

Management  
Science  
Diploma  
2<sup>nd</sup> year

# PRODUCTION MANAGEMENT I

(Dirección y Gestión de la Producción I en lengua inglesa)

Group 5

<http://www.asignatura.us.es/adgp1euee>



Escuela Universitaria  
de Estudios Empresariales

## Syllabus and Norms Academic Year 07-08

Departamento de Economía Financiera y  
Dirección de Operaciones  
<http://www.aloj.us.es/defdo>

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**Academic Year 07-08**

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## DIRECTORY AND TEACHING STAFF

### Academic Year 07-08

DPTO. DE ECONOMÍA FINANCIERA Y DIRECCIÓN DE OPERACIONES			
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- **FCEYE:** Facultad de Ciencias Económicas y Empresariales.
- **EUEE:** Escuela Universitaria de Estudios Empresariales.

### Distribution of teaching staff by group during the present academic year:

Unit of the syllabus	T1	T2	T3	T4	T5	T6	T7	T8
Group 1 Monday 10:00 to 11:30 Wednesday 10:00 to 11:30	Pedro Garrido Vega							
Group 2 Monday 08:30 to 10:00 Wednesday 11:30 to 13:00	Pedro Garrido Vega							
Group 3 Monday 11:30 to 13:00 Thursday 10:00 to 11:30	Macarena Sacristán Díaz							
Group 4 Monday 10:00 to 11:30 Thursday 11:30 to 13:00	M.ª Rosa García Sánchez				Victoria E. Ruiz Orcaray			Rafaela Alfalla Luque
Group 5 (English) Monday 13:30 to 15:00 Thursday 11:30 to 13:00	Macarena Sacristán Díaz							
Group 6 Monday 17:00 to 18:30 Wednesday 17:00 to 18:30	M.ª Rosa García Sánchez				Victoria E. Ruiz Orcaray			
Group 7 Monday 15:30 to 17:00 Wednesday 15:30 to 17:00	M.ª Rosa García Sánchez				Rafaela Alfalla Luque			
Group 8 Monday 19:00 to 20:30 Thursday 17:00 to 18:30	M.ª del Mar González Zamora			Rafaela Alfalla Luque				
Group 9 Monday 17:00 to 18:30 Thursday 18:30 to 20:00	M.ª del Mar González Zamora			Rafaela Alfalla Luque				

\* Only in Group 5 classes will be held in English.

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## TEACHING PLAN

### Academic Year 07-08

To many people, the term *production* conjures up images of factories, machines, and assembly lines. Interestingly enough, the field of production management in the past focused almost exclusively on manufacturing management, with a heavy emphasis on the methods and the techniques used in operating a factory. In recent years, the scope of production management has broadened considerably. Production concepts and techniques are applied to a wide range of activities and situations *outside* manufacturing; that is, in *services* such as health care, food service, recreation, banking, hotel management, retail sales, education, transportation, and government. This broadened scope has given the field the name of *production/operations management*, or more simply, *operations management*, a term that more closely reflects the diverse nature of activities to which its concepts and techniques are applied. (Stevenson, W.J., 1999, p.4).


### Course Objectives

The general aim of the course is to help students develop a clear view of what Production/Operations Management (POM) consists of, the techniques to be used in solving problems, and alternative solutions that can be found in the production field. The course is devoted to analysing all these questions at the tactical and operational level, that is, considering medium- and short-term decisions.

During the course, students will be expected to achieve specific goals in terms of relevant knowledge and the application of relevant skills. These are defined as follows:

- **Cognitive Objectives:**
  - To develop a clear understanding and knowledge in all subjects covered.
  - To achieve competence in basic POM terminology.
  - To develop a global, integrated perspective of how the POM area works.
  - To identify the way POM interrelates with other business functions.
  - To understand the object of studying POM and the influence it has on businesses.
- **Skill Objectives:**
  - How to use specific scientific instruments (graphs, charts, tables, etc.)
  - How to work with bibliographies and locate references.
  - How to form, discuss and transmit one's own ideas.

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## **Syllabus**

### **Unit 1: Introduction to Production/Operations Management.**

- 1.1. The operations subsystem and Operations Management.
- 1.2. A historical view of Operations Management.
- 1.3. Production planning and control hierarchical process.
- 1.4. The importance of demand forecasts for the production planning and control process.
- 1.5. Capacity planning and control process.

### **Unit 2: Inventory Management.**

- 2.1. Introduction.
- 2.2. Inventory review systems.
- 2.3. Deterministic dynamic models.
  - 2.3.1. Basic EOQ model.
  - 2.3.2. EOQ with simultaneous supply and usage model.
- 2.4. Advantages and inconveniences of each model.

