Prifysgol **Wrecsam**
Wrexham University

Module specification

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Module Code	COM659
Module Title	Emergent Technologies
Level	6
Credit value	20
Faculty	FACE
HECoS Code	100367
Cost Code	GACP
Pre-requisite module	N/A

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
BSc (Hons) Computer Science	Core
BSc (Hons) Computer Science with Industrial Placement	Core
BSc (Hons) Computing for Business	Core

Breakdown of module hours

Learning and teaching hours	12 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	12 hrs
Project supervision hours	0 hrs
Active learning and teaching hours total	**24 hrs**
Placement hours	0 hrs
Guided independent study hours	176 hrs
Module duration (Total hours)	**200 hrs**

Breakdown of module hours (to apply to Hong Kong Institute of Technology only)

Learning and teaching hours	12 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	12 hrs

Project supervision hours	0 hrs
Active learning and teaching hours total	**24 hrs**
Tutorial Contact Hours	51 hrs
Placement hours	0 hrs
Guided independent study hours	125 hrs
Module duration (Total hours)	**200 hrs**

Module aims

The module aims to provide students with an understanding of emerging technologies and their impact on the field of computing. It explores cutting-edge technologies, their underlying principles, and their potential applications. Students will gain knowledge and skills to critically evaluate and apply emerging technologies in real-world scenarios. The module also fosters creativity and innovation by encouraging students to explore and experiment with novel technologies.

Module Learning Outcomes

At the end of this module, students will be able to:

1	Evaluate and analyse emerging technologies and their potential impact on the field of computing and society.
2	Demonstrate the underlying principles and concepts behind different emerging technologies.
3	Apply emerging technologies to solve complex problems in the field of computing.
4	Demonstrate creativity and innovation by exploring and experimenting with novel technologies.

Assessment

Indicative Assessment Tasks:
This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

The assessment for this module will be made up of a couple of portfolio tasks, the first will be a research report that will analyse the impact of an emergent technology within the report they will evaluate the benefits, risks and ethical considerations. The second part of the portfolio students will work in teams or as individuals to develop a prototype or proof-of-concept utilizing an emerging technology.

Assessment 2:

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1,2,3,4	Portfolio	4000 Words or Equivalent	100%	

Derogations

None

Learning and Teaching Strategies

In line with the Active Learning Framework, this module will be blended digitally with both a VLE and online community. Content will be available for students to access synchronously and asynchronously and may indicatively include first and third-party tutorials and videos, supporting files, online activities any additional content that supports their learning.
As this module progresses, the strategies will change to best support a diverse learning environment. Initially, the module will start with a heavier reliance on engaging tutor-led lectures, demonstrations, and workshops to ensure that the students get the relevant threshold concepts. As the module continues experiential and peer learning strategies will be encouraged as the students' progress with their portfolio work.
Assessment will occur throughout the module to build student confidence and self-efficacy in relation to emerging technologies and their potential impacts.

Welsh Elements

This module is designed to support Welsh-speaking students in line with the Welsh Language Standards. While the primary delivery will be in English, students will have the opportunity to submit assessments, including coursework and projects, in Welsh if preferred. Relevant module materials, such as reading lists, key texts, and guidance, will be available bilingually upon request, ensuring accessibility for all students. Additionally, where possible, guest speakers, case studies, or examples may include references to the Welsh business context, especially in areas such as data use in local industries and Welsh public sector organisations.

The department encourages students to develop bilingual digital skills by incorporating Welsh-language datasets, tools, and resources where appropriate, offering an inclusive learning environment. We also support the development of bilingual visualisation techniques, enabling students to create digital outputs that reflect the Welsh language, should they wish to do so.

Indicative Syllabus Outline

Introduction to Emergent Technologies

- Definition and scope of emergent technologies
- Overview of the impact of emergent technologies

Internet of Things (IoT)

- Concepts and architecture of IoT systems
- IoT communication protocols and security considerations
- Practical applications and case studies of IoT in different industries

Artificial Intelligence and Machine Learning

- Principles of artificial intelligence and machine learning
- Deep learning and neural networks
- Applications of artificial intelligence and machine learning

Blockchain

- Fundamentals of blockchain technology
- Use cases of blockchain technology

Cloud Computing and Edge Computing

- Introduction to cloud computing models
- Edge computing and its role in distributed systems

Augmented Reality (AR) and Virtual Reality (VR)

- Introduction to AR and VR technologies
- Applications in entertainment, education, and training

Quantum Computing

- Basics of quantum computing principles
- Potential applications of quantum computing

Ethical Considerations and Future Trends

- Ethical implications of emergent technologies
- Legal and regulatory considerations
- Privacy and security concerns
- Emerging and future trends in the field

Indicative Bibliography

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads:
- Kl. Schwab. *The Fourth Industrial Revolution*. Portfolio Penguin. 2017.

Other indicative reading:
- J. Follett, *Designing for Emerging Technologies*. O'Reilly. 2014.
- E. Brynjolfsson & A. Mcafee. *The Second Machine Age: Work, Progress and Prosperity in a*
- *Time of Brilliant Technologies*. W.W Norton & Company. 2016.

Administrative Information

For office use only	
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