Swansea University
Prifysgol Abertawe

# FACULTY OF SCIENCE AND ENGINEERING

## UNDERGRADUATE STUDENT HANDBOOK

## YEAR 2 (FHEQ LEVEL 5)

## MATHEMATICS AND COMPUTER SCIENCE
## DEGREE PROGRAMMES

**SUBJECT SPECIFIC**
**PART TWO OF TWO**
**MODULE AND COURSE STRUCTURE**
**2025-26**

## DISCLAIMER

The Faculty of Science and Engineering has made all reasonable efforts to ensure that the information contained within this publication is accurate and up-to-date when published but can accept no responsibility for any errors or omissions.

The Faculty of Science and Engineering reserves the right to revise, alter or discontinue degree programmes or modules and to amend regulations and procedures at any time, but every effort will be made to notify interested parties.

It should be noted that not every module listed in this handbook may be available every year, and changes may be made to the details of the modules. You are advised to contact the Faculty of Science and Engineering directly if you require further information.

# IMPORTANT

## Term Dates

The 25-26 academic year begins on 29 September 2025

Full term dates can be found here

## Academic Integrity

Swansea University and the Faculty of Science of Engineering takes any form of **academic misconduct** very seriously. In order to maintain academic integrity and ensure that the quality of an Award from Swansea University is not diminished, it is important to ensure that all students are judged on their ability. No student should have an unfair advantage over another as a result of academic misconduct - whether this is in the form of **Plagiarism**, **Collusion** or **Commissioning**.

It is important that you are aware of the **guidelines** governing Academic Misconduct within the University/Faculty of Science and Engineering and the possible implications. The Faculty of Science and Engineering will not take intent into consideration and in relation to an allegation of academic misconduct - there can be no defence that the offence was committed unintentionally or accidentally.

Please ensure that you read the University webpages covering the topic – procedural guidance here and further information here. You should also read the Faculty Part One handbook fully, in particular the pages that concern Academic Misconduct/Academic Integrity.

## The difference between compulsory and core modules

**Compulsory modules** must be **pursued** by a student.

**Core modules** must not only be **pursued**, but also **passed** before a student can proceed to the next level of study or qualify for an award. Failures in core modules must be redeemed.

Further information can be found under “Modular Terminology” on the following link - https://myuni.swansea.ac.uk/academic-life/academic-regulations/taught-guidance/essential-info-taught-students/your-programme-explained/

## Key Programme Staff

| Mathematics Programme Director | Year 2 Coordinator |
|---|---|
| Dr Kristian Evans | Professor Chenggui Yaun |

# Year 2 (FHEQ Level 5) 2025/26
# Mathematics and Computer Science
**BSc Mathematics and Computer Science[GS08]**

## Compulsory Modules

| Semester 1 Modules | Semester 2 Modules |
|---|---|
| **CS-250**<br>**Database Systems**<br>**15 Credits**<br>**Dr KL Tam** | **CS-256**<br>**Visual Computing**<br>**15 Credits**<br>**Prof MW Jones** |
| | **MA-282**<br>**Game Theory and Optimization**<br>**15 Credits**<br>**Dr EJ Beggs** |
| **Total 120 Credits** | |

## Optional Modules

Choose exactly 15 credits

MAWXXX modules are for students who wish to study part of their course through the medium of Welsh.

| | | | | |
|---|---|---|---|---|
| **MA-201** | Multi-variable analysis | Dr JB Macmillan | TB1 | 15 (CORE) |
| **MAW201** | Dadansoddi Aml-Newidyn | Prof V Moroz | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-211** | Vector Spaces | Prof G Garkusha | TB1 | 15 (CORE) |
| **MAW211** | Gofodau Fector | Prof G Garkusha | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-212** | Groups and Rings | Dr EJ Beggs | TB2 | 15 (CORE) |
| **MAW212** | Grwpiau a Chylchoedd | Dr EJ Beggs | TB2 | 15 (CORE) |

