



POLITÉCNICA

INTERNATIONAL  
CAMPUS OF  
EXCELLENCE

COORDINATION PROCESS OF  
LEARNING ACTIVITIES  
PR/CL/001



E.T.S. de Ingenieros de  
Telecomunicacion

# ANX-PR/CL/001-01

## LEARNING GUIDE

### SUBJECT

**93000960 - Health Technology Business Management**

### DEGREE PROGRAMME

09AU - Master Universitario En Ingenieria Biomedica

### ACADEMIC YEAR & SEMESTER

2022/23 - Semester 1

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## 1. Description

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### 1.1. Subject details

<b>Name of the subject</b>	93000960 - Health Technology Business Management
<b>No of credits</b>	3 ECTS
<b>Type</b>	Compulsory
<b>Academic year of the programme</b>	First year
<b>Semester of tuition</b>	Semester 1
<b>Tuition period</b>	September-January
<b>Tuition languages</b>	English
<b>Degree programme</b>	09AU - Master Universitario en Ingenieria Biomedica
<b>Centre</b>	09 - Escuela Tecnica Superior De Ingenieros De Telecomunicacion
<b>Academic year</b>	2022-23

## 2. Faculty

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### 2.1. Faculty members with subject teaching role

<b>Name and surname</b>	<b>Office/Room</b>	<b>Email</b>	<b>Tutoring hours *</b>
Francisco Gonzalez Sanchez (Subject coordinator)	A-127	francisco.gonzalez.sanchez @upm.es	Sin horario. Appointment by e- mail.

\* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

## 3. Prior knowledge recommended to take the subject

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### 3.1. Recommended (passed) subjects

The subject - recommended (passed), are not defined.

### 3.2. Other recommended learning outcomes

- Foundations of Business Management

## 4. Skills and learning outcomes \*

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### 4.1. Skills to be learned

CB06 - Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación

CB07 - Que los estudiantes sepan aplicar los conocimientos adquiridos y su capacidad de resolución de problemas en entornos nuevos o poco conocidos dentro de contextos más amplios (o multidisciplinares) relacionados con su área de estudio

CB08 - Que los estudiantes sean capaces de integrar conocimientos y enfrentarse a la complejidad de formular juicios a partir de una información que, siendo incompleta o limitada, incluya reflexiones sobre las responsabilidades sociales y éticas vinculadas a la aplicación de sus conocimientos y juicios

CB09 - Que los estudiantes sepan comunicar sus conclusiones y los conocimientos y razones últimas que las sustentan a públicos especializados y no especializados de un modo claro y sin ambigüedades

CB10 - Que los estudiantes posean las habilidades de aprendizaje que les permitan continuar estudiando de un modo que habrá de ser en gran medida autodirigido o autónomo.

CE-MIB02 - Analizar los procesos organizativos y de dirección de las empresas de ingeniería biomédica para aplicar herramientas de gestión en las distintas áreas funcionales de la misma.

CG-MIB01 - Resolver problemas e integrar conocimiento en temas nuevos o escasamente definidos y en entornos multidisciplinares del área de la Ingeniería Biomédica

CG-MIB02 - Analizar y aplicar la reglamentación correspondiente a la sensibilidad social y ética en los ámbitos de operación que pueden darse en Ingeniería Biomédica

CG-MIB03 - Utilizar la filosofía, el método científico y el método experimental para la búsqueda de innovación, la curiosidad científica y el desarrollo de actitudes creativas

CG-MIB04 - Utilizar las tecnologías de la información y la comunicación para la búsqueda de información, datos bibliográficos y adquisición de nuevo conocimiento para la formación permanente y el trabajo autónomo

CG-MIB05 - Utilizar técnicas de expresión oral y escrita para comunicar trabajos y conclusiones a comunidades de iguales o divulgación científica, elaboración de artículos, manuales de estilo y herramientas de edición para fomentar la capacidad de comunicación y diseminación de resultados

CG-MIB06 - Aplicar técnicas de trabajo colaborativo en equipos multidisciplinares internacionales y liderazgo, así como utilizar métodos para asumir la responsabilidad de orientar y dirigir trabajos científicos en el ámbito de la ingeniería Biomédica

CG-MIB07 - Utilizar la lengua inglesa como herramienta de trabajo

CG-MIB08 - Analizar y aplicar métodos de gestión, organización y planificación de proyectos avanzados en Ingeniería Biomédica

CG-MIB09 - Identificar y utilizar métodos para la búsqueda de recursos, la gestión económica y administrativa de proyectos avanzados en Ingeniería Biomédica

## 4.2. Learning outcomes

RA81 - EN\_RA2 - Applying terminology commonly used in business environments

RA138 - EN\_RA1 - Analyzing the functions carried out by a biomedical engineer within different organizations of the biomedical engineering sector

RA83 - EN\_RA3 - Developing the ability to search, store and process business information for decision making

\* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

## 5. Brief description of the subject and syllabus

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### 5.1. Brief description of the subject

The main objectives of the course are:

- To analyze the functions and roles of a biomedical engineer within an organization.
- To understand managerial concepts in a business environment.
- To develop the ability and skills to search, analyze and combine business information for decision making.
- To understand how to manage the main functional areas of a company: marketing, operations, human resources and finance.

## 5.2. Syllabus

1. Introduction
2. Strategic management
  - 2.1. The nature of Management Strategy. Business values and orientation
  - 2.2. External analysis
  - 2.3. Internal analysis
  - 2.4. Corporate strategies
  - 2.5. Business strategies
  - 2.6. Functional strategies
3. Marketing
  - 3.1. Introduction
  - 3.2. Strategic marketing
  - 3.3. Operative marketing
4. Operations Management
  - 4.1. Introduction
  - 4.2. Evolution and Strategies
  - 4.3. Supply chain
  - 4.4. Quality management
  - 4.5. Five P's (product, process, plan, programme and people)
5. Human Resources
  - 5.1. Planning, Recruiting, Selection, Training, Performance appraisal, and Compensation
6. Finance
  - 6.1. General concepts on financial cycles
  - 6.2. Main financial documents: Balance Sheet, Profit and Loss Statement, and Cash Flow Statement
  - 6.3. Cost Accounting: Basic Concepts

## 6. Schedule

### 6.1. Subject schedule\*

Week	Classroom activities	Laboratory activities	Distant / On-line	Assessment activities
1	<p><b>Main presentation of the course</b> Duration: 01:00 Lecture</p> <p><b>1. Introduction</b> Duration: 01:00 Lecture</p>			
2	<p><b>2. Strategic management</b> Duration: 02:00 Lecture</p>			
3	<p><b>2. Strategic management</b> Duration: 02:00 Lecture</p>			
4	<p><b>2. Strategic management</b> Duration: 02:00 Lecture</p>			
5	<p><b>3. Marketing</b> Duration: 01:00 Lecture</p>			<p><b>Case 1</b> Written test Continuous assessment Presential Duration: 01:00</p>
6	<p><b>2. Strategic management. Industry presentation</b> Duration: 00:50 Problem-solving class</p> <p><b>3. Marketing</b> Duration: 01:00 Lecture</p>			<p><b>Test 1</b> Other assessment Continuous assessment Presential Duration: 00:10</p>
7	<p><b>3. Marketing</b> Duration: 02:00 Lecture</p>			
8	<p><b>Business Presentation - Introduction to the Final Case.</b> Duration: 01:00 Problem-solving class</p> <