

# WM175-15 Engineering Mathematics

**21/22**

**Department**

WMG

**Level**

Undergraduate Level 1

**Module leader**

Shaheen Hassan

**Credit value**

15

**Module duration**

13 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

This module provides the appropriate mathematical knowledge and skills base for the various modules of the AEP and in order to analyse engineering problems effectively.

[Module web page](#)

### Module aims

Typically, students begin with a review of the basics in the first half of the year, with concepts developed further in the second half of the year to enable students to formulate and solve engineering problems mathematically.

### Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

- Basic algebra
- Functions
- Angles & Trigonometry

- Introduction to Calculus
- Complex numbers
- Techniques & applications of Integration
- Matrices, determinants and simultaneous equations
- First & Second order differential equations
- Laplace transforms & their application to solving ordinary differential equations.

## Learning outcomes

By the end of the module, students should be able to:

- Demonstrate awareness and comprehension of appropriate mathematical terminology and methods.
- Combine and manipulate mathematical techniques effectively to explore engineering contexts and solve contextual problems..
- Justify the choice of mathematical techniques for a given problem based on a sound understanding of the basic concepts taught.
- Reflect on the efficiency of their approach to the problem and revise their technique where appropriate.

## Indicative reading list

Croft, A., Davison, R., Mathematics for Engineers. 5th edition. Pearson 2019.

ISBN: 1292253649, 9781292253640

Stroud K.A., Booth D.J. Engineering Mathematics. 7th edition. Palgrave Macmillan 2013.

ISBN: 1137031204, 9781137031204

[View reading list on Talis Aspire](#)

## Subject specific skills

communicating mathematically  
 quantitative reasoning  
 manipulation of precise and intricate ideas

## Transferable skills

analytical skills  
 problem solving  
 flexibility  
 persistence

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## Study

## Study time

Type	Required
Lectures	11 sessions of 1 hour (7%)
Seminars	22 sessions of 1 hour (15%)
Tutorials	6 sessions of 1 hour (4%)
Online learning (scheduled sessions)	(0%)
Private study	77 hours (51%)
Assessment	34 hours (23%)
Total	150 hours

## Private study description

Self-study: 80 hours

## Costs

No further costs have been identified for this module.

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## Assessment

You must pass all assessment components to pass the module.

### Assessment group A

	Weighting	Study time	Eligible for self-certification
WM175 Assessment 1	30%	10 hours	No
Online test to be completed within an hour.			
WM175 Assessment 2	70%	24 hours	Yes (extension)
Maths problems including within an engineering context to be solved fully by students. Number of words not relevant as it is calculations that will be submitted but a maximum of 10 sides of A4.			

## Feedback on assessment

Individual feedback will be given after each assessment.

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## Availability

## Courses

This module is Core for:

- Year 1 of UWMS-H7C3 Undergraduate Applied Professional Engineering (Control/Technical Support Engineer)
- Year 1 of DWMS-H7C7 Undergraduate Applied Professional Engineering (Control/Technical Support Engineer) (Degree Apprenticeship)
- Year 1 of UWMS-H7C2 Undergraduate Applied Professional Engineering (Electrical/Electronic Support Engineer)
- Year 1 of DWMS-H7C6 Undergraduate Applied Professional Engineering (Electrical/Electronic Support Engineer) (Degree Apprenticeship)
- Year 1 of UWMS-H7C1 Undergraduate Applied Professional Engineering (Manufacturing Engineer)
- Year 1 of DWMS-H7C5 Undergraduate Applied Professional Engineering (Manufacturing Engineer) (Degree Apprenticeship)
- Year 1 of UWMS-H7C4 Undergraduate Applied Professional Engineering (Product Design and Development Engineer)
- Year 1 of DWMS-H7C8 Undergraduate Applied Professional Engineering (Product Design and Development Engineer) (Degree Apprenticeship)