



# UNIVERSIDAD DE CASTILLA - LA MANCHA

## GUÍA DOCENTE

### 1. General information

**Course:** PRODUCTION PLANNING AND CONTROL AND INDUSTRIAL ORG  
**Type:** CORE COURSE  
**Degree:** 344 - CHEMICAL ENGINEERING  
**Center:** 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY  
**Year:** 4

**Main language:** Spanish  
**Use of additional languages:**  
**Web site:**

**Code:** 57729  
**ECTS credits:** 6  
**Academic year:** 2023-24  
**Group(s):** 21  
**Duration:** First semester  
**Second language:** English  
**English Friendly:** Y  
**Bilingual:** N

Lecturer: FRANCISCO JESUS FERNANDEZ MORALES - Group(s): 21				
Building/Office	Department	Phone number	Email	Office hours
ITQUIMA / 1	INGENIERÍA QUÍMICA	926 05 21 79	fcojesus.fmorales@uclm.es	M-F de 9:00 a 10:00
Lecturer: JUAN RAMON TRAPERO ARENAS - Group(s): 21				
Building/Office	Department	Phone number	Email	Office hours
Margarita Salas/ 304	ADMINISTRACIÓN DE EMPRESAS	926052446	juanramon.trapero@uclm.es	M-F de 10:00 a 11:00

### 2. Pre-Requisites

It is highly recommended that students should have passed the second year subject of economics and chemical industry.

### 3. Justification in the curriculum, relation to other subjects and to the profession

This subject is focused on the topics related to Business Organization. This subjects also belong to the common module of industrial stream. The existence of this subject in the Chemical Engineering degree is justified given the necessity of providing the students the required tools to know: i) What is the importance of the manufacturing planning and control for a company and what is its role to achieve a competitive advantage; ii) how to determine the future organization demand using both quantitative and qualitative forecasting models; iii) how production planning ought to be organized on the basis of demand forecasts considering capacity, resources and cost factors; iv) the economic order quantity of inventory assets; v) the different stock control policies and production system based on "just in time" philosophy.

In addition, this subject help student get a deeper insight in the production subsystem previously introduced in the 2<sup>o</sup> course subject "Economics and Chemical industry"

### 4. Degree competences achieved in this course

#### Course competences

Code	Description
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
E15	Basic knowledge of production and manufacturing systems.
E17	Applied knowledge of business organization.
G01	Ability to write, sign and develop projects in the field of chemical engineering that are intended, according to the knowledge acquired as established in section 5 of order CIN / 351/2009 of February 9, construction, reform, repair, conservation, demolition, manufacture, installation, assembly or operation of: structures, mechanical equipment, energy installations, electrical and electronic installations, industrial facilities and processes and manufacturing and automation processes.
G02	Capacity for the direction, of the activities object of the engineering projects described in the competence G1.
G03	Knowledge in basic and technological subjects, which enables them to learn new methods and theories, and give them versatility to adapt to new situations.
G08	Ability to apply the principles and methods of quality.
G09	Capacity for organization and planning in the field of the company, and other institutions and organizations.
G17	Capacity for critical thinking and decision making

### 5. Objectives or Learning Outcomes

#### Course learning outcomes

##### Description

- To be able to implement in MS-Excel the main algorithms of demand forecasting.
- To possess capacity to differentiate operative and strategic decisions from production.
- To know the operation that describes the control of production and inventories through the MRP methodology.
- To know the main production planning tools at different levels of aggregation from the aggregate planning to the Production Master Program.
- To have skill when planning production demand.

#### Additional outcomes

To be able to analyze the different factors that can influence both decisions regarding quality and statistical quality control tools.  
 To have skills for project management through PERT-CPM algorithms  
 To understand the diverse short-range production planning tools  
 To know the Lean-Just in Time production system.

## 6. Units / Contents

**Unit 1: Introduction**  
**Unit 2: Demand management**  
**Unit 3: Aggregate production planning**  
**Unit 4: Master Production Schedule**  
**Unit 5: Material Requirement Planning**  
**Unit 6: Short-range planning**  
**Unit 7: Lean-Just in Time philosophy**  
**Unit 8: Production control**  
**Unit 9: Quality management**

## 7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB03 E15 E17 G01 G02 G03 G08 G09	1.5	37.5	N	-	
Computer room practice [ON-SITE]	Practical or hands-on activities	E15 E17 G03 G09 G17	0.3	7.5	Y	N	
Workshops or seminars [ON-SITE]	Project/Problem Based Learning (PBL)	CB03 E17 G01 G02 G08 G17	0.3	7.5	Y	N	
Group tutoring sessions [ON-SITE]	Project/Problem Based Learning (PBL)	CB03 E15 G01 G02 G08 G17	0.2	5	Y	N	
Progress test [ON-SITE]	Assessment tests	CB03 E15 E17 G01 G02 G03 G08 G09 G17	0.1	2.5	Y	N	
Study and Exam Preparation [OFF-SITE]	Self-study	E15 E17 G01 G02 G03 G08 G09 G17	3.6	90	N	-	
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.4</b>			<b>Total class time hours: 60</b>				
<b>Total credits of out of class work: 3.6</b>			<b>Total hours of out of class work: 90</b>				

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

## 8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Theoretical exam	0.00%	100.00%	
Assessment of problem solving and/or case studies	15.00%	0.00%	
Portfolio assessment	15.00%	0.00%	
Mid-term tests	35.00%	0.00%	
Mid-term tests	35.00%	0.00%	
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

### Evaluation criteria for the final exam:

#### Continuous assessment:

Those students that do not pass the subject via continuous evaluation, they should go through one written final exam with all the contents (theoretical and practice) of the subject

#### Non-continuous evaluation:

Those students who do not pass by continuous evaluation, must take a single exam on all the theoretical and practical contents of the subject.

### Specifications for the resit/retake exam:

Students will be examined of all the contents of the subject in one written exam.

## 9. Assignments, course calendar and important dates

### Not related to the syllabus/contents

Hours	hours

## 10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	City	ISBN	Year	Description
Domínguez Machuca, J. A. y otros	Aspectos tácticos y operativos en la producción y los servicios,	McGraw-Hill Interamericana			2003	

Domínguez Machuca, J. A. y otros	Dirección de operaciones : aspectos estratégicos en la produ	MacGraw-Hill	84-481-1848-0	2005
Heizer, Jay	Dirección de la producción : decisiones estratégicas	Prentice Hall	84-205-2924-9	2001
Ord, J. Keith	Principles of business forecasting /	Wessex,	978-0-9990649-1-7	2017
Heizer, Jay	Dirección de la producción : decisiones tácticas	Prentice Hall	84-205-3036-0	2001
Nahmias, Steven	Análisis de la producción y las operaciones	McGraw-Hill	978-970-10-6239-5	2007
Trapero Arenas, Juan Ramón	Dirección y gestión empresarial	Mc Graw Hill Education	978-84-481-9038-5	2013