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 08-09

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

Diligencia para hacer constar que el presente programa es el depositado por el Dpto. en este Centro. El Secretario del Centro: José Ángel Pérez López

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# PRODUCTION MANAGEMENT I

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

# Academic Year 08-09

# http://www.asignatura.us.es/adgp1euee

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# DIRECTORY AND TEACHING STAFF Academic Year 08-09

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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:

Tema del Programa	T1	T2	T3	T4	T5	T6	T7	T8
Group 1	Pedro Garrido Vega							
Monday 10:00 to 11:30 Wednesday 10:00 to 11:30				Pedro Gar	ndo vega			
Group 2								
Monday 08:30 to 10:00 Wednesday 11:30 to 13:00				Pedro Gar	rido Vega			
Group 3 Monday 11:30 to 13:00 Thursday 10:00 to 11:30			ı	Macarena Sa	acristán Día	Z		
Group 4 Monday 10:00 to 11:30 Thursday 11:30 to 13:00			Rafaela A	falla Luque				oria E. Orcaray
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		Rafaela Al	falla Luque		A	ntonio M. M	oreno More	no
Group 7 Monday 15:30 to 17:00 Wednesday 15:30 to 17:00		Rafaela Al	falla Luque		M.ª Rosa García Sánchez			
Group 8 Monday 19:00 to 20:30 Thursday 17:00 to 18:30	M. <sup>2</sup>	del Mar Go	onzález Zam	iora	M.ª Rosa García Sánchez			
Group 9 Monday 17:00 to 18:30 Thursday 18:30 to 20:00	M. <sup>6</sup>	del Mar Go	onzález Zam	iora	M.ª Rosa García Sánchez			

<sup>\*</sup> Only Group 5 classes will be held in English.

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# TEACHING PLAN Academic Year 08-09

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 levels, that is, considering medium- and short-term decisions.

The aim, therefore, is to provide students with training, skills and experience in the discipline that they are studying in the sphere of both manufacturing and service companies and motivate them throughout its study.

In short, the goal is to enable students to develop the abilities and talent required to successfully go into the profession. In this regard, one objective is to promote critical reasoning and a better capacity for adapting to new situations through the aspects of the subject that dealt with, which would help to better develop the skill of problem solving.

Knowledge of the production system is founded on practice and is therefore eminently practical in character. This, together with the methodology used, both provides and strengthens the ability to apply said knowledge practically in the real world. To be specific, the intention is for the student to put into practice the main tactical and operational decisions related to Productions Management, and, in particular, those that are connected to production and capacity programming and inventory management.

The specific abilities that will be developed during the course are, therefore, the following:

# 1. Managing company operations.

- Understanding the nature of Production/Operations Management in any economic organisation and the various aspects entailed.
- Appreciating Operations Management as a useful discipline both for the manufacture of goods and the provision of services which can be applied in private companies, public bodies, and non-profit organisations.
- Developing through a systemic vision of organisations, the appreciation that the Operations
  Function is in continual contact with other functional areas and that it is necessary to create formal
  mechanisms for these areas to work in partnership in order to achieve the organisation's general
  goals
- Becoming familiar with the production processing, planning and control process and the different time horizons involved in decision-making: long-term, medium-term, short-term and very shortterm.
- Perceiving the need for a hierarchical and integrative focus that allows plans to be coherent with each other and which is an aid to company decision-making.
- Being aware of the need to take production capacity into consideration at any planning level.

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- Understanding different management trends and philosophies in the sphere of Operations Management based on an all-embracing vision of the company and its environment and the need for continual improvement.
- Valuing the goal of quality in the sphere of Operations Management and understanding what it implies for management.
- Understanding how the production structure affects operations programming.
- Being qualified to draw up aggregate production and capacity plans using different planning strategies.
- Being qualified to draw up operative production and capacity plans on the basis of company features.
- Managing inventory of finished products and other independent-demand items by applying traditional stock management techniques.
- Planning, processing and controlling processes.

# 2. Understanding the principles of engineering and linking them to business and management knowledge (operations management, Gantt charts, information technology, for example).

- Understanding what the technical workings of production mean for competition, sales, finances, etc.
- Using task programming tools such as Gantt charts, PERT, etc.
- Understanding the impact of information technologies on production/operations activities.

