



A) COURSE

Course Id:	Course
5647	PRODUCTION SYSTEMS

Class Hours per Week	Lab hours per week	Complementary practices	Credits	Total hour course
3	2	3	8	80

B) GENERAL COURSE INFORMATION:

	EE (IEA)	ME (IM)	MME (IMA)	EME (IME)	MTE (IMT)
Level:		V			IX
Course Type (Required/Elective)		REQUIRED			ELECTIVE
Prerequisite Course:		OPERATIONS RESEARCH			OPERATIONS RESEARCH
CACEI Classification:		OC			OC

C) COURSE OBJECTIVE

At the end of the course, the student will be capable of:

The student should know the existing production systems and which is the involvement and participation of the same mechanical engineer according to trends in manufacturing, whereas a systemic approach. Emphasize that their involvement may include both the design of a system and its stages or the improvement of an existing one.

D) TOPICS (CONTENTS AND METHODOLOGY)

1 . PRODUCTION SYSTEMS: PRINCIPLES AND TYPES		10 Hours
Specific Objective:	The student will learn the principles, types and role of production systems within a manufacturing firm.	
	1.1 Production systems concepts 1.2 Characteristics and classifications of production systems 1.3 Components of production systems 1.4 Production systems models 1.5 Production systems and their role within a manufacturing firm 1.5.1 A systems and process-based approach 1.6 Demand-driven production systems	
Readings and other resources	Books, Articles, Further literature, Internet Links.	
Teaching Methodologies	Exhibition themes, concept analysis, problem resolution and discussion, group work and individual.	
Learning Activities		

2.- PRODUCTION SYSTEMS DESIGN: GENERAL ASPECTS		10 Hours
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Specific Objective:	The student will learn the general aspects involved in the design of a production system.
<ul style="list-style-type: none"> 1.1 Principles of production systems design 1.2 Production capacity, size, location and layout 1.3 Selection of manufacturing facilities 1.4 Product design and development and its influence on production systems 1.4.1 Advanced product quality management 1.5 Fundamentals of manufacturing facilities design 1.6 Information systems design 	
Readings and other resources	Books, Articles, Further literature, Internet Links.
Teaching Methodologies	Exhibition themes, concept analysis, problem resolution and discussion, group work and individual.
Learning Activities	Analysis and discussion of actual cases in collaboration , exposure results case analysis.

3 - PRODUCTION SYSTEMS DESIGN: SPECIFIC ASPECTS	10 Hours
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Specific Objective:	the student will identify the specific aspects and activities involved in the design of a production system
<ul style="list-style-type: none"> 3.1 Value stream mapping <ul style="list-style-type: none"> 3.1.1 Material and information flows in the value stream of a production system 3.1.2 Value stream mapping: activities and analysis 3.2 Production process analysis <ul style="list-style-type: none"> 3.2.1 Human aspect/working conditions 3.2.2 Manufacturing process 3.2.3 Maintenance management systems 3.2.4 Tool preparation, management and changes 3.2.5 Material and equipment management/supply 3.3 Organization/operations performance metrics 	
Readings and other resources	Books, Articles, Further literature, Internet Links.
Teaching Methodologies	Exhibition themes, concept analysis, problem resolution and discussion, group work and individual.
Learning Activities	Analysis and discussion of actual cases in collaboration , exposure results case analysis.

4 - METHODS ENGINEERING	10 Hours
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Specific Objective:	The student will understand the importance of methods engineering in the design and functioning of a production system
<ul style="list-style-type: none"> 1.1 Time and motion study <ul style="list-style-type: none"> 1.1.1 A brief history 1.1.2 Current practices and perspectives 1.2 Charts and graphs used in methods engineering <ul style="list-style-type: none"> 1.2.1 Operations process chart 1.2.2 Process flow chart 1.2.3 Activities flow chart 1.2.4 Operations process chart 1.3 Line-balancing methods 	
Readings and other resources	Books, Articles, Further literature, Internet Links.
Teaching Methodologies	Exhibition themes, concept analysis, problem resolution and discussion, group work and individual.
Learning Activities	Analysis and discussion of actual cases in collaboration , exposure results case analysis.

5 - DEMAND AND MATERIALS REQUIREMENT MANAGEMENT	8 Hours
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Specific Objective:	The student will learn the principles of customer demand management and its impact on materials planning
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1.1	Customer demand
1.2	Production planning and control
1.2.1	Production planning and control functions
1.3	Inventory management
1.3.1	Inventory control
1.3.1.1	Raw material, work-in-process and finished goods inventories
1.3.2	Activity-based costing (ABC) analysis
1.3.3	Inventory control objectives
Readings and other resources	Books, Articles, Further literature, Internet Links.
Teaching Methodologies	Exhibition themes, concept analysis, problem resolution and discussion, group work and individual.
Learning Activities	Analysis and discussion of actual cases in collaboration , exposure results case analysis.

E) TEACHING AND LEARNING METHODOLOGIES

Explanation, analysis and presentation of topics and concepts, problem resolution and discussion and case-study related issues, group and individual work. Consultations and research with Internet use. Using the specified software.

F) EVALUATION CRITERIA:

Evaluation:	Schedule	Suggested Form of Evaluation and weighing	Topics
1er. Evaluation Partial	Session 16	Exam 80% , Homework 20%,	Unity 1 y 2
2º Evaluation Partial	Session 32	Exam 80% , Homework 20%,	Unity 2 y 3
3er. Evaluation Partial	Session 48	Exam 80% , Homework 20%,	Unity 3 y 4
Evaluation Final Ordinary		100% Average partial evaluations	
Other Activity:			
Exam Extraordinary	Week 17 of the semester in progress	100% Exam	100% Program
Exam of title	According to schedule school secretary	100% Exam	100% Program
Exam regularization	According to schedule school secretary	100% Exam	100% Program

G) BIBLIOGRAPHY AND ELECTRONIC RESOURCES

BUFFA, ELWOOD S. y SARIN RAKESH K Administración de la Producción y de las Operaciones Limusa, 1992

(Production Management and Operations)

- COCHRAN DAVID

Production System Design Guidelines MIT, 1998

- HOPEMAN RICHARD J.

Administración de Producción y Operaciones CECSA, México, D.F.

Production Management and Operations)



- NIEBEL

Ingeniería Industrial, Métodos, Tiempos y Movimientos.

Alfaomega

(Industrial Engineering, Methods, time and motion.)

- JAY HEIZER BARRY RENDER

Principios de Administración de Operaciones

Pearson, Prentice Hall.

(Principles of Operations Management)

- NADLER, GERALD Y THOMAS JUAN JORGE Diseño de Sistemas de Producción: El Concepto Ideal El Ateneo

(production system design: The Ideal Concept Ateneo)

- SIPPER, DANIEL Y BULFIN, ROBERT L.

Planeación y Control de la Producción

Mc GRAW HILL, 2000

(Planning and Production Control)

- CAMILO JANANIA ABRAHAM

Manual de tiempos y movimientos

Ingeniería de Métodos

Limusa

(Manual time and motion

Engineering Methods)

SOFTWARE A UTILIZAR:

Excel; AB: POM

Main Books

Complementary Books