### **Unit 3: Aggregate Production Planning (APP).**

- 3.1. Introduction to Aggregate Production Planning.
- 3.2. Aggregate Planning Strategies: Chase demand and level production.
- 3.3. The Aggregate Planning process using the trial and error technique.
- 3.4. Aggregate Planning in services.

### **Unit 4: Master Production Scheduling (MPS).**

- 4.1. Introduction to MPS: units and planning horizon.
- 4.2. The process for obtaining a feasible MPS.
- 4.3. Disaggregating the Aggregated Production Plan: Initial MPS.
- 4.4. The viability of MPS: Capacity bills.
  - 4.4.1. Determining the available capacity.
  - 4.4.2. Rough-cut capacity planning: capacity bills.
  - 4.4.3. Interpretation and correction of deviations.
- 4.5. Coordination with other functional areas in developing MPS.

### **Unit 5: MRP Systems: The original MRP.**

- 5.1. Introduction to MRP systems: an easy example.
- 5.2. Basic structure of MRP: concept and features of the system.
  - 5.2.1. MRP inputs.
  - 5.2.2. MRP computations.
  - 5.2.3. MRP outputs.
- 5.3. Lot-sizing.
- 5.4. Applicability and suitability of MRP systems.

### **Unit 6: Very short term planning and control.**

- 6.1. Introduction to execution and control activities.
- 6.2. The order revision and authorization process.
- 6.3. Introduction to operations scheduling: loading, sequencing and programming.
- 6.4. Workshop loading: Load charts.
- 6.5. Sequencing in *job-shop* environments: priority rules.
- 6.6. Detailed programming: Gantt chart.

### **Unit 7: Just in Time (JIT) Systems.**

- 7.1. Introduction to JIT.
- 7.2. Aims and elements of JIT.
- 7.3. Adjusting the Operations System to JIT.

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- 7.4. Smoothing work flows.
- 7.5. Performing and control: the *Kanban system*.
- 7.6. Relationship with suppliers and customers.
- 7.7. JIT implementation.
- 7.8. Final considerations: MRP systems compared to JIT.

#### Unit 8: Project management.

- 8.1. Introduction.
- 8.2. Basic principles of PERT.
- 8.3. Drawing a PERT diagram.
- 8.4. Project planning with PERT.
- 8.5. Considering resources in project planning: scheduling with limited resources.
- 8.6. Project control with PERT.

### Bibliography

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## **COURSE NORMS AND REQUIREMENTS**

### **Methods**

#### **1.- PRACTICAL-THEORETICAL CLASSES**

Although voluntary, class attendance is recommended as it permits a better following and understanding of course content. The fundamental elements for the preparation of subject content are: explanations given in class, published materials and basic recommended bibliography.

The presentation of the units in class will not necessarily be exhaustive and students may be referred to the recommended reading, especially with regard to topics or areas of the syllabus that are less difficult. Nevertheless, the lecturer will usually go through the main points of the unit being studied in general terms, whilst going into more complex topics in greater detail.

Only in Group 5 classes will be held in English.

#### **2.- BIBLIOGRAPHY AND OTHER TEACHING MATERIALS**

The recommended bibliography covers completely the content of the whole course, and is a basic tool to be used. However, it is also recommended that other reading sources be consulted in order to broaden or contrast ideas and points-of-view.

The aim of the provided handouts containing the slides is to serve as a guide for presentations used in class and as a help for studying, but these handouts do not replace the content of the different units of the syllabus, which is developed in the recommended bibliography and in class explanations.

In the photocopy shop and the website for the subject, the following materials in English will be available:

- Slides of all units of the syllabus corresponding to presentations used in class (they are just a guide for studying, not detailed handouts).
- Problem booklet.
- Tables for solving problems for units 3 to 5.

#### **3.- OFFICE HOURS**

As a supplementary aid for the preparation of the subject, there are mandatory times set aside for student tutoring or consultations. The corresponding timetable of the lecturer of Group 5 and any future modifications made to same will be posted on the *Departamento de Economía Financiera y Dirección de Operaciones* noticeboard (FCEYE, 1st floor), and also on the subject website.

Students are asked to observe these times as the presence of the lecturer cannot be guaranteed outside these times nor his/her availability to attend to consultations. For their part, the teaching staff will undertake to keep to this schedule, although it must be borne in mind that on occasion this may not be possible, due to tutorials being held at the same time as other tasks or responsibilities. Should this be the case, in accordance with the Rectoral Decision of 4th June, 1993 dealing with student attendance, the member of staff in question will do his/her best to attend to students who would otherwise have attended at the earliest available time.

