

## PROGRAMME SPECIFICATION

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UG Programme Directory

PG Programme Directory

### Award titles

#### Programme Title(s)

BSc (Anrh) Cyfrifiadureg  
BSc (Hons) Computer Science

BSc (Anrh) Cyfrifiadureg (gyda Lleoliad Diwydiant)  
BSc (Hons) Computer Science (with Industrial Placement)

BSc (Anrh) Peirianeg Meddalwedd  
BSc (Hons) Software Engineering

BSc (Anrh) Peirianeg Meddalwedd (gyda Lleoliad Diwydiant)  
BSc (Hons) Software Engineering (with Industrial Placement)

BSc (Anrh) Seiberddiogelwch  
BSc (Hons) Cyber Security

BSc (Anrh) Seiberddiogelwch (gyda Lleoliad Diwydiant)  
BSc (Hons) Cyber Security (with Industrial Placement)

MSc Cyfrifiadureg  
MSc Computer Science

MSc Cyfrifiadureg (gydag Ymarfer Uwch)  
MSc Computer Science (with Advanced Practice)

MSc Peirianeg Meddalwedd  
MSc Software Engineering

MSc Peirianeg Meddalwedd (gydag Ymarfer Uwch)  
MSc Software Engineering (with Advanced Practice)

MSc Seiberddiogelwch  
MSc Cyber Security

MSc Seiberddiogelwch (gydag Ymarfer Uwch)  
MSc Cyber Security (with Advanced Practice)

MSc Gwyddor Data a Dadansoddi Data Mawr  
MSc Data Science and Big Data Analytics

MSc Gwyddor Data a Dadansoddi Data Mawr (gydag Ymarfer Uwch)  
MSc Data Science and Big Data Analytics (with Advanced Practice)

WUCCE in Computing Fundamentals

## Internal Programme Title(s) (if different to the title on the certificate)

### Programme to be included in Graduation Ceremonies

Yes

### Delivery period

Sept 2024 –Sept 2028

### Intake points

Sept intake for Undergraduate Programmes

Sept Intake and Feb Intake for Postgraduate Programmes

### Regulatory details

Regulatory details
Awarding body
Wrexham University
Programme delivered by
Wrexham University
Location of delivery
Plas Coch Campus CICRA Campus, Sri Lanka HKIT (Hong Kong Institute of Technology) IST, Athens, Greece (Independent Studies of Science and Technology) LondonTec City Campus, Sri Lanka  Partners (pending delivery approval): Capital College, Dubai, UAE
Faculty/Department
Faculty of Arts, Computing and Engineering
Exit awards available
<b>Undergraduate Exit Awards:</b>  BSc (Ord) Computer Science BSc (Ord) Computer Science with Industrial Placement Diploma of Higher Education in Computer Science Diploma of Higher Education in Computer Science with Industrial Placement Certificate of Higher Education in Computer Science  BSc (Ord) Software Engineering BSc (Ord) Software Engineering with Industrial Placement Diploma of Higher Education in Software Engineering Diploma of Higher Education in Software Engineering with Industrial Placement Certificate of Higher Education in Software Engineering  BSc (Ord) Cyber Security BSc (Ord) Cyber Security with Industrial Placement Diploma of Higher Education in Cyber Security Diploma of Higher Education in Cyber Security with Industrial Placement Certificate of Higher Education in Cyber Security

Regulatory details
<p><b>Postgraduate Exit Awards:</b></p> <p>Postgraduate Diploma in Computer Science  Postgraduate Diploma in Computer Science with Advanced Practice  Postgraduate Certificate in Computer Science</p> <p>Postgraduate Diploma in Software Engineering  Postgraduate Diploma in Software Engineering with Advanced Practice  Postgraduate Certificate in Software Engineering</p> <p>Postgraduate Diploma in Cyber Security  Postgraduate Diploma in Cyber Security with Advanced Practice  Postgraduate Certificate in Cyber Security</p> <p>Postgraduate Diploma in Data Science and Big Data Analytics  Postgraduate Diploma in Data Science and Big Data Analytics with Advanced Practice  Postgraduate Certificate in Data Science and Big Data Analytics</p>
Professional, Statutory or Regulatory Body (PSRB) accreditation
<p>All programmes have been designed to align with the requirements of the British Computer Society (BCS) and accreditation will be sought in the next accreditation visit.</p> <p>BSc (Hons) Cyber Security and MSc Cyber Security will be aspiring for NCSC degree accreditation at the next application window, date to be announced.</p> <p>This information is correct at the time of validation, please refer to the PSRB register for current accreditation status. This information is correct at the time of validation, please refer to the PSRB register for current accreditation status.</p>
Please add details of any conditions that may affect accreditation (e.g. is it dependent on choices made by a student?) e.g. completion of placement.
<p>Students must have studied all years at the Wrexham campus</p>
HECoS codes
<p>Computer Science: 100366  Software Engineering: 100374  Cyber Security: 100376  Data Science and Big Data Analytics: 100370</p>
UCAS code
<p>BSc (Hons) Computer Science: 4R9B/I345/CSIP  BSc (Hons) Software Engineering: SE24/SFFY/SFIP  BSc (Hons) Cyber Security: 8L6D/H098/CYIP</p>
Relevant External Reference Points
<p>QAA Subject Benchmark Statement: Computing March 2022  <a href="https://www.qaa.ac.uk/the-quality-code/subject-benchmark-statements/computing">https://www.qaa.ac.uk/the-quality-code/subject-benchmark-statements/computing</a></p> <p>Master's Degree Characteristics Statement  <a href="https://www.qaa.ac.uk/en/the-quality-code/characteristics-statements/characteristics-statement-masters-degrees">https://www.qaa.ac.uk/en/the-quality-code/characteristics-statements/characteristics-statement-masters-degrees</a></p> <p>The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies  <a href="https://www.qaa.ac.uk/quality-code/qualifications-and-credit-frameworks">https://www.qaa.ac.uk/quality-code/qualifications-and-credit-frameworks</a></p>

<b>Regulatory details</b>
<b>List the programmes that offer the Foundation Year route</b>
BSc (Hons) Computer Science BSc (Hons) Software Engineering BSc (Hons) Cyber Security
<b>Mode of study</b>
Full & part time
<b>Normal length of study for each mode of study</b>
<b>FULL TIME</b> 3-year Bachelor's Degree 4-year Bachelor's with Foundation Year 4-year Bachelor's with Industrial Placement Year  1-year Master's Degree 20 Months Master's Degree with Advanced Practice  <b>PART TIME</b>  5-year Bachelor's Degree (2 modules per semester) 2-year Master's Degree (2 modules per semester)
<b>Language of study</b>
English
<b>Transitional arrangements for re-validated provision if applicable</b>
Students entering at level 3 on year 23/24 will progress to level 4 of the newly validated programme for the year 24/25. New students at level 4 for the year 24/25 will start with the newly validated programme. Students at Level 5 and Level 6 will be taught out on the existing programme and any outstanding (referred) modules from the old programme will be supported.
<b>Repeat year students</b>
If a student had passed one element of assessment and needed to re-sit the other, if they remained on original module they would retain the pass mark for the element passed. If they needed to do the new module they would need to complete all elements of assessment but need to be aware this would still count as a reassessment therefore they could only achieve a maximum mark of 40%.
<b>The following University Award Regulations apply to this programme (<i>highlight the appropriate ones and delete the others</i>)</b>
General Regulations and Definitions Regulations for Bachelor Degrees, Diplomas, Certificates and Foundation Degrees Regulations for Taught Masters Degrees Regulations for Wrexham University Certificate of Attendance, Wrexham University Certificate of Continuing Education, Wrexham University Professional Certificate Language Admissions Policy

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Date of validation event:	27 <sup>th</sup> Jul 2023
Date of approval by Academic Board:	9 <sup>th</sup> Nov 2023
Approved Validation Period:	Sept 24 – Sept 28
Transitional arrangements approved (if revalidation)	<i>Students entering at level 3 on year 23/24 will progress to level 4 of the newly validated programme for the year 24/25.</i>  <i>New students at level 4 for the year 24/25 will start with the newly validated programme.</i>

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	<i>Level 5 students will be taught out on the old programme. Any outstanding (referred) modules from the old programme will be supported and the student would continue on the old programme.</i>
Date and type of revision:	<p>April 2024 MSc Data Science and Big Data Analytics amendment of entry requirements (AM2)</p> <p>04/12/2024 APSC approval to modify assessment on COM752</p> <p>26/03/2025 AM2 COM478 replaced with COM480 on BSc Computer Science programme</p> <p>26/03/2025 AM2 to change assessment on module COM757</p> <p>07/05/2024 AM2 approval to replace COM574 with COM571 and COM665 with COM664 on the BSc (Hons ) Software Engineering programme</p>

### Criteria for admission to the programme

#### Standard entry criteria

Entry requirements are in accordance with the University's admissions policy, please click on the following link for more information. [Admissions policies](#)

The University's general entry requirements are;

Qualification	Entry requirements
Foundation Year	48-72 Tariff points
3 year Bachelors degree	80-112 Tariff points

These figures are intended as a general guide. Each application is considered individually.

The standard entry requirement for masters are as following:

- MSc Computer Science: an honours degree of at least 2:2 classification in a Computer Science related subject area, or equivalent in any science-based degree with a strong computing element.
- MSc Software Engineering: an honours degree of at least 2:2 classification in Computer Science related subject area, or equivalent in any science-based degree with a strong computing element.
- MSc Cyber Security: an honours degree of at least 2:2 classification in Computer Science related subject area, or equivalent in any science-based degree with a strong computing element.
- MSc Data Science and Big Data Analytics: an honours degree of at least 2:2 classification in any subject area.

International entry qualifications are outlined on the UK National Information Centre for global qualifications and skills (UK ENIC) 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 [academic-entry-requirements](#) for details), including IELTS.

International students are required to provide an English Language Certificate which meets the requirements of the University (*please see [English-language-requirements](#) for details*).

### **Non Standard entry criteria**

Applicants with significant industry or professional experience will be treated on a case-by-case basis and invited for a discussion/interview with a member of the programme team.

Students who do not meet the Level 4 entry requirements will be directed towards two other types of programmes within the computing suite:

- Students who have missed the entry requirements needed for the undergraduate programmes by a significant amount will be directed towards the programme of their choice with a Foundation year of study. This will include introductory studies for the computing suite of programmes but will also include general higher education learning support and skills.
- Students who marginally miss the entry requirements for the undergraduate courses but show the appropriate personal learning skills and motivation for higher education will be directed towards the Computing Access Programme. This is a shorter programme that can be attended in the summer prior to the start of the academic term and will focus on the key skills required for entry on the first year of the computing suite.

### **Record 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.

### **DBS Requirements**

N/A

### **Suitability for Practice Procedure**

N/A

### **Aims of the programme**

#### **BSc (Hons) Computer Science**

The BSc Computer Science programme aims to provide students with a strong foundation in computer science principles, theories, and practical skills. It will provide students with a comprehensive understanding of core computer science concepts, as well as the theoretical elements of computer science. This course aims to offer hands-on experience through lab work, and coding assignments, and foster an understanding of ethical issues related to computer science including privacy, security, intellectual property, and social implications of technology. Finally, students will be able to specialise in specific areas of computer science, such as machine learning, artificial intelligence, and data analytics. The BSc Computer Science will cover:

- Core Knowledge – Provide a thorough understanding of essential computer science concepts, including data structures, programming languages, computer architecture, software engineering and databases.
- Programming Skills – Develop students' proficiency in programming languages and software development methodologies.

- Theory and Analysis - Introduce students to theoretical aspects of computer science, including formal languages, computability, and complexity theory, enabling them to analyse and solve problems computational problems.
- Software Development Lifecycle – Familiarise students with the software development lifecycle, including requirements analysis, system design, implementation, testing, deployment, and maintenance. Develop the skills needed to plan and execute software development projects.
- Practical Experience – Provide hands-on experience through lab work, coding assignments, and projects to reinforce theoretical concepts and develop practical skills.
- Ethical and Professional Considerations – Foster an understanding of ethical issues related to computer science, including privacy, security, intellectual property, and social implications of technology. Promote professional responsibility, including adherence to professional codes of conduct, accessibility guidelines, effective communication, teamwork, and lifelong learning.
- Communication and Presentation Skills – Develop students written and oral communication skills to effectively convey technical concepts and ideas to both technical and non-technical audiences. Emphasize the importance of clear documentation, technical writing, and effective presentation techniques.
- Adaptability and Lifelong Learning – Cultivate a mindset of continuous learning and adaptability to keep pace with the rapidly evolving field of computer science. Equip students with the skills and resources to stay updated with new technologies, frameworks, and programming languages throughout their professional careers.

### **BSc (Hons) Computer Science (with Industrial Placement)**

The BSc Computer Science programme which incorporates the Industrial Placement aims to combine academic coursework with a structured period of work experience in a professional setting. Following the standard BSc programme, it will provide students with additional practical industry exposure and enhance their employability by integrating theoretical knowledge with real-world application. The BSc Computer Science with Industrial Placement will cover:

Practical Experience through Industry Placement – Provide students with a structured period of work experience in an industrial or professional setting. This placement allows students to apply their knowledge and skills in real-world scenarios, gain practical experience, and understand the dynamics of the industry. It provides an opportunity to work on real projects, collaborate with professionals, and develop professional networks.

### **BSc (Hons) Software Engineering**

The BSc (Hons) Software Engineering programme aims to provide students with a comprehensive understanding of software engineering principles, methodologies, and practices. Through a carefully designed curriculum, the programme seeks to equip students with the necessary knowledge, skills, and practical experience to design, develop, and maintain software systems effectively. The programme focuses on core areas such as programming, and software architecture while fostering problem-solving abilities and critical thinking skills. It emphasizes the importance of software quality assurance, testing, and project

management, as well as ethical and professional considerations. With a strong emphasis on hands-on learning and industry relevance, the programme aims to prepare graduates for successful careers in software engineering, enabling them to contribute to innovative software solutions and adapt to the evolving technological landscape. The BSc Software Engineering will cover:

- **Develop Core Knowledge** – Provide students with a solid foundation in core areas of software engineering, including programming languages, algorithms, data structures, software design and architecture, and databases. This will ensure a strong understanding of fundamental concepts and techniques used in software development.
- **Foster Practical Skills** – Cultivate practical skills through hands-on experience, enabling students to apply software engineering principles and techniques in real-world scenarios. Students will gain proficiency in software development tools, programming languages, and technologies commonly used in industry.
- **Enhance Problem-Solving Abilities** – Develop students' problem-solving and critical thinking abilities, enabling them to analyse complex problems, identify software requirements, and design effective solutions. Students will be equipped with systematic and creative approaches to problem-solving within the software engineering context.
- **Promote Collaboration and Teamwork** – Encourage collaboration and teamwork skills, as software engineering often involves working in teams on complex projects. Students will learn effective communication, collaboration, and project management skills to ensure successful teamwork and project delivery.
- **Emphasize Software Quality and Testing** – Emphasize the importance of software quality assurance, testing, and debugging techniques. Students will gain an understanding of software testing methodologies and learn how to ensure the reliability, robustness, and security of software systems.
- **Cultivate Ethical and Professional Values** – Foster an understanding of ethical and professional considerations in software engineering, including issues related to privacy, security, intellectual property, and social implications of technology. Students will be encouraged to adhere to professional codes of conduct, ethical practices, and societal responsibilities.
- **Enable Adaptability and Lifelong Learning** – Equip students with the skills and mindset necessary for continuous learning and adaptation to the evolving landscape of software engineering. Students will develop the ability to keep abreast of emerging technologies, industry trends, and best practices throughout their careers.

### **BSc (Hons) Software Engineering (with Industrial Placement)**

The BSc Software Engineering programme which incorporates the Industrial Placement aims to combine academic coursework with a structured period of work experience in a professional setting. Following the aims of the standard BSc programme it will provide students with additional practical industry exposure and enhance their employability by integrating theoretical knowledge with real-world application.

**Practical Experience through Industry Placement** – Provide students with an invaluable opportunity to undertake an industry placement within the software engineering sector. This



placement will allow students to gain real-world experience, apply theoretical knowledge in practical settings, and develop a deeper understanding of industry practices and workflows.

### **BSc (Hons) Cyber Security**

The BSc (Hons) Cyber Security programme aims to provide students with a comprehensive understanding of the complex and ever-evolving field of cybersecurity. The program seeks to equip students with the knowledge, skills, and practical experience necessary to protect information systems, networks, and data from cyber threats. The primary goals of the program are to develop a strong foundation in cybersecurity principles, instil ethical and professional values, also cultivate critical thinking and problem-solving abilities. Through a combination of theoretical coursework, hands-on practical exercises, and real-world projects, the program aims to produce graduates who can effectively analyse risks, develop secure systems, detect, and respond to security incidents, and contribute to the ongoing efforts of safeguarding digital infrastructure. Additionally, the program emphasises the importance of staying current with emerging technologies, industry best practices, and legal and regulatory frameworks to address the constantly evolving landscape of cyber threats. Overall, the program seeks to prepare graduates for rewarding careers in cybersecurity, where they can make valuable contributions to protecting digital assets and ensuring the integrity, confidentiality, and availability of information in today's interconnected world. The BSc (Hons) Cyber Security will cover:

- **Core Knowledge** – Provide a thorough understanding of essential cyber security concepts, including networking fundamentals, network security, information security and governance and computer systems and architecture.
- **Industry-Relevant Skills** – Align the curriculum with industry requirements and emerging trends to equip students with skills that are in high demand.
- **Practical Technical Experience** - Provide hands-on experience through practical lab, and projects to reinforce theoretical concepts and develop practical technical skills.
- **Programming Skills** – Develop students' proficiency in programming languages and secure software development methodologies.
- **Theory and Analysis** - Introduce students to theoretical aspects of computer science, including formal languages, computability, and complexity theory, enabling them to analyse and solve problems computational problems.
- **Ethical and Professional Considerations** – Foster an understanding of ethical issues related to cyber security, including privacy, security, intellectual property, and social implications of technology. Promote professional responsibility, including adherence to professional codes of conduct, effective communication, teamwork, and lifelong learning.
- **Communication and Presentation Skills** – Develop students written and oral communication skills to effectively convey technical concepts and ideas to both technical and non-technical audiences. Emphasise the importance of clear documentation, technical writing, and effective presentation techniques.
- **Adaptability and Lifelong Learning** – Cultivate a mindset of continuous learning and adaptability to keep pace with the rapidly evolving field of computer science. Equip students with the skills and resources to stay updated with new technologies, frameworks, and programming languages throughout their professional careers.

## **BSc (Hons) Cyber Security (with Industrial Placement)**

The BSc Cyber Security programme which incorporates the Industrial Placement aims to combine academic coursework with a structured period of work experience in a professional setting. Following the aims of the standard BSc programme it will provide students with additional practical industry exposure and enhance their employability by integrating theoretical knowledge with real-world application.

Practical Experience through Industry Placement – Provides students with a structured period of work experience in an industrial or professional setting. This placement allows students to apply their knowledge and skills in real-world scenarios, gain practical experience, and understand the dynamics of the industry. It provides an opportunity to work on real projects, collaborate with professionals, and develop professional networks.

