COURSE DATA

Data Subject	
Code	34770
Name	Production organization and management
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
1401 - Degree in Chemical Engineering	School of Engineering	3	Second term

Subject-matter

Degree	Subject-matter	Character
1401 - Degree in Chemical Engineering	13 - Projects	Obligatory

Coordination

Name	Department
BADIA VALIENTE, JOSE DAVID	245 - Chemical Engineering
CERISUELO FERRIOLS, JOSEP PASQUAL	245 - Chemical Engineering
FUENTES BARGUES, DANIEL	245 - Chemical Engineering

SUMMARY

This course “Management and Organization of Production” is part of the subject Projects whose overall objective is that students gain the ability to properly apply all previously acquired knowledge to the design, development and evaluation of projects and reports, using appropriate methodology and basic principles of economics, management, quality and industrial organization as well as legislation, regulation and standardization in the field of industrial engineering. To do this, the course addresses both aspects of Organization and Management of Manufacturing and Project office. Management and Organization of Production is compulsory course, which is taught in the third year of the Degree in Chemical Engineering in the second quarter (6 ECTS). This course aims to give an overview of the skills and fundamentals related to management systems, production and manufacturing, including principles and methods of quality and industrial safety and labour. This course is divided into three sections. In the first, and main part of the course, it will introduce the student to the tools and methods of planning, scheduling and organizing the manufacturing and production system, including the development of programming and control of a manufacturing system using a software tool. The second part will introduce students to the quality management systems and in the basic tools of Statistical Quality Control. The last

block is intended for industrial and labour safety, including techniques and methodology for industrial and occupational health and safety assessment.

Remarks: The theoretical lectures will be in Spanish whereas the practical lessons, including lab, in Spanish or Valencian according to the guide of the web of the degree.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

It might be necessary to revise concepts and methodologies of statistics from teh subjects of Maths

OUTCOMES

1401 - Degree in Chemical Engineering

- G4 - Ability to solve problems with initiative, decision-making skills, creativity and critical reasoning and to communicate and transmit knowledge, abilities and skills in the field of industrial engineering.
- G5 - Knowledge to carry out measurements, calculations, assessments, appraisals, surveys, studies, reports, work plans and analogous work.
- G6 - Ability to deal with specifications, regulations and mandatory standards.
- G7 - Ability to analyse and assess the social and environmental impact of technical solutions.
- G8 - Ability to apply the principles and methods of quality control.
- G9 - Ability to organise and plan work in companies and in other institutions and organisations.
- G10 - Ability to work in a multilingual and multidisciplinary environment.
- G11 - Knowledge, understanding and ability to apply the necessary legislation for practising professionally as a qualified industrial technical engineer.
- R9 - Basic knowledge of the main production and manufacturing systems.
- R11- Applied knowledge of business organisation.

LEARNING OUTCOMES

- To understand the basic principles of chemical engineering and be able to use them to create, analyze and select suitable alternatives to solve it (outcomes G4, G6, G7, G9, G11)
- To know the production and manufacturing systems (R9, G6, G11)
- To know the basics of safety in industrial processes (G5, G6, G7, G11)
- To be able to apply the principles and methods of quality (G6, G8, G11)
- To understand the management structure and roles of a project office (G4, G9, R11)
- To design processes, equipment and facilities according to standards and specifications (G4, G5, G6, G11, R9)

- To develop the economic assessment of processes and projects (G4, G5, G7)

- To know the professional organization and basic track procedures (G6, G11)
- To understand current legislation and in particular that concerning prevention and equality (G6, G11)
- To be able to work in teams of their field of work or multidisciplinary (G9, G10)
- To possess ability to the information management and the use of Information and Communication Technologies (G7, G10)
- To possess organizational skills, particularly in the industrial field. To have applied knowledge of management and organization (G9, R11)
- To possess critical thinking skills, creativity and decision making (G4)
- To be able to gather and interpret information and make judgments on social, scientific, technological or ethical issues (G4, G7)
- To have auto-learning skills and update for their continuous training throughout their professional life with a high degree of autonomy (G4, G7, G10)

DESCRIPTION OF CONTENTS

1. SYSTEMS OF PRODUCTION AND MANUFACTURING

1. Companies and production systems. Product and product design techniques. Plant layout.
2. Organization of the production system: time, cost and resource planning. Project monitoring.
3. Provisioning, storage and distribution logistics.

2. BASES AND METHODS OF QUALITY

Introduction to quality. Quality management. Planning, control and improvement of quality. Statistical techniques of quality control. Natural variability of processes. The typified normal distribution. Process capacity. The binomial distribution and the distribution of Poisson. Probability of total occurrence and conditionality: Theorem of Bayes. Control charts of variables and attributes.

3. INDUSTRIAL AND OCCUPATIONAL SAFETY

- Introduction to industrial and occupational safety: Principles. Basic regulatory for safety and risk prevention: laws of occupational health and safety, and risk prevention.
- Regulation of industrial safety and risk prevention: Spanish regulation development LPR 31/1995, LPRL: RD39/1997, RD486/1997, RD1215/1997 and technical regulations. Legislation (21/1992) for industrial safety regulations. Case Study: Application of fire safety regulations.
- Analytical techniques of risk management: techniques before and after the accident. Operational control.
- Management of industrial and labour risk prevention: Organization of prevention: policy, responsibilities, planning, procedures. Plan for prevention of occupational hazards. Evaluation of occupational hazards. Industrial risk management. Prevention control.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	35,00	100
Classroom practices	19,00	100
Laboratory practices	6,00	100
Development of group work	16,00	0
Development of individual work	8,00	0
Study and independent work	40,00	0
Preparing lectures	14,00	0
Preparation of practical classes and problem	12,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

The development of the course is structured around the lectures and problems, computer classroom and workshops (using some specific software) and the performance of home works.

