communications. Although the necessary background is introduced as appropriate, the course on the whole deals with problem solving and the provisioning of real network services using current and emergent network hardware and protocols along with the development of applications to exploit these technologies. In addition to developing an understanding of underlying principles, students are engaged in the practical application of network design, implementation, trouble-shooting and management for real-world problems. The practicalities of network 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 networking solutions or develop or analyse original network applications.

### MSc Cyber Security

The MSc Cyber Security is designed to build upon substantial knowledge that has already been gained at undergraduate level, or from more recent industry work, in the field of computer security, cyber security, network security, and related fields. This programme focuses upon several specialist disciplines, which are technical in nature, particularly around the areas of developing secure software platforms and protecting against complex attack processes used to breach system security and create deficits in normal functionality. The programme also integrates professional level skills that relate to the audit and management or institutional and organizational risk relating to cyber security and data protection regulations. This is achieved via a mixture of interactive theory work as well as deep technical and practical teaching and exercises.

In terms of all of the MSc programmes on offer, it is anticipated that graduates will go into careers in the computing and technology fields of their chosen award specialism or to continue their academic study at doctoral (MPhil/PhD) level, and industrial research positions, as well as new roles that are likely to emerge in the industry.

The Advanced Practice component will provide students with the opportunity to enhance personal and professional development so that they learn *through* work, learn *for* work and learn *at* work. In addition to practical and professional skills gained during their work placement, students will also be able to engage in the process of critical self-reflection and thereby build up more self-awareness, flexibility and

resilience to better prepare themselves for the challenges at the workplace. Furthermore, twelve weeks of work experience will guarantee students a surer footing in the job market and give them an edge over graduates who have not undertaken any work placement as part of their degree.

## 21 Programme structure narrative

All of the MSc programmes included in this suite feature a core backbone of modules, making up 100 credits of the 180 credit programme. This core consists of Postgraduate Study and Research Methods, Technological Horizon-Scanning, and Dissertation.

The programme consists of two parts: part one, which consists of the 120 credits of taught modules; and part two, which is the 60 credit Dissertation. The Dissertation pursued will complement the prior taught modules by focussing upon a theme or topic from the relevant computing discipline.

The module diet of each programme provides a vehicle for these aims and intentions to be met and will equip students with a mixture of theoretical and practical abilities that will allow them to enhance their current skillset in this emerging field. In addition to the specialist content, students will develop transferable skills in working consistently at a professional level and in handling, and responding to, complex, large-scale, information, focused upon current research and industry developments in computing.

The programme is offered in full-time and part-time modes of attendance, and has two intake points every year: Sept Intake and Jan/Feb Intake. Students will typically be expected to attend the University for two or three days a week, full-time, and for one or two days a week, when studying part-time, in addition to studying in their own time.

For the Advanced Practice routes, the taught modules follow the same delivery schedule as the standard routes, with the 12 weeks placement taking place after the completion of all taught modules and before the commencement of the Dissertation.

## 22 Programme structure diagram

### MSc Computer Science (Full-time)

Level 7						
Semester 1	Mod title	Postgraduate Study and Research Methods	Mod title	Network Hardware and Software	Mod title	Advanced Data Structures and Algorithms
	Mod code/ 'New' Module	COM742	Mod code/ 'New' Module	COM739	Mod code/ 'New' Module	COM713
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Vic Grout	Mod leader	Nigel Houlden	Mod leader	Jessica Muirhead
Semester 2	Mod title	Internet and Mobile App Development	Mod title	Security and Risk Management	Mod title	Technological Horizon-Scanning
	Mod code/ 'New' Module	COM708	Mod code/ 'New' Module	COM744	Mod code/ 'New' Module	COM745
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Jason Matthews	Mod leader	Denise Oram	Mod leader	Vic Grout
Semester 3	Mod title	Dissertation				
	Mod code/ 'New' Module	COM738				
	Credit value	60				
	Core/Option	Core				
	Mod leader	Rich Picking				

MSc Computing (Full-time)

Level 7						
Semester 1	Mod title	Postgraduate Study and Research Methods	Mod title	Network Hardware and Software	Mod title	Advanced Data Structures and Algorithms
	Mod code/ 'New' Module	COM742	Mod code/ 'New' Module	COM739	Mod code/ 'New' Module	COM713
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Vic Grout	Mod leader	Nigel Houlden	Mod leader	Jessica Muirhead

Semester 2	Mod title	Database Systems and Analytics	Mod title	Security and Risk Management	Mod title	Technological Horizon-Scanning
	Mod code/ 'New' Module	COM736	Mod code/ 'New' Module	COM744	Mod code/ 'New' Module	COM745
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Bindu Jose	Mod leader	Denise Oram	Mod leader	Vic Grout

Semester 3	Mod title	Dissertation				
	Mod code/ 'New' Module	COM738				
	Credit value	60				
	Core/Option	Core				
	Mod leader	Rich Picking				



MSc Computer Networking (Full-time)

Level 7						
Semester 1	Mod title	Postgraduate Study and Research Methods	Mod title	Network Hardware and Software	Mod title	Network Techniques & Technologies
	Mod code/ 'New' Module	COM742	Mod code/ 'New' Module	COM739	Mod code/ 'New' Module	COM741
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Vic Grout	Mod leader	Nigel Houlden	Mod leader	Nigel Houlden

Semester 2	Mod title	Remote Access & Security	Mod title	Network Protocols & Algorithms	Remote Access & Security	Technological Horizon-Scanning
	Mod code/ 'New' Module	COM743	Mod code/ 'New' Module	COM740	Mod code/ 'New' Module	COM745
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Nigel Houlden	Mod leader	Vic Grout

Semester 3	Mod title	Dissertation
	Mod code/ 'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking

MSc Cyber Security (Full-time)

Level 7						
Semester 1	Mod title	Postgraduate Study and Research Methods	Mod title	Advanced Ethical Hacking	Mod title	Applied Cryptography
	Mod code/ 'New' Module	COM742	Mod code/ 'New' Module	COM733	Mod code/ 'New' Module	COM735
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Vic Grout	Mod leader	Nigel Houlden	Mod leader	Vic Grout

Semester 2	Mod title	Developing Secure Software	Mod title	Security and Risk Management	Remote Access & Security	Technological Horizon-Scanning
	Mod code/ 'New' Module	COM737	Mod code/ 'New' Module	COM744	Mod code/ 'New' Module	COM745
	Credit value	20	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Denise Oram	Mod leader	Vic Grout

Semester 3	Mod title	Dissertation
	Mod code/ 'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking

## MSc Computer Science (Part-time)

Year 1

Trimester 1	Mod title	Network Hardware and Software	Mod title	Advanced Data Structures and Algorithms
	Mod code/ 'New' Module	COM739	Mod code/ 'New' Module	COM713
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Jessica Muirhead

Trimester 2	Mod title	Internet and Mobile App Development	Mod title	Security and Risk Management
	Mod code/ 'New' Module	COM708	Mod code/ 'New' Module	COM744
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Jason Matthews	Mod leader	Denise Oram

Year 2

Level 7		
Trimester 1	Mod title	Postgraduate Study and Research Methods
	Mod code/'New' Module	COM742
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Trimester 2	Mod title	Technological Horizon-Scanning
	Mod code/'New' Module	COM745
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Trimester 3	Mod title	Dissertation
	Mod code/'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking

MSc Computer Science (Part-time - specific cohorts only)

Year 1

Level 7		
Semester 1	Mod title	Postgraduate Study and Research Methods
	Mod code/'New' Module	COM742
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Semester 2	Mod title	Internet and Mobile App Development	Mod title	Advanced Data Structures and Algorithms
	Mod code/'New' Module	COM708	Mod code/'New' Module	COM713
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Jason Matthews	Mod leader	Jessica Muirhead

Semester 3	Mod title	Network Hardware and Software	Mod title	Security and Risk Management
	Mod code/'New' Module	COM739	Mod code/'New' Module	COM744
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Denise Oram

Year 2

Semester 2	Mod title	Technological Horizon-Scanning
	Mod code/'New' Module	COM745
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Semester 3	Mod title	Dissertation
	Mod code/'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking

## MSc Computing (Part-time)

Year 1

Trimester 1	Mod title	Network Hardware and Software	Mod title	Advanced Data Structures and Algorithms
	Mod code/'New' Module	COM739	Mod code/'New' Module	COM713
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Jessica Muirhead

Trimester 2	Mod title	Database Systems and Analytics	Mod title	Security and Risk Management
	Mod code/'New' Module	COM736	Mod code/'New' Module	COM744
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Bindu Jose	Mod leader	Denise Oram

Year 2

Level 7		
Trimester 1	Mod title	Postgraduate Study and Research Methods
	Mod code/'New' Module	COM742
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Trimester 2	Mod title	Technological Horizon-Scanning
	Mod code/'New' Module	COM745
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Trimester 3	Mod title	Dissertation
	Mod code/'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking



MSc Computing (Part-time specific cohorts only)

Year 1

Level 7		
Semester 1	Mod title	Postgraduate Study and Research Methods
	Mod code/'New' Module	COM742
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Semester 2	Mod title	Database Systems and Analytics	Mod title	Advanced Data Structures and Algorithms
	Mod code/'New' Module	COM736	Mod code/'New' Module	COM713
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Bindu Jose	Mod leader	Jessica Muirhead

Semester 3	Mod title	Network Hardware and Software	Mod title	Security and Risk Management
	Mod code/'New' Module	COM739	Mod code/'New' Module	COM744
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Denise Oram

Year 2

Semester 2	Mod title	Technological Horizon-Scanning
	Mod code/'New' Module	COM745
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Semester 3	Mod title	Dissertation
	Mod code/'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking

## MSc Computer Networking (Part-time)

Year 1

Level 7				
Trimester 1	Mod title	Network Hardware and Software	Mod title	Network Techniques & Technologies
	Mod code/'New' Module	COM739	Mod code/'New' Module	COM741
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Nigel Houlden

Trimester 2	Mod title	Remote Access and Security	Mod title	Network Protocols and Algorithms
	Mod code/'New' Module	COM743	Mod code/'New' Module	COM740
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Nigel Houlden

Year 2

Trimester 1	Mod title	Postgraduate Study and Research Methods
	Mod code/'New' Module	COM742
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Trimester 2	Mod title	Technological Horizon-Scanning
	Mod code/'New' Module	COM745
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Summer period	Mod title	Dissertation
	Mod code/'New' Module	COM738
	Credit value	60
	Core/Option	Core



	Mod leader	Rich Picking
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MSc Computer Networking (Part-time - specific cohorts only)

Year 1

Level 7				
Semester 1	Mod title	Network Hardware and Software	Mod title	Network Techniques & Technologies
	Mod code/'New' Module	COM739	Mod code/'New' Module	COM741
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Nigel Houlden

Semester 2	Mod title	Remote Access and Security	Mod title	Network Protocols and Algorithms
	Mod code/'New' Module	COM743	Mod code/'New' Module	COM740
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Nigel Houlden

Semester 3	Mod title	Postgraduate Study and Research Methods		
	Mod code/'New' Module	COM742		
	Credit value	20		
	Core/Option	Core		
	Mod leader	Vic Grout		

Year 2

Semester 2	Mod title	Technological Horizon-Scanning		
	Mod code/'New' Module	COM745		
	Credit value	20		
	Core/Option	Core		
	Mod leader	Vic Grout		

Summer period	Mod title	Dissertation		
	Mod code/'New' Module	COM738		
	Credit value	60		
	Core/Option	Core		
	Mod leader	Rich Picking		

MSc Cyber Security (Part-time)

Year 1

Trimester 3	Mod title	Advanced Ethical Hacking	Mod title	Applied Cryptography
	Mod code/ 'New' Module	COM733	Mod code/ 'New' Module	COM735
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Vic Grout

Trimester 2	Mod title	Developing Secure Software	Mod title	Security and Risk Management
	Mod code/ 'New' Module	COM737	Mod code/ 'New' Module	COM744
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Denise Oram

Year 2

Level 7		
Trimester 1	Mod title	Postgraduate Study and Research Methods
	Mod code/'New' Module	COM742
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Trimester 2	Mod title	Technological Horizon-Scanning
	Mod code/'New' Module	COM745
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Trimester 3	Mod title	Dissertation
	Mod code/'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking

MSc Cyber Security (Part-time - specific cohorts only)

Year 1

Level 7		
Semester 1	Mod title	Postgraduate Study and Research Methods
	Mod code/'New' Module	COM742
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Semester 2	Mod title	Developing Secure Software	Mod title	Applied Cryptography
	Mod code/'New' Module	COM737	Mod code/'New' Module	COM735
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Vic Grout

Semester 3	Mod title	Advanced Ethical Hacking	Mod title	Security and Risk Management
	Mod code/'New' Module	COM733	Mod code/'New' Module	COM744
	Credit value	20	Credit value	20
	Core/Option	Core	Core/Option	Core
	Mod leader	Nigel Houlden	Mod leader	Denise Oram

Year 2

Semester 2	Mod title	Technological Horizon-Scanning
	Mod code/'New' Module	COM745
	Credit value	20
	Core/Option	Core
	Mod leader	Vic Grout