Students are required to have some knowledge of the topic that they wish to consult on and to not regard tutorials as a replacement for lectures or as private classes with which to avoid the necessary work and effort required of the students.

The e-mail addresses afforded to students are meant to serve as a broader means of communication between the students and teaching staff. They can be used to provide comments and/or suggestions on any topic related to the subject that might help to improve advancement. These addresses may also be used for consultations although, as far as is possible, these will be attended to during the times set aside for tutorials. Questions about exams announcements, office hours timetables or any other information available on the subject website that students can easily check will not be answered. It must be remembered that all e-mails must obligatorily include name, surnames, subject referred to, and group

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attended. Any message which does not include this information in full will be ignored and/or left unanswered.

Finally, it is likewise especially advised that students should not leave consultation on all the points they are unsure about until the last few days before an upcoming examination.

#### 4.- WEBSITE AND WEBCT PLATFORM

The website for the subject (<http://www.asignatura.us.es/adgp1euee>) was set up by the lecturers several years ago with a view to offering students a lively, dynamic support tool for their training process in Production and Operations Management. If you are a student, one thing you will find it useful for is accessing the teaching programme for the subject and materials used in class (notes, slides, multiple-choice self-assessment tests with answers and explanations), knowing themes and norms for assignments, timetables, name of lecturer for each group, information on subject lecturers (tutorial timetables, offices, personal websites, etc.), links to other interesting websites, and news about anything important related to the course, including examination dates, practical answers to exams that have been done, marks and course records.

The aim is for students to have access to a tool they can use to supplement their attendance of lectures in the subject, but it is not meant to be a replacement for these. We hope that the website will allow a direct and permanent communication channel to be established between our subject's teaching staff and students, using the discipline of Productions and Operations Management as a reference framework. We heartily encourage one and all to take an active part in improving the website and making it of greater use for everyone involved.

Also, during the 2007/2008 school year the materials available on this website and various other types of virtual teaching could be made available on the Seville University WebCT Platform (<http://ev.us.es>) in keeping with the Plan for the Renewal of Teaching Methods.

#### 5.- STUDENT'S PERSONAL WORK

Art. 97 of the University of Seville Statutes state that students' duties include:

- a) Study and, in certain cases, initiation in research.
- b) Taking an active part in the full range of university learning activities programmed for the course for which they are to be assessed.
- c) Bearing responsibility for their own learning within the wider framework of their freedom to study as they see fit.

Students are therefore expected to attend classes on a regular basis to the extent that they need to and depending on personal circumstances, and to take an active part in classes. They are also expected to duly plan their study of the course contents, to take advantage of the times set aside for tutorials, to refer to the recommended bibliography and materials, to individually find the solutions to practical problems included in the subject apart from those solved by the lecturer in class, to do and hand in the (individual and group) assignments that are programmed throughout the course and to personally check their progress with the self-assessment tools available to them.

In this regard, a list of multiple choice questions with answers taken from previous examination sittings is available both in photocopied form and on the subject website for students to assess their knowledge of the subject matter, especially of the theory. On the website these questions are available (for the moment only in Spanish) in a format that, as has already been stated, will facilitate self-learning, with reasoned explanations given for the answers. Students therefore have the chance to do multiple choice tests similar to those that they will have to do in their partial (semester) and final exams in the subject.

To prepare the practical part of the course it is necessary for students to find solutions on their own to some of the many problems that are available in the Problems booklet, apart from those done in class by the lecturer. Many others can be found in the Problems book in the recommended bibliography (in Spanish).

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## Assessment

The final assessment will be the arithmetical average between the assessments of both partials. Each partial assessment will take into account the marks students receive in the examinations and for the assignments they have done throughout the course, with the following weighting:

- Practical-theoretical exams .....90%
- Assignments.....10%

Failing to pass any of the partial exams, the final assessment of the practical-theoretical exam will be the mark obtained in the final sitting in June (or September).

The final mark for any practical-theoretical exam (partial or final) will be calculated by applying the following weighting:

- Theoretical part (multiple choice).....40%
- Practical part (problems).....60%

The marks of all the elements considered in assessment (tests, problems and assignments) will always be made on a scale from 0 to 10 points.