## **MSc Computer Science**

The MSc Computer Science programme aims to build upon the knowledge acquired at undergraduate level and provide students with advanced skills and expertise in specific areas of computer science. It will allow students to delve deeper into specific areas of computer science, such as artificial intelligence, machine learning, and data science, and engage in research to contribute to the advancement of knowledge in computer science. Using advanced theories students will be able to solve complex problems, lead software development projects and address real-world software engineering challenges. The MSc Computer Science will cover:

- Advanced Specialisation – Allow students to focus on specific areas of computer science, such as artificial intelligence, machine learning, and data science.
- Research and Innovation – Foster a research-oriented mindset and provide opportunities for students to contribute to advancement of knowledge in computer science.
- Advance Theory and Practice – Using advanced knowledge and understanding enable students to solve complex computational problems effectively addressing real-world software engineering challenges.
- Professional Development – Encourage the development of skills such as critical thinking, problem solving, project management and effective teamwork.
- Ethical and Social Considerations – Promote an understanding of the ethical and social implications of computer science and technology and encourage students to critically analyse the impact of technology on society, addressing issues such as privacy, security, and promote responsible and inclusive computing practices.
- Continuous Learning – Foster a culture of lifelong learning and professional development by encouraging students to stay up to date with the latest advancements in the field of computer science.

## **MSc Computer Science (with Advanced Practice)**

The MSc Computer Science programme with advanced practice aims to provide students with an opportunity to apply their knowledge and skills in a real-world environment. Building upon the standard MSc programme which enhances their knowledge and skills through their

academic studies, the Advanced Practice route will provide students with the opportunity to enhance personal and professional development in preparation for their entry into the job market.

In addition to practical and professional skills gained during their Advanced Practice 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 of the job market, giving them an edge over graduates who have not undertaken a practical work component as part of their degree.

## **MSc Software Engineering**

The MSc Software Engineering programme aims to provide students with an advanced understanding of software development principles, methodologies, and practices. The primary objectives of the programme are to enhance students' knowledge and skills in designing, developing, and managing complex software systems. The programme strives to deepen their understanding of core areas such as software architecture, software project management, software quality assurance, and software testing. Through a combination of theoretical coursework, research projects, and practical assignments, the programme aims to produce graduates who possess advanced proficiency in various programming languages, software engineering tools, and software development lifecycle methodologies.

The programme also focuses on cultivating critical thinking and problem-solving abilities, enabling students to analyse and address complex software engineering challenges.

Additionally, the programme emphasises the importance of software maintenance, evolution, and software reuse techniques to ensure long-term sustainability and efficiency of software systems. Moreover, the programme emphasizes ethical and professional considerations, promoting adherence to software engineering standards, best practices, and codes of conduct. The MSc Software Engineering programme aims to prepare graduates for roles within the software industry, equipping them with the necessary expertise to drive innovation, manage software projects, and contribute to the advancement of the field.

- **Advanced Technical Knowledge** – Provide students with a deep understanding of the principles, theories, and practices of software engineering. Students should gain expertise in areas such as software development methodologies, software design and architecture, software testing and quality assurance, software project management, and software maintenance.
- **Problem-Solving Skills** – Develop students' ability to analyse complex software engineering problems and devise effective solutions. This includes the application of appropriate software engineering techniques, tools, and methodologies to address real-world challenges encountered in software development projects.
- **Research and Innovation** – Foster research skills in software engineering. Students may be expected to conduct independent research, investigate emerging trends and technologies in the field, and contribute to the advancement of knowledge in software engineering through scholarly work.
- **Software Development Practices** – Equip students with practical skills in software development. This includes learning programming languages, frameworks, and tools commonly used in the industry, as well as gaining hands-on experience in designing, implementing, and testing software systems.

- **Teamwork and Collaboration** – Cultivate effective teamwork and collaboration skills among students. Software engineering is often a collaborative effort, and students are encouraged to work in teams to develop software projects, mimicking real-world scenarios.
- **Ethical and Professional Considerations** – Emphasize the ethical and professional responsibilities of software engineers. Students should develop an understanding of ethical issues related to software development, such as privacy, security, and intellectual property, and learn to adhere to professional codes of conduct and best practices.
- **Lifelong Learning** – Foster a mindset of lifelong learning and professional development among students. Software engineering is a rapidly evolving field, and graduates should be prepared to stay abreast of new technologies, methodologies, and practices throughout their careers.

### **MSc Software Engineering (with Advanced Practice)**

The MSc Software Engineering programme with advanced practice aims to provide students with an opportunity to apply their knowledge and skills in a real-world environment. Building upon the standard MSc programme which enhances their knowledge and skills through their academic studies, the Advanced Practice route will provide students with the opportunity to enhance personal and professional development in preparation for their entry into the job market.

In addition to practical and professional skills gained during their Advanced Practice 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 of the job market, giving them an edge over graduates who have not undertaken a practical work component as part of their degree.

### **MSc Cyber Security**

The MSc Cyber Security aims to build upon the foundational knowledge and skills acquired at the undergraduate level, providing students with advanced expertise and specialised training in the field of cybersecurity. The program's primary objectives are to deepen students' understanding of complex cybersecurity concepts, foster critical thinking and analytical skills, and develop their ability to design and implement secure systems and strategies. Through a combination of advanced coursework, research projects, and practical exercises, the program aims to produce graduates who can effectively analyse and mitigate risks, develop robust security frameworks, lead incident response and forensic investigations, and make informed decisions to protect sensitive information and critical infrastructure.

Additionally, the program emphasizes the importance of staying abreast of emerging technologies, industry trends, and legal and regulatory frameworks to address the evolving landscape of cyber threats. The MSc Cyber Security program aims to prepare graduates for leadership positions in cybersecurity, equipping them with the knowledge and skills necessary to navigate complex challenges, drive innovation, and contribute to the advancement of knowledge in the field. The program also emphasises ethical considerations, professional responsibility, and effective communication skills, recognising the importance of maintaining integrity, addressing privacy concerns, and collaborating with diverse stakeholders. Overall, the MSc Cyber Security program aims to empower graduates to become cybersecurity experts who can tackle emerging threats, protect valuable assets, and drive positive change in the digital landscape.

- **Enhanced Knowledge** – Develop a comprehensive understanding of concepts in cybersecurity, encompassing networking fundamentals, network security, information security and governance, and computer systems and architecture.
- **Industry-Relevant Skills** – Align the curriculum with current industry requirements and emerging trends, equipping students with high-demand skills sought by employers in the field.
- **Practical Technical Experience** – Offer hands-on opportunities through practical labs and projects, reinforcing theoretical knowledge and fostering the development of practical technical skills.
- **Programming Proficiency** – Enhance students' competency in programming languages and secure software development methodologies, enabling them to effectively develop and secure software systems.
- **Theory and Analysis** – Introduce students to theoretical aspects of computer science such as formal languages, computability, and complexity theory, empowering them to analyse and solve complex computational problems.
- **Research and Innovation** – Cultivate a research-oriented mindset, providing opportunities for students to contribute to the advancement of knowledge in computer science and cybersecurity.
- **Ethical and Professional Considerations** – Foster an understanding of ethical issues related to cybersecurity, including privacy, security, intellectual property, and the social implications of technology. Promote professional responsibility, effective communication, teamwork, and lifelong learning.
- **Communication and Presentation Skills** – Develop students' written and oral communication abilities, enabling them to effectively convey technical concepts and ideas to both technical and non-technical audiences. Emphasise the importance of clear documentation, technical writing, and impactful presentation techniques.
- **Adaptability and Lifelong Learning** – Cultivate a mindset of continuous learning and adaptability, equipping students with the skills and resources to stay updated with new technologies, frameworks, and programming languages throughout their professional careers.

### **MSc Cyber Security (with Advanced Practice)**

The MSc Cyber Security programme with advanced practice aims to provide students with an opportunity to apply their knowledge and skills in a real-world environment. Building upon the standard MSc programme which enhances their knowledge and skills through their academic studies, the Advanced Practice route will provide students with the opportunity to enhance personal and professional development in preparation for their entry into the job market.

In addition to practical and professional skills gained during their Advanced Practice 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 of the job market, giving them an edge over graduates who have not undertaken a practical work component as part of their degree.

## **MSc Data Science and Big Data Analytics**

The MSc Data Science and Big Data Analytics program aims to develop graduates who are experts in the field of data science. The program covers a wide range of topics, including machine learning techniques, implementation and evaluation of data science approaches, tools, and techniques, analytical aspects of big data, finding patterns in data, making meaningful data-driven conclusions, and producing predictions.

Graduates of the program will be able to use their skills to solve a variety of problems in both the private and public sectors. For example, they could use their skills to analyse customer data to identify trends and improve marketing campaigns, develop predictive models to forecast demand for products or services, investigate fraud or other criminal activity, or improve public health by analysing data on disease outbreaks.

The program is rigorous and challenging, it provides students with the skills and knowledge they need to succeed in a rapidly growing field. Students will learn from an experienced faculty, conduct research, and gain hands-on experience with real-world data problems. In addition to the technical skills, graduates of the program will also develop strong communication and problem-solving skills. They will be able to communicate their findings to a variety of audiences, and they will be able to apply their skills to solve complex problems.

The MSc Data Science and Big Data Analytics will:

- **Cultivate a Research and Innovation Mindset:** Encourage students to develop a mindset focused on research and innovation, enabling them to contribute to the advancement of knowledge in the field of data science and data analytics.
- **Promote Critical Thinking:** Foster critical thinking skills among students, enabling them to analyse complex data problems and devise innovative solutions.
- **Enhance Technical Proficiency:** Equip students with the necessary technical skills and knowledge to effectively navigate and manipulate big data sets, employing advanced analytical techniques and tools.
- **Foster Collaborative Learning:** Encourage collaborative learning environments that enable students to engage in discussions, share insights, and collaborate on research projects, promoting a multidisciplinary approach to data science.
- **Develop Ethical Data Practices:** Instil an understanding of ethical considerations and responsible data handling practices, ensuring students are equipped to address ethical challenges and privacy concerns in the field of data science.
- **Bridge Theory and Practice:** Bridge the gap between theoretical concepts and practical applications by providing hands-on experiences, real-world case studies, and industry-relevant projects, allowing students to apply their knowledge to real-world scenarios.
- **Cultivate Communication Skills:** Develop effective communication skills, both written and verbal, to enable students to convey complex data findings and insights to diverse audiences in a clear and compelling manner.

- Foster Lifelong Learning: Promote a mindset of continuous learning and professional development, enabling graduates to stay abreast of evolving trends and technologies in the dynamic field of data science and big data analytics.

### **MSc Data Science and Big Data Analytics (with Advanced Practice)**

The MSc Data Science and Big Data Analytics programme with advanced practice aims to provide students with an opportunity to apply their knowledge and skills in a real-world environment. Building upon the standard MSc programme which enhances their knowledge and skills through their academic studies, the Advanced Practice route will provide students with the opportunity to enhance personal and professional development in preparation for their entry into the job market.

In addition to practical and professional skills gained during their Advanced Practice 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 of the job market, giving them an edge over graduates who have not undertaken a practical work component as part of their degree.

### **Wrexham University Certificate of Continuing Education in Computing Fundamentals.**

Wrexham University Certificate of Continuing Education is intended to provide students with the opportunity to explore and develop knowledge and skill in the field of computing fundamentals along with associated tools and methodologies. It will provide the building blocks needed for the essential concepts, principles, and theories that will be used. For those who do not have the traditional qualifications for entry into university, these modules will offer a pathway for individuals to gain the necessary skills to pursue further students in computing at university level. It will also equip students with the academic and technical skills required for success while familiarising student with the learning environment, academic expectations and methodologies of HE is ensuring a smoother transition into university studies.

Specifically, the programme aims to provide students with the following:

- Digital and Professional Skills – to provide students with a well-rounded set of digital and professional skills necessary for navigating the digital age and succeeding in their chosen field and/or industry. It will focus on the digital literacy, information management, critical thinking, communication and writing skills.
- Introduction to Programming – this module has already been validated previously. This module will provide the students with the fundamental knowledge of object –orientated programming.
- Computing Technologies – to introduce the key concepts, principles, and components of computing technologies. Familiarize students with the basic concepts of process management, memory management, file systems, and device management.

### **Distinctive features of the programme**

This validation is a turning point in the departments future, the new computing programme aims to fulfil the demand in the ever growing and evolving computing sector. The programme design also builds on the game programmes success with collaborative government/industry partnerships such as Games Talent Wales to implement industry driven experiences for Wrexham University computing students.

The proposed programme will make innovative use of agile project management methodologies in conjunction with cloud-based management tools to create environments of

industry simulation. Use of these platforms will be mandatory for all students undertaking substantial projects and will require the statistical tracking of all direct study hours completed meaning that students will be trained to manage their time effectively and provide a detailed statistical analysis of their performance.

### **Industrial Placement Opportunities**

Integrated into the computing's suite is the explicit opportunity to gain first-hand involvement with the workplace, by completing the Industrial Placement at level 5. Although this is a distinct, named award route, the programme team foresee that students may choose to start on one, but switch to the other, prior to completion of their core modules at level 5; thereby affording them the optionality of a year in industry.

### **Computing Short Courses**

The computing team has been looking to expand its short course/part-time credit offerings to our current students as additional skills that supplement the main core study of the students in a model that mirrors the games suite. These have been designed in such a way that they can be offered a level 4 short course that interests' students on varied levels of the courses (Level 3-7) and to apply to external applicants. A system is being worked towards that allows the team to deliver one or two short courses over the summer period that can interest as many students as possible through a carousel model of 3 years. Previously short courses have proved to be popular, and the department will build on this with new short courses.

### **Computing Fundamentals Course**

The computing team feel that it is now appropriate to be offering a short course over the summer for students that could be classed as in-between the foundation year and the first year of a degree. If these students were to be put onto the foundation year, they may become bored and leave the programme. If they go straight onto the first year, they may find this too big a leap.

This is an opportunity to offer potential students that bridge between the two, and these short courses can offer that. They can provide students with the fundamental skills and knowledge within the fields of computing, whilst giving students a taste of university and the opportunity to develop their basic skills and gain confidence.

### **Mentorship Programme**

The computing department has been running a formalised Mentorship system since 2019 in which master's level students' mentor undergraduate students. This process is run through a formalised mentor training programme linked with a postgraduate level optional module where students are tasked with exploring and proving their competence in the role. These mentors are then distributed amongst teams of undergraduate students. This has proved successful over the past few years with the game's suite, especially in the pandemic, and is being supported across the computing department.

### **Industry Certification in Cyber Security**

Academic Partnership with EC-Council to deliver the Essentials Series as part of the undergraduate programme. EC-Council Essential Series is a comprehensive collection of courses designed to provide individuals with the essential knowledge and skills in cybersecurity. The EC-Council Essential Series offers a range of certifications covering various cybersecurity domains, including ethical hacking, network defence and digital forensics. The EC-Council Essentials Series is highly regarded in the cybersecurity industry and is recognised globally for its comprehensive curriculum and rigorous training standards. The essentials series will also be offered as the Cybersecurity Fundamentals short course.



### Credit Accumulation and exit awards

Intended/Exit Awards at Undergraduate level:

Award	Credit Requirements
<b>BSc (Hons)</b> Computer Science (with Industrial Placement)	480 credits (excluding the summer access modules), 120 of which are at Level 6 and 120 of which are from the level 5 Industrial Placement module)
<b>BSc (Hons)</b> Computer Science	360 Credits (excluding the summer access modules) 120 of which are at level 6
<b>BSc (Ord)</b> Computer Science (with Industrial Placement)	420 credits (excluding the summer access modules), 60 of which are at Level 6 and 120 of which are from the Level 5 Industrial Placement module.
<b>BSc (Ord)</b> Computer Science	300 credits (excluding the summer access modules), 60 of which are at Level 6
<b>DipHE</b> Computer Science (with Industrial Placement)	360 credits (excluding the summer access modules), 240 of which are at Level 5 or above and 120 of which are from the Level 5 Industrial Placement module
<b>DipHE</b> Computer Science	240 credits (excluding the summer access modules), 120 of which are at Level 5 or above
<b>CertHE</b> Computer Science	120 credits at level 4 or above (excluding the summer access modules)

Award	Credit Requirements
<b>BSc (Hons)</b> Software Engineering (with Industrial Placement)	480 credits (excluding the summer access modules), 120 of which are at Level 6 and 120 of which are from the level 5 Industrial Placement module)
<b>BSc (Hons)</b> Software Engineering	360 Credits (excluding the summer access modules) 120 of which are at level 6
<b>BSc (Ord)</b> Software Engineering (with Industrial Placement)	420 credits (excluding the summer access modules), 60 of which are at Level 6 and 120 of which are from the Level 5 Industrial Placement module.
<b>BSc (Ord)</b> Software Engineering	300 credits (excluding the summer access modules), 60 of which are at Level 6
<b>DipHE</b> Software Engineering (with Industrial Placement)	360 credits (excluding the summer access modules), 240 of which are at Level 5 or above and 120 of which are from the Level 5 Industrial Placement module
<b>DipHE</b> Software Engineering	240 credits (excluding the summer access modules), 120 of which are at Level 5 or above
<b>CertHE</b> Software Engineering	120 credits at level 4 or above (excluding the summer access modules)

Award	Credit Requirements
<b>BSc (Hons)</b> Cyber Security (with Industrial Placement)	480 credits (excluding the summer access modules), 120 of which are at Level 6 and 120 of which are from the level 5 Industrial Placement module)
<b>BSc (Hons)</b> Cyber Security	360 Credits (excluding the summer access modules) 120 of which are at level 6
<b>BSc (Ord)</b> Cyber Security (with Industrial Placement)	420 credits (excluding the summer access modules), 60 of which are at Level 6 and 120 of which are from the Level 5 Industrial Placement module.

