MNE8007M: RESEARCH AND DEVELOPMENT CASE STUDY

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Research and Development Case Study

Subject Code
MNE - Mechanical Engineering
Course Number
8007M

Academic Unit
Mechanical Engineering (MNE)

College/School
College of Engineering (EG)

Course Duration
One Semester

Credit Units
3

Level
R8 - Research Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
MNE8007 Research and Development Case Study

Exclusive Courses
MNE8001 Comprehensive Studies

Part II Course Details

Abstract

The aim of the course is to develop the student's ability to carry out R&D study in chosen subject area related to mechatronics and automation systems. It will enable students to establish a Research & Development (R & D) proposal to meet defined requirements.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Understand the scope and nature of a research and development work, and the process of investigation;		x	x	
2	Establish a research and development proposal based on the selected engineering topic;			x	x
3	Develop professional skills of formulating a project work.			x	x

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

	LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Class Activities	Seminars and lectures; workshop.	1, 2, 3	9 hours
2	Small Group / individual Activities *	Group projects; group discussions; individual proposal development	2, 3	30 hours

Additional Information for LTAs

*Depending on the number of students participating in the course

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Continuous Assessment	1, 2, 3	100	-	Yes

Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)

Assessment Task
Large Class Activities (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Develop a project proposal that includes the definition of the problem and main outcomes that may be accomplished.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
Small Group Activities (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Evidence of good literature review to develop a methodology towards accomplishing the stated project objectives, project execution and the results obtainable, along with related discussion.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
Presentation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion
Summarize the critical aspects of the project, propose a suitable methodology that may be adopted to accomplish the stated objective(s) and likely results in a concise manner during the presentation.

Excellent
(A+, A, A-) High

Good
(B+, B, B-) Significant

Fair
(C+, C, C-) Moderate

Marginal
(D) Basic

Failure
(F) Not even reaching marginal levels

Assessment Task
Large Class Activities (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Develop a project proposal that includes the definition of the problem and main outcomes that may be accomplished.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Moderate

Failure
(F) Not even reaching marginal levels

Assessment Task
Small Group Activities (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion
Evidence of good literature review to develop a methodology towards accomplishing the stated project objectives, project execution and the results obtainable, along with related discussion.

Excellent
(A+, A, A-) High

Good
(B+, B) Significant

Marginal
(B-, C+, C) Moderate

Failure
(F) Not even reaching marginal levels

Assessment Task

Presentation (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Summarize the critical aspects of the project, propose a suitable methodology that may be adopted to accomplish the stated objective(s) and likely results in a concise manner during the presentation.

Excellent

(A+, A, A-) High

Good

(B+, B) Significant

Marginal

(B-, C+, C) Moderate

Failure

(F) Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

R&D development professional skill strategy, seminars and technical talks, Mechatronics, Automations, Robotics, Controls.

Reading List

Compulsory Readings

	Title
1	N.A.

Additional Readings

	Title
1	The students need to read technical papers and/or books based on respective project study.