Semester 3	Mod title	Dissertation
	Mod code/'New' Module	COM738
	Credit value	60
	Core/Option	Core
	Mod leader	Rich Picking

## 23 Intended learning outcomes of the programme

### MSc Computer Science

<b>Postgraduate</b>	
<b>Knowledge and understanding</b>	
	Level 7
A1	<i>Make professional judgements in the selection of technologies or processes for complex and dynamic scenarios</i>
A2	<i>Give a critical account of current and emerging developments in computer science</i>
A3	<i>Evidence deep comprehension of specialist applications for computer science and recognise the boundaries of knowledge in this domain</i>
A4	<i>Appraise computer network configurations and evaluate their application scenarios</i>
A5	<i>Compare and contrast software development tools and techniques for a variety of practical situations</i>
A6	<i>Demonstrate a sufficiently detailed knowledge of research methods appropriate specifically to their advanced independent-study dissertation/project, together with detailed knowledge of the particular area in which the project is carried out</i>
<b>Intellectual skills</b>	
	Level 7
B1	<i>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 within the specialist area of computer science</i>
B2	<i>Identify and classify principles, ideas in contemporary information sources, and situations to professional standards; analyse rigorously, effectively, critically and creatively; cope with complexity</i>
B3	<i>Synthesise and predict the future development of current and emerging technologies in the field of computer science, being mindful of external factors</i>
B4	<i>Design and synthesise software and hardware systems in response to a range of technological and practical constraints</i>
B5	<i>Utilise complex, often contradictory, resources and demonstrate how to access these to obtain state-of-the-art knowledge of computer science</i>
B6	<i>Evaluate methods, and plan for, a complex, self-led, investigation in response to a recognised problem or gap in knowledge</i>
<b>Subject skills</b>	
	Level 7
C1	<i>Work with a range of computer hardware and networked devices to implement complete and functional systems or platforms</i>
C2	<i>Be effective in the acquisition and analysis of data, from a range of sources</i>
C3	<i>Make effective use of a range of theories and techniques applicable to computer science scenarios</i>
C4	<i>Assimilate and integrate emerging developments in computer science into their own work</i>

<b>Subject skills</b>	
	Level 7
C5	<i>Undertake a significant computer science related thesis which involves an analytical, rigorous and critical approach to problem identification, solution and evaluation</i>
C6	<i>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 computer science techniques and / or technologies</i>

<b>Practical, professional and employability skills</b>	
	Level 7
D1	<i>Display a mastery of working with a range of information sources and be able to objectively arrange these in a holistic manner</i>
D2	<i>Professionally and efficiently operate a range of IT software, specialist computing applications, and configure a range of hardware devices</i>
D3	<i>Effectively and proficiently work with stakeholders in designing IT and computer systems in response to their needs and demands</i>
D4	<i>Make critical decisions regarding technology adoption and success, based upon technological, societal, ethical, and market information</i>
D5	<i>Conduct and control a piece of research or investigation and professionally present the outcomes in a succinct and reflexive manner</i>
D6	<i>Carry out a large-scale, independent project and provide detailed and reflective analysis of its efficacy and value</i>
D7	<i>Advanced Practice route: Demonstrate knowledge and understanding of operating in a business or employer environment(s), and articulate the deployment of higher level skills within this context.</i>

## MSc Computing

<b>Postgraduate</b>	
<b>Knowledge and understanding</b>	
	Level 7
A1	<i>Make professional judgements in the selection of technologies or processes for complex and dynamic scenarios</i>
A2	<i>Give a critical account of current and emerging developments in computing</i>
A3	<i>Evidence deep comprehension of specialist applications for computing and recognise the boundaries of knowledge in this domain</i>
A4	<i>Appraise computer network configurations and evaluate their application scenarios</i>
A5	<i>Select and design tools for solving real-world problems that require the integration of large data sets and analytics</i>
A6	<i>Demonstrate a sufficiently detailed knowledge of research methods appropriate specifically to their advanced independent-study dissertation/project, together with detailed knowledge of the particular area in which the project is carried out</i>
<b>Intellectual skills</b>	
	Level 7
B1	<i>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 within the specialist area of computing</i>
B2	<i>Identify and classify principles, ideas in contemporary information sources, and situations to professional standards; analyse rigorously, effectively, critically and creatively; cope with complexity</i>
B3	<i>Synthesise and predict the future development of current and emerging technologies in the field of computing, being mindful of external factors</i>
B4	<i>Design and synthesise software and hardware systems in response to a range of technological and practical constraints</i>
B5	<i>Utilise complex, often contradictory, resources and demonstrate how to access these to obtain state-of-the-art knowledge of computing</i>
B6	<i>Evaluate methods, and plan for, a complex, self-led, investigation in response to a recognised problem or gap in knowledge</i>
<b>Subject skills</b>	
	Level 7
C1	<i>Work with a range of computer hardware and networked devices to implement complete and functional systems or platforms</i>
C2	<i>Be effective in the acquisition and analysis of data, from a range of sources</i>
C3	<i>Make effective use of a range of theories and techniques applicable to computing scenarios</i>
C4	<i>Assimilate and integrate emerging developments in computing into their own work</i>
C5	<i>Undertake a significant computing related thesis which involves an analytical, rigorous and critical approach to problem identification, solution and evaluation</i>
C6	<i>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</i>

Practical, professional and employability skills	
	Level 7
D1	<i>Display a mastery of working with a range of information sources and be able to objectively arrange these in a holistic manner</i>
D2	<i>Professionally and efficiently operate a range of IT software, specialist computing applications, and configure a range of hardware devices</i>
D3	<i>Effectively and proficiently work with stakeholders in designing IT and computer systems in response to their needs and demands</i>
D4	<i>Make critical decisions regarding technology adoption and success, based upon technological, societal, ethical, and market information</i>
D5	<i>Conduct and control a piece of research or investigation and professionally present the outcomes in a succinct and reflexive manner</i>
D6	<i>Carry out a large-scale, independent project and provide detailed and reflective analysis of its efficacy and value</i>
D7	<i>Advanced Practice route: Demonstrate knowledge and understanding of operating in a business or employer environment(s), and articulate the deployment of higher level skills within this context.</i>



## MSc Computer Networking

<b>Postgraduate</b>	
<b>Knowledge and understanding</b>	
	Level 7
A1	<i>Make professional judgements in the selection of technologies or processes for complex and dynamic scenarios</i>
A2	<i>Give a critical account of current and emerging developments in computer networking</i>
A3	<i>Evidence deep comprehension of specialist applications for computer networking and recognise the boundaries of knowledge in this domain</i>
A4	<i>Appraise computer network configurations and evaluate their application scenarios</i>
A5	<i>Compare and contrast the theories and models of network protocols, algorithms and remote access principles</i>
A6	<i>Demonstrate a sufficiently detailed knowledge of research methods appropriate specifically to their advanced independent-study dissertation/project, together with detailed knowledge of the particular area in which the project is carried out</i>