<b>BSc (Ord)</b> Cyber Security	300 credits (excluding the summer access modules), 60 of which are at Level 6
<b>DipHE</b> Cyber Security (with Industrial Placement)	360 credits (excluding the summer access modules), 240 of which are at Level 5 or above and 120 of which are from the Level 5 Industrial Placement module
<b>DipHE</b> Cyber Security	240 credits (excluding the summer access modules), 120 of which are at Level 5 or above
<b>CertHE</b> Cyber Security	120 credits at level 4 or above (excluding the summer access modules)

Exit Awards at Postgraduate level:

<b>Award</b>	<b>Credit Requirements</b>
<b>MSc</b> Computer Science with Advanced Practice	240 credits at Level 7, 60 credits of which are from the Advanced Practice module
<b>MSc</b> Computer Science	180 credits at Level 7, excluding the Advanced Practice module
<b>PGDip</b> Computer Science with Advanced Practice	180 credits at Level 7, 60 credits of which are from the Advanced Practice module
<b>PGDip</b> Computer Science	120 credits at Level 7, excluding the Advanced Practice module
<b>PGCert</b> Computer Science	60 credits at Level 7, excluding the Advanced Practice module

<b>Award</b>	<b>Credit Requirements</b>
<b>MSc</b> Software Engineering with Advanced Practice	240 credits at Level 7, 60 credits of which are from the Advanced Practice module
<b>MSc</b> Software Engineering	180 credits at Level 7, excluding the Advanced Practice module
<b>PGDip</b> Software Engineering with Advanced Practice	180 credits at Level 7, 60 credits of which are from the Advanced Practice module
<b>PGDip</b> Software Engineering	120 credits at Level 7, excluding the Advanced Practice module
<b>PGCert</b> Software Engineering	60 credits at Level 7, excluding the Advanced Practice module

<b>Award</b>	<b>Credit Requirements</b>
<b>MSc</b> Cyber Security	240 credits at Level 7, 60 credits of which are from the Advanced Practice module
<b>MSc</b> Cyber Security with Advanced Practice	180 credits at Level 7, excluding the Advanced Practice module
<b>PGDip</b> Cyber Security with Advanced Practice	180 credits at Level 7, 60 credits of which are from the Advanced Practice module
<b>PGDip</b> Cyber Security	120 credits at Level 7, excluding the Advanced Practice module
<b>PGCert</b> Cyber Security	60 credits at Level 7, excluding the Advanced Practice module

<b>Award</b>	<b>Credit Requirements</b>
<b>MSc</b> Data Science and Big Data Analytics with Advanced Practice	240 credits at Level 7, 60 credits of which are from the Advanced Practice module

<b>MSc</b> Data Science and Big Data Analytics	180 credits at Level 7, excluding the Advanced Practice module
<b>PGDip</b> Data Science and Big Data Analytics with Advanced Practice	180 credits at Level 7, 60 credits of which are from the Advanced Practice module
<b>PGDip</b> Data Science and Big Data Analytics	120 credits at Level 7, excluding the Advanced Practice module
<b>PGCert</b> Data Science and Big Data Analytics	60 credits at Level 7, excluding the Advanced Practice module

## Programme Structure Diagram, including delivery schedule

### Undergraduate Provision

	Computer Science	Software Engineering	Cyber Security
<b>Level 4</b>	COM474 Programming Fundamentals		
	COM475 Computer Systems and Architecture		
	COM476 Information Security and Governance		
	COM477 Applied Computational Methods		
	COM480 Database Systems	COM478 Software Development Methodologies	COM481 Network Defence
	COM479 Fundamentals of Machine Learning	COM480 Database Systems	COM482 Network Fundamentals
<b>Level 5</b>	COM577 Secure Software Development		
	COM569 Systems Engineering and Project Management		
	COM570 Cloud, Distributed Architecture and Security		
	COM553 Group Project		
	COM571 Data Structures and Algorithms	COM573 User Experience Design	COM575 Cyber Operations
	COM572 Machine Learning	COM571 Data Structures and Algorithms	COM576 Ethical Hacking
<b>Level 6</b>	COM646 Project		
	COM658 Cryptography and Defensive Systems		
	COM659 Emergent Technologies		COM660 Threat Detection and Incident Response
	COM661 Deep Learning Implementation	COM662 Software Development and Optimisation	COM663 Digital Forensics
	COM664 Data Analysis and Visualisation	COM664 Data Analysis and Visualisation	COM666 Security Optimisation and Automation

### BSc (Hons) Computer Science

#### Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM479	Fundamentals of Machine Learning	20	Core	1
Level 4	COM476	Information Security and Governance	20	Core	1
Level 4	COM480	Database Systems	20	Core	2
Level 4	COM477	Applied Computational Methods	20	Core	2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2
Level 5	COM571	Data Structures and Algorithms	20	Core	1
Level 5	COM577	Secure Software Development	20	Core	1
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1
Level 5	COM572	Machine Learning	20	Core	2
Level 5	COM569	Systems Engineering and Project Management	20	Core	2
Level 5	COM553	Group Project	20	Core	2
Level 6	COM661	Deep Learning Implementation	20	Core	1
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1
Level 6	COM664	Data Analysis and Visualisation	20	Core	2
Level 6	COM659	Emergent Technologies	20	Core	2
Level 6	COM646	Project	40	Core	1 & 2

## BSc (Hons) Computer Science (with Industrial Placement)

### Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM479	Fundamentals of Machine Learning	20	Core	1
Level 4	COM476	Information Security and Governance	20	Core	1
Level 4	COM480	Database Systems	20	Core	2
Level 4	COM477	Applied Computational Methods	20	Core	2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2
Level 5	COM571	Data Structures and Algorithms	20	Core	1
Level 5	COM577	Secure Software Development	20	Core	1
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1
Level 5	COM572	Machine Learning	20	Core	2

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
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Level 5	COM569	Systems Engineering and Project Management	20	Core	2
Level 5	COM553	Group Project	20	Core	2
Level 5	COM549	Industrial Placement	120	Optional	1 & 2
Level 6	COM661	Deep Learning Implementation	20	Core	1
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1
Level 6	COM664	Data Analysis and Visualisation	20	Core	2
Level 6	COM659	Emergent Technologies	20	Core	2
Level 6	COM646	Project	40	Core	1 & 2

## BSc (Hons) Computer Science

Part-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 4	COM479	Fundamentals of Machine Learning	20	Core	1	Y2
Level 4	COM476	Information Security and Governance	20	Core	1	Y1
Level 4	COM480	Database Systems	20	Core	2	Y1
Level 4	COM477	Applied Computational Methods	20	Core	2	Y2
Level 4	COM474	Programming Fundamentals	20	Core	1&2	Y1
Level 4	COM475	Computer Systems and Architecture	20	Core	1&2	Y1
Level 5	COM571	Data Structures and Algorithms	20	Core	1	Y2
Level 5	COM577	Secure Software Development	20	Core	1	Y3
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1	Y3
Level 5	COM572	Machine Learning	20	Core	2	Y2
Level 5	COM569	Systems Engineering and Project Management	20	Core	2	Y3

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 5	COM553	Group Project	20	Core	2	Y3

Level 6	COM661	Deep Learning Implementation	20	Core	1	Y4
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1	Y4
Level 6	COM664	Data Analysis and Visualisation	20	Core	2	Y4
Level 6	COM659	Emergent Technologies	20	Core	2	Y4
Level 6	COM646	Project	40	Core	1&2	Y5

## BSc (Hons) Software Engineering

### Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM480	Database Systems	20	Core	1
Level 4	COM476	Information Security and Governance	20	Core	1
Level 4	COM478	Software Development Methodologies	20	Core	2
Level 4	COM477	Applied Computational Methods	20	Core	2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2
Level 5	COM573	User Experience Design	20	Core	2
Level 5	COM577	Secure Software Development	20	Core	1
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1
Level 5	COM571	Data Structures and Algorithms	20	Core	1
Level 5	COM569	Systems Engineering and Project Management	20	Core	2
Level 5	COM553	Group Project	20	Core	2
Level 6	COM664	Data Analysis and Visualisation	20	Core	2
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1
Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 6	COM662	Software Development and Optimisation	20	Core	2 1
Level 6	COM659	Emergent Technologies	20	Core	2
Level 6	COM646	Project	40	Core	1 & 2

## BSc (Hons) Software Engineering (with Industrial Placement)

Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM480	Database Systems	20	Core	1
Level 4	COM476	Information Security and Governance	20	Core	1
Level 4	COM478	Software Development Methodologies	20	Core	2
Level 4	COM477	Applied Computational Methods	20	Core	2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2
Level 5	COM573	User Experience Design	20	Core	4 2
Level 5	COM577	Secure Software Development	20	Core	1
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1
Level 5	COM571	Data Structures and Algorithms	20	Core	1
Level 5	COM569	Systems Engineering and Project Management	20	Core	2
Level 5	COM553	Group Project	20	Core	2
Level 5	COM549	Industrial Placement	120	Optional	1 & 2
Level 6	COM664	Data Analysis and Visualisation	20	Core	2
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1
Level 6	COM662	Software Development and Optimisation	20	Core	2 1
Level 6	COM659	Emergent Technologies	20	Core	2
Level 6	COM646	Project	40	Core	1 & 2



## BSc (Hons) Software Engineering

Part-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 4	COM480	Database Systems	20	Core	1	Y2
Level 4	COM476	Information Security and Governance	20	Core	1	Y1
Level 4	COM478	Software Development Methodologies	20	Core	2	Y1
Level 4	COM477	Applied Computational Methods	20	Core	2	Y2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2	Y1
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2	Y1
Level 5	COM573	User Experience Design	20	Core	4 2	Y2
Level 5	COM577	Secure Software Development	20	Core	1	Y3
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1	Y3
Level 5	COM571	Data Structures and Algorithms	20	Core	1	Y2
Level 5	COM569	Systems Engineering and Project Management	20	Core	2	Y3
Level 5	COM553	Group Project	20	Core	2	Y3
Level 6	COM664	Data Analysis and Visualisation	20	Core	2	Y4
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1	Y4
Level 6	COM662	Software Development and Optimisation	20	Core	2 1	Y4
Level 6	COM659	Emergent Technologies	20	Core	2	Y4
Level 6	COM646	Project	40	Core	1 & 2	Y5

## BSc (Hons) Cyber Security

Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM482	Network Fundamentals	20	Core	1
Level 4	COM476	Information Security and Governance	20	Core	1
Level 4	COM477	Applied Computational Methods	20	Core	2
Level 4	COM481	Network Defence	20	Core	2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2
Level 5	COM575	Cyber Operations	20	Core	1
Level 5	COM577	Secure Software Development	20	Core	1
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1
Level 5	COM576	Ethical Hacking	20	Core	2
Level 5	COM569	Systems Engineering and Project Management	20	Core	2
Level 5	COM553	Group Project	20	Core	2
Level 6	COM663	Digital Forensics	20	Core	1
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1
Level 6	COM666	Security Optimisation & Automation	20	Core	2
Level 6	COM660	Threat Detection and Incident Response	20	Core	2
Level 6	COM646	Project	40	Core	1 & 2

## BSc (Hons) Cyber Security (with Industrial Placement)

Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM482	Network Fundamentals	20	Core	1
Level 4	COM476	Information Security and Governance	20	Core	1
Level 4	COM477	Applied Computational Methods	20	Core	2
Level 4	COM481	Network Defence	20	Core	2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2

Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2
Level 5	COM575	Cyber Operations	20	Core	1
Level 5	COM577	Secure Software Development	20	Core	1

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1
Level 5	COM576	Ethical Hacking	20	Core	2
Level 5	COM569	Systems Engineering and Project Management	20	Core	2
Level 5	COM553	Group Project	20	Core	2
Level 5	COM549	Industrial Placement	120	Optional	1 & 2
Level 6	COM663	Digital Forensics	20	Core	1
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1
Level 6	COM666	Security Optimisation & Automation	20	Core	2
Level 6	COM660	Threat Detection and Incident Response	20	Core	2
Level 6	COM646	Project	40	Core	1 & 2

## BSc (Hons) Cyber Security

Part-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 4	COM482	Network Fundamentals	20	Core	1	Y2
Level 4	COM476	Information Security and Governance	20	Core	1	Y1
Level 4	COM477	Applied Computational Methods	20	Core	2	Y1
Level 4	COM481	Network Defence	20	Core	2	Y2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2	Y1
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2	Y1
Level 5	COM575	Cyber Operations	20	Core	1	Y2
Level 5	COM577	Secure Software Development	20	Core	1	Y3

Level 5	COM570	Cloud, Distributed Architecture	20	Core	1	Y3
Level 5	COM576	Ethical Hacking	20	Core	2	Y2
Level 5	COM569	Systems Engineering and Project Management	20	Core	2	Y3

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 5	COM553	Group Project	20	Core	2	Y3
Level 6	COM663	Digital Forensics	20	Core	1	Y4
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1	Y4
Level 6	COM666	Security Optimisation & Automation	20	Core	2	Y4
Level 6	COM660	Threat Detection and Incident Response	20	Core	2	Y4
Level 6	COM646	Project	40	Core	1 & 2	Y5

### WUCCE in Computing Fundamentals

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM469	Introduction to Programming	20	Core	summer
Level 4	COM484	Digital and Professional Skills	20	Core	summer
Level 4	COM485	Computing Technologies	20	Core	summer

### Postgraduate Taught provision

	MSc Cyber Security	MSc Computer Science	MSc Software Engineering	MSc Big Data and Data Analytics
Level 7	COM756 Networking and Defensive Security	COM757 Artificial Intelligence	COM758 Advanced Development Methodologies	COM759 Applied Data Science
	COM760 Secure Computing		COM761 Advanced Software Development	COM762 Advanced Data Analysis and Visualisation
	COM713 Advanced Data Structures and Algorithms			
	COM763 Advance Machine Learning			
	COM764 Offensive Security and Incident Response	COM736 Database Systems and Data Analytics		
	COM754 Research Methods for Digital Technologies			
	COM752 Dissertation Project			

## MSc Computer Science

### Full-time delivery – September Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1
Level 7	COM757	Artificial Intelligence	20	Core	1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	1
Level 7	COM763	Advanced Machine Learning	20	Core	2
Level 7	COM760	Secure Computing	20	Core	2
Level 7	COM736	Database systems and Data Analytics	20	Core	2
Level 7	COM752	Dissertation Project	60	Core	3

### Full-time delivery – February Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM763	Advanced Machine Learning	20	Core	Sem 2, Y1
Level 7	COM760	Secure Computing	20	Core	Sem2, Y1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Y1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Y2
Level 7	COM757	Artificial Intelligence	20	Core	Sem1, Y2
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Y2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Y2

## MSc Computer Science (with Advanced Practice)

### Full-time delivery – September Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year1
Level 7	COM757	Artificial Intelligence	20	Core	Sem1, Year1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM760	Secure Computing	20	Core	Sem2, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	APD701	Advanced Practice: Work-based Learning	60	Option	Sem1, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem1, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Year2

### Full-time delivery – February Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year 1
Level 7	COM760	Secure Computing	20	Core	Sem2, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year2
Level 7	COM757	Artificial Intelligence	20	Core	Sem1, Year2
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year2
Level 7	ADP701	Advanced Practice: Work-based Learning	60	Option	Sem2, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem2, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem3, Year2

### MSc Computer Science Part-Time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1	Y1
Level 7	COM757	Artificial Intelligence	20	Core	1	Y1
Level 7	COM763	Advanced Machine Learning	20	Core	2	Y1
Level 7	COM760	Secure Computing	20	Core	2	Y1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	1	Y2
Level 7	COM736	Database systems and Data Analytics	20	Core	2	Y2

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 7	COM752	Dissertation Project	60	Core	2 & 3	Y2

## **MSc Software Engineering**

### **Full-time delivery – September Intake**

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem 1
Level 7	COM758	Advanced Development Methodologies	20	Core	Sem 1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem 1
Level 7	COM761	Advanced Software Development	20	Core	Sem 2
Level 7	COM763	Advanced Machine Learning	20	Core	Sem 2
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem 2
Level 7	COM752	Dissertation Project	60	Core	Sem 3

### **Full-time delivery – February Intake**

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM761	Advanced Software Development	20	Core	Sem2, Year1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year2
Level 7	COM758	Advanced Development Methodologies	20	Core	Sem1, Year2
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Year2

## MSc Software Engineering (with Advanced Practice)

### Full-time delivery – September Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year1
Level 7	COM758	Advanced Development Methodologies	20	Core	Sem1, Year1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year1
Level 7	COM761	Advanced Software Development	20	Core	Sem2, Year1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	APD701	Advanced Practice: Work-based Learning	60	Option	Sem1, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem1, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Year2

### Full-time delivery – February Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM761	Advanced Software Development	20	Core	Sem2, Year 1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year2
Level 7	COM758	Advanced Development Methodologies	20	Core	Sem1, Year2
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year2
Level 7	ADP701	Advanced Practice: Work-based Learning	60	Option	Sem2, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem2, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem3, Year2



### MSc Software Engineering Part-Time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1	Y1
Level 7	COM758	Advanced Development Methodologies	20	Core	1	Y1
Level 7	COM736	Database systems and Data Analytics	20	Core	2	Y1
Level 7	COM761	Advanced Software Development	20	Core	2	Y1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	1	Y2
Level 7	COM763	Advanced Machine Learning	20	Core	2	Y2
Level 7	COM752	Dissertation Project	60	Core	2 & 3	Y2

### MSc Cyber Security

#### Full-time delivery – September Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1
Level 7	COM756	Networking and Defensive Security	20	Core	1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	1
Level 7	COM760	Secure Computing	20	Core	2
Level 7	COM763	Advanced Machine Learning	20	Core	2
Level 7	COM764	Offensive Security & Incident Response	20	Core	2
Level 7	COM752	Dissertation Project	60	Core	3

#### Full-time delivery – February Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM760	Secure Computing	20	Core	Sem2, Year1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM764	Offensive Security & Incident Response	20	Core	Sem2, Year1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year2

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM756	Networking and Defensive Security	20	Core	Sem1, Year2
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Year2

### **MSc Cyber Security (with Advanced Practice)**

#### **Full-time delivery – September Intake**

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year1
Level 7	COM756	Networking and Defensive Security	20	Core	Sem1, Year1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year1
Level 7	COM760	Secure Computing	20	Core	Sem2, Year1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM764	Offensive Security & Incident Response	20	Core	Sem2, Year1
Level 7	APD701	Advanced Practice: Work-based Learning	60	Option	Sem1, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem1, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Year2

#### **Full-time delivery – February Intake**

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM760	Secure Computing	20	Core	Sem2, Year1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM764	Offensive Security & Incident Response	20	Core	Sem2, Year1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year2
Level 7	COM756	Networking and Defensive Security	20	Core	Sem1, Year2
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	Sem1, Year2
Level 7	ADP701	Advanced Practice: Work-based Learning	60	Option	Sem2, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem2, Year2

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM752	Dissertation Project	60	Core	Sem3, Year2

### MSc Cyber Security Part-Time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1	Y1
Level 7	COM756	Networking and Defensive Security	20	Core	1	Y1
Level 7	COM760	Secure Computing	20	Core	2	Y1
Level 7	COM764	Offensive Security & Incident Response	20	Core	2	Y1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	1	Y2
Level 7	COM763	Advanced Machine Learning	20	Core	2	Y2
Level 7	COM752	Dissertation Project	60	Level 7	2 & 3	Y2

### MSc Data Science & Big Data Analytics

#### Full-time delivery – September Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1
Level 7	COM759	Applied Data Science	20	Core	1
Level 7	COM713	Advanced Data Structures and Algorithm	20	Core	1
Level 7	COM736	Database systems and Data Analytics	20	Core	2
Level 7	COM762	Advanced Data Analysis and Visualisation	20	Core	2
Level 7	COM763	Advanced Machine Learning	20	Core	2
Level 7	COM752	Dissertation Project	60	Core	3

### Full-time delivery – February Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM762	Advanced Data Analysis and Visualisation	20	Core	Sem2, Year 1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year2
Level 7	COM713	Advanced Data Structures and Algorithm	20	Core	Sem1, Year2
Level 7	COM759	Applied Data Science	20	Core	Sem1, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Year2

