# MATH C2608: Engineering Mathematics 4

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| **Module Title:** | Engineering Mathematics 4 |
| **Language of Instruction:** | English |

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| **Credits:** | 5 |

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| **NFQ Level:** | 6 |

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| **Module Delivered In** | 8 programme(s) |

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| **Teaching & Learning Strategies:** | A series of lectures will be delivered using whiteboard and data projector. The Institute Managed Learning Environment will be used to interactively communicate with students e.g. on-line test, discussion forums, reference information Mathematical software (e.g. Matlab, C) will be used by students to re-enforce the mathematical principles and practices |

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| **Module Aim:** | To give the student sufficient mathematical knowledge to support the other modules of the course and provide a solid foundation for further studies |

| **Learning Outcomes** | |
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| *On successful completion of this module the learner should be able to:* | |
| LO1 | Find the indefinite and definite integrals and apply integration in solving engineering-type problems |
| LO2 | Perform operations on matrices and use matrices to solve systems of linear equations |
| LO3 | Apply vector operations in an engineering context |
| LO4 | Solve integration and matrix problems using computer programmes |

| **Pre-requisite learning** |
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| ***Module Recommendations***<br>*This is prior learning (or a practical skill) that is recommended before enrolment in this module.* |
| No recommendations listed |
| ***Incompatible Modules***<br>*These are modules which have learning outcomes that are too similar to the learning outcomes of this module.* |
| No incompatible modules listed |
| ***Co-requisite Modules*** |
| No Co-requisite modules listed |
| ***Requirements***<br>*This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.* |
| No requirements listed |

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## Module Content & Assessment

| Indicative Content |
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| **Integration**<br>Find the indefinite and definite integrals and apply integration in solving engineering-type problems |
| **Matrices**<br>Perform operations on matrices and use matrices to solve systems of linear equations |
| **Vectors**<br>Vectors in two and three dimensions Dot and cross products Engineering problems with vectors |
| **Computer Application**<br>Solve engineering problems, plot graphs and perform mathematical computations through software packages such as Python and/or Matlab |

| Assessment Breakdown | % |
|---|---|
| Continuous Assessment | 70.00% |
| Practical | 30.00% |

**Continuous Assessment**

| *Assessment Type* | *Assessment Description* | *Outcome addressed* | *% of total* | *Assessment Date* |
|---|---|---|---|---|
| Examination | Each student will be obliged to complete a continuous assessment program | 1,2,3 | 70.00 | n/a |

No Project

**Practical**

| *Assessment Type* | *Assessment Description* | *Outcome addressed* | *% of total* | *Assessment Date* |
|---|---|---|---|---|
| Practical/Skills Evaluation | Use of software techniques to solve mathematical problems | 4 | 30.00 | n/a |

No End of Module Formal Examination

**SETU Carlow Campus reserves the right to alter the nature and timings of assessment**

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## Module Workload

| **Workload: Full Time** | | |
|---|---|---|
| *Workload Type* | *Frequency* | *Average Weekly Learner Workload* |
| Lecture | 12 Weeks per Stage | 3.00 |
| Practicals | 12 Weeks per Stage | 2.00 |
| Independent Learning Time | 15 Weeks per Stage | 4.33 |
| | Total Hours | 125.00 |

## Module Delivered In

| Programme Code | Programme | Semester | Delivery |
|---|---|---|---|
| CW_EEAER_B | Bachelor of Engineering (Honours) in Aerospace Engineering | 4 | Mandatory |
| CW_EFARG_B | Bachelor of Engineering (Honours) in Agricultural Systems Engineering | 4 | Mandatory |
| CW_EMMEC_B | Bachelor of Engineering (Honours) in Mechanical Engineering | 4 | Mandatory |
| CW_EEROB_B | Bachelor of Engineering (Honours) in Robotics and Automated Systems | 4 | Mandatory |
| CW_EFARG_D | Bachelor of Engineering in Agricultural Systems Engineering | 4 | Mandatory |
| CW_EEACS_D | Bachelor of Engineering in Aircraft Systems | 4 | Mandatory |
| CW_EEMEC_D | Bachelor of Engineering in Mechanical Engineering | 4 | Mandatory |
| CW_EEROO_D | Bachelor of Engineering in Robotics and Automated Systems | 4 | Mandatory |