

SYE8027P: TECHNOLOGICAL INNOVATION AND ENTREPRENEURSHIP

New Syllabus Proposal

Effective Term

Semester A 2025/26

Part I Course Overview

Course Title

Technological Innovation and Entrepreneurship

Subject Code

SYE - Systems Engineering

Course Number

8027P

Academic Unit

Systems Engineering (SYE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

D8 - Professional Doctorate

Medium of Instruction

Other Languages

Other Languages for Medium of Instruction

Chinese, supplemented by English

Medium of Assessment

Other Languages

Other Languages for Medium of Assessment

Chinese, supplemented by English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course aims to develop the students' ability to integrate and apply their knowledge acquired from this and other courses in the formulation and implementation of projects and evaluate, plan and manage engineering and industrial projects.

The aim of this course is to develop an understanding of the processes involved in developing innovative technological products, and of the skills and techniques that can be usefully employed to effectively manage development projects. At the conclusion of the course, the student is expected to:

- Appreciate the nature of innovative work in order to provide a framework for understanding the skills and techniques needed to manage innovative development projects;
- Understand the nature of management in innovative technological projects and the skills and techniques which can be employed in these situations;
- Understand the issues and techniques valuable for managing new product design to ensure the development of high-quality, manufacturable and cost-effective products; and
- Be aware of the market issues and economic aspects of technological product development projects.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	To identify and describe new ideas developed from group discussion and brain storming. Both technology-push and market pull will be used as sources of new ideas.	20	x	x	x
2	To describe the basic process and principle of product and process innovation. To understand the different thinking pattern and work style along the process of innovation. To understand the difference between creative and critical thinking.	20	x		
3	To integrate managerial issues like marketing, finance and team management into new product development. To conduct an innovation project from an entrepreneurial perspective rather than an engineering perspective.	20	x	x	x
4	To Identify examples and cases of innovation in daily life and work in order to be inspired by the fact that innovation is every where.	10	x		
5	To combine all the relevant engineering and managerial theories and methods and apply them in formulating a complete innovation and entrepreneurship project plan. The final goal is to integrate your creative ideas, physical design, patent search, marketing plan and financial plan into a complete entrepreneurial package.	30	x	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	Including lecturing, discussion, questioning, answering questions, participating in class assessments.	1, 2, 3, 4, 5	26 hrs/sem
2	Group project and tutorial	Including idea generation, product design, market research, financial analysis and project report.	1, 2, 3, 4, 5	13 hrs/sem

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Class activities	1, 2, 3, 4, 5	20	-	No
2	Group project	1, 2, 3, 4, 5	40	-	No
3	Continuous tests	1, 2, 3, 4, 5	40	-	No

Continuous Assessment (%)

100

Minimum Continuous Assessment Passing Requirement (%)

30

Assessment Rubrics (AR)

Assessment Task

1. Class activities(for students admitted in Semester A 2025/26 & thereafter)

Criterion

Active participation in class activities measured each time.

Excellent

(A+, A, A-)

Good

(B+, B, B-)

Fair

(C+, C, C-)

Marginal

(D)

Failure

(F)

Assessment Task

2. Group project(for students admitted in Semester A 2025/26 & thereafter)

Criterion

Contribution to group project in terms of problem, idea, product concept and/or business plan preparation, plus peer assessment.

Excellent

(A+, A, A-)

Good

(B+, B, B-)

Fair

(C+, C, C-)

Marginal

(D)

Failure

(F)

Assessment Task

3. Continuous tests(for students admitted in Semester A 2025/26 & thereafter)

Criterion

Identification of programmes and provide potential solutions.

Excellent

(A+, A, A-)

Good

(B+, B, B-)

Fair

(C+, C, C-)

Marginal

(D)

Failure

(F)

Additional Information for AR

Class activities: Including Q&A, attendance, and class activities. A scorecard will be used to measure how active a group will be in the class. For all the questions asked in the class, a score will be given and recorded.

Group project: Including a written report, the final presentation, peer assessment and a preliminary patent application form. The distribution of the scores among team members will be adjusted by peer assessment.

Continuous tests: Continuous tests will be conducted in the middle and the end of the semester.

Part III Other Information

Keyword Syllabus

- Creativity, innovation and entrepreneurship
- Creative thing and idea generation
- Sources of innovation
- Technology forecasting and assessment
- Innovative team
- Innovative organization
- Management fundamentals for innovation project
- Basic marketing and financial issues for innovation

Reading List

Compulsory Readings

Title	
1	Dorf, R. C. and Byers, T. H. (2005) Technology Ventures: From Idea to Enterprise, McGraw Hill, Singapore.

Additional Readings

Title	
1	Carayannis, Elias G. 2001, Strategic Management of Technological Learning, USA: CRC Press.
2	Christiansen, James A. 2000, Building the Innovative Organization: Management System that Encourage Innovation, USA: St. Martin's Press, Inc.
3	Drucker, Peter F. 1993, Innovation and Entrepreneurship: Practice and Principles, NY: Harper Business.
4	Hofstede, Geert H. 1997, Cultures and Organizations: Software of the Mind, UK: McGraw-Hill.
5	Jay, Ros 2000, The Ultimate book of Business Creativity: 50 Great Thinking Tools for Transforming your Business, UK: capstone Publishing.
6	Ricchiuto, J. 1997, Collaborative Creativity: Unleashing the Power of Shared Thinking, Akron & New York Oakhill Press.
7	Sherwood, Daniel 2002, Creating an Innovative Culture, UK: Capstone Publishing.
8	Smith, D (2006) Exploring Innovation, McGraw-Hill.
9	Tushman, Michael L. and Anderson, P. 1997, Managing Strategic Innovation and Change: a Collection of Readings, NY: Oxford University Press.