### MSc Data Science and Big Data Analytics (with Advanced Practice)

#### Full-time delivery – September Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year1
Level 7	COM759	Applied Data Science	20	Core	Sem1, Year1
Level 7	COM713	Advanced Data Structures and Algorithm	20	Core	Sem1, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	COM762	Advanced Data Analysis and Visualisation	20	Core	Sem2, Year1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	APD701	Advanced Practice: Work-based Learning	60	Option	Sem1, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem1, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem2, Year2

### Full-time delivery – February Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM762	Advanced Data Analysis and Visualisation	20	Core	Sem2, Year 1
Level 7	COM763	Advanced Machine Learning	20	Core	Sem2, Year1
Level 7	COM736	Database systems and Data Analytics	20	Core	Sem2, Year1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	Sem1, Year2
Level 7	COM713	Advanced Data Structures and Algorithm	20	Core	Sem1, Year2
Level 7	COM759	Applied Data Science	20	Core	Sem1, Year2
Level 7	ADP701	Advanced Practice: Work-based Learning	60	Option	Sem2, Year2
Level 7	ADP702	Advanced Practice: Entrepreneurship	60	Option	Sem2, Year2
Level 7	COM752	Dissertation Project	60	Core	Sem3, Year2

### MSc Data Science & Big Data Analytics Part-Time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)	Year of Study
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1	Y1
Level 7	COM759	Applied Data Science	20	Core	1	Y1
Level 7	COM713	Advanced Data Structures and Algorithm	20	Core	2	Y1
Level 7	COM736	Database systems and Data Analytics	20	Core	2	Y1
Level 7	COM762	Advanced Data Analysis and Visualisation	20	Core	1	Y2
Level 7	COM763	Advanced Machine Learning	20	Core	2	Y2
Level 7	COM752	Dissertation Project	60	Core	2 & 3	Y2

### Intended learning outcomes of the programme

Key	QAA Undergraduate Subject Benchmark Statements
<b>SBS1</b>	Subject knowledge, understanding and skills
<b>SBS2</b>	Intellectual skills
<b>SBS3</b>	Computational problem-solving
<b>SBS4</b>	Practical skills across the computing lifecycle
<b>SBS5</b>	Interpersonal and team working skills (see also Entrepreneurship and enterprise education)
<b>SBS6</b>	Professional practice (see also Equality, diversity and inclusion, Sustainability and Entrepreneurship and enterprise education)

Key	BCS Accreditation Guidelines
<b>BCS1</b>	Computing-related cognitive abilities
<b>BCS2</b>	Computing-related practical abilities
<b>BCS3</b>	Transferable Skills
<b>BCS4</b>	Project

## BSc (Hons) Computer Science

### Knowledge and Understanding

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>A1</b>	<p><b>The level in which students engage with the core concepts, principles, and theories common to a range of computing specialist roles.</b></p> <p><b>SBS1 SBS4 BCS1</b></p>	Apply essential facts, concepts, principles, and theories relating to software/web design, development, and production as part of the wider computing specialism through practical work, design exercises and case studies.	Analyse the significance of key concepts, principles, theories, and practices that underpin to software/web design, development, and production as an academic discipline by exploring the boundaries of computing through practical work, design exercises and case studies.	Evaluate broad areas of the knowledge bases of the discipline of computing and an appreciation of the principles, theories and practices that underpin software/web design, development, and production as an academic discipline.	Evaluate and conceptualise the discipline of computing as part of the wider computing specialism. Assess advanced concepts, principles and theories relating to software/web design, development, and production and demonstrate them through graduate-level project work.
<b>A2</b>	<p><b>The level of competence shown through a wider range of development tools and software that directly relate to software/web creation process.</b></p> <p><b>SBS1 SBS4 BCS2, BCS4</b></p>	Identify the appropriateness of a range of development tools for the creation of software/web applications and apply them to computing-based scenarios.	Compare and contrast a range of development tools and relate them to workflows, practices, and outputs in the creation of software/web applications.	Select and deploy established techniques and tools to develop software/web applications for computing-based problems and briefs with the justification of applied strategies.	Demonstrate independence, confidence and flexibility in evaluating and applying a range of development tools for the creation of software/web applications and assets for selected computing-based problems.
<b>A3</b>	<p><b>The level of awareness of computing specialism within a team-based computing skillset.</b></p> <p><b>SBS1 SBS5 BCS1, BCS3</b></p>	Demonstrate awareness of differing disciplines within the context of software/web creation and identify a subject area for further research and study.	Differentiate differing roles with the context of software/web creation and demonstrate practical work, research, and study as part of a subject specialism.	Appraise differing roles with the context of software/web creation against technical and design skills, and relate them to the wider, team-based skillset industry practice.	Fully conceptualise differing roles with the context of software/web creation against technical and design skills, and relate them to the wider, team-based skillset industry practice.
<b>A4</b>	<p><b>The level in which students engage with the wider context of the computing and wider digital industries and they are related to ongoing practice.</b></p>	Identify and explore key concepts and practise related to software creation within the wider context of the computing and digital industries. Relate practice to wider social ethical,	Analyse key practice areas of software/web design, development, and production against the wider context of the computing and digital industries. Interpret wider social, ethical, economical and	Fully assess the wider social, ethical, economical and sustainability issues as part of practical work and relate computing products within the context of the wider computing and digital industries.	Fully evaluate the wider social, ethical, economical and sustainability issues as part of graduate-project work and relate computing products within the context of the wider computing and digital industries.

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
	<b>SBS1 SBS6 BCS1, BSC3</b>	economical and sustainability issues.	sustainability issues as part of analysing ongoing practice.		

## Intellectual Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>B1</b>	<b>The level in which students identify problems or requirements and engage with solutions.</b>  <b>SBS2 SBS3 BCS1, BSC3</b>	Explore problems to identify requirements and experiment with solutions to computing-based problems or design briefs.	Identify computing-based problems and analyse requirements to compare and propose solutions using relevant tools and strategies.	Develop self-reliance and confidence in the analysis of problems, identify requirements and propose and evaluate alternative solutions for computing-based problems using relevant tools and strategies.	Integrate learned theory and techniques with practical experience to analyse problems, identify requirements and propose and critically evaluate alternative solutions for computing-based problems using relevant tools and strategies.
<b>B2</b>	<b>The level of competence of numeracy, literacy and algebra in the context of the software/web creation process and the wider computing and digital industries.</b>  <b>SBS1 SBS2 BCS1, BSC2</b>	Relate basic numeracy, literacy, and algebraic competencies to the context of computing using relevant software, tools, and strategies by way of technical problems and design solutions.	Apply numeracy, literacy, and algebraic competencies as part of the software/web design, development, art, and production process and apply it through contextualised practical work.	Appraise numeracy, literacy, and algebraic competencies as part of the software/web design, development, and production process and apply it through contextualised practical work.	Appraise numeracy, literacy, and algebraic competencies a key part of the software/web design, development, art, and production process and demonstrate graduate level competencies through contextualised practical and project work.
<b>B3</b>	<b>The level in which students engage with critical thinking to collect and disseminate information through communication and academic work.</b>  <b>SBS2 SBS6 BSC1</b>	Apply the fundamentals of critical thought and research skills to a range of contextualised tasks using clear communication methods.	Analyse information from a range of sources to make an argued case and enhance ongoing practice.	Evaluate information by collecting of a range of facts/ideas/elements in an argued case and produce new ideas in closely defined situations to enhance ongoing practice.	Rigorously apply research methods to relate and collect facts/ ideas/ elements in an argued case and disseminate information with clear communication to ensure professional practice.



	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>B4</b>	<p><b>The level of self-awareness the student demonstrates in a digital context and their awareness of wider legal, professional, moral, social and ethical issues.</b></p> <p><b>SBS2</b> <b>SBS6</b> <b>BCS1, BCS3</b></p>	Develop an ability to explore and recognise any risks or safety aspects that may be involved in their work and to the relevance of selected professional, legal, moral, social and ethical issues; communicate the results of their study/work accurately and reliably, and with structured and coherent arguments.	Use a range of established techniques using experiential learning exercises, to explore and recognise the relevance of selected professional, legal, moral, social and ethical issues in their work and to communicate the results of their study/work accurately and reliably, and with structured and coherent arguments.	Demonstrate technology industry acumen, and recognising the relevance of legal, professional, moral, social and ethical issues in the workplace and the wider environment. Able to inform and adapt their work to satisfy these issues.	Effective self-management in terms of time; ability to conduct research independently or as a team, into legal, professional, moral, social and ethical issues.

### Subject Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>C1</b>	<p><b>The level of competency demonstrated by the core skills and associated tools, technologies, and strategies.</b></p> <p><b>SBS1</b> <b>SBS4</b> <b>BCS2</b></p>	Develop a basic understanding and application of programming concepts including basic algorithms, and data structures. Develop core skills in problem-solving and teamwork using a collaboration of software development tools, and basic project management skills, with considerable guidance provided by tutors.	Demonstrate an appreciation of programming concepts including more advanced algorithms, and data structures. Further develop core skills in problem-solving and teamwork using a collaboration of software development tools, methodologies and project management skills with some guidance provided as appropriate.	Gain a deeper understanding of the skills, tool and technologies. Develop proficiency in research methods and demonstrate advance programming and software systems development skills, frameworks, and engineering principles. Evolve and expand skills to incorporate security tools and techniques, with minimal guidance.	Using advanced skills and research methods demonstrate advance programming and software systems development skills, frameworks, and engineering principles. Evolve and expand new concepts to incorporate security tools and techniques, working autonomously.
<b>C2</b>	<p><b>The level of computational problem solving as part of technical, mathematical, and logical computer science element.</b></p> <p><b>SBS2</b> <b>SBS4</b> <b>BCS2</b></p>	Understand the fundamental principles and concepts of computer science, including computational problem solving.	Develop the ability to analyse complex problems, identify appropriate algorithms and data structures, and design efficient solutions using techniques.	Gain a deeper understanding of computer science topics and explore advanced computational problem-solving techniques.	Further specialize in a particular area of computer science, and demonstrate in-depth research, analysis, showcasing complex problems in computer science.
<b>C3</b>	<p><b>The level of practical skills demonstrated through the</b></p>	Develop basic skills in software development and	Apply principles of software development and programming	Design and develop complex software systems incorporating	Further specialise to gain practical skills specific to the

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
	<b>lifecycle of the development process.</b>  <b>SBS3</b> <b>SBS4</b> <b>BCS2</b>	programming, to become familiar with basic coding, debugging, testing in development environments and tools.	for larger-scale projects incorporating additional skills to coordinate and deliver software solutions.	software engineering principles and practices. Demonstrate knowledge and understanding of the software development frameworks, tools and technologies relevant to the chose domain.	chosen specialisation, developing and implementing applications following the results of an in-depth research project.
<b>C4</b>	<b>The level of competency demonstrated by the core skill of development software to write programs for computer projects.</b>  <b>SBS3</b> <b>SBS4</b> <b>BCS2</b>	Develop a foundational understanding of programming concepts and develop basic proficiency in writing programme.	Build on the foundation skills and develop a higher level of proficiency in programming languages moving to more complex programmes.	Demonstrate advanced competency in software development by designing and implementing complex software systems. Gain a proficiency in software design patterns, software architecture and develop skills in handling larger-scale projects. Conduct independent research and apply critical thinking skills to solve complete problems.	Further specialise to gain advanced competency in software development. Conduct in-depth research and demonstrate advanced analytical and problem-solving skills. Critically evaluate and apply advanced theories, models and techniques, and communication complex ideas effectively both orally and in writing.

### Practical, Professional and Employability Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>D1</b>	<b>The level of awareness of the importance of communication, social interaction, and diversity within the learning environment and as a core employability skill.</b>  <b>SBS5</b> <b>SBS6</b> <b>BCS1, BCS3</b>	Identify the importance of social interaction, communication and diversity as part of employability skillsets and apply them within the learning environment.	Demonstrate and reflect on social interaction, communication and diversity within the learning environment to relate that to core employment and the context of the computing industry.	Demonstrate a high-level of social interaction, communication and diversity within the learning environment a further communication-based tasks to a variety of audiences	Have a full conceptualisation of social interaction, communication and diversity within the learning environment and relate that to further employable, computing industry-related practice
<b>D2</b>	<b>The competence demonstrated through team management and agile production</b>	Apply the use of agile methodologies as part of team-based organisation and group work on a small-scale computing project.	Analyse the use of agile methodologies as part of team-based organisation and group work on a computing project to	Evaluate the use of agile methodologies as part of team-based organisation and multi-disciplinary group work on a computing project to ensure	Have a full conceptualisation of the use of agile methodologies in the wider computing and digital industries to manage professional teams and projects

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
	<b>methodologies in a computing-based setting.</b>  <b>SBS5</b> <b>SBS6</b> <b>BCS2, BCS3</b>		enhance team communication and management.	high-level team communication and management.	including being able to demonstrate basic negotiation and leadership skills.
<b>D3</b>	<b>The level of awareness of opinions of others and the demonstration of flexibility in considering alternate viewpoints.</b>  <b>SBS5</b> <b>SBS6</b> <b>BCS1, BCS3</b>	Show an understanding of the opinions of other people and have flexibility in considering alternatives and opinions.	Demonstrate the ability to take the perspective of others and identify the similarities and differences between two approaches to the solution of a given problem.	Demonstrate the ability to take the perspective of others; compare the strengths and weaknesses of alternative interpretations determining the credibility of a source of information.	Demonstrate the ability to take the perspective of others; articulate the strengths and weaknesses of the suggestions of arguments posed and recognize the underlying agendas and motivations of individuals and groups involved in a given situation.
<b>D4</b>	<b>The level of competence demonstrated through organisational skill, personal learning and time-management skills and how they relate to the learning environment.</b>  <b>SBS2</b> <b>SBS6</b> <b>BCS2, BCS4</b>	Demonstrate basic organisation skills, goal setting and time-management to manage own learning.	Demonstrate effective personal organisation skills, goal setting and time-management to manage own learning with a focus on subject specialisms.	Demonstrate a high-level of personal learning by using organisational and time-management skills to set appropriate goals for improving project work.	Demonstrate a graduate-level of personal learning by using organisational and time-management skills to set appropriate goals to continue to hone-skills outside the learning environment or in further employment.

## BSc (Hons) Software Engineering

### Knowledge and Understanding

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>A1</b>	<p><b>The level in which students engage with the core concepts, principles, and theories common to a range of computing specialist roles.</b></p> <p>SBS1 SBS4 BCS1</p>	Apply essential facts, concepts, principles, and theories relating to software/web design, development, and production as part of the wider computing specialism through practical work, design exercises and case studies.	Analyse the significance of key concepts, principles, theories, and practices that underpin to software/web design, development, and production as an academic discipline by exploring the boundaries of computing through practical work, design exercises and case studies.	Evaluate broad areas of the knowledge bases of the discipline of computing and an appreciation of the principles, theories and practices that underpin software/web design, development, and production as an academic discipline.	Evaluate and conceptualise the discipline of computing as part of the wider computing specialism. Assess advanced concepts, principles and theories relating to software/web design, development, and production and demonstrate them through graduate-level project work.
<b>A2</b>	<p><b>The level of competence shown through a wider range of development tools and software that directly relate to software/web creation process.</b></p> <p>SBS1 SBS4 BCS2, BCS4</p>	Identify the appropriateness of a range of development tools for the creation of software/web applications and apply them to computing-based scenarios.	Compare and contrast a range of development tools and relate them to workflows, practices, and outputs in the creation of software/web applications.	Select and deploy established techniques and tools to develop software/web applications for computing-based problems and briefs with the justification of applied strategies.	Demonstrate independence, confidence and flexibility in evaluating and applying a range of development tools for the creation of software/web applications and assets for selected computing-based problems.
<b>A3</b>	<p><b>The level of awareness of computing specialism within a team-based computing skillset.</b></p> <p>SBS1 SBS5 BCS1, BCS3</p>	Demonstrate awareness of differing disciplines within the context of software/web creation and identify a subject area for further research and study.	Differentiate differing roles with the context of software/web creation and demonstrate practical work, research, and study as part of a subject specialism.	Appraise differing roles with the context of software/web creation against technical and design skills, and relate them to the wider, team-based skillset industry practice.	Fully conceptualise differing roles with the context of software/web creation against technical and design skills, and relate them to the wider, team-based skillset industry practice.
<b>A4</b>	<p><b>The level in which students engage with the wider context of the computing and wider digital industries and they</b></p>	Identify and explore key concepts and practise related to software creation within the wider context of the computing and digital	Analyse key practice areas of software/web design, development, and production against the wider context of the computing and digital	Fully assess the wider social, ethical, economical and sustainability issues as part of practical work and relate computing products within the	Fully evaluate the wider social, ethical, economical and sustainability issues as part of graduate-project work and relate computing products within the

	are related to ongoing practice.  SBS1 SBS6 BCS1, BSC3	industries. Relate practice to wider social ethical, economical and sustainability issues.	industries. Interpret wider social, ethical, economical and sustainability issues as part of analysing ongoing practice.	context of the wider computing and digital industries.	context of the wider computing and digital industries.
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## Intellectual Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>B1</b>	<b>The level in which students identify problems or requirements and engage with solutions.</b>  SBS2 SBS3 BCS1, BSC3	Explore problems to identify requirements and experiment with solutions to computing-based problems or design briefs.	Identify computing-based problems and analyse requirements to compare and propose solutions using relevant tools and strategies.	Develop self-reliance and confidence in the analysis of problems, identify requirements and propose and evaluate alternative solutions for computing-based problems using relevant tools and strategies.	Integrate learned theory and techniques with practical experience to analyse problems, identify requirements and propose and critically evaluate alternative solutions for computing-based problems using relevant tools and strategies.
<b>B2</b>	<b>The level of competence of numeracy, literacy and algebra in the context of the software/web creation process and the wider computing and digital industries.</b>  SBS1 SBS2 BCS1, BCS2	Relate basic numeracy, literacy, and algebraic competencies to the context of computing using relevant software, tools, and strategies by way of technical problems and design solutions.	Apply numeracy, literacy, and algebraic competencies as part of the software/web design, development, and production process and apply it through contextualised practical work.	Appraise numeracy, literacy, and algebraic competencies as part of the software/web design, development and production process and apply it through contextualised practical work.	Appraise numeracy, literacy, and algebraic competencies a key part of the software/web design, development and production process and demonstrate graduate level competencies through contextualised practical and project work.
<b>B3</b>	<b>The level in which students engage with critical thinking to collect and disseminate information through communication and academic work.</b>  SBS2 SBS6 BSC1	Apply the fundamentals of critical thought and research skills to a range of contextualised tasks using clear communication methods.	Analyse information from a range of sources to make an argued case and enhance ongoing practice.	Evaluate information by collecting a range of facts/ideas/elements in an argued case and produce new ideas in closely defined situations to enhance ongoing practice.	Rigorously apply research methods to relate and collect facts/ ideas/ elements in an argued case and disseminate information with clear communication to ensure professional practice.