<b>Intellectual skills</b>	
	Level 7
B1	<i>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 within the specialist area of computer networking</i>
B2	<i>Identify and classify principles, ideas in contemporary information sources, and situations to professional standards; analyse rigorously, effectively, critically and creatively; cope with complexity</i>
B3	<i>Synthesise and predict the future development of current and emerging technologies in the field of computer networking, being mindful of external factors</i>
B4	<i>Design and synthesise computer networks and infrastructures in response to a range of technological and practical constraints</i>
B5	<i>Utilise complex, often contradictory, resources and demonstrate how to access these to obtain state-of-the-art knowledge of computer networking</i>
B6	<i>Evaluate methods, and plan for, a complex, self-led, investigation in response to a recognised problem or gap in knowledge</i>

<b>Subject skills</b>	
	Level 7
C1	<i>Work with a range of computer hardware and networked devices to implement complete and functional systems or platforms</i>
C2	<i>Be effective in the acquisition and analysis of data, from a range of sources</i>
C3	<i>Make effective use of a range of theories and techniques applicable to computer networking scenarios</i>
C4	<i>Assimilate and integrate emerging developments in computer networking into their own work</i>
C5	<i>Undertake a significant computer networking related thesis which involves an analytical, rigorous and critical approach to problem identification, solution and evaluation</i>

<b>Subject skills</b>	
	Level 7
C6	<i>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 computer networking techniques and / or technologies</i>

<b>Practical, professional and employability skills</b>	
	Level 7
D1	<i>Display a mastery of working with a range of information sources and be able to objectively arrange these in a holistic manner</i>
D2	<i>Professionally and efficiently operate a range of IT software, specialist computing applications, and configure a range of hardware devices</i>
D3	<i>Effectively and proficiently work with stakeholders in designing IT and computer systems in response to their needs and demands</i>
D4	<i>Make critical decisions regarding technology adoption and success, based upon technological, societal, ethical, and market information</i>
D5	<i>Conduct and control a piece of research or investigation and professionally present the outcomes in a succinct and reflexive manner</i>
D6	<i>Carry out a large-scale, independent project and provide detailed and reflective analysis of its efficacy and value</i>
D7	<i>Advanced Practice route: Demonstrate knowledge and understanding of operating in a business or employer environment(s), and articulate the deployment of higher level skills within this context.</i>

## MSc Cyber Security

<b>Postgraduate</b>	
<b>Knowledge and understanding</b>	
	Level 7
A1	<i>Make professional judgements in the selection of technologies or processes for complex and dynamic scenarios</i>
A2	<i>Give a critical account of current and emerging developments in cyber security</i>
A3	<i>Evidence deep comprehension of specialist applications for cyber security and recognise the boundaries of knowledge in this domain</i>
A4	<i>Relate the theories and paradigms of security, risk and information management to the backdrop of a range of cyber attacks and penetration methods</i>
A5	<i>Evaluate the principles and approaches for secure software development in a constantly developing landscape of cyber attacks</i>
A6	<i>Demonstrate a sufficiently detailed knowledge of research methods appropriate specifically to their advanced independent-study dissertation/project, together with detailed knowledge of the particular area in which the project is carried out</i>
<b>Intellectual skills</b>	
	Level 7
B1	<i>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 within the specialist area of cyber security</i>
B2	<i>Identify and classify principles, ideas in contemporary information sources, and situations to professional standards; analyse rigorously, effectively, critically and creatively; cope with complexity</i>
B3	<i>Synthesise and predict the future development of current and emerging technologies in the field of cyber security, being mindful of external factors</i>
B4	<i>Formulate a range of strategies and advanced techniques for secure and auditable information and data storage in contemporary situations</i>
B5	<i>Utilise complex, often contradictory, resources and demonstrate how to access these to obtain state-of-the-art knowledge of cyber security</i>
B6	<i>Evaluate methods, and plan for, a complex, self-led, investigation in response to a recognised problem or gap in knowledge</i>
<b>Subject skills</b>	
	Level 7
C1	<i>Work with a range of cyber security technologies and devices to implement complete and functional systems or platforms</i>
C2	<i>Be effective in the acquisition and analysis of data, from a range of sources</i>
C3	<i>Make effective use of a range of theories and techniques applicable to cyber security scenarios</i>
C4	<i>Assimilate and integrate emerging developments in cyber security into their own work</i>
C5	<i>Undertake a significant cyber security related thesis which involves an analytical, rigorous and critical approach to problem identification, solution and evaluation</i>

<b>Subject skills</b>	
	Level 7
C6	<i>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 cyber security techniques and / or technologies</i>

<b>Practical, professional and employability skills</b>	
	Level 7
D1	<i>Display a mastery of working with a range of information sources and be able to objectively arrange these in a holistic manner</i>
D2	<i>Professionally and efficiently operate a range of IT software, specialist computing applications, and configure a range of hardware devices</i>
D3	<i>Effectively and proficiently work with stakeholders in designing IT and computer systems in response to their needs and demands</i>
D4	<i>Make critical decisions regarding technology adoption and success, based upon technological, societal, ethical, and market information</i>
D5	<i>Conduct and control a piece of research or investigation and professionally present the outcomes in a succinct and reflexive manner</i>
D6	<i>Carry out a large-scale, independent project and provide detailed and reflective analysis of its efficacy and value</i>
D7	<i>Advanced Practice route: Demonstrate knowledge and understanding of operating in a business or employer environment(s), and articulate the deployment of higher level skills within this context.</i>

## 24 Curriculum matrix

### MSc Computer Science

	Module Title	Core or option?	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6
PgC	Postgraduate Study and Research Methods	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Network Hardware and Software	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Security and Risk Management	Core	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	Advanced Data Structures and Algorithms	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Internet and Mobile App Development	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Technological Horizon-Scanning	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MSc	Dissertation	Core	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Module Title	Core or option?	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6
PgC	Postgraduate Study and Research Methods	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Network Hardware and Software	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Security and Risk Management	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	Advanced Data Structures and Algorithms	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Internet and Mobile App Development	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Technological Horizon-Scanning	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MSc	Dissertation	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

For successful completion of the Advanced Practice route, students will achieve the learning outcomes highlighted in the tables above as well as Learning Outcomes D7.

