SYE8024P: INTEGRATIVE ENGINEERING MANAGEMENT

New Syllabus Proposal

Effective Term
Semester A 2025/26

Part I Course Overview

Course Title
Integrative Engineering Management

Subject Code
SYE - Systems Engineering
Course Number
8024P

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 provides theoretical background and knowledge for students to acquire and develop the set of strategic organizational and managerial skills and innovative capabilities in solving strategic and operational engineering/ technology management problems.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Describe and interrelate the knowledge in strategic engineering management		x	x	
2	Recognize the degree to which the organizational adjustments needed to compete in different industries		x	x	
3	Formulate organizational strategies that map firm strengths on to environmental opportunities		x	x	x
4	Identify problems from a strategic management perspective and propose innovative measures to resolve diverse Engineering Management problems		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	Large Class activities/ Directed Studies (i)	See remarks (i)	1	6 hours/sem
2	Individual Assignments/ appreciation of literature/ group discussion(ii)	See remarks (ii)	1, 2, 3, 4	8 hours/sem

3	Group discussion/ Individual report/ presentation on individual project ideas/ definition(iii)	See remarks (iii)	2, 3, 4	25 hours/sem

Additional Information for LTAs

Activity Type: Lecture/Tutorial/Laboratory Mix & Timetabled Activity (Hours per week): Lectures/Action learning activities/ Projects (3)

Or

Activity Type: Directed Studies/Group or Individual work & Timetabled Activity (Hours per week): Directed Studies Consultation (1); Group or Individual Work (2)

Remarks:

(i) Emphasis of the large class activities/directed studies is placed on the conceptual understanding and practical applications of various strategic engineering management topics.

(ii) A Learning Group comprises about 6-8 students working together to help each other in working out the following through group discussion, individual presentation, Q & A and individual report:

- Individual assignment: A 5 years strategic plan for each student’s own company;
- Identify strategic important problem areas to student’s company or industry;
- Extensive literature appreciation with possible innovative measures to resolve the identified problem areas;
- Project ideas possibly be developed as the student’s EngD project proposal.

(iii) Each student is expected to be actively involved in the process of diagnosing and taking actions to help each other on solving each other’s problems. The group will meet at regular intervals with a view of capturing and focusing on the learning, which is taking place through the problem solving process. It is essential for “real” dialogue about real problems and “real” feelings to take place, if there is to be meaningful learning. To avoid group meetings becoming merely interesting discussions, real work on problems must take place between meetings. These activities provide students with the opportunities to apply the strategic engineering management concepts and associated methodologies to identify and solve real-life problems for engineering enterprises and innovative solutions.

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Individual Assignment: Individual feedback to others/ Presentation /report	1, 2, 3	20	-	No
2	Literature appreciation: Individual feedback to others/ presentation & report	1, 2, 3	20	-	No
3	Individual project ideas: Individual feedback to others/ presentation & report	2, 3, 4	60	-	No

Continuous Assessment (%)

100

Minimum Continuous Assessment Passing Requirement (%)

30

Additional Information for ATs

It is inappropriate to use written examinations to assess individual or group works. A process of continuous assessment is used to replace the written test based on attendance, individual and group performance reflecting on literature appreciation, problem identification and strategic analysis works in the course. The participative and cooperative nature of the learning methods used also makes assessment by continuous assessment appropriate.

Individual assignments/reports and presentations are used to assess student’ s level of achievement of the intended learning outcomes, with balanced emphasis placed on both conceptual understanding and practical applications of the various strategic engineering management topics;

The individual/group performance, presentations and reports during the course assess students’ understanding of the strategic engineering management issues. Their commitment/feedback to help each other in the group and the learning objectives of the course are also sought for;

Students’ ability to identify engineering management problems with creative measures for improvements is assessed through project reports and presentations during and after the study process. Such achievement should be observable throughout the stream of problem identification and justification, data collection and root cause analysis leading to improvement suggestions.

Assessment Rubrics (AR)

Assessment Task

Individual Assignment: Individual feedback to others/Presentation
/report(for students admitted in Semester A 2025/26 & thereafter)

Criterion

Criterion of Individual Assignment: Individual feedback to others/Presentation
/report：Assess conceptual understanding & practical application of strategic engineering management topics. Evaluate clarity/depth of the presentation & written report.

Excellent

(A+, A, A-)

Good

(B+, B, B-)

Fair

(C+, C, C-)

Marginal

(D)

Failure

(F)

Assessment Task

Literature appreciation: Individual feedback to others/presentation & report (for students admitted in Semester A 2025/26 & thereafter)

Criterion

Criterion of Literature appreciation: Individual feedback to others/presentation & report：Assess critical analysis and understanding of literature. Evaluate presentation/report clarity in discussing themes, strengths, weaknesses, and relevance. Score feedback to peers for insightful critique and contribution to scholarly discourse on the literature.

Excellent

(A+, A, A-)

Good

(B+, B, B-)

Fair

(C+, C, C-)

Marginal

(D)

Failure

(F)

Assessment Task

Individual project ideas: Individual feedback to others/presentation & report(for students admitted in Semester A 2025/26 & thereafter)

Criterion

Criterion of Individual project ideas: Individual feedback to others/presentation & report：Assess creativity in identifying engineering management problems and proposing solutions. Evaluate justification, feasibility, and potential impact in the presentation/report. Score feedback to peers for helpful suggestions on problem identification, analysis, and improvement measures.

Excellent

(A+, A, A-)

Good

(B+, B, B-)

Fair

(C+, C, C-)

Marginal

(D)

Failure

(F)

Part III Other Information

Keyword Syllabus

Strategic engineering management process in practice: internal organization analysis, external environmental analysis, strategic alternative analysis, formulating corporate and business strategies, implementing corporate and business strategies, strategic control and evaluation aspects;

Problem identification and solving techniques, Project planning and control, Reporting and presentation.

Students will work in cooperative teams on multi-disciplinary projects related to the practice of Engineering Management. In addition to the successful completion of the assigned tasks, students are required to learn through collaborative actions

in order to improve their understanding on creative strategic thinking, innovative problem solving, team working processes, the relationships and interactions between the fields of knowledge that they have learnt in this and other courses.

Reading List

Compulsory Readings

	Title
1	T L Wheelen & J D Hunger - Strategic Management and Business Policy, 11E, Pearson

Additional Readings

	Title
1	M A Hitts, R D Ireland & R E Hoskisson - Strategic Management, Competitiveness and Globalization: Concepts and Cases, 7th Edition, Thomson/South-western, 2007
2	J B Barney & W S Hesterly – Strategic Management and Competitive Advantage, Concepts and Cases, 2E, Pearson
3	G.R. Jones and J.M. George, Essentials of Contemporary Management, 2nd edition, 2007, McGraw-Hill.