<b>B4</b>	<b>The level of self-awareness the student demonstrates in a digital context and their awareness of wider legal, professional, moral, social and ethical issues.</b>  <b>SBS2</b> <b>SBS6</b> <b>BCS1, BCS3</b>	Develop an ability to explore and recognise any risks or safety aspects that may be involved in their work and to the relevance of selected professional, legal, moral, social and ethical issues; communicate the results of their study/work accurately and reliably, and with structured and coherent arguments.	Use a range of established techniques using experiential learning exercises, to explore and recognise the relevance of selected professional, legal, moral, social and ethical issues in their work and to communicate the results of their study/work accurately and reliably, and with structured and coherent arguments.	Demonstrate technology industry acumen, and recognising the relevance of legal, professional, moral, social and ethical issues in the workplace and the wider environment. Able to inform and adapt their work to satisfy these issues.	Effective self-management in terms of time; ability to conduct research independently or as a team, into legal, professional, moral, social and ethical issues.
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## Subject Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>C1</b>	<b>The level of competency demonstrated by the core skills and associated tools, technologies, and strategies.</b>  <b>SBS1</b> <b>SBS4</b> <b>BCS2</b>	Develop a basic understanding and concepts of software engineering. Develop core skills in problem-solving and teamwork using a collaboration of software development tools, and basic project management skills, with considerable guidance provided by tutors.	Demonstrate an appreciation of the software engineering concepts and methodologies. Further develop core skills in problem-solving and teamwork using a collaboration of software development tools, frameworks and project management skills with some guidance provided as appropriate.	Gain a deeper understanding of the skills, tool and technologies. Develop proficiency in research methods and demonstrate proficiency in programming and software development frameworks, and tools. Evolve and expand skills to ensure software quality, with minimal guidance.	Using advanced skills and research methods demonstrate advance programming and software development skills, frameworks, and engineering principles. Evolve and expand new concepts to incorporate software quality assurances and software process improvement, working autonomously.
<b>C2</b>	<b>The level of computational problem solving as part of technical, mathematical, and logical software engineering elements.</b>  <b>SBS2</b> <b>SBS4</b> <b>BCS2</b>	Understand the fundamental principles and concepts of software engineering, including requirement engineering. Apply basic programming skills and techniques to develop software solutions.	Develop the ability to analyse complex problems, identify appropriate software engineering tools and technologies.	Gain a deeper understanding of the software engineering topics and explore advanced programming concepts and techniques in the development of complex software systems	Further specialize in a particular area of software engineering, and demonstrate in-depth research, analysis, showcasing complex problems in software engineering.
<b>C3</b>	<b>The level of practical skills demonstrated through the lifecycle of the development process.</b>	Develop basic skills in software engineering, including software development life cycle,	Apply principles of software development and programming for larger-scale projects incorporating additional skills to	Design and develop complex software systems incorporating software engineering principles and practices. Demonstrate	Further specialise to gain practical skills specific to the chosen specialisation, developing and implementing

	SBS3 SBS4 BCS2	requirements engineering and software testing.	coordinate and deliver software solutions.	knowledge and understanding of the software development frameworks, tools and technologies relevant to the chosen domain.	applications following the results of an in-depth research project.
<b>C4</b>	<b>The level of competency demonstrated by the core skill of development software to write programs for computer projects.</b>  SBS3 SBS4 BCS2	Develop a foundational understanding of programming concepts and develop basic proficiency in basic programming skills and techniques to develop software solutions.	Build on the foundation skills and develop a higher level of proficiency in programming languages moving to more complex programmes.	Demonstrate advanced competency in software engineering by designing and implementing complex software systems. Gain a proficiency in software design patterns, software architecture and develop skills in handling larger-scale projects. Conduct independent research and apply critical thinking skills to solve complete problems.	Further specialise to gain advanced competency in software engineering. Conduct in-depth research and demonstrate advanced analytical and problem-solving skills in software engineering contexts. Critically evaluate and apply advanced theories, models and techniques, and communication complex ideas effectively both orally and in writing.

### Practical, Professional and Employability Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>D1</b>	<b>The level of awareness of the importance of communication, social interaction, and diversity within the learning environment and as a core employability skill.</b>  SBS5 SBS6 BCS1, BCS3	Identify the importance of social interaction, communication and diversity as part of employability skillsets and apply them within the learning environment.	Demonstrate and reflect on social interaction, communication and diversity within the learning environment to relate that to core employment and the context of the computing industry.	Demonstrate a high-level of social interaction, communication and diversity within the learning environment a further communication-based tasks to a variety of audiences	Have a full conceptualisation of social interaction, communication and diversity within the learning environment and relate that to further employable, computing industry-related practice
<b>D2</b>	<b>The competence demonstrated through team management and agile production methodologies in a computing-based setting.</b>	Apply the use of agile methodologies as part of team-based organisation and group work on a small-scale computing project.	Analyse the use of agile methodologies as part of team-based organisation and group work on a computing project to enhance team communication and management.	Evaluate the use of agile methodologies as part of team-based organisation and multi-disciplinary group work on a computing project to ensure high-level team communication and management.	Have a full conceptualisation of the use of agile methodologies in the wider computing and digital industries to manage professional teams and projects including being able to



	<b>SBS5 SBS6 BCS2, BCS3</b>				demonstrate basic negotiation and leadership skills.
<b>D3</b>	<b>The level of awareness of opinions of others and the demonstration of flexibility in considering alternate viewpoints.</b>  <b>SBS5 SBS6 BCS1, BCS3</b>	Show an understanding of the opinions of other people and have flexibility in considering alternatives and opinions.	Demonstrate the ability to take the perspective of others and identify the similarities and differences between two approaches to the solution of a given problem.	Demonstrate the ability to take the perspective of others; compare the strengths and weaknesses of alternative interpretations determining the credibility of a source of information.	Demonstrate the ability to take the perspective of others; articulate the strengths and weaknesses of the suggestions of arguments posed and recognize the underlying agendas and motivations of individuals and groups involved in a given situation.
<b>D4</b>	<b>The level of competence demonstrated through organisational skill, personal learning and time-management skills and how they relate to the learning environment.</b>  <b>SBS2 SBS6 BCS2, BCS4</b>	Demonstrate basic organisation skills, goal setting and time-management to manage own learning.	Demonstrate effective personal organisation skills, goal setting and time-management to manage own learning with a focus on subject specialisms.	Demonstrate a high-level of personal learning by using organisational and time-management skills to set appropriate goals for improving project work.	Demonstrate a graduate-level of personal learning by using organisational and time-management skills to set appropriate goals to continue to hone-skills outside the learning environment or in further employment.



## BSc (Hons) Cyber Security

### Knowledge and Understanding

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>A1</b>	<p><b>The level in which students engage with the core concepts, principles, and theories common to a range of computing specialist roles.</b></p> <p><b>SBS1 SBS4 BCS1</b></p>	Apply essential facts, concepts, principles, and theories relating to software/web design, development, and production as part of the wider computing specialism through practical work, design exercises and case studies.	Analyse the significance of key concepts, principles, theories, and practices that underpin to software/web design, development, and production as an academic discipline by exploring the boundaries of computing through practical work, design exercises and case studies.	Evaluate broad areas of the knowledge bases of the discipline of computing and an appreciation of the principles, theories and practices that underpin software/web design, development, and production as an academic discipline.	Evaluate and conceptualise the discipline of computing as part of the wider computing specialism. Assess advanced concepts, principles and theories relating to software/web design, development, and production and demonstrate them through graduate-level project work.
<b>A2</b>	<p><b>The level of competence shown through a wider range of development tools and software that directly relate to software/web creation process.</b></p> <p><b>SBS1 SBS4 BCS2, BCS4</b></p>	Identify the appropriateness of a range of development tools for the creation of software/web applications and apply them to computing-based scenarios.	Compare and contrast a range of development tools and relate them to workflows, practices, and outputs in the creation of software/web applications.	Select and deploy established techniques and tools to develop software/web applications for computing-based problems and briefs with the justification of applied strategies.	Demonstrate independence, confidence and flexibility in evaluating and applying a range of development tools for the creation of software/web applications and assets for selected computing-based problems.
<b>A3</b>	<p><b>The level of awareness of computing specialism within a team-based computing skillset.</b></p> <p><b>SBS1 SBS5 BCS1, BCS3</b></p>	Demonstrate awareness of differing disciplines within the context of software/web creation and identify a subject area for further research and study.	Differentiate differing roles with the context of software/web creation and demonstrate practical work, research, and study as part of a subject specialism.	Appraise differing roles with the context of software/web creation against technical and design skills, and relate them to the wider, team-based skillset industry practice.	Fully conceptualise differing roles with the context of software/web creation against technical and design skills, and relate them to the wider, team-based skillset industry practice.
<b>A4</b>	<p><b>The level in which students engage with the wider context of the computing and wider digital industries and they</b></p>	Identify and explore key concepts and practise related to software creation within the wider context of the computing and digital industries. Relate practice to	Analyse key practice areas of software/web design, development, and production against the wider context of the computing and digital industries. Interpret wider	Fully assess the wider social, ethical, economical and sustainability issues as part of practical work and relate computing products within the	Fully evaluate the wider social, ethical, economical and sustainability issues as part of graduate-project work and relate computing products within the

	<b>are related to ongoing practice.</b>  SBS1 SBS6 BCS1, BSC3	wider social ethical, economical and sustainability issues.	social, ethical, economical and sustainability issues as part of analysing ongoing practice.	context of the wider computing and digital industries.	context of the wider computing and digital industries.
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## Intellectual Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>B1</b>	<b>The level in which students identify problems or requirements and engage with solutions.</b>  SBS2 SBS3 BCS1, BSC3	Explore problems to identify requirements and experiment with solutions to computing-based problems or design briefs.	Identify computing-based problems and analyse requirements to compare and propose solutions using relevant tools and strategies.	Develop self-reliance and confidence in the analysis of problems, identify requirements and propose and evaluate alternative solutions for computing-based problems using relevant tools and strategies.	Integrate learned theory and techniques with practical experience to analyse problems, identify requirements and propose and critically evaluate alternative solutions for computing-based problems using relevant tools and strategies.
<b>B2</b>	<b>The level of competence of numeracy, literacy and algebra in the context of the software/web creation process and the wider computing and digital industries.</b>  SBS1 SBS2 BCS1, BCS2	Relate basic numeracy, literacy, and algebraic competencies to the context of computing using relevant software, tools, and strategies by way of technical problems and design solutions.	Apply numeracy, literacy, and algebraic competencies as part of the software/web design, development, art, and production process and apply it through contextualised practical work.	Appraise numeracy, literacy, and algebraic competencies as part of the software/web design, development, and production process and apply it through contextualised practical work.	Appraise numeracy, literacy, and algebraic competencies as a key part of the software/web design, development, art, and production process and demonstrate graduate level competencies through contextualised practical and project work.
<b>B3</b>	<b>The level in which students engage with critical thinking to collect and disseminate information through communication and academic work.</b>  SBS2 SBS6 BSC1	Apply the fundamentals of critical thought and research skills to a range of contextualised tasks using clear communication methods.	Analyse information from a range of sources to make an argued case and enhance ongoing practice.	Evaluate information by collecting a range of facts/ideas/elements in an argued case and produce new ideas in closely defined situations to enhance ongoing practice.	Rigorously apply research methods to relate and collect facts/ ideas/ elements in an argued case and disseminate information with clear communication to ensure professional practice.

<b>B4</b>	<p><b>The level of self-awareness the student demonstrates in a digital context and their awareness of wider legal, professional, moral, social and ethical issues.</b></p> <p><b>SBS2</b> <b>SBS6</b> <b>BCS1, BCS3</b></p>	Develop an ability to explore and recognise any risks or safety aspects that may be involved in their work and to the relevance of selected professional, legal, moral, social and ethical issues; communicate the results of their study/work accurately and reliably, and with structured and coherent arguments.	Use a range of established techniques using experiential learning exercises, to explore and recognise the relevance of selected professional, legal, moral, social and ethical issues in their work and to communicate the results of their study/work accurately and reliably, and with structured and coherent arguments.	Demonstrate technology industry acumen, and recognising the relevance of legal, professional, moral, social and ethical issues in the workplace and the wider environment. Able to inform and adapt their work to satisfy these issues.	Effective self-management in terms of time; ability to conduct research independently or as a team, into legal, professional, moral, social and ethical issues.
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## Subject Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>C1</b>	<p><b>The level of competency demonstrated in computer science and cyber security theories, strategies, principles and concepts.</b></p> <p><b>SBS1</b> <b>SBS4</b> <b>BCS2</b></p>	Develop a foundational understanding of cyber security theories, strategies, principles, and concepts, including fundamental concepts in network defence, governance, and risk.	Demonstrate intermediate competency in cyber security theories, strategies, principles, and concepts, focusing on distributed architecture and security by design. Further enhance problem-solving and teamwork skills using collaboration methodologies and project management with guidance as needed.	Gain a deeper understanding of advanced cyber security theories, strategies, principles, and concepts, including forensic and threat detection concepts and frameworks. Develop proficiency in research methods and project management with minimal guidance.	Attain comprehensive understanding of advanced cyber security theories, strategies, principles, and concepts by applying research methods. Evolve and expand new concepts autonomously
<b>C2</b>	<p><b>The level of computational problem solving and critical thinking as part of technical, mathematical, and logical component of Cyber Security.</b></p> <p><b>SBS2</b> <b>SBS4</b> <b>BCS2</b></p>	Apply computational problem-solving techniques and critical thinking skills in programming and computational methods.	Develop advanced computational problem-solving and critical thinking skills in cyber security, focusing on operational cyber security and secure programming frameworks.	Apply advanced computational problem-solving and critical thinking skills to address complex cyber security challenges, including cryptographic problems and security optimization.	Critically analyse and apply advanced computational problem-solving and critical thinking skills to address specialized cyber security challenges.
<b>C3</b>	<p><b>The level of competency demonstrated through</b></p>	Develop basic applied practical and technical skills	Apply practical and technical skills in real-world cyber	Demonstrate advanced applied practical and technical	Further demonstrate advanced applied practical and technical

	<b>applied practical and technical skills within cyber security.</b>  SBS3 SBS4 BCS2	with cyber security tools and techniques, including basic network configuration, network defence techniques, and fundamental programming skills.	security scenarios using applicable tools and techniques for cyber operations and hacking.	skills in cyber security, including threat detection, forensic tools and techniques, and application of optimisation and automation.	skills in the chosen specialist area of cyber security, developing and implementing solutions through an in-depth research project.
<b>C4</b>	<b>The level of competency demonstrated by the core skill of strategic system defence, detection and mitigation.</b>  SBS3 SBS4 BCS2	Gain a foundational understanding of system defence, detection, and mitigation techniques in cyber security, including governance frameworks.	Build upon foundation skills and develop higher competency in system defence, detection, and mitigation strategies in cyber security, focusing on industry-aligned challenges.	Demonstrate advanced competency in system defence, detection, and mitigation in complex industry-aligned cyber security scenarios. Conduct independent research and apply critical thinking skills to solve complete problems.	Exhibit advanced competency in system defence, detection, and mitigation in complex and specialised cyber security areas. Conduct in-depth research and demonstrate advanced analytical and problem-solving skills. Critically evaluate and apply advanced theories, models, techniques, and effectively communicate complex ideas both orally and in writing

### Practical, Professional and Employability Skills

	Core Aims	Level 4	Level 5	Level 6	Level 6 (Hons)
<b>D1</b>	<b>The level of awareness of the importance of communication, social interaction, and diversity within the learning environment and as a core employability skill.</b>  SBS5 SBS6 BCS1, BCS3	Identify the importance of social interaction, communication and diversity as part of employability skillsets and apply them within the learning environment.	Demonstrate and reflect on social interaction, communication and diversity within the learning environment to relate that to core employment and the context of the computing industry.	Demonstrate a high-level of social interaction, communication and diversity within the learning environment a further communication-based tasks to a variety of audiences	Have a full conceptualisation of social interaction, communication and diversity within the learning environment and relate that to further employable, computing industry-related practice
<b>D2</b>	<b>The competence demonstrated through team management and agile production</b>	Apply the use of agile methodologies as part of team-based organisation and group work on a small-scale computing project.	Analyse the use of agile methodologies as part of team-based organisation and group work on a computing project to	Evaluate the use of agile methodologies as part of team-based organisation and multi-disciplinary group work on a computing project to ensure	Have a full conceptualisation of the use of agile methodologies in the wider computing and digital industries to manage professional teams and projects

	<b>methodologies in a computing-based setting.</b>  <b>SBS5</b> <b>SBS6</b> <b>BCS2, BCS3</b>		enhance team communication and management.	high-level team communication and management.	including being able to demonstrate basic negotiation and leadership skills.
<b>D3</b>	<b>The level of awareness of opinions of others and the demonstration of flexibility in considering alternate viewpoints.</b>  <b>SBS5</b> <b>SBS6</b> <b>BCS1, BCS3</b>	Show an understanding of the opinions of other people and have flexibility in considering alternatives and opinions.	Demonstrate the ability to take the perspective of others and identify the similarities and differences between two approaches to the solution of a given problem.	Demonstrate the ability to take the perspective of others; compare the strengths and weaknesses of alternative interpretations determining the credibility of a source of information.	Demonstrate the ability to take the perspective of others; articulate the strengths and weaknesses of the suggestions of arguments posed and recognize the underlying agendas and motivations of individuals and groups involved in a given situation.
<b>D4</b>	<b>The level of competence demonstrated through organisational skill, personal learning and time-management skills and how they relate to the learning environment.</b>  <b>SBS2</b> <b>SBS6</b> <b>BCS2, BCS4</b>	Demonstrate basic organisation skills, goal setting and time-management to manage own learning.	Demonstrate effective personal organisation skills, goal setting and time-management to manage own learning with a focus on subject specialisms.	Demonstrate a high-level of personal learning by using organisational and time-management skills to set appropriate goals for improving project work.	Demonstrate a graduate-level of personal learning by using organisational and time-management skills to set appropriate goals to continue to hone-skills outside the learning environment or in further employment.