## MSc Computing

	<i>Module Title</i>	<i>Core or option?</i>	<i>A1</i>	<i>A2</i>	<i>A3</i>	<i>A4</i>	<i>A5</i>	<i>A6</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>B4</i>	<i>B5</i>	<i>B6</i>
PgC	<i>Postgraduate Study and Research Methods</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<i>Network Hardware and Software</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Security and Risk Management</i>	Core	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	<i>Advanced Data Structures and Algorithms</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Database Systems and Analytics</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Technological Horizon-Scanning</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MSc	<i>Dissertation</i>	Core	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<i>Module Title</i>	<i>Core or option?</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C5</i>	<i>C6</i>	<i>D1</i>	<i>D2</i>	<i>D3</i>	<i>D4</i>	<i>D5</i>	<i>D6</i>
PgC	<i>Postgraduate Study and Research Methods</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<i>Network Hardware and Software</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Security and Risk Management</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	<i>Advanced Data Structures and Algorithms</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Database Systems and Analytics</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Technological Horizon-Scanning</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MSc	<i>Dissertation</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

For successful completion of the Advanced Practice route, students will achieve the learning outcomes highlighted in the tables above as well as Learning Outcomes D7.

MSc Computer Networking

	<i>Module Title</i>	<i>Core or option?</i>	<i>A1</i>	<i>A2</i>	<i>A3</i>	<i>A4</i>	<i>A5</i>	<i>A6</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>B4</i>	<i>B5</i>	<i>B6</i>
PgC	<i>Postgraduate Study and Research Methods</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<i>Network Hardware and Software</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Network Techniques &amp; Technologies</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	<i>Remote Access and Security</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Network Protocols and Algorithms</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Technological Horizon-Scanning</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MSc	<i>Dissertation</i>	Core	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<i>Module Title</i>	<i>Core or option?</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C5</i>	<i>C6</i>	<i>D1</i>	<i>D2</i>	<i>D3</i>	<i>D4</i>	<i>D5</i>	<i>D6</i>
PgC	<i>Postgraduate Study and Research Methods</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<i>Network Hardware and Software</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Network Techniques &amp; Technologies</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	<i>Remote Access and Security</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Network Protocols and Algorithms</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Technological Horizon-Scanning</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MSc	<i>Dissertation</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

For successful completion of the Advanced Practice route, students will achieve the learning outcomes highlighted in the tables above as well as Learning Outcomes D7.

MSc Cyber Security

	<i>Module Title</i>	<i>Core or option?</i>	<i>A1</i>	<i>A2</i>	<i>A3</i>	<i>A4</i>	<i>A5</i>	<i>A6</i>	<i>B1</i>	<i>B2</i>	<i>B3</i>	<i>B4</i>	<i>B5</i>	<i>B6</i>
PgC	<i>Postgraduate Study and Research Methods</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<i>Advanced Ethical Hacking</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Security and Risk Management</i>	Core	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	<i>Applied Cryptography</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Developing Secure Software</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Technological Horizon-Scanning</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MSc	<i>Dissertation</i>	Core	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<i>Module Title</i>	<i>Core or option?</i>	<i>C1</i>	<i>C2</i>	<i>C3</i>	<i>C4</i>	<i>C5</i>	<i>C6</i>	<i>D1</i>	<i>D2</i>	<i>D3</i>	<i>D4</i>	<i>D5</i>	<i>D6</i>
PgC	<i>Postgraduate Study and Research Methods</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<i>Advanced Ethical Hacking</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Security and Risk Management</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PgD	<i>Applied Cryptography</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Developing Secure Software</i>	Core	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<i>Technological Horizon-Scanning</i>	Core	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MSc	<i>Dissertation</i>	Core	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

For successful completion of the Advanced Practice route, students will achieve the learning outcomes highlighted in the tables above as well as Learning Outcomes D7.



## 25 Learning and teaching strategy

The programme is informed and guided by the Computing Learning, Teaching and Assessment strategy. It seeks to assist the student to become an independent learner, delivering subject skills alongside the embedding of skills for employment. The curriculum is designed to encourage an appreciation for learning. Learning is enriched by appropriate underpinnings, current research, industrial applications and the development of transferable skills.

The majority of scheduled learning and teaching activities is through attendance at lectures, guest talks, tutorials, and labs. Attendance at external events and field trips are made available and as when they are appropriate and practicable. These modes of contact provide students with the ability to develop and practice the range of learning outcomes associated with the programme, ranging from the theoretical to the practical.

In the early stages of each module, problems will be well defined and limited in scope and scale. At later stages, problems will become less structured (to encourage reflection on problem issues) and open-ended (to give scope to propose and evaluate alternative solution strategies). Case studies are used when appropriate to integrate study topics and to underline vocational relevance. Coursework assignments are important throughout.

As the programme progresses, students are expected to demonstrate increasing proficiency in use of IT tools and techniques to support production of technical documentation, to enhance oral and written presentations, and to aid organisation of personal study material.

Part two of the programme is the Dissertation and is an area that has been given special consideration since it is such a significant piece of work undertaken by the student. While students study the taught part of the course they are given a 1 hour a week special lecture to inform them of the requirements of the Dissertation. This module is run so that it coincides with the end of the taught part of the course, which means that on completion of part one students can start immediately on producing the proposal for the dissertation. On submission of the proposal it is assessed and passed to an appropriate supervisor with expertise in the area that the student wishes to carry out the work. It is the supervisor's task to work with the student to improve the proposal to a level that is acceptable and achievable for a master's level within the time constraints. Students work independently on the dissertation having regular meetings with the supervisor. It is important that the student identifies at the proposal stage the various requirements needed to complete the dissertation e.g. equipment, software, space.

Extensive use is made of the University's Virtual Learning Environment (VLE), Moodle, to provide students with access to a range of delivery, and supporting, materials related to each of the modules featured on the programme. In addition to the materials used during the taught sessions, the VLE is used to provide students with additional content such as quizzes, videos, audio recordings, external links, technical reports, research papers, and so forth. The VLE also provides students with the ability to communicate using discussion forums and is the platform primarily used in the issuing, submission, marking, and feedback of student assessment.

## 26 Work based/placement learning statement

For programmes without the Advanced Practice option, students are encouraged to use their current or previous work experience to reflect on.

Programmes on the Advanced Practice route offer substantive work-based learning via the advanced practice module. Advanced practice module is worth 60 academic credits and takes place after the completion of taught module and before the dissertation semester. The placement will normally be carried out over a period of twelve weeks and the student is expected to complete 240 hours in total.

While advice can be sought from the Work-related Learning Unit (WRLU) during the process, students are ultimately responsible for securing a placement using the protocol described in the Advanced Practice module handbook. If students fail to secure a placement, they will be transferred out of the AP route and onto the standard programme, where they start their dissertation/research modules a semester earlier and Tier 4 visas for international students will be modified accordingly.