# <u>Syllabus</u>

## 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.

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# 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. Lean Production.

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

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# COURSE NORMS AND REQUIREMENTS

# Methods

#### 1.- PRACTICAL-THEORETICAL CLASSES

Although not compulsory in order to sit exams, class attendance is recommended, essential in fact, 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. This analysis will often involve detailed explanations that may not be explicitly found in the bibliography, which is the reason why continued class attendance is so important.

Students are requested to attend the classes for the Groups in which they are enrolled. Despite the fact that there is a degree of flexibility regarding attendance of classes for Groups other than those students are enrolled in, Tests and Examinations (see pages 11 and 12) have to be done for the official Group as these will only be marked by the lecturer or lecturers responsible for the Group in which students are enrolled. The timetable and lecturer(s) for each Group for the 2008/2009 academic year can be found in the second Table on page 3.

# 2.- BIBLIOGRAPHY AND OTHER TEACHING MATERIALS

Recommended bibliography develops completely the content of the whole course, being 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 following materials for the subject will be available in English in the photocopy shop and on the WebCT platform:

• Slides of all units of the syllabus corresponding to presentations used in class (they are just a guide for studying, not detailed handouts).

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- Problem booklet.
- Tables for solving problems for units 3 to 5.
- Multiple-choice tests for previous years' examinations.
- Reading related to different aspects of the syllabus.

The sets of slides that are provided are intended to act as a guide to the explanations given by the lecturer in class and as an aid to help direct students' study on the topic in question. They are not a replacement for the content of the topic as set out in the subject syllabus which is, as indicated above, expanded upon in the recommended reading and the explanations given by the lecturer in class.

### 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 schedule 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, 1<sup>st</sup> 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  $4^{th}$  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 the lectures that take place in the classrooms or as a period for private classes which allow them to dispense with the personal effort that study requires.

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 regarding examination sittings, tutorial timetables and any other information available on the website or on the WebCT platform that students can easily look up will not be answered. It must be remembered that all e-mails must obligatorily include name, surnames, subject referred to, and group 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. - WEBCT PLATFORM AND WEBSITE

Production and Operations Management has its own virtual area on the University of Seville WebCT platform on which all the subject material is available, as well as mock theoretical and practical assessment tests designed to facilitate students' autonomous learning process.

The aim is for students to have a tool at their disposal to complement their following of the subject in class and not to replace their attendance, and which allows them to plan their work in the subject in a more autonomous way tailored to their own learning rate. The platform is an absolutely essential work tool for keeping up with the class for any students who in exceptional circumstances cannot attend class.

To be specific, the content that can be found on the platform is as follows:

- a.- Course Guide (in Spanish only) and simplified programme (syllabus and norms).
- b.- Theoretical content for units 1 and 7 of the syllabus (in Spanish only).
- c.- Slides of all the topics in the syllabus showing diagrams, charts, graphs and all other teaching materials used in class.
  - d.- Standardised tables for solving problems in units 3, 4 and 5 of the syllabus.
- e.- Multiple-choice tests similar to those that will have to be done in theoretical assessment tests for the subject (periodic tests and partial and final examinations). Rather than providing the opportunity for

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self-assessment, the aim is to facilitate students' self-learning, with reasons and explanations for each of the answers being provided (in Spanish only).

- f.- Solutions to practical problems (in Spanish only) of the same type that are included in the practical assessment examinations (periodic tests and partial and final examinations). The solutions to problems from different examination sittings throughout the course are also provided (also in English).
- g.- Tasks: Throughout the course students will have to do a number of theoretical and practical multiple-choice tests via the platform. These tests will be administered by the WebCT task management tool. Students, especially those who fail to attend class, will therefore have to be alert to when these tasks are activated and the dates when they are to be done (dates are firm and unalterable).
  - h.- Virtual tutorials (only those lecturers who state these are available).
- In addition, students have a range of information at their disposal on the website (<a href="http://.asignatura.us.es/adgp1euee">http://.asignatura.us.es/adgp1euee</a>) which 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.