## MSc

### MSc Computer Science

#### Knowledge and Understanding

	Core Aims	Level 7
<b>A1</b>	<p>The level in which students engage with the core concepts, principles, and theories common to a range of specialist roles within their subject area.</p> <p>SBS1 SBS4 BCS1</p>	<p>Develop and demonstrate advanced knowledge and understandings of core concepts, theories and principles, within their specialisation.</p>
<b>A2</b>	<p>The level of competence shown through a wider range of development tools and software that directly relate to the topic specialisation.</p> <p>SBS1 SBS4 BCS2, BCS4</p>	<p>Acquire adept knowledge and competence in using a variety of techniques, technologies and tools that are essential for their subject area specialisation. Master the skills, techniques and tools within their field, demonstrating proficiency within their use.</p>
<b>A3</b>	<p>The level of awareness of topic specialism within a team-based system skillset.</p> <p>SBS1 SBS5 BCS1, BCS3</p>	<p>Conceptualise and critically evaluate subject specialisations within a team-based system skillset. Understand the different components of a system and/or project and understand how collaboration evolves.</p>
<b>A4</b>	<p>The level in which students engage with the wider context of their topic specialism and wider digital industries and they are related to ongoing practice.</p> <p>SBS1 SBS6 BCS1, BCS3</p>	<p>Understand the social and ethical facets of the subject specialisations that includes ethical decision-making, privacy considerations, security measures, and responsible use of data, including the broader social impact of technology.</p>

## Intellectual Skills

	Core Aims	Level 7
<b>B1</b>	<p><b>The level in which students identify problems or requirements and engage with solutions.</b></p> <p>SBS2 SBS3 BCS1, BCS3</p>	<p>Make professional judgements in the selection of technologies or processes for eroding complex problems into manageable components, defining problem statements and identifying underlying issues or constraints.</p>
<b>B2</b>	<p><b>The level of competence of numeracy, and literacy in the context of the computer science and digital industries.</b></p> <p>SBS1 SBS2 BCS1, BCS2</p>	<p>Demonstrate professional levels in numeracy and literacy by way of analysing and interpreting technical information and applying computational thinking to tackle challenges effectively, so producing adept written reports and skilful oral communication.</p>
<b>B3</b>	<p><b>The level in which students engage with critical thinking to collect and disseminate information through communication and academic work.</b></p> <p>SBS2 SBS6 BCS1</p>	<p>Critically evaluate specialist knowledge from a range of appropriate sources and clearly disseminate information through a range of advanced independent studies and academic research work.</p>
<b>B4</b>	<p><b>The level of self-awareness the student demonstrates in a digital context and their awareness of wider legal, professional, moral, social and ethical issues.</b></p> <p>SBS2 SBS6 BCS1, BCS3</p>	<p>Critically evaluate own digital practice and contemporary and emerging trends in the wider legal, professional, moral, social and ethical context. Understand the potential impact of technology on individuals and society and apply ethical principles in the decision-making process.</p>

## Subject Skills

	Core Aims	Level 7
<b>C1</b>	<p><b>The level of competency demonstrated by the core skills and the associated tools, technologies, and strategies.</b></p> <p>SBS1 SBS4 BCS2</p>	<p>Possess and demonstrate a mastery of all core skills using the contemporary and emerging tools, technologies and strategies. Exhibit deep knowledge and demonstrate a comprehensive understanding.</p>
<b>C2</b>	<p><b>The level of computational problem solving within the field of computer science, and the comprehension of advanced techniques and strategies.</b></p> <p>SBS2 SBS4 BCS2</p>	<p>Exhibit extensive practical and theoretical knowledge and understanding of advanced techniques and strategies. Demonstrate skills to tackle groundbreaking problems, conduct pioneering research, and contribute to the advancement of computer science.</p>
<b>C3</b>	<p><b>The level of competency to analyse problems, design algorithms, and implement efficient solutions using the associated tools, technologies and strategies.</b></p> <p>SBS2 SBS4 BCS2</p>	<p>Exhibit exceptional expertise in problem analysis, algorithm design, and implementation, while demonstrating extensive practical experience and a comprehensive understanding of advanced techniques and strategies.</p>
<b>C4</b>	<p><b>The level of practical skills demonstrated through the lifecycle of the Computer Analytics process.</b></p> <p>SBS3 SBS4 BCS2, BCS4</p>	<p>Demonstrate advanced computer analytics process by effectively collecting, preparing, analysing and interpreting data as part of a large, student-led research project.</p>



## Practical, Professional and Employability Skills

	Core Aims	Level 7
<b>D1</b>	<p><b>The level of awareness of the importance of communication, social interaction, and diversity within wider computer and digital industries as a core employability skill.</b></p> <p>SBS5 SBS6 BCS1, BCS3</p>	<p>Conceptualise and evaluate the importance of communication, social interaction and diversity within the computer and digital industries so enhancing employability and contribution to industry. Demonstrate professionalism in verbal and written postgraduate assessment.</p>
<b>D2</b>	<p><b>The awareness of professional and enterprising opportunities in relation to employability, computer systems and personal enterprise.</b></p> <p>SBS5 SBS6 BCS2, BCS3</p>	<p>Critically evaluate and engage in opportunities to pursue entrepreneurial endeavours, contribute to innovation-driven organisation and create own ventures within the computer systems industry.</p>
<b>D3</b>	<p><b>The level of awareness of opinions of others and the demonstration of flexibility in considering alternate viewpoints.</b></p> <p>SBS5 SBS6 BCS2, BCS3</p>	<p>Critically evaluate alternate viewpoints and the opinions of others to enhance and defend postgraduate academic and project work.</p>
<b>D4</b>	<p><b>The level of competence demonstrated through organisational skill, personal learning and time-management skills and how they relate to the wider computer science and digital industries.</b></p> <p>SBS2 SBS6 BCS2, BCS4</p>	<p>Devise, plan and deliver a large-scale, independent project that demonstrates structured organisation skills, professional learning and effective time-management.</p>
<b>D5</b>	<p><b>Advanced Practice route: The level of knowledge and understanding of operating in a business or employer environment(s).</b></p> <p>SBS5 SBS6 BCS1, BCS2, BCS3</p>	<p>Emphasises the deployment of higher-level skills within the context of operating in a business or employer environment. Apply advanced concepts and theories to solve complex problems, make informed decisions, and develop innovative strategies. Critically evaluate business practices and integrate multiple disciplines to achieve the organisational goals.</p>

## MSc Cyber Security

### Knowledge and Understanding

	Core Aims	Level 7
<b>A1</b>	<p><b>The level in which students engage with the core concepts, principles, and theories common to a range of specialist roles within their subject area.</b></p> <p>SBS1 SBS4 BCS1</p>	<p>Develop and demonstrate advanced knowledge and understandings of core concepts, theories and principles, within their specialisation.</p>
<b>A2</b>	<p><b>The level of competence shown through a wider range of development tools and software that directly relate to the topic specialisation.</b></p> <p>SBS1 SBS4 BCS2, BCS4</p>	<p>Acquire adept knowledge and competence in using a variety of techniques, technologies and tools that are essential for their subject area specialisation. Master the skills, techniques and tools within their field, demonstrating proficiency within their use.</p>
<b>A3</b>	<p><b>The level of awareness of topic specialism within a team-based system skillset.</b></p> <p>SBS1 SBS5 BCS1, BCS3</p>	<p>Conceptualise and critically evaluate subject specialisations within a team-based system skillset. Understand the different components of a system and/or project and understand how collaboration evolves.</p>
<b>A4</b>	<p><b>The level in which students engage with the wider context of their topic specialism and wider digital industries and they are related to ongoing practice.</b></p> <p>SBS1 SBS6 BCS1, BCS3</p>	<p>Understand the social and ethical facets of the subject specialisations that includes ethical decision-making, privacy considerations, security measures, and responsible use of data, including the broader social impact of technology.</p>

## Intellectual Skills

	Core Aims	Level 7
<b>B1</b>	<p><b>The level in which students identify problems or requirements and engage with solutions.</b></p> <p>SBS2 SBS3 BCS1, BCS3</p>	<p>Make professional judgements in the selection of technologies or processes for eroding complex problems into manageable components, defining problem statements and identifying underlying issues or constraints.</p>
<b>B2</b>	<p><b>The level of competence of numeracy, and literacy in the context of the computer science and digital industries.</b></p> <p>SBS1 SBS2 BCS1, BCS2</p>	<p>Demonstrate professional levels in numeracy and literacy by way of analysing and interpreting technical information and applying computational thinking to tackle challenges effectively, so producing adept written reports and skilful oral communication.</p>
<b>B3</b>	<p><b>The level in which students engage with critical thinking to collect and disseminate information through communication and academic work.</b></p> <p>SBS2 SBS6 BCS1</p>	<p>Critically evaluate specialist knowledge from a range of appropriate sources and clearly disseminate information through a range of advanced independent studies and academic research work.</p>
<b>B4</b>	<p><b>The level of self-awareness the student demonstrates in a digital context and their awareness of wider legal, professional, moral, social and ethical issues.</b></p> <p>SBS2 SBS6 BCS1, BCS3</p>	<p>Critically evaluate own digital practice and contemporary and emerging trends in the wider legal, professional, moral, social and ethical context. Understand the potential impact of technology on individuals and society and apply ethical principles in the decision-making process.</p>

## Subject Skills

	Core Aims	Level 7
<b>C1</b>	<p><b>The level of competency demonstrated by the core skills of cyber security theory and the associated tools, techniques, and strategies.</b></p> <p>SBS1 SBS4 BCS2</p>	Demonstrate a mastery of all core cyber security theory including emerging tools, techniques and strategies.
<b>C2</b>	<p><b>The level of computational problem solving as part of technical, mathematical, and logical cyber security-based contexts.</b></p> <p>SBS2 SBS4 BCS2</p>	Critically analyse and apply advanced computational problem solving and critical thinking skills to address specialised and industry focused cyber security problems using robust research methods and approaches.
<b>C3</b>	<p><b>The level of practical skills demonstrated through the lifecycle of the development process.</b></p> <p>SBS3 SBS4 BCS2, BCS4</p>	Thoroughly analyse and adeptly apply advanced computational problem-solving and critical thinking skills to effectively tackle specialised cyber security challenges that are industry-focused
<b>C4</b>	<p><b>The level of competency demonstrated by the core skill of technical and practical capabilities in strategic system defence, detection and mitigation.</b></p> <p>SBS3 SBS4 BCS2, BCS4</p>	Demonstrate advanced capabilities in technical; and practical skills in the tools and techniques within system defence detection and mitigation including advanced techniques demonstrated through a student led project.

## Practical, Professional and Employability Skills

	Core Aims	Level 7
<b>D1</b>	<p><b>The level of awareness of the importance of communication, social interaction, and diversity within wider computer and digital industries as a core employability skill.</b></p> <p>SBS5 SBS6 BCS1, BCS3</p>	<p>Conceptualise and evaluate the importance of communication, social interaction and diversity within the computer and digital industries so enhancing employability and contribution to industry. Demonstrate professionalism in verbal and written postgraduate assessment.</p>
<b>D2</b>	<p><b>The awareness of professional and enterprising opportunities in relation to employability, computer systems and personal enterprise.</b></p> <p>SBS5 SBS6 BCS2, BCS3</p>	<p>Critically evaluate and engage in opportunities to pursue entrepreneurial endeavours, contribute to innovation-driven organisation and create own ventures within the computer systems industry.</p>
<b>D3</b>	<p><b>The level of awareness of opinions of others and the demonstration of flexibility in considering alternate viewpoints.</b></p> <p>SBS5 SBS6 BCS2, BCS3</p>	<p>Critically evaluate alternate viewpoints and the opinions of others to enhance and defend postgraduate academic and project work.</p>
<b>D4</b>	<p><b>The level of competence demonstrated through organisational skill, personal learning and time-management skills and how they relate to the wider computer and digital industries.</b></p> <p>SBS2 SBS6 BCS2, BCS4</p>	<p>Devise, plan and deliver a large-scale, independent project that demonstrates structured organisation skills, professional learning and effective time-management.</p>
<b>D5</b>	<p><b>Advanced Practice route: The level of knowledge and understanding of operating in a business or employer environment(s).</b></p> <p>SBS5 SBS6 BCS1, BCS2, BCS3</p>	<p>Emphasises the deployment of higher-level skills within the context of operating in a business or employer environment. Apply advanced concepts and theories to solve complex problems, make informed decisions, and develop innovative strategies. Critically evaluate business practices and integrate multiple disciplines to achieve the organisational goals.</p>

## MSc Software Engineering

### Knowledge and Understanding

	Core Aims	Level 7
<b>A1</b>	<b>The level in which students engage with the core concepts, principles, and theories common to a range of specialist roles within their subject area.</b> SBS1 SBS4 BCS1	Develop and demonstrate advanced knowledge and understandings of core concepts, theories and principles, within their specialisation.
<b>A2</b>	<b>The level of competence shown through a wider range of development tools and software that directly relate to the topic specialisation.</b>  SBS1 SBS4 BCS2, BCS4	Acquire adept knowledge and competence in using a variety of techniques, technologies and tools that are essential for their subject area specialisation. Master the skills, techniques and tools within their field, demonstrating proficiency within their use.
<b>A3</b>	<b>The level of awareness of topic specialism within a team-based system skillset.</b>  SBS1 SBS5 BCS1, BCS3	Conceptualise and critically evaluate subject specialisations within a team-based system skillset. Understand the different components of a system and/or project and understand how collaboration evolves.
<b>A4</b>	<b>The level in which students engage with the wider context of their topic specialism and wider digital industries and they are related to ongoing practice.</b>  SBS1 SBS6 BCS1, BCS3	Understand the social and ethical facets of the subject specialisations that includes ethical decision-making, privacy considerations, security measures, and responsible use of data, including the broader social impact of technology.

## Intellectual Skills

	Core Aims	Level 7
<b>B1</b>	<p><b>The level in which students identify problems or requirements and engage with solutions.</b></p> <p>SBS2 SBS3 BCS1, BCS3</p>	<p>Make professional judgements in the selection of technologies or processes for eroding complex problems into manageable components, defining problem statements and identifying underlying issues or constraints.</p>
<b>B2</b>	<p><b>The level of competence of numeracy, and literacy in the context of the computer science and digital industries.</b></p> <p>SBS1 SBS2 BCS1, BCS2</p>	<p>Demonstrate professional levels in numeracy and literacy by way of analysing and interpreting technical information and applying computational thinking to tackle challenges effectively, so producing adept written reports and skilful oral communication.</p>
<b>B3</b>	<p><b>The level in which students engage with critical thinking to collect and disseminate information through communication and academic work.</b></p> <p>SBS2 SBS6 BCS1</p>	<p>Critically evaluate specialist knowledge from a range of appropriate sources and clearly disseminate information through a range of advanced independent studies and academic research work.</p>
<b>B4</b>	<p><b>The level of self-awareness the student demonstrates in a digital context and their awareness of wider legal, professional, moral, social and ethical issues.</b></p> <p>SBS2 SBS6 BCS1, BCS3</p>	<p>Critically evaluate own digital practice and contemporary and emerging trends in the wider legal, professional, moral, social and ethical context. Understand the potential impact of technology on individuals and society and apply ethical principles in the decision-making process.</p>

## Subject Skills

	Core Aims	Level 7
<b>C1</b>	<p><b>The level of competency demonstrated by the core skills of software engineering theory and the associated tools, techniques, and strategies.</b></p> <p>SBS1 SBS4 BCS2</p>	<p>Possess and demonstrate a mastery of all core skills in software engineering using the contemporary and emerging tools, technologies and strategies. Exhibit deep knowledge and demonstrate a comprehensive understanding of software engineering principles and practices</p>
<b>C2</b>	<p><b>The level of computational problem solving as part of technical, mathematical, and logical cyber security-based contexts.</b></p> <p>SBS2 SBS4 BCS2</p>	<p>Critically analyse and apply advanced computational problem solving and critical thinking skills to address specialised and industry focused cyber security problems using robust research methods and approaches.</p>
<b>C3</b>	<p><b>The level of practical skills demonstrated through the lifecycle of the development process.</b></p> <p>SBS3 SBS4 BCS2, BCS4</p>	<p>Demonstrate advanced software engineering skills by effectively participating in all phases of the software development lifecycle. This includes requirements gathering, system design, coding, testing, and deployment of software solutions as part of real-world projects.</p>
<b>C4</b>	<p><b>The level of competency demonstrated by the core skill of technical and practical capabilities in strategic system defence, detection and mitigation.</b></p> <p>SBS3 SBS4 BCS2, BCS4</p>	<p>Exhibit exceptional expertise in problem analysis, algorithm design, and implementation within the domain of software engineering. Demonstrate extensive practical experience and a comprehensive understanding of advanced techniques and strategies for designing and implementing efficient software solutions.</p>



## Practical, Professional and Employability Skills

	Core Aims	Level 7
<b>D1</b>	<p><b>The level of awareness of the importance of communication, social interaction, and diversity within wider computer and digital industries as a core employability skill.</b></p> <p>SBS5 SBS6 BCS1, BCS3</p>	<p>Conceptualise and evaluate the importance of communication, social interaction and diversity within the computer and digital industries so enhancing employability and contribution to industry. Demonstrate professionalism in verbal and written postgraduate assessment.</p>
<b>D2</b>	<p><b>The awareness of professional and enterprising opportunities in relation to employability, computer systems and personal enterprise.</b></p> <p>SBS5 SBS6 BCS2, BCS3</p>	<p>Critically evaluate and engage in opportunities to pursue entrepreneurial endeavours, contribute to innovation-driven organisation and create own ventures within the computer systems industry.</p>
<b>D3</b>	<p><b>The level of awareness of opinions of others and the demonstration of flexibility in considering alternate viewpoints.</b></p> <p>SBS5 SBS6 BCS2, BCS3</p>	<p>Critically evaluate alternate viewpoints and the opinions of others to enhance and defend postgraduate academic and project work.</p>
<b>D4</b>	<p><b>The level of competence demonstrated through organisational skill, personal learning and time-management skills and how they relate to the wider computer and digital industries.</b></p> <p>SBS2 SBS6 BCS2, BCS4</p>	<p>Devise, plan and deliver a large-scale, independent project that demonstrates structured organisation skills, professional learning and effective time-management.</p>
<b>D5</b>	<p><b>Advanced Practice route: The level of knowledge and understanding of operating in a business or employer environment(s).</b></p> <p>SBS5 SBS6 BCS1, BCS2, BCS3</p>	<p>Emphasises the deployment of higher-level skills within the context of operating in a business or employer environment. Apply advanced concepts and theories to solve complex problems, make informed decisions, and develop innovative strategies. Critically evaluate business practices and integrate multiple disciplines to achieve the organisational goals.</p>

## MSc Data Science and Big Data Analytics

### Knowledge and Understanding

	Core Aims	Level 7
<b>A1</b>	<b>The level in which students engage with the core concepts, principles, and theories common to a range of specialist roles within their subject area.</b> SBS1 SBS4 BCS1	Develop and demonstrate advanced knowledge and understandings of core concepts, theories and principles, within their specialisation.
<b>A2</b>	<b>The level of competence shown through a wider range of development tools and software that directly relate to the topic specialisation.</b>  SBS1 SBS4 BCS2, BCS4	Acquire adept knowledge and competence in using a variety of techniques, technologies and tools that are essential for their subject area specialisation. Master the skills, techniques and tools within their field, demonstrating proficiency within their use.
<b>A3</b>	<b>The level of awareness of topic specialism within a team-based system skillset.</b>  SBS1 SBS5 BCS1, BCS3	Conceptualise and critically evaluate subject specialisations within a team-based system skillset. Understand the different components of a system and/or project and understand how collaboration evolves.
<b>A4</b>	<b>The level in which students engage with the wider context of their topic specialism and wider digital industries and they are related to ongoing practice.</b>  SBS1 SBS6 BCS1, BCS3	Understand the social and ethical facets of the subject specialisations that includes ethical decision-making, privacy considerations, security measures, and responsible use of data, including the broader social impact of technology.