Students on Advanced Practice route are required to submit a Placement Proposal and a Placement Specification form to the Work-Related Learning Unit before the placement can be approved. The Placement Specification should be signed by WRLU, Placement Provider and student. Placement hours are to be recorded by students in a log and signed off by a manager at their workplace at the end of the placement. Any cause of concerns, either from students or from placement providers shall be referred to the WRLU who will follow the procedures outlined in the Advanced Practice handbook for remedy actions.

## 27 Welsh medium provision

The programmes will be delivered through the medium of English. Students are entitled to submit assessments in the medium of Welsh.

## 28 Assessment strategy

A range and diversity of assessment is provided on the programme as a way to allow students with multiple types of opportunity to demonstrate the skills and knowledge that they are developing over the duration of the programme and to help support inclusivity. This mixture often makes use of assessment methods where students must document a process or solution to a challenge, but also in the submission of artefacts, such as computer programs, databases, media assets, and practical network implementations.

Module code & title	Assessment type and weighting	Assessment loading	Indicative submission date
Postgraduate Study and Research Methods	Coursework 40% Coursework 60%	1500 words 2500 words	Sem1, Wk6 Sem1, Wk12
Network Hardware and Software	In-class test 20% Practical 30% Coursework 50%	2.5 hrs 2 hrs 2000 words	Sem1, ongoing Sem1, ongoing Sem1, Wk12
Network Techniques & Technologies	In-class test 20% Practical 30% Coursework 50%	2.5 hrs 2 hrs 2000 words	Sem1, ongoing Sem1, ongoing Sem1, Wk12
Internet and Mobile App Development	Coursework 100%		Sem2, Wk12

Advanced Data Structures and Algorithms	Portfolio 70% Project 30%		Ongoing: Wk 2 to Wk 8, Sem 1 Week 12, Sem 1
Database Systems and Data Analytics	Coursework 50% Coursework 50%	N/A 3000 words	Sem2, Wk6 Sem2, Wk12
Remote Access & Security	Case Study 100%		Sem2, ongoing
Network Protocols & Algorithms	In-class test 15% Practical 20% Coursework 65%	1.15 hrs 2 hrs 3000 words	Sem2, ongoing Sem2, ongoing Sem2, Wk12
Advanced Ethical Hacking	Coursework 60% Practical 40%	3000 words 2 hrs	Sem1, Wk6 Sem1, Wk12
Security and Risk Management	Case Study 70% In-class test 30%	4000 words 1.5 hrs	Sem1, Wk6 Sem1, Wk12
Developing Secure Software	Portfolio 70% In-class test 30%	4000 words 1.5 hrs	Sem2, Wk6 Sem2, Wk12
Applied Cryptography	Exam 50% Practical 50%	2 hrs 3000 words	Sem2, Wk13-14 Sem2, Wk10
Technological Horizon-Scanning	Presentation 40% Report 60%	30 minutes 3500 words	Sem2, Wk6 Sem2, Wk12
Dissertation	Research proposal 10% Dissertation 90%	2000 words 15-20000 words <b>OR</b> 17 page journal paper	Sem3, Wk1 Sem3, Wk12
Advanced Practice: Work-based Learning	Report 20% (pass/fail basis) Report 30% (pass/fail basis) Portfolio 50% (pass/fail basis)	750 words 1,200 words 2,000 words	Dependant on intake and mode of delivery

## 29 Assessment regulations

University regulations for Taught Masters Degrees apply.  
For students on the Advanced Practice route, please note that the Advanced Practice module will not be used towards the degree classification and will show as pass/fail only on the transcript. Please consult the Taught Masters Regulations available on the Student Administration web pages.

### Derogations

N/A

### Non-credit bearing assessment

N/A

### Restrictions for trailing modules (for taught masters programmes only)

None other than Postgraduate Study and Research Methods.

## 30 Programme Management

### Programme leader

Nigel Houlden

## Module Leaders

Nigel Houlden  
Prof. Vic Grout  
Mrs. Bindu Jose  
Mrs. Denise Oram  
Mr. Jason Matthews  
Prof. Richard Picking

## Link to Staff Profiles

<https://www.glyndwr.ac.uk/en/StaffProfiles/VicGrout/>

<https://www.glyndwr.ac.uk/en/StaffProfiles/BinduJose/>

<https://www.glyndwr.ac.uk/en/StaffProfiles/DeniseOram/>

<https://www.glyndwr.ac.uk/en/StaffProfiles/JasonMatthews/>

<https://www.glyndwr.ac.uk/en/StaffProfiles/RichardPicking/>

## 31 Quality Management

### Programme Management

The designated Programme Leader 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 to Module Leaders 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, feedback for individual modules
- Liaison with part-time members of staff involved in module teaching

### Student Feedback

The University has procedures for the regular review of its educational provision, including the annual review of modules and programmes, which draw on feedback from such sources as external examiner 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 Faculty's strategic thinking. It also allows the Faculty to evaluate how its most important group of stakeholders, its students, views its service provision. Students can provide feedback in a number of ways, for instance:

Student Voice Forum (SVF): Chaired by a member of academic staff from outside the programme, will be held at least once per semester. The Chair will minute student feedback for action/response by the Programme Leader. Minutes of the SVFs and the response from the Programme Leader will be posted on the programme pages of Moodle. All programmes have representation at SVFs.

Student Evaluation of Modules (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.

Feedback on assessed work: 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 tutors give feedback via this interface within 3 working weeks. Practical work is developed and assessed by having students 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, to resubmit or what areas were good and which areas can be improved on.

## 32 Research and scholarship activity

Research within the programme team is co-ordinated at a Faculty level and, at a local level manifests itself through the Applied Research in Computing Laboratories (ARClab) group. ARClab's research encompasses the broader computing subject and is concentrated in the following areas:

- IoT, Networking and Cybersecurity
- Audio and Affective Computing
- Health and Assisted Living Technologies
- HCI, Augmented and Virtual Reality
- CAD/Engineering software
- MIS/Business
- Ethics/professionalism
- Robotics/AI

ARClab has taken over from the previous Computing research groups of Creative and Applied Research for the Digital Society (CARDS) and the Centre for Applied Internet Research (CAIR), which built up their activities very impressively over the past ten 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.