Below are the regulations that will be in place for examinations, assignments and marking during the current school year:

### 1.- EXAMS

As a result of the agreement arrived at by the Governing Body (J. G.) of 21/03/01 which determines the process by which the dates for examinations and tests are set before the commencement of the academic year, the dates approved by the Faculty Committee in accordance with Art. 28.1.g) of the EUS for the various sittings for the subject during the present academic year are as follows:

Sitting	Date
<b>3rd Ordinary (December)</b>	05/12/07 (Monday)
<b>1<sup>st</sup> Partial</b>	07/02/08 (Thursday)
<b>February Extraordinary</b>	07/02/08 (Thursday)
<b>2nd Partial</b>	09/06/08 (Monday)
<b>1st Ordinary (June)</b>	27/07/08 (Friday)
<b>2nd Ordinary (September)</b>	09/09/07 (Tuesday)

Besides, in accordance with Art. 15 of the University of Seville Norms for Exam Regulation, Evaluation and Marking, students must present their ID Card or Passport at each separate examination.

No examinations will be held other than on these dates agreed with Student Representatives, except in compliance with what is set forth in the University of Seville Norms for Exam Regulation, Evaluation and Marking and Directives on Procedures to be followed when Examinations Coincide, as dictated by the EUEE. executive. According to this latter, there will only be an alternative sitting when an examination coincides with another examination in a subject from a previous year. If for any reason an examination has to be held on a date other than the aforementioned, this may take the form of an oral examination.

The subject contents are set out in the official published programme and the complete programme will be considered as material that students can be examined on unless the teaching staff expressly indicates the contrary.

**Structure of examinations.** These will have at least two distinct parts:

1. **Theoretical:** This will usually consist of an objective multiple-choice test (closed, with 20 or 30 questions and 4 options). In special sittings or when defined in the official

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announcement, it may consist of short questions and/or subject questions "to be elaborated upon".

2. **Practical:** This will include a number of problems related to the material taught throughout the course. In special sittings or when defined in the official announcement, it may include commentaries and case analyses.

Nevertheless, the definitive structure of each examination (whether partial or final) will be defined at the appropriate time when the examination in question is officially announced.

Students should be aware that, whatever the structure of an examination in the subject, its total length is usually between 3 and 4 hours.

Evaluation criteria will depend upon the structure of the examination determined for each particular case. Said criteria will therefore be defined when official notice is given of the sitting. Nevertheless, the following can be stated as guidance:

- A minimum average mark of five (5) points is necessary to pass any practical-theoretical exam.
- A minimum mark will be established for both theoretical and practical examinations that must be achieved in order for an average mark to be obtained from the different parts of the examination. Should said minimum not be achieved, the student is considered to have failed the examination. It is normal practice in this subject for the minimum mark to be set at three (3) for each part of the examination. The minimum mark required for each part of the examination will nevertheless be clearly announced when official notice of the examinations in question is given.
- For the minimum mark to be considered to have been attained in the practical part of the examination it is also required that no problem be left unanswered or to receive a mark equating to zero (0). Should this be the case, it will be deemed that the minimum mark in the practical part of the exam has not been achieved for an average mark to be found with the theoretical part of the examination and, as such, the student will be considered to have failed the examination.
- In both partial exams as well as in the final sittings in June and September, a minimum average mark of five (5) points is required in the practical-theoretical exam for an average mark to be obtained between the exam and the assignments.
- Partial marks do not compensate each other. It is necessary to pass both partial assessments, which means that it is a requirement to obtain a minimum of five (5) points in each (exam mark\*0,9 + assignment mark \*0,1), in order to pass the subject.
- The examination papers of students who are caught copying or talking by any of the invigilators during any of the tests will not be corrected. In any case of this type, the lecturer will sign the exam paper of the student(s) involved and add a reference to the incident in order that the exam not be corrected and receive a mark of zero (0), without precluding the commencement of the required procedures to apply the Academic Disciplinary Regulations currently in force to infractors.

## 2.- ASSIGNMENTS

Students will be required to a number of assignments throughout the course guided by the lecturer for the group in which they are officially enrolled. Some of these assignments are to be done on an individual basis, whereas others are collective (maximum 3-4 students per group).

The subject matter for these assignments will be chosen by the lecturer from amongst all the topics in the course Programme or others put forward by the students themselves as long as their suggestions are well-founded and approved by the teaching staff. Content and structure of these assignments will, nevertheless, in principle be as described below:

- Individual theoretical assignments: each student must do and hand in two assignments (one for each semester) consisting of the preparation of two multiple choice questions for each of the topics in the programme of the corresponding semester and the writing of a short case study based on a piece of news in the press related to any of the topics studied during the semester in question.

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- Individual practical assignments: Each student must hand in an assignment consisting of solutions to problems set by the lecturer.
- Collective practical assignments: In groups of three or four students. The assignment will consist of working out problems and solving them. The problems will be set by the lecturer although on some occasions they can be set by the students themselves, in which case they must be approved by the lecturer.