## Intellectual Skills

	Core Aims	Level 7
<b>B1</b>	<p><b>The level in which students identify problems or requirements and engage with solutions.</b></p> <p>SBS2 SBS3 BCS1, BCS3</p>	<p>Make professional judgements in the selection of technologies or processes for eroding complex problems into manageable components, defining problem statements and identifying underlying issues or constraints.</p>
<b>B2</b>	<p><b>The level of competence of numeracy, and literacy in the context of the computer science and digital industries.</b></p> <p>SBS1 SBS2 BCS1, BCS2</p>	<p>Demonstrate professional levels in numeracy and literacy by way of analysing and interpreting technical information and applying computational thinking to tackle challenges effectively, so producing adept written reports and skilful oral communication.</p>
<b>B3</b>	<p><b>The level in which students engage with critical thinking to collect and disseminate information through communication and academic work.</b></p> <p>SBS2 SBS6 BCS1</p>	<p>Critically evaluate specialist knowledge from a range of appropriate sources and clearly disseminate information through a range of advanced independent studies and academic research work.</p>
<b>B4</b>	<p><b>The level of self-awareness the student demonstrates in a digital context and their awareness of wider legal, professional, moral, social and ethical issues.</b></p> <p>SBS2 SBS6 BCS1, BCS3</p>	<p>Critically evaluate own digital practice and contemporary and emerging trends in the wider legal, professional, moral, social and ethical context. Understand the potential impact of technology on individuals and society and apply ethical principles in the decision-making process.</p>

## Subject Skills

	Core Aims	Level 7
<b>C1</b>	<b>The level of competency demonstrated by the core skills of asset production and the associated tools, technologies, and strategies.</b>  SBS1 SBS4 BCS2	Critically analyse the application of technology to a range of real-world problems particularly in industry and interdisciplinary research.
<b>C2</b>	<b>The level of computational problem solving as part of technical, mathematical, and logical data science contexts.</b>  SBS2 SBS4 BCS2	Apply advanced skills and research-led specialist knowledge in the areas of machine learning and statistics to the design of software and data analyses
<b>C3</b>	<b>The level of practical skills demonstrated through the lifecycle of the Data Analytics process.</b>  SBS3 SBS4 BCS2, BCS4	Design and program complex computer software and data products.

## Practical, Professional and Employability Skills

	Core Aims	Level 7
<b>D1</b>	<b>The level of awareness of the importance of communication, social interaction, and diversity within wider computer and digital industries as a core employability skill.</b>  SBS5 SBS6 BCS1, BCS3	Conceptualise and evaluate the importance of communication, social interaction and diversity within the computer and digital industries so enhancing employability and contribution to industry. Demonstrate professionalism in verbal and written postgraduate assessment.
<b>D2</b>	<b>The awareness of professional and enterprising opportunities in relation to employability, computer systems and personal enterprise.</b>  SBS5 SBS6 BCS2, BCS3	Critically evaluate and engage in opportunities to pursue entrepreneurial endeavours, contribute to innovation-driven organisation and create own ventures within the computer systems industry.

<b>D3</b>	<p><b>The level of awareness of opinions of others and the demonstration of flexibility in considering alternate viewpoints.</b></p> <p>SBS5 SBS6 BCS2, BCS3</p>	Critically evaluate alternate viewpoints and the opinions of others to enhance and defend postgraduate academic and project work.
<b>D4</b>	<p><b>The level of competence demonstrated through organisational skill, personal learning and time-management skills and how they relate to the wider computer science and digital industries.</b></p> <p>SBS2 SBS6 BCS2, BCS4</p>	Devise, plan and deliver a large-scale, independent project that demonstrates structured organisation skills, professional learning and effective time-management.
<b>D5</b>	<p><b>Advanced Practice route: The level of knowledge and understanding of operating in a business or employer environment(s).</b></p> <p>SBS5 SBS6 BCS1, BCS2, BSC3</p>	Emphasises the deployment of higher-level skills within the context of operating in a business or employer environment. Apply advanced concepts and theories to solve complex problems, make informed decisions, and develop innovative strategies. Critically evaluate business practices and integrate multiple disciplines to achieve the organisational goals.

## Learning and teaching strategy

The proposed computing programme suite will adopt the Computing subject area model for Learning, Teaching and Assessment, which is underpinned by university-wide frameworks such as the Active Learning Framework (ALF) and the Strategy for Supporting Student Learning and Achievement (SSSLA). The programme suite is also designed to facilitate key outcomes for the delivery of Employability Skills and contemporary industry methods and tools to assist the student to become an independent learner while still supporting students in their transition to the workforce or postgraduate education. The curriculum is designed to encourage an appreciation for learning, to develop a professional work ethic enriched by current research, industrial engagement and the development of transferable skills.

Students within the programme suite will benefit from a number of core project modules that are designed to simulate the realities of cross-discipline industry practise alongside key subject-specific modules that facilitate theoretical and practical experience of working with a range of industry aligned tools and software.

Scheduled learning and teaching activities are broad and varied in nature to provide students with an enriched learning experience and may include attendance at active learning sessions, industry-focused guest talks, practical exercises and workshops.

The programme suite provides students with knowledge in several subject disciplines that support industry best-practice and real-world application of skills within the various computing discipline. Learning is supported with a multidisciplinary and research-based approach to learning with a focus on emerging technologies and theories to equip students with the skillsets required for the rapid future growth in this area.

The course 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 and a new Cyber Innovation Academy providing industry and public service engagement and industry-leading, internationally recognised, certifications and accreditations within specialist computer science fields.

General purpose computing laboratories will also support the teaching activities as needed. The specialist labs offer access to a range of software that is utilised within the modules defined in the programmes and are key to the delivery of subject specialist content. Staff across the Computing department operate an Open-Door policy in relation to students, ensuring flexibility and responsiveness in dealing with queries and questions that occur outside of the scheduled teaching hours.

### **Online Community Platform:**

Microsoft Teams is an industry online community management platform. The computing programme team has been using Microsoft teams since COVID-19 and is looking to utilise this platform and other technologies to develop a more vibrant online community which provides bespoke communication for all modules and other student feedback initiatives.

### **Moodle:**

The Computing department has a long tradition of producing high quality online content in the support of teaching and learning. Students within the computing programme suite are heavily supported by a wide range of varied content including pre-recorded video content, interactive quizzes, discussion forums and other activities. Where practical, sessions are recorded and provided online.

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.

### **Play Space:**

The Play Space is a bespoke project room and supporting technology store. Students are able to make use of the space for practical project work and are able to book key technology for use in research experiments, practical work and other project-related activities. Available technologies include motion capture, haptic feedback systems, eye tracking, heart monitors, galvanic skin response systems, laptops and other assorted hardware/peripherals.

### **Industry Engagement & Enterprise:**

The computing department has implemented an enterprise strategy that focuses on various initiatives to enhance industry collaborations and educational engagement. The program suite actively supports industry events and collaborations throughout the year. Specifically, the Cyber Security program participates in World Skills UK Competitions and plans to expand its engagement to encompass a wider range of technology-based competitions. The department also collaborates with the Inspiring Skills Excellence in Wales project, working closely with both Higher Education (HE) and Further Education (FE) institutions in Wales to establish educational pathways from Key Stage 3 to degree level.

To address sector deficits, the department has established the Cyber-Innovation Academy, which takes a multidisciplinary approach to teaching and learning. The academy utilises gamified and project-based learning to develop a comprehensive set of skills alongside technological competencies, with a focus on industry and employability. The Cyber-Innovation Academy collaborates with industry engagement initiatives like Cyber Wales and EC-Council for industry-level certification and accreditation.

Through the Cyber Innovation Academy, the department will focus on collaboration and engagement, providing simulators and immersive environments for computing and computer security. The resources available will enable technical research, gamified learning, digital forensics, and business risk and mitigation. The innovative space encourages cross-disciplinary research projects, leveraging the full range of expertise within the department.

The department actively participates in the NCSC CyberFirst Schools Collaboration, which aims to inspire and nurture talented young individuals from diverse backgrounds to pursue careers in cybersecurity. Additionally, the department houses a cyber escape room within the Cyber-Innovation Academy, serving as a training facility for both students and industry professionals.

Promoting diversity in the tech industry, the department has established a North Wales chapter of Women in Tech in partnership with Cyber Wales and the South Wales Women in Cyber Cluster. This initiative aims to empower and support women in the field of cybersecurity.

Furthermore, the department is involved in Knowledge Transfer Partnerships (KTPs), which enables the department to collaborate with industry partners and facilitate the exchange of knowledge and expertise. Through KTPs, the department works closely with businesses and organizations to address real-world challenges and drive innovation in sectors relevant to its expertise.

Additionally, the department collaborates with other universities across Wales to deliver Technocamps, an innovative and impactful program aimed at inspiring and nurturing young

minds in the field of technology. Technocamps extends its reach from Key Stage 1 to Key Stage 4 pupils, ensuring that students at various educational levels have access to the program's enriching activities and resources. By participating in Technocamps, the department actively contributes to the development of young people who are interested in developing STEM careers in the future.

In a joint effort with Technocamps and the Welsh Government, the department has also become a Minecraft education centre. This collaborative project aims to provide Continuous Professional Development (CPD) opportunities to teachers, equipping them with the necessary skills and knowledge to effectively incorporate Minecraft into their classrooms. By supporting educators in utilizing Minecraft as an educational tool, the department promotes interactive and engaging learning experiences for students, fostering creativity and problem-solving skills.

Furthermore, the department actively participates in the Cisco Academy and RedHat Academy programs. These partnerships provide students with valuable industry certifications and training, preparing them for careers in networking and cybersecurity. By aligning with leading technology companies like Cisco and RedHat, the department ensures that its curriculum remains up to date with the latest advancements in the field. Through these academy programs, students gain practical skills and knowledge, making them highly sought-after by employers in the industry.

These various partnerships and collaborations form a crucial part of the department's comprehensive enterprise strategy. By engaging with industry, educational institutions, and government bodies, the department fosters a dynamic environment that promotes innovation, industry connections, and educational excellence. These initiatives not only benefit students and teachers but also contribute to the growth and development of the regional economy by producing a skilled workforce equipped to meet the demands of the ever-evolving technology sector.

### **The University Skills Framework**

At Wrexham University we aim to help students develop and enhance key employability skills and capabilities during their study. There are three key areas with different attributes, attitudes and skillsets and the aim is to help students have the opportunity to enhance and develop skills such as resilience, adaptability, confidence, team working, emotional intelligence and communication, creativity and acting ethically and sustainably. Programmes are designed to enable students to develop and enhance these skills via module content, module learning outcomes and assessment opportunities. Each module will help provide different opportunities for developing and enhancing these capabilities.

The programme has been designed using an Employability Level Descriptor in collaboration with the Careers and Employability team. The Employability Level Descriptor document is reviewed as part of validation and following approval will be published in the student programme handbook.

The Careers and Employability team are available to provide additional careers education activities for all programmes as well as individualised information, advice and guidance. Learners gain access to self-directed learning resources by logging into our [careers portal](#). Here students can book professional careers guidance appointments and make employment and volunteering applications and learn to build and develop their CV and applications.



### Work based/placement learning statement

The Industrial Placement will normally take place during the normal academic year, as if over the two normal University semesters. As such its duration should normally be in the region of 24 weeks, no less than 20 weeks, and no more than 28 weeks. As such, students are encouraged to secure placements prior to the commencement of the academic year in which it is to take place and ideally before the end of the second semester of their level 5 studies. The student and placement provider will negotiate specific working hours, arrangements, and payment. It is the expectation of the University that, whilst the student is being hosted by the Placement Provider, they will hold a contractual position in that organisation. As such, the Placement Provider is responsible for the Health and Safety of the student and the student will be expected to have conducted a full risk assessment, in collaboration with the Provider, in advance of placement commencement. The Risk Assessment is a mandatory part of the Placement Proposal, which students require the University to approve.

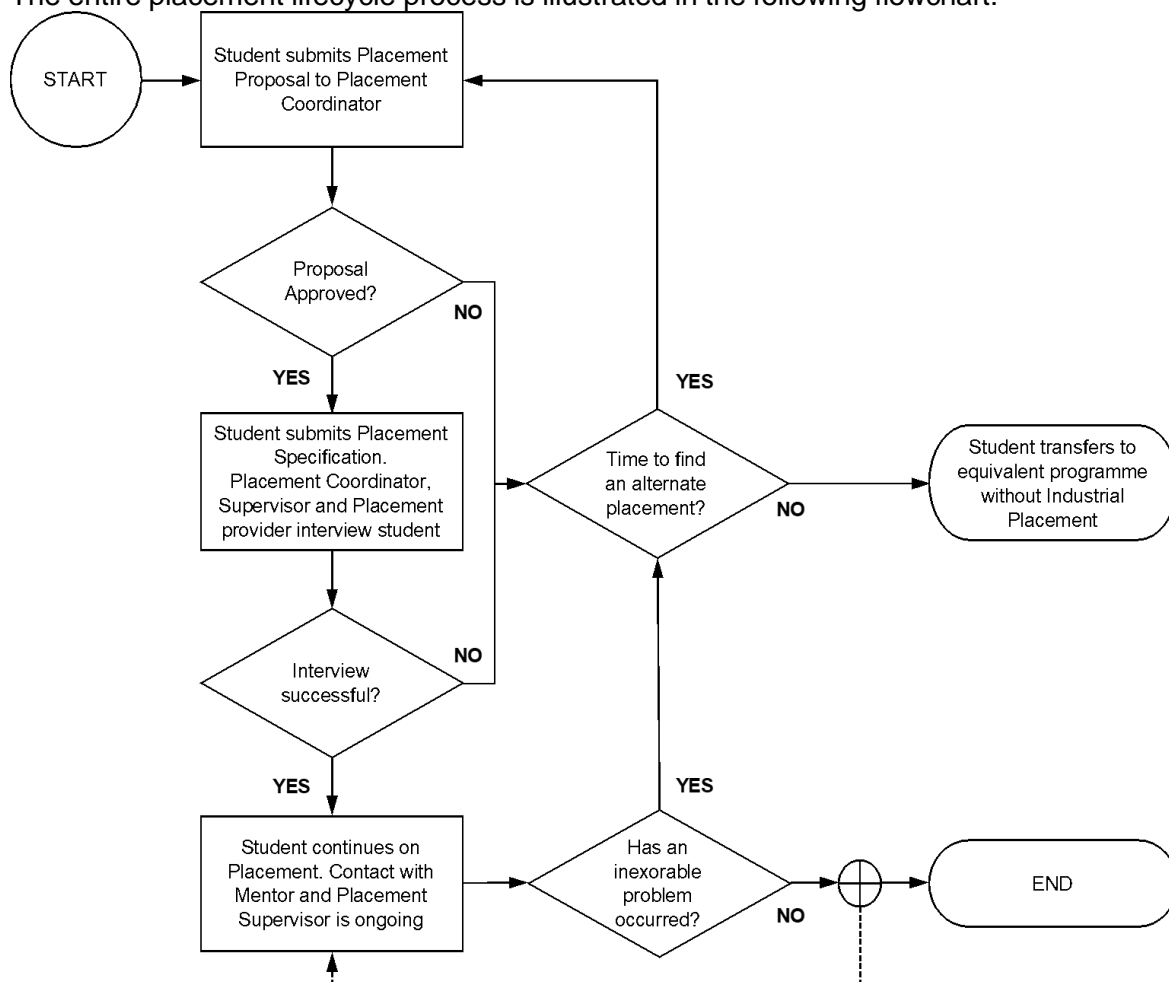
Students intending to take up a placement will be provided with a series of tutorial sessions, led by academic members of staff at the University, in the academic year that precedes the placement. This will be used to ensure that students understand the expectations and requirements of the placement, provide them with guidance and instruction upon obtaining a placement, and in completing the Placement Proposal and Placement Specification forms. It is the responsibility of students to identify and negotiate their own placement opportunity and to keep the University informed of their intentions. Placement Providers will be expected to nominate a Placement Mentor, who will bear responsibility for the student whilst with the Provider and will maintain contact with the Placement Supervisor whilst the student is on placement. Placement Supervisors and Mentors will be provided with a Handbook and the contact details of the Placement Supervisor, the Placement Coordinator, and the Faculty Dean, in case of any issues.

Briefly, the operation of the Industrial Placement will follow these steps:

1. The student will be expected to find and secure a suitable placement opportunity. This could be done independently or in collaboration with a member of staff at the University or via the University Careers & Employability team.
2. The student will inform the Industrial Placement module leader of the placement opportunity via a Placement Proposal form. The Placement Coordinator will then discuss the opportunity with the student and placement provider and make a decision regarding its suitability. The student will then be asked to complete a Placement Specification, in collaboration with their nominated Provider.
3. The Placement Specification will then be scrutinised. This will involve the Placement Coordinator conducting an interview, alongside the nominated Placement Supervisor and Mentor, of the student to determine the student's suitability to undertake the placement. The Placement Coordinator, Placement Supervisor, and Placement Mentor will determine if the proposed placement meets the academic requirements of the module.
  - a. If the placement is approved, practical arrangements will be completed by the student in collaboration with an allocated academic Supervisor and Mentor at the placement provider.
  - b. If the placement is not approved the student must find an alternate placement or change to the honour's degree programme award.
4. A full set of information, expectations and guidelines will be provided as part of the Industrial Placement Handbook, which will be supplied to students, placement providers and University supervisors and asked to sign a statement of agreement. This will include the Placement Specification, which is, in essence, a learning agreement and details the learning objectives, plan of work, and intended deliverables for the placement provider.

5. The student will produce a progress report before the end of the second semester and this will include a site visit by their academic supervisor.
6. During the course of the placement, the student will complete a learning log, which will be a diarised record of their activities and experience during the placement. This will also include comments and feedback from their mentor at the placement provider organisation. Students are expected to produce one entry every 3 to 4 weeks during placement.

The entire placement lifecycle process is illustrated in the following flowchart:



Students successfully completing the Industrial Placement module will be awarded the 120-credit value for the module, which is a requirement of obtaining their differentiated award title to include “with Industrial Placement”.

If irreconcilable problems occur during the placement the student should attempt to find an alternate placement opportunity. In the event that this cannot be done or if students fail to meet the expectations of the placement year, the student will be transferred to their relevant standard honours programme route and may have to suspend their studies for the remainder of the current academic year. Students failing the placement module will be automatically transferred to their relevant standard honours programme route by the appropriate Progression Board.

Students who withdraw from the industrial placement more than one month after commencement, but prior to completion will revert to the 3-year programme and re-join their studies the following academic year. There will be no opportunity to retake the placement year.

### Welsh medium provision

Although the programme team is not in a position to deliver module content through the medium of Welsh, students will be entitled to submit assessments in Welsh in line with university policy. The programmes will be delivered through the medium of English. Students are entitled to submit assessments in the medium of Welsh.

The programme team will continue to work closely with the Welsh Medium Development team with a view to exploring further potential avenues for integration of Welsh medium delivery.

One potential way forward is to promote the development of a bilingual culture to better support local/regional Welsh students. A starting place would be providing support for industrial placements in Welsh language medium. Core project modules can also be translated into Welsh to allow for better synchronisation with local/regional industry.

