

SYE3004: PRODUCTION PLANNING AND CONTROL

New Syllabus Proposal

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Production Planning and Control

Subject Code

SYE - Systems Engineering

Course Number

3004

Academic Unit

Systems Engineering (SYE)

College/School

College of Engineering (EG)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

MA1201 Calculus and Basic Linear Algebra II or MA1301 Enhanced Calculus and Linear Algebra II

Equivalent Courses

ADSE3004 Production Planning and Control

Exclusive Courses

Nil

Part II Course Details

Abstract

The course aims to equip students with necessary skills for planning and controlling production and the associated operations. Various production management techniques and their practical implementation issues in product realization and logistics are introduced.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Develop aggregate production plan, master production schedule, material requirement and logistics plan, and capacity requirement plan for industrial applications.	20	x		
2	Make basic demand forecasting (such as moving averages, Holt's methods, Winters' method, regression analysis) for various types of demand patterns.	20	x		
3	Apply basic techniques of inventory monitoring and control (EOQ model with its various extensions) in production planning and control.	20	x		
4	Schedule operations at a work center under operational constraints, and Optimize facilities layout and location.	20	x		
5	Formulate models in industrial settings for analyzing problems arising from production planning and logistics, operations scheduling, material handling and transportation planning, and find optimal solutions to these problems. Apply open-source enterprise resource planning systems to automate these operations.	20	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.

Teaching and Learning Activities (TLAs)

TLAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Large Class Activities	Learning through teaching is primarily based on lectures. Emphasis in lectures is placed on the understanding of the principles and industrial applications of different production planning and control techniques.	1, 2, 3, 4, 5	3 hours/week

Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Tests and Assignments	1, 2, 3, 4, 5	50

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

For a student to pass the course, at least 30% of the maximum mark for the examination should be obtained.

Assessment Rubrics (AR)**Assessment Task**

Homework sets and Test

Criterion

Submitted written work

Excellent (A+, A, A-)

For all 5 CILOs, strong evidence of original thinking; good organization, capacity to analyse and synthesize; superior grasp of subject matter; evidence of extensive knowledge base.

Good (B+, B, B-)

For at least 4 out of 5 CILOs, evidence of grasp of subject, some evidence of critical capacity and analytic ability; reasonable understanding of issues; evidence of familiarity with literature.

Fair (C+, C, C-)

For at least 4 out of the 5 CILOs, evidence that student is profiting from the university experience; understanding of the subject; ability to develop solutions to simple problems in the material

Marginal (D)

For at least 4 out of the 5 CILOs, sufficient familiarity with the subject matter to enable the student to progress without repeating the course.

Failure (F)

Little evidence of familiarity with the subject matter; weakness in critical and analytic skills; limited, or irrelevant use of literature.

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Examination

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Part III Other Information

Keyword Syllabus

Aggregate production planning. Master production scheduling. Material requirement and logistics planning. Capacity planning. Basic demand forecasting techniques. Job scheduling. Basic production control and inventory management. Facilities design and location. Material handling. Introduction to enterprise resource planning systems.

Reading List

Compulsory Readings

Title	
1	Lecture notes and slides provided by the instructor

Additional Readings

Title	
1	S. Nahmias, Production and Operations Analysis, 7th ed., Waveland Press, 2015.
2	Chopra and Meindl, Supply Chain Management, 6th ed., Pearson, 2016.
3	D.R. Kiran, Production Planning and Control: A Comprehensive Approach, 1st ed., Butterworth-Heinemann, 2019.