### 33 Learning support

#### Institutional level support for students

The University has a range of departments that offer the support for students as:

- Library & IT Resources
- The Assessment Centre
- DisAbility Support Team
- Irlen Centre
- Careers Centre and Job Shop
- Zone Enterprise hub
- Chaplaincy
- Counselling & Wellbeing
- Student Funding and Welfare
- International Welfare
- Student Programmes Centre
- Glyndŵr Students' Union
- Work-related Learning Unit

#### Faculty support for students

All students at Wrexham Glyndŵr University are allocated a Personal Tutor whose main responsibility is to act as the first point of contact for their personal students and to provide pastoral and academic support throughout their studies at the University. It is a vital role to support student engagement and retention, and to help every student to success to the best of his or her ability.

#### Programme specific support for students

##### Induction

New students on the programme will undergo an induction programme that 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, provided electronically via the VLE, which will contain details and guidance on all aspects of the programme and forms of student support and guidance, programme-based, and Faculty-based.

##### Computing Labs

The majority of Computing provision is located on the Wrexham campus, including teaching rooms, lecture theatres, staff offices, and specialist labs. There are a number of specialist computer labs on the Wrexham campus, including general purpose computing laboratories that support the teaching. These specialist labs offer access to a range of software that is utilised within the modules defined in the programme.

##### Open Door Policy

Computing operates an Open Door policy, meaning that academic staff are readily and easily accessible and approachable for students outside of scheduled learning

and teaching hours. Staff can be approached without the need for a formal appointment to be made.

#### 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.

### **34 Equality and Diversity**

Glyndŵr University is committed to providing access to all students and promotes equal opportunities in compliance with the Equality Act 2010 legislation. This programme complies fully with the University's Equal Opportunities Policy (<http://www.glyndwr.ac.uk/en/AboutGlyndwrUniversity/Governance/TheFile.64499.en.pdf>), ensuring that everyone who has the potential to achieve in higher education is given the chance to do so.



DATE OF APPROVAL	
Date of programme delivery approval event:	28 November 2019 <i>Desk based re-approval conducted by APC</i>
Date of approval by Academic Board:	09 December 2019



## APPENDIX 1 – PARTNER PROVIDER SUPPLEMENT TO PROGRAMME SPECIFICATION

When printed this becomes an uncontrolled document. Please check the Programme Directory for the most up to date version by clicking [here](#).

### Programme Title(s): MSc Computing

*This is the intended award title from the definitive Programme Specification and what will be printed on the award certificate.*

1	<b>Awarding body</b>
	Glyndwr University
2	<b>Partner Provider</b>
	Londontec City Campus
3	<b>Location of delivery</b>
	No. 6/1A Pepiliyana Road, Gamsabha Junction, Nugegoda, WP 10250 Sri Lanka
4	<b>Faculty/Department</b>
	Faculty of Arts, Science and Technology
5	<b>Mode of study</b>
	Full time
6	<b>Frequency / timing of intake/s</b>
	2 intake point per academic year (Sep & Feb)
7	<b>Language of study</b>
	English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	John Worden



## 9 GU Approved Partner Programme Delivery Schedule(s)

### September intake – f/t

<b>Semester 1</b> Sep-Jan	COM742 Postgraduate Study and Research Methods	COM736 Database Systems and Data Analytics	COM713 Advanced Data Structures and Algorithms
<b>Semester 2</b> Feb-May	COM739 Network Hardware and Software	COM744 Security and Risk Management	COM745 Technological Horizon- Scanning
<b>Semester 3</b> Jun-Aug	COM738 Dissertation		

### January intake – f/t

<b>Semester 2</b> Feb-May	COM745 Technological Horizon- Scanning	COM739 Network Hardware and Software	COM744 Security and Risk Management
<b>Semester 3</b> Jun-Aug	COM713 Advanced Data Structures and Algorithms	COM742 Postgraduate Study and Research Methods	COM736 Database Systems and Data Analytics
<b>Semester 1</b> Sep-Jan	COM738 Dissertation		

DATE OF APPROVAL	
Date of programme delivery approval event:	29 May 2020
Date of approval by Academic Board:	11 June 2020



## APPENDIX 2 – PARTNER PROVIDER SUPPLEMENT TO PROGRAMME SPECIFICATION

When printed this becomes an uncontrolled document. Please check the Programme Directory for the most up to date version by clicking [here](#).

### Programme Title(s): MSc Computing

*This is the intended award title from the definitive Programme Specification and what will be printed on the award certificate.*

1	<b>Awarding body</b>
	Glyndwr University
2	<b>Partner Provider</b>
	Independent Science and Technology (IST) College
3	<b>Location of delivery</b>
	68, Syngrou Avenue, 11742 Athens
4	<b>Faculty/Department</b>
	Faculty of Arts, Science and Technology
5	<b>Mode of study</b>
	Full time
6	<b>Frequency / timing of intake/s</b>
	1 intake point per academic year (September)
7	<b>Language of study</b>
	English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	John Worden

## 9 GU Approved Partner Programme Delivery Schedule(s)

### September intake – f/t

Year 1			
<b>Semester 1</b>	COM742 Postgraduate Study and Research Methods	COM739 Network Hardware and Software	COM713 Advanced Data Structures and Algorithms
<b>Semester 2</b>	COM736 Database Systems and Analytics	COM744 Security and Risk Management	COM745 Technological Horizon Scanning
<b>Semester 3</b>	COM738 Dissertation		

Semester 1 – Sept to Jan

Semester 2 – Feb to Apr

Semester 3 – May to Aug

Assessment is subject to GU's regulations. GU assessments are to be used however if there are any additional assessments required to be written by IST as advised by GU, IST are to submit them to GU for approval by GU prior to use. The assessment schedule at IST will be aligned with that of GU.

DATE OF APPROVAL	
Date of programme delivery approval event:	21 January 2021
Date of approval by Academic Board:	12 April 2021



## APPENDIX 1 – PARTNER PROVIDER SUPPLEMENT TO PROGRAMME SPECIFICATION

When printed this becomes an uncontrolled document. Please check the Programme Directory for the most up to date version by clicking [here](#).