Among the most relevant information on the website are:

- a.- Course Guide (in Spanish only) and simplified programme (syllabus and norms).
- b.- Tutorial timetables and lecturers' contact information.
- c.- Dates of official examinations when they come out (according to official rules and regulations, examination dates are published 10 days prior to the examinations being held).
- d.- Multiple-choice tests similar to those that will have to be done in theoretical assessment tests for the subject (periodic tests and partial and final examinations).
  - e.- Noticeboard with notices and news of how the course is progressing.

#### 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 all the tests 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 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, apart from those done in class by the lecturer. Many of these can be found in the Problems book in the basic recommended bibliography.

# Assessment

The final mark will be the average of the marks received in partial examinations. For each partial examination, assessment will be done taking into account both the marks obtained in the examination and the tests done via the WebCT platform, with the following weighting applied:

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If none of the partial examinations are passed, the final course mark will be that obtained in the final theoretical-practical examination held in June (or September, should that be the case).

In all cases (partial or final examinations), the average mark for examinations in the subject will be obtained by applying the following weighting:

- Marks for all assessment components (tests and problems) will always be given on a scale of 0 to 10 points.

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

#### 1.- EXAMINATIONS

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 year 2005-2006 are as follows:

Sitting	Date		
3 <sup>rd</sup> Ordinary (December)	04/12/08 (Thursday)		
1 <sup>st</sup> Partial	03/02/09 (Tuesday)		
February Extraordinary	03/02/09 (Tuesday)		
2 <sup>nd</sup> Partial	16/06/09 (Tuesday)		
1 <sup>st</sup> Ordinary (June)	03/07/09 (Friday)		
2 <sup>nd</sup> Ordinary (September)	08/09/09 (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 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.

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. Nevertheless, **structure of examinations** will usually have at least two distinct parts:

- Theoretical: This will usually consist of an objective multiple-choice test (closed, with 20 or 30 questions and 3 or 4 options). In special sittings or when defined in the official announcement, it may consist of short questions and/or subject questions "to be elaborated upon".
- Practical: This will include a number of problems related to the material taught throughout the course. The questions to answer may be presented in the form of a multiple-choice test. In special sittings or when defined in the official announcement, it may include commentaries and case analyses.

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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.
- 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.
- · 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.
- 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\*0,8 + controls mark \*0,2), 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.- CONTROLS VIA WEBCT

A number of multiple-choice tests will be programmed throughout the course which students must complete via the WebCT task management platform. Students are responsible for finding out the dates when these tests are activated and when they are to be done. The dates, which may vary slightly from group to group, will also be given in class in advance and announced on the platform itself and on the subject website. THE TESTS CANNOT BE DONE ONCE THE TASK HAS BEEN REMOVED FROM THE PLATFORM.

Tests and their approximate dates are as follows:

First Semester	Weighting	Approximate date
Theoretical test Unit 1	0.25	Second half of October
Theoretical-practical test Unit 2	0.25	First half of November
Theoretical-practical test Unit 3	0.25	December 10th to 20th
Theoretical-practical test Unit 4	0.25	Second half of January
Second Semester	Weighting	Approximate date
Theoretical-practical test Unit 5	0.25	First half of March
Theoretical-practical test Unit 6	0.25	First half of April
Theoretical test Unit 7	0.25	First half of May
Theoretical-practical test Unit 8	0.25	First half of June

The basic aim of tests is to facilitate students' ongoing learning. They equate to 20% of the course mark. This means that an average mark of '5' in examinations is not enough on its own to pass partials or the complete course if these tests have not been done.

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For assessment in the final June or September examinations, the mark obtained in the tests will be the arithmetical average of the marks received in the partials. For the December and February Extraordinary sittings students will be assessed EXCLUSIVELY on the basis of the mark they achieve in these examinations, which will count for 100% of the final mark.

### 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.
- 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 will evaluate those 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.

# INSTRUCTION IN ENGLISH

Under the framework of the programme implemented by Seville University Business School (EUEE) and in accordance with its rules and regulations (<a href="http://centro.us.es/euee/lengua inglesa.htm">http://centro.us.es/euee/lengua inglesa.htm</a>), this subject will be taught to Group 5 in English.

All students who take the course in English must have an intermediate/advanced knowledge of both the written and spoken language.

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