The lecturer will present in class the topics to be worked on in the assignments, as well as the criteria that must be kept to when doing them. These will also be available on the subject website. The teaching staff may also require students to attend meetings in person in order to give guidance on the assignments, check work already done and answer any queries they may have. Depending on how the course develops, a collective practical assignment might be presented to the class, in which case the choice of assignment will be made by the corresponding lecturer and based on the assignment's interest, quality, need for clarification, etc., or it may be chosen at random.

Apart from the evident need for correction in the way the problems are worked out and their solutions, special consideration will be given to their correct presentation (phrasing, spelling, structure, etc.) when assessing the assignments.

Assignments must be handed in as duly typed hardcopies, as well as in a digital format (by e-mail, in Word or PDF). ASSIGNMENTS WILL NOT BE ADMITTED OUTSIDE THE ALLOTTED DEADLINES (this, independently of the exam the student finally sits: partial, June or September).

DEADLINES for handing in assignments are as follows:

	First semester	Second semester
Collective practical assignments	Monday, 14th January, 2008	
Individual theoretical assignments	Friday, 18th January, 2008	Friday, 23rd May, 2008
Individual practical assignments		Friday, 14th April, 2008

It is not a requirement to hand in assignments but students should bear in mind the following important questions:

- The basic aim of assignments is to facilitate the learning process and to develop students' abilities, whereby they are for their benefit and in their interest.
- Assignments equate to 10% of the final mark for the course as a whole. An average mark of 5 points in the practical-theoretical examination without having done the assignments therefore means that a final pass mark has not been achieved.
- In each semester, ALL ASSIGNMENTS REQUIRED IN SAID SEMESTER HAVE TO BE HANDED IN by the above mentioned deadlines if they are to be taken into consideration for assessment.
- In the assessment of June and September sittings, assignments mark will be the arithmetical average of marks in each semester.
- Student assessment for the December sitting and the special remedial setting in February will be done SOLELY on the basis of the mark received in the examinations, which will be worth 100%.

### 3.- OTHER ASSESSMENT-RELATED ISSUES

As far as Student Records are concerned, according to Art. 5.4 of Rectoral Decision 1125 of 5th September 2003, marks that can appear in the official examination records are:

Fail (Suspenso):	0 – 4.9 points
Pass (Aprobado):	5 – 6.9 points
Pass with merit (Notable):	7 – 8.9 points
Pass with distinction (Sobresaliente):	9 – 10 points

- In accordance with EUS Art. 55.1, when awarding students' final marks, participation in class, seminars and other supplementary activities organised during the course can be taken into account, along with the examinations that have been taken.

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- Official notice shall be given of provisional results within the time-frame established under Art.26 of the University of Seville Norms for Exam Regulation, Evaluation and Marking and said results will become final four working days after said notice is given; for this reason it is recommended that students check both provisional and final results in order to detect and correct any possible mistake.
- Marks will be made public per group except for the examination sittings in December and February. Each lecturer will solely and exclusively correct the exams and assignments of students who are officially enrolled in his/her groups. As a result, any examination paper with an incorrectly indicated Group reference number may lead to a delay in notice being given of examination results, or to a given student not appearing on any of the lists, or to a student appearing as not having attended an examination because his/her examination paper was not located until after his/her group's marks were given out.
- In accordance with present regulations, before provisional results become final, students have the right look over the exam he/she has done at a time and place set aside to this end. With regard to this checking of exams, students are reminded that, according to said regulations, the objective is to inform the student of how his/her mark was arrived at and what evaluation criteria were applied. Other channels exist for any issues other than these, many of which figure in the EUS and in the Norms for Examination Regulation.
- Students that have passed the subject through sitting partial examinations who wish to improve their average mark may sit the final examination that includes the part of the examination that they wish to improve in the knowledge that the mark they attained in the initial partial examination will be observed. Students wishing to opt for this possibility must convey this to the lecturer in charge of his/her official group.
- The mark of "Absent" or "Did not Attend" (No Presentado) shall in no case be entered into the official examination records for any student who has sat any of the final examinations, whatever the number of sittings he/she has used up. To conclude, it must be reminded that the mere fact that a student enters into an examination room in order to do a duly-called examination evidently implies that he/she has sat said examination, even though he/she leaves the examination room as soon as this starts. This will be counted as a final examination sitting that has been used up for the purpose of determining the number of examination sittings the student has remaining, both with regards to the Academic Year and to the total reckoning for the subject.

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