The wider programme suite currently maintains a small portfolio of short courses. These also have the potential to be translated into Welsh. Additional short courses focus on language localisation for games could provide a platform for increased Welsh language awareness.

As part of this revalidation process, it is the team's goal to support at least one complete module pathway through levels 4, 5 and 6 in the medium of Welsh, or at the very least with full Welsh translations of module materials.

### Assessment strategy

In line with ALF, innovative assessments strategies are used throughout the programmes and are always delivered in context and/or as part of portfolio building exercises to enhance student achievement and employability. Specifically, as part of all projects, students' achievement is tracked and managed through cloud-based systems. This not only delivers complete transparency of work allocations in student group projects but delivers an industry simulated environment which further enhances student awareness of the industry context of their work.

The modules assessment methods within the computing discipline put a strong emphasis on students' abilities and their mastery of specific skills or knowledge areas, which allows for a more tailored and individualised approach. To support students' learning, formative assessments are used throughout the module delivery, including activities such as self-reflection, peer assessments, and other effective feedback approaches.

For modules that are entirely assessed through coursework and portfolio-based assessment, milestone progress reviews are conducted as part of the formative assessment process, providing personalised feedback to students. These milestones not only offer support for the students' progress, but also help them to stay on track towards meeting the learning outcomes and achieving the intended deliverables of the module.

For modules that have an embedded industry-based certification there will be an opportunity for students to submit a coursework-based submission as a preparation to the final module assessment in order to obtain personalised feedback and monitor progress. The final assessment will be conducted in line with the requirements of the industry certification and may include a remote proctored in-class assessment.

Module code & title	Assessment type and weighting	Indicative submission date
COM474 Programming Fundamentals	100% Coursework	Wk. 12 & 24
COM475 Computer Systems and Architecture	100% Portfolio	Wk. 5 & 11
COM480 Database Systems	100% Coursework	Wk. 7 & 12
COM479 Fundamentals of Machine Learning	100% Coursework	Wk. 6 & 12
COM476 Information Security and Governance	50% Written Assignment 50% In-class test	Wk. 9 Wk. 12
COM481 Network Defence	30% Coursework 70% In Class Test	Wk. 5 & 12
COM482 Network Fundamentals	100% Coursework	Wk. 5 & 12
COM478 Software Development Methodologies	100% Portfolio	Wk. 12
COM553 Group Project	100% Coursework	Wk. 12
COM570 Cloud, Distributed Architecture and Security	100% Coursework	Wk. 7 & 12
COM575 Cyber Operations	100% Portfolio	Wk. 12
COM571 Data Structures and Algorithms	100% Coursework	Wk. 4, 8 & 12
COM576 Ethical Hacking	30% Coursework 70% In Class Test	Wk. 5 & 12
COM574 Full-Stack Development	100% Coursework	Wk.11
COM572 Machine Learning	100% Coursework	Wk. 4, 8 & 12
COM577 Secure Software Development	100% Coursework	Wk. 4, 8 & 12
COM569 Systems Engineering and Project Management	100% Portfolio	Wk. 7 & 12
COM573 User Experience Design	100% Coursework	Wk. 7 & 12
COM646 Project	100% Coursework	Wk. 12 & 24
COM658 Cryptography and Defensive Systems	100% Portfolio	Wk. 4, 8 & 12
COM664 Data Analysis and Visualisation	100% Portfolio	Wk. 4, 7 & 12
COM661 Deep Learning Implementation	100% Coursework	Wk. 7 & 12
COM665 DevOps	100% Coursework	Wk. 5 & 12
COM663 Digital Forensics	30% Coursework 70% In Class Test	Wk. 5 & 12
COM659 Emergent Technologies	100% Portfolio	Wk. 5 & 12
COM662 Software Development and Optimisation	100% Coursework	Wk. 6 & 12

Module code & title	Assessment type and weighting	Indicative submission date
COM666 Security Optimisation and Automation	100% Portfolio	Wk. 4, 8 & 12
COM660 Threat Detection and Incident Response	100% Portfolio	Wk. 4, 7 & 12
COM752 Dissertation Project	100% Dissertation/Project	Wk. 12 & 24
COM754 Research Methods for Digital Technologies	100% Coursework	Wk. 6 & 12
COM732 Mentorship in Technology	40% Written Assignment 60% Coursework	Wk. 12 & 24
COM762 Advanced Data Analysis and Visualisation	100% Portfolio	Wk. 4, 7 & 12
COM713 Advanced Data Structures and Algorithm	100% Portfolio	Wk. 7 & 11
COM758 Advanced Development Methodologies	100% Portfolio	Wk. 6 & 12
COM763 Advanced Machine Learning	100% Portfolio	Wk. 4, 7 & 12
COM761 Advanced Software Development	100% Coursework	Wk. 6 & 12
COM759 Applied Data Science	100% Portfolio	Wk. 7 & 11
COM757 Artificial Intelligence	70% Coursework 30% Written Assignment	Wk. 5 & 12
COM736 Database Systems and Data Analytics	100% Coursework	Wk. 6 & 11
COM756 Networking and Defensive Security	100% Portfolio	Wk. 5 & 12
COM764 Offensive Security and Incident Response	100% Portfolio	Wk. 12
COM760 Secure Computing	100% Portfolio	Wk. 12

### Assessment and award regulations

#### Derogations

N/A

#### Non Credit Bearing assessment

N/A

#### Borderline Classifications (Undergraduate programmes)

In considering borderline cases the Assessment Board shall raise the classification to the next level if all of the following criteria are met:

- At least 50% of the credits at level 6 fall within the higher classification.
- All level 6 modules must have been passed at the first attempt.
- The mark achieved for the *dissertation project* module is within the higher classification.

### **Ordinary Degrees**

The eligibility of the ordinary degree will depend on the accumulated credits.

### **Restrictions for trailing modules (Taught Masters)**

N/A

### **Accreditation**

BCS and NCSC accreditation to be confirmed following application.

### **Quality Management**

All provision is expected to comply with the University processes for quality assurance, the QAA Quality Code and any specific PSRB requirements to ensure the quality of the learning and teaching on the programme. The University uses the following mechanisms to help evaluate, enhance and review programmes delivery;

Student Evaluation of Module Questionnaire  
Student Voice Forum  
Individual student feedback  
Student representatives  
Continuous Programme Monitoring and Enhancement reports  
Periodic review and re-validation process  
External Examiner reports  
PSRB requirements and accreditation activities  
National Student Survey (NSS)

### **Support for Students**

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

- Library & IT Resources
- Inclusion Services
- Careers Service
- Chaplaincy
- Counselling & Wellbeing
- Student Funding and Welfare
- Student Administration

Please access the University's website at [www.wrexham.ac.uk](http://www.wrexham.ac.uk) to find out more about the Departments.

The Student Union offers support for students, please access their website at to find out more. <https://www.wrexhamglyndwrsu.org.uk/>

All students at Wrexham 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.

### **Equality and Diversity**

Wrexham 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 Equality and Diversity Policy, ensuring that everyone who has the potential to achieve in higher education is given the chance to do so. Please click on the following link for more information about [equality and diversity](#)

DATE OF APPROVAL	
Date of programme delivery approval event:	14 June 2024
Date of approval by Panel:	31 July 2024

# Prifysgol Wrexham Wrexham University

## 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): BSc (Hons) Computer Science

*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>
	Wrexham University
2	<b>Partner Provider</b>
	Hong Kong Institute of Technology (HKIT)
3	<b>Location of delivery</b>
	213 Nam Cheong Street, Sham Shui Po, Kowloon, Hong Kong (SSP Campus)
4	<b>Faculty/Department</b>
	Faculty of Social and Life Sciences
5	<b>Mode of study</b>
	Full & part time
6	<b>Frequency / timing of intake/s</b>
	September and February intakes
7	<b>Language of study</b>
	English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	Julie Mayers



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

### BSc (Hons) Computer Science

#### FULL-TIME DELIVERY

Level	Module Code	Module Title	Credit Value	Core/Option	Module Teacher	Delivery (i.e., semester 1,2)
Level 4	COM479	Fundamentals of Machine Learning	20	Core	HKIT: Mr. Andy Kwong	1
Level 4	COM476	Information Security and Governance	20	Core	HKIT: Mr. Paul Chow	1
<del>Level 4</del>	<del>COM478</del>	<del>Software Development Methodologies</del>	<del>20</del>	<del>Core</del>	<del>HKIT: Dr HK Ng</del>	<del>2</del>
Level 4	COM480	Database Systems	20	Core	HKIT:	2
Level 4	COM477	Applied Computational Methods	20	Core	HKIT: Mr. Mike Wong	2
Level 4	COM474	Programming Fundamentals	20	Core	HKIT: Mr. Mike Wong	1 & 2
Level 4	COM475	Computer Systems and Architecture	20	Core	HKIT: Ms. Jo Hugh	1 & 2
Level 5	COM571	Data Structures and Algorithms	20	Core	HKIT: Mr. Alan Tam	1
Level 5	COM577	Secure Software Development	20	Core	HKIT: Mr. Russel Lo	1
Level 5	COM570	Cloud, Distributed Architecture	20	Core	HKIT: Mr. Russel Lo	1
Level 5	COM572	Machine Learning	20	Core	HKIT: Dr HK Ng	2
Level 5	COM569	Systems Engineering and Project Management	20	Core	HKIT: Dr Ada Zheng	2
Level 5	COM553	Group Project	20	Core	HKIT: Dr HK Ng	2
Level 6	COM571	Deep Learning Implementation	20	Core	HKIT: Dr HK Ng	1
Level 6	COM577	Cryptography and Defensive Systems	20	Core	HKIT: Dr Ada Zheng	1
Level 6	COM570	Data Analysis and Visualisation	20	Core	HKIT: Mr. Yuman Chau	2
Level 6	COM572	Emergent Technologies	20	Core	HKIT: Mr. Thomas Lee	2
Level 6	COM569	Project	40	Core	HKIT: Dr HK Ng	1 & 2

## PART-TIME DELIVERY

Level	Module Code	Module Title	Credit Value	Core/Option	Module Teacher	Delivery (i.e., semester 1,2)	Year of Study
Level 4	COM479	Fundamentals of Machine Learning	20	Core	HKIT: Mr. Andy Kwong	1	Y2
Level 4	COM476	Information Security and Governance	20	Core	HKIT: Mr. Paul Chow	1	Y1
Level 4	COM478	Software Development Methodologies	20	Core	HKIT: Dr HK Ng	2	Y1
Level 4	COM480	Database Systems	20	Core	HKIT	2	Y1
Level 4	COM477	Applied Computational Methods	20	Core	HKIT: Mr. Mike Wong	2	Y2
Level 4	COM474	Programming Fundamentals	20	Core	HKIT: Mr. Mike Wong	1&2	Y1
Level 4	COM475	Computer Systems and Architecture	20	Core	HKIT: Ms. Jo Hugh	1&2	Y1
Level 5	COM571	Data Structures and Algorithms	20	Core	HKIT: Mr. Alan Tam	1	Y2
Level 5	COM577	Secure Software Development	20	Core	HKIT: Mr. Russel Lo	1	Y3
Level 5	COM570	Cloud, Distributed Architecture	20	Core	HKIT: Mr. Russel Lo	1	Y3
Level 5	COM572	Machine Learning	20	Core	HKIT: Dr HK Ng	2	Y2
Level 5	COM569	Systems Engineering and Project Management	20	Core	HKIT: Dr Ada Zheng	2	Y3
Level 5	COM553	Group Project	20	Core	HKIT: Dr HK Ng	2	Y3
Level 6	COM571	Deep Learning Implementation	20	Core	HKIT: Dr HK Ng	1	Y4
Level 6	COM577	Cryptography and Defensive Systems	20	Core	HKIT: Dr Ada Zheng	1	Y4

Level 6	COM570	Data Analysis and Visualisation	20	Core	HKIT: Mr. Frankie Leung	2	Y4
Level 6	COM572	Emergent Technologies	20	Core	HKIT: Mr. Thomas Lee	2	Y4
Level 6	COM569	Project	40	Core	HKIT: Dr HK Ng	1&2	Y5

DATE OF APPROVAL	
Date of programme delivery approval event:	07 August 2024
Date of approval by Panel:	14 October 2024

# Prifysgol Wrexham Wrexham University

## 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): BSc (Hons) Computer Science

*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>
	Wrexham University
2	<b>Partner Provider</b>
	IST College
3	<b>Location of delivery</b>
	68, Sygrou Avenue – 11742 Athens - Greece
4	<b>Faculty/Department</b>
	Faculty of Social and Life Sciences
5	<b>Mode of study</b>
	Full time
6	<b>Frequency / timing of intake/s</b>
	1 intake in October from 2025
7	<b>Language of study</b>
	Greek and English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	Julie Mayers

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

### BSc (Hons) Computer Science

#### Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 4	COM479	Fundamentals of Machine Learning	20	Core	1
Level 4	COM476	Information Security and Governance	20	Core	1
Level 4	COM478	Software Development Methodologies	20	Core	2
Level 4	COM477	Applied Computational Methods	20	Core	2
Level 4	COM474	Programming Fundamentals	20	Core	1 & 2
Level 4	COM475	Computer Systems and Architecture	20	Core	1 & 2
Level 5	COM571	Data Structures and Algorithms	20	Core	1
Level 5	COM577	Secure Software Development	20	Core	1
Level 5	COM570	Cloud, Distributed Architecture	20	Core	1
Level 5	COM572	Machine Learning	20	Core	2
Level 5	COM569	Systems Engineering and Project Management	20	Core	2
Level 5	COM553	Group Project	20	Core	2
Level 6	COM661	Deep Learning Implementation	20	Core	1
Level 6	COM658	Cryptography and Defensive Systems	20	Core	1
Level 6	COM664	Data Analysis and Visualisation	20	Core	2
Level 6	COM659	Emergent Technologies	20	Core	2
Level 6	COM646	Project	40	Core	1 & 2

DATE OF APPROVAL	
Date of programme delivery approval event:	07 August 2024
Date of approval by Panel:	14 October 2024

# Prifysgol Wrexham Wrexham University

## APPENDIX 3 – 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 Computer Science

*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>
	Wrexham University
2	<b>Partner Provider</b>
	IST College
3	<b>Location of delivery</b>
	68, Sygrou Avenue – 11742 Athens - Greece
4	<b>Faculty/Department</b>
	Faculty of Social and Life Sciences
5	<b>Mode of study</b>
	Full time
6	<b>Frequency / timing of intake/s</b>
	1 intake in October from 2025
7	<b>Language of study</b>
	English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	Julie Mayers

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

### MSc Computer Science

#### Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1
Level 7	COM757	Artificial Intelligence	20	Core	1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	1
Level 7	COM763	Advanced Machine Learning	20	Core	2
Level 7	COM760	Secure Computing	20	Core	2
Level 7	COM736	Database systems and Data Analytics	20	Core	2
Level 7	COM752	Dissertation Project	60	Core	3

DATE OF APPROVAL	
Date of programme delivery approval event:	24 July 2024
Date of approval by Panel:	27 September 2024

# Prifysgol Wrexham Wrexham University

## APPENDIX 4 – 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 Computer Science

*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>
	Wrexham University
2	<b>Partner Provider</b>
	LondonTec City Campus
3	<b>Location of delivery</b>
	Londontec City Campus, Nugegoda (Colombo) Sri Lanka
4	<b>Faculty/Department</b>
	Faculty of Social and Life Sciences
5	<b>Mode of study</b>
	Full time
6	<b>Frequency / timing of intake/s</b>
	October and February intakes
7	<b>Language of study</b>
	English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	Julie Mayers



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

### MSc Computer Science

#### October Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM754	Research Methods for Digital Technologies	20	Core	1
Level 7	COM757	Artificial Intelligence	20	Core	1
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	1
Level 7	COM763	Advanced Machine Learning	20	Core	2
Level 7	COM760	Secure Computing	20	Core	2
Level 7	COM736	Database systems and Data Analytics	20	Core	2
Level 7	COM752	Dissertation Project	60	Core	3

#### February Intake

Level	Module Code	Module Title	Credit Value	Core/Option	Delivery (i.e., semester 1,2)
Level 7	COM736	Database systems and Data Analytics	20	Core	1
Level 7	COM763	Advanced Machine Learning	20	Core	1
Level 7	COM760	Secure Computing	20	Core	1
Level 7	COM754	Research Methods for Digital Technologies	20	Core	2
Level 7	COM757	Artificial Intelligence	20	Core	2
Level 7	COM713	Advanced Data Structures and Algorithms	20	Core	2
Level 7	COM752	Dissertation Project	60	Core	3

DATE OF APPROVAL	
Date of programme delivery approval event:	07 August 2024
Date of approval by Panel:	23 October 2024

# Prifysgol Wreccsam Wrexham University

## APPENDIX 5 – 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 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>
	Wrexham University
2	<b>Partner Provider</b>
	CICRA Campus
3	<b>Location of delivery</b>
	CICRA Campus (PVT) Ltd, No 245, Srimath Anagarika Dharmapala Mawatha, Colombo 07, Sri Lanka
4	<b>Faculty/Department</b>
	Faculty of Social and Life Sciences
5	<b>Mode of study</b>
	Full time
6	<b>Frequency / timing of intake/s</b>
	September and February intakes from Sept 2025
7	<b>Language of study</b>
	English
8	<b>Name of academic link (correct at the point of programme approval)</b>
	Julie Mayers

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

<b>Program</b>	MSc in Cyber Security (FTE) Level 7
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Semester 1	<b>Module Title</b>	Research Methods for Digital Technologies	<b>Module Title</b>	Networking and Defensive Security	<b>Module Title</b>	Advanced Machine Learning
	<b>Module Code</b>	COM754	<b>Module Code</b>	COM756	<b>Module Code</b>	COM763
	<b>Credit Value</b>	20	<b>Credit Value</b>	20	<b>Credit Value</b>	20
	<b>Core/Option</b>	Core	<b>Core/Option</b>	Core	<b>Core/Option</b>	Core
	<b>Mod leader</b>	Ms. Nimesha Rajakaruna	<b>Mod leader</b>	Mr. Nirosh Ananda	<b>Mod leader</b>	Prof. Ruwan Abeysekera

Semester 2	<b>Module Title</b>	Secure Computing	<b>Module Title</b>	Offensive Security & Incident Response	<b>Module Title</b>	Advanced Data Structures and Algorithms
	<b>Module Code</b>	COM760	<b>Module Code</b>	COM764	<b>Module Code</b>	COM713
	<b>Credit Value</b>	20	<b>Credit Value</b>	20	<b>Credit Value</b>	20
	<b>Core/Option</b>	Core	<b>Core/Option</b>	Core	<b>Core/Option</b>	Core
	<b>Mod leader</b>	Dr. Sidath Liyanage	<b>Mod leader</b>	Mr. Anura Buddika	<b>Mod leader</b>	Mr. Rasika Alahakoon

Semester 3	<b>Module Title</b>	Dissertation Project
	<b>Module Code</b>	COM752
	<b>Credit Value</b>	60
	<b>Core/Option</b>	Core
	<b>Mod leader</b>	Prof. Ruwan Abeysekera