**And**

Choose exactly 15 credits

CS-205: Logic and AI Theme. MA-241: Modelling and Simulation Theme. MA-252: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-205** | Declarative Programming | Dr M Seisenberger/Dr C Pradic | TB1 | 15 |
| **MA-203** | Professional Development and Career Planning | Dr SA Rolland/Dr SA Rolland | TB1+2 | 0 |
| **MA-241** | Differential Equations | Dr V Giunta | TB1 | 15 |
| **MA-252** | Probability Theory | Prof C Yuan/Prof E Lytvynov | TB1 | 15 |

**And**

Choose exactly 15 credits

CS-265: Logic and AI Theme. MA-243: Modelling and Simulation Theme. MA-292: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-265** | Artificial Intelligence | Dr AZ Wyner/Dr B Muller | TB2 | 15 |
| **MA-243** | Mathematical Modelling: Theory and Practice | Prof GG Powathil | TB2 | 15 |
| **MA-292** | Statistical Data Analysis | Dr K Evans | TB2 | 15 |

# Year 2 (FHEQ Level 5) 2025/26
# Mathematics and Computer Science
### BSc Mathematics and Computer Science with a Year in Industry[GS12]

## Compulsory Modules

| Semester 1 Modules | Semester 2 Modules |
|---|---|
| **CS-250**<br>**Database Systems**<br>**15 Credits**<br>**Dr KL Tam** | **CS-256**<br>**Visual Computing**<br>**15 Credits**<br>**Prof MW Jones** |
| **MA-203**<br>**Professional Development and Career Planning**<br>**0 Credits**<br>**Dr SA Rolland/Dr SA Rolland** | **MA-282**<br>**Game Theory and Optimization**<br>**15 Credits**<br>**Dr EJ Beggs** |
| **MA-203**<br>**Professional Development and Career Planning**<br>**0 Credits**<br>**Dr SA Rolland/Dr SA Rolland** | |
| **Total 120 Credits** | |

## Optional Modules

Choose exactly 15 credits

MAWXXX modules are for students who wish to study part of their course through the medium of Welsh.

| | | | | |
|---|---|---|---|---|
| **MA-201** | Multi-variable analysis | Dr JB Macmillan | TB1 | 15 (CORE) |
| **MAW201** | Dadansoddi Aml-Newidyn | Prof V Moroz | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-211** | Vector Spaces | Prof G Garkusha | TB1 | 15 (CORE) |
| **MAW211** | Gofodau Fector | Prof G Garkusha | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-212** | Groups and Rings | Dr EJ Beggs | TB2 | 15 (CORE) |
| **MAW212** | Grwpiau a Chylchoedd | Dr EJ Beggs | TB2 | 15 (CORE) |

**And**

Choose exactly 15 credits

CS-205: Logic and AI Theme. MA-241: Modelling and Simulation Theme. MA-252: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-205** | Declarative Programming | Dr M Seisenberger/Dr C Pradic | TB1 | 15 |
| **MA-241** | Differential Equations | Dr V Giunta | TB1 | 15 |
| **MA-252** | Probability Theory | Prof C Yuan/Prof E Lytvynov | TB1 | 15 |

**And**

Choose exactly 15 credits

CS-265: Logic and AI Theme. MA-243: Modelling and Simulation Theme. MA-292: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-265** | Artificial Intelligence | Dr AZ Wyner/Dr B Muller | TB2 | 15 |
| **MA-243** | Mathematical Modelling: Theory and Practice | Prof GG Powathil | TB2 | 15 |
| **MA-292** | Statistical Data Analysis | Dr K Evans | TB2 | 15 |

# Year 2 (FHEQ Level 5) 2025/26
# Mathematics and Computer Science
### BSc Mathematics and Computer Science with a Year Abroad[GS14]

## Compulsory Modules

| Semester 1 Modules | Semester 2 Modules |
|---|---|
| **CS-250**<br>**Database Systems**<br>**15 Credits**<br>**Dr KL Tam** | **CS-256**<br>**Visual Computing**<br>**15 Credits**<br>**Prof MW Jones** |
| | **MA-282**<br>**Game Theory and Optimization**<br>**15 Credits**<br>**Dr EJ Beggs** |
| **Total 120 Credits** | |

## Optional Modules

Choose exactly 15 credits

MAWXXX modules are for students who wish to study part of their course through the medium of Welsh.