### Programme Title(s):

MSc Computing  
MSc Computer Science  
MSc Computer Networking  
MSc Cyber Security

*This is the intended award title from the definitive Programme Specification and what will be printed on the award certificate.*

1	<b>Awarding body</b>
	Glyndwr University
2	<b>Partner Provider</b>
	Global Pathways Academy
3	<b>Location of delivery</b>
	Global Pathways Academy, #806, Souravya, 10th A Main Road, Indiranagar 1st Stage, Bangalore – 560 038
	Western International College (WINC) #22/1, Siddedahalli ,off Hesarghatta Main Rd, behind Siddineya Temple, Nagasandra Post, Bengaluru, 560073
	Western International College (WINC) FZE, PO Box 16038, Ras Al Khaimah Free Trade Zone, Ras Al Khaimah, UAE and/or other sites as approved by Glyndwr in writing.
4	<b>Faculty/Department</b>
	Faculty of Arts, Science and Technology
5	<b>Mode of study</b>
	Part time - PG PT
6	<b>Frequency / timing of intake/s</b>
	3 intake points per academic year (July, September and January)
7	<b>Language of study</b>
	English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	Computing – John Worden

## POSTGRADUATE COMPUTING PROGRAMMES

MSc Computing

MSc Computer Science

MSc Computer Networking

## July intake – p/t

Year 1		
<b>Semester 3</b> <b>Jul to Aug</b>	COM742 Postgraduate Study and Research Methods (20 credits) CORE	COM745 Technological Horizon-Scanning (20 credits) CORE
<b>Semester 1</b> <b>Sept to Jan</b>	COM739 Network Hardware and Software (20 credits) CORE	<b>MSc Computing &amp; MSc Computer Science</b> COM713 Advanced Data Structures and Algorithms (20 credits) CORE  <b>MSc Computer Networking</b> COM741 Network Techniques & Technologies (20 credits) CORE
<b>Semester 2</b> <b>Feb to May</b>	<b>MSc Computing</b> COM736 Database Systems and Analytics (20 credits) CORE  <b>MSc Computer Science</b> COM708 Internet and Mobile App Development (20 credits) CORE  <b>MSc Computer Networking</b> COM743 Remote Access and Security (20 credits) CORE	<b>MSc Computing</b> COM744 Security and Risk Management (20 credits) CORE  <b>MSc Computer Science</b> COM744 Security and Risk Management (20 credits) CORE  <b>MSc Computer Networking</b> COM740 Network Protocols and Algorithms (20 credits) CORE
Year 2		
<b>Semester 3/1</b> <b>Jun to Jan</b>	COM738 Dissertation (60 credits) CORE	

**September intake – p/t**

<b>Year 1</b>		
<b>Semester 1</b> <b>Sep to Jan</b>	COM739 Network Hardware and Software (20 credits) CORE	<b>MSc Computing &amp; MSc Computer Science</b> COM713 Advanced Data Structures and Algorithms (20 credits) CORE  <b>MSc Computer Networking</b> COM741 Network Techniques & Technologies (20 credits) CORE
<b>Semester 2</b> <b>Feb to May</b>	<b>MSc Computing</b> COM736 Database Systems and Analytics (20 credits) CORE  <b>MSc Computer Science</b> COM708 Internet and Mobile App Development (20 credits) CORE  <b>MSc Computer Networking</b> COM743 Remote Access and Security (20 credits) CORE	<b>MSc Computing</b> COM744 Security and Risk Management (20 credits) CORE  <b>MSc Computer Science</b> COM744 Security and Risk Management (20 credits) CORE  <b>MSc Computer Networking</b> COM740 Network Protocols and Algorithms (20 credits) CORE
<b>Semester 3</b> <b>Jun to Aug</b>	COM742 Postgraduate Study and Research Methods (20 credits) CORE	COM745 Technological Horizon-Scanning (20 credits) CORE

<b>Year 2</b>	
<b>Semester 1/2</b> <b>Sept to May</b>	COM738 Dissertation (60 credits) CORE

**February intake – p/t**

<b>Year 1</b>		
<b>Semester 2</b> <b>Feb to May</b>	<b>MSc Computing</b> COM736 Database Systems and Analytics (20 credits) CORE  <b>MSc Computer Science</b> COM708 Internet and Mobile App Development (20 credits) CORE  <b>MSc Computer Networking</b> COM743 Remote Access and Security (20 credits) CORE	<b>MSc Computing</b> COM744 Security and Risk Management (20 credits) CORE  <b>MSc Computer Science</b> COM744 Security and Risk Management (20 credits) CORE  <b>MSc Computer Networking</b> COM740 Network Protocols and Algorithms (20 credits) CORE
<b>Semester 3</b> <b>Jun to Aug</b>	COM742 Postgraduate Study and Research Methods (20 credits) CORE	COM745 Technological Horizon-Scanning (20 credits) CORE
<b>Semester 1</b> <b>Sep to Jan</b>	COM739 Network Hardware and Software (20 credits) CORE	<b>MSc Computing &amp; MSc Computer Science</b> COM713 Advanced Data Structures and Algorithms (20 credits) CORE  <b>MSc Computer Networking</b> COM741 Network Techniques & Technologies (20 credits) CORE
<b>Year 2</b>		
<b>Semester 2/3</b> <b>Feb to Aug</b>	COM738 Dissertation (60 credits) CORE	

## MSc Cyber Security

### July intake – p/t

<b>Year 1</b>		
<b>Semester 3</b> <b>Jul to Aug</b>	COM742 Postgraduate Study and Research Methods (20 credits) CORE	COM745 Technological Horizon-Scanning (20 credits) CORE
<b>Semester 1</b> <b>Sept to Jan</b>	COM733 Advanced Ethical Hacking (20 credits) CORE	COM735 Applied Cryptography (20 credits) CORE
<b>Semester 2</b> <b>Feb to May</b>	COM737 Developing Secure Software (20 credits) CORE	COM744 Security and Risk Management (20 credits) CORE

<b>Year 2</b>	
<b>Semester 3/1</b> <b>Jun to Jan</b>	COM738 Dissertation (60 credits) CORE

### September intake – p/t

<b>Year 1</b>		
<b>Semester 1</b> <b>Sept to Jan</b>	COM733 Advanced Ethical Hacking (20 credits) CORE	COM735 Applied Cryptography (20 credits) CORE
<b>Semester 2</b> <b>Feb to May</b>	COM737 Developing Secure Software (20 credits) CORE	COM744 Security and Risk Management (20 credits) CORE
<b>Semester 3</b> <b>Jun to Aug</b>	COM742 Postgraduate Study and Research Methods (20 credits) CORE	COM745 Technological Horizon-Scanning (20 credits) CORE

<b>Year 2</b>	
<b>Semester 1/2</b> <b>Sep to May</b>	COM738 Dissertation (60 credits) CORE

### February intake – p/t

<b>Year 1</b>		
<b>Semester 2</b> <b>Feb to May</b>	COM737 Developing Secure Software (20 credits) CORE	COM744 Security and Risk Management (20 credits) CORE
<b>Semester 3</b>	COM742	COM745 Technological Horizon-Scanning



<b>Jun to Aug</b>	Postgraduate Study and Research Methods (20 credits) CORE	(20 credits) CORE
<b>Semester 1 Sep to Jan</b>	COM733 Advanced Ethical Hacking (20 credits) CORE	COM735 Applied Cryptography (20 credits) CORE
<b>Year 2</b>		
<b>Semester 2/3 Feb to Aug</b>	COM738 Dissertation (60 credits) CORE	