

## MODULE DESCRIPTION FORM

### DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

## ME962 DEGRADATION OF METALS AND ALLOYS

Module Registrar: Prof A M Galloway <a href="mailto:alex.galloway@strath.ac.uk">alex.galloway@strath.ac.uk</a>	Taught To (Course): MSc Advanced Mechanical Engineering Online	
Other Lecturers Involved:	Credit Weighting: 10	Semester: 1 (Online Learning)
Optional class for MSc AME Online only	Academic Level: 5	Suitable for Exchange: N

### Required prerequisites

**Note:** It is the responsibility of ALL students to ensure that they satisfy the prerequisite knowledge for this module BEFORE adding as part of curriculum selection. If unsure, please contact the Module Registrar or discuss with your Programme/Year Adviser of Studies.

None

### Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
	6				30		4	60	100

### Educational Aim

This module aims to develop an understanding of the degradation processes that are responsible for eventual in-service destruction of metals and alloys. The module will focus on the fundamental mechanisms and prevention strategies related to corrosion, erosion and corrosive wear.

### Learning Outcomes

On completion of the module the student is expected to:

- LO1 Gain knowledge and understanding of common degradation processes
- LO2 Understand the techniques used to protect metals and alloys from degradation
- LO3 Be able to apply the knowledge gained across several industrial sectors

### Syllabus

The module will teach the following:

- Introduction to the fundamental science of aqueous corrosion
- Factors that determine corrosion rates
- Methods of corrosion monitoring and prevention
- Principles of erosion and corrosive wear
- Degradation control strategies (Corrosion Engineering)

### Assessment of Learning Outcomes

#### Criteria

For each of the Module Learning Outcomes the following criteria will be used to make judgements on student learning:

#### LO1 Gain knowledge and understanding of common degradation processes

- C1 Exhibit knowledge of fundamental erosion / corrosion science
- C2 Demonstrate understanding of erosion / corrosion mechanisms

**LO2 Understand the techniques used to protect metals and alloys from degradation**

C1 Demonstrate understanding and application of erosion / corrosion protection measures

**LO3 Be able to apply the knowledge gained across several industrial sectors**

C1 Understand the specifics of erosion / corrosion mechanisms across a variety of applications

C2 Exhibit knowledge of the degradation phenomena influencing a variety of engineering alloys

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

**Principles of Assessment and Feedback**(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/professionalservices/staff/policies/academic/>)**Deliver high quality feedback information that helps learners self-correct.**

Students are invited and encouraged to contact staff using the Myplace forum or by email with any module-related questions upon which specific formative feedback will be provided, including advice on style and expectations.

**Ensure that summative assessment has a positive impact on learning.**

The open book nature of the exam encourages students to read and research widely in preparation of their written answers.

**Give choice in the topic, method, criteria, weighting or timing of assessments.**

The assignments and the exam style coursework offer a 2-week submission window, allowing students to schedule their coursework around employment-related commitments.

**Assessment Method(s) Including Percentage Breakdown and Duration of Exams (individual weightings)**

Examination				Coursework		Practical		Project	
Number	Month(s)	Duration	Weighting	Number	Weighting	Number	Weighting	Number	Weighting
				2 (DL)	20%, 80%				
*				*LO1, LO2, LO3		*		*	

\* **L/Os:** Indicate which Learning Outcomes (LO1, LO2, etc) are to be assessed by exam/coursework/practical/project as required.

**Coursework / Submission deadlines (academic weeks):**

Coursework 1 will be released in wk4 & coursework 2 in wk7, with submission deadlines in wks 6 & 9 respectively.

**Resit Assessment Procedures:**

Submission of alternate online ^coursework(s) prior to commencement of the July/August exam diet.

^^Students must contact the module Registrar for details as soon as results confirm that a resit is required.

**PLEASE NOTE:**

Students must gain a summative mark of 50% to pass the module. Students who fail the module at the first attempt will be re-assessed prior to the July/August exam diet. This re-assessment will consist entirely of online coursework. No marks from any previous attempts will be transferred to a new resit attempt.

**Recommended Reading**

\*\*\*Purchase recommended    \*\*Highly recommended reading    \*For reference

\*\*Pedefferri, P., Corrosion Science and Engineering, Springer

\*\*McCafferty, E., Introduction to Corrosion Science, Springer

**Additional Student Feedback**

(Please specify details of when additional feedback will be provided)

Date	Time	Room No
Email to arrange		

Session: 2024/25
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**Approved:**

<b>Programme Lead/Director Signature:</b> Dr A McLaren
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<b>Date of Last Modifications:</b> 22/11/2024
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(MAE template updated July 2024)

## MODULE TIMETABLE

**Module Code:**

**ME962**

**Module Title:**

## Degradation of Metals and Alloys

### Brief Description of Assessment:

Coursework 1 will be released in wk4 & coursework 2 in wk7. The corresponding submission deadlines will be in wk6 and wk9.

## Assessment Timing

Indicated on the table below are the start/submission dates for each assignment/project and the timing of each exam/assessment.

**Please note: Timings could change during unforeseen periods of disruption; this should only be used as a guide.**

Semester One	W&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item. Choose an item.	Course work Set	Choose an item. Choose an item.	Course work Submit	Course work Set	Choose an item. Choose an item.	Course work Submit	Choose an item. Choose an item.	Choose an item. Choose an item.	Choose an item.

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