- In the lectures we will use the lecture model. The teacher will present on presentation and / or explain the contents of each issue impacting on key aspects for understanding (outcomes G5, G8, G9, G11, R9, R11).
- Practical classes of problems will be developed following two models. In some classes the professor will resolve a number of sample problems for students to learn to identify the essential elements of the approach and problem resolution. In other kinds of problems will be the students, individually or arranged in groups, which should solve similar problems under the supervision of the teacher (outcomes G4, G5, G7, G8, G10, G11).
- For practical sessions the activities to be performed will be scheduled, and they will be developed a case of programming and control of a production system using a software tool. On a sector or previously defined process and under the supervision of the teacher, the students will complete the organization and planning of the productive system (outcomes G4, G5, G6, G7, G8, G10, G11, R11).
- The proposed work students will be divided into three types one for each unit, consisting of solving Problems and Case Studies of Implementation. Some of these activities will take place in class and the rest will have a timetable for completion and delivery by the students. After correction, students will be informed of their results and a summary of the most consolidated and more frequent failures.

EVALUATION

The evaluation consists of different tests:

• Exam (EX): written test of open response type, test and short / long problems on the contents worked on in the classroom. Minimum exam = 5.0

• Works (TR): Preparation of one or more individual and / or group works and corresponding reports. The deliveries of sections TR are not recoverable between calls. Minimum weighted average of the works = 5.0.

• Laboratories (LAB): attendance will be mandatory. Minimum laboratory = 5.0. Deliveries from LAB laboratories are recoverable between calls.

Based on these evaluation evidences, 2 modalities are established, the final grade being the one corresponding to the higher of:

• Mode A: 50% · EX + 40% · TR + 10% · LAB

• Mode B: 85% · EX + 15% · LAB

In case of not exceeding the minimum grade in the written test, the grade will be EX.

In no case will the grade of any thematic unit between exams be saved.

Once the minimum qualification of EX is exceeded, in case of not exceeding the minimum qualification in TR or LAB, the qualification will be determined by the one obtained through modality B.

The evaluation methodology is valid for the first and second call.

In any case, the evaluation system will be governed by what is established in the Evaluation and Qualification Regulation of the University of Valencia for Degrees and Masters.

REFERENCES

Basic

- Dirección de la producción: Decisiones estratégicas, J. Heizer, B. Render , Prentice Hall, 2000.
- Administración de producción y operaciones, R. B. Chase, Mcgraw-Hill, 2004, 10ª edición.
- Dirección de Operaciones. Aspectos Tácticos y Operativos en la Producción y los servicios, J.A. Domínguez Machuca, S. García González, M.A. Domínguez Machuca, A. Ruiz Jiménez. Mcgraw-Hill, 2003.

- Gestión de la Calidad, Editorial AENOR, 2010.
- Control estadístico de la calidad, D.C. Montgomery, Wiley, 2004.
- Técnicas de Prevención de Riesgos Laborales, J. M. Cortés Díaz, Tebar, 2003.
- Problemas Resueltos de Administración de la Producción y Operaciones. Mª Carmen Carnero Moya. Editorial: Paraninfo. Madrid, 2013.

Additional

- Manual para la identificación y evaluación de riesgos laborales, [versión electrónica] : versión 3.1, Generalitat de Catalunya, Dirección General de Relaciones Laborales, 2006.
- Notas Técnicas de Prevención y Guías Técnicas de Aplicación del INSHT. Disponible en http://www.insht.es/portal/site/Insht
- Organización de la producción, J. Velasco Sánchez , Piramide 2006.
- Problemas de Programación y Control de Producción. J. J. Alfaro Sáiz, SPUPV, 2008.
- Problemas resueltos de diseño de sistemas productivos y logísticos, J. P. García Sabater, SPUPV, 2008.
- Manual de control de calidad, J.M. Juran y F. Gryma , Ed. Mc Graw-Hill, 1997.
- Manual para la Prevención de Riesgos Laborales, G. López Etxebarría, CISS PRAXIS, 2001.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

Contents

The contents initially established in the Course Guide are maintained.

Workload and planning of teaching

Workload:

The activities described in the Course Guide with their time dedication are maintained.

Planning of teaching:

The material for the follow-up of the classes allows to continue with the teaching time planning both in days and in time, whether the teaching is face-to-face in the classroom or not.

Teaching methodology

If it is required by the sanitary situation, the Academic Committee of the Degree will approve the Teaching Model of the Degree and its adaption to each subject, establishing the specific conditions in which it will be developed, taking into account the actual enrolment data and the space availability.

If there is a closure of the facilities for sanitary reasons that totally or partially affects the classes of the course, they will be replaced by online sessions following the established schedules.

Evaluation

The evaluation system described in the Course Guide in which the activities have been specified as well as their contribution to the final grade of the subject is maintained.

If there is a closure of the facilities for sanitary reasons that affect the development of any face-to-face evaluable activity, it will be replaced by a test/activity of a similar nature that will be carried out in virtual mode using the computer tools licensed by the University of Valencia. The contribution of each evaluable activity to the final grade of the course will remain unchanged, as established in this guide.

References

The recommended references in the Course Guide are maintained, since they are available. In addition, it will be complemented with notes, slides and problems uploaded to the Virtual Classroom.