| | | | | |
|---|---|---|---|---|
| **MA-201** | Multi-variable analysis | Dr JB Macmillan | TB1 | 15 (CORE) |
| **MAW201** | Dadansoddi Aml-Newidyn | Prof V Moroz | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-211** | Vector Spaces | Prof G Garkusha | TB1 | 15 (CORE) |
| **MAW211** | Gofodau Fector | Prof G Garkusha | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-212** | Groups and Rings | Dr EJ Beggs | TB2 | 15 (CORE) |
| **MAW212** | Grwpiau a Chylchoedd | Dr EJ Beggs | TB2 | 15 (CORE) |

**And**

Choose exactly 15 credits

CS-205: Logic and AI Theme. MA-241: Modelling and Simulation Theme. MA-252: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-205** | Declarative Programming | Dr M Seisenberger/Dr C Pradic | TB1 | 15 |
| **MA-203** | Professional Development and Career Planning | Dr SA Rolland/Dr SA Rolland | TB1+2 | 0 |
| **MA-241** | Differential Equations | Dr V Giunta | TB1 | 15 |
| **MA-252** | Probability Theory | Prof C Yuan/Prof E Lytvynov | TB1 | 15 |

**And**

Choose exactly 15 credits

CS-265: Logic and AI Theme. MA-243: Modelling and Simulation Theme. MA-292: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-265** | Artificial Intelligence | Dr AZ Wyner/Dr B Muller | TB2 | 15 |
| **MA-243** | Mathematical Modelling: Theory and Practice | Prof GG Powathil | TB2 | 15 |
| **MA-292** | Statistical Data Analysis | Dr K Evans | TB2 | 15 |

# Year 2 (FHEQ Level 5) 2025/26
# Mathematics and Computer Science
**BSc Mathematics and Computer Science[GS10]**

## Compulsory Modules

| Semester 1 Modules | Semester 2 Modules |
|---|---|
| **CS-250**<br>**Database Systems**<br>**15 Credits**<br>**Dr KL Tam** | **CS-256**<br>**Visual Computing**<br>**15 Credits**<br>**Prof MW Jones** |
| | **MA-282**<br>**Game Theory and Optimization**<br>**15 Credits**<br>**Dr EJ Beggs** |
| **Total 120 Credits** | |

## Optional Modules

Choose exactly 15 credits

MAWXXX modules are for students who wish to study part of their course through the medium of Welsh.

| | | | | |
|---|---|---|---|---|
| **MA-201** | Multi-variable analysis | Dr JB Macmillan | TB1 | 15 (CORE) |
| **MAW201** | Dadansoddi Aml-Newidyn | Prof V Moroz | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-211** | Vector Spaces | Prof G Garkusha | TB1 | 15 (CORE) |
| **MAW211** | Gofodau Fector | Prof G Garkusha | TB1 | 15 (CORE) |

**And**

Choose exactly 15 credits

| | | | | |
|---|---|---|---|---|
| **MA-212** | Groups and Rings | Dr EJ Beggs | TB2 | 15 (CORE) |
| **MAW212** | Grwpiau a Chylchoedd | Dr EJ Beggs | TB2 | 15 (CORE) |

**And**

Choose exactly 15 credits

CS-205: Logic and AI Theme. MA-241: Modelling and Simulation Theme. MA-252: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-205** | Declarative Programming | Dr M Seisenberger/Dr C Pradic | TB1 | 15 |
| **MA-203** | Professional Development and Career Planning | Dr SA Rolland/Dr SA Rolland | TB1+2 | 0 |
| **MA-241** | Differential Equations | Dr V Giunta | TB1 | 15 |
| **MA-252** | Probability Theory | Prof C Yuan/Prof E Lytvynov | TB1 | 15 |

**And**

Choose exactly 15 credits

CS-265: Logic and AI Theme. MA-243: Modelling and Simulation Theme. CS-292: Data Science Theme.

| | | | | |
|---|---|---|---|---|
| **CS-265** | Artificial Intelligence | Dr AZ Wyner/Dr B Muller | TB2 | 15 |
| **MA-243** | Mathematical Modelling: Theory and Practice | Prof GG Powathil | TB2 | 15 |
| **MA-292** | Statistical Data Analysis | Dr K Evans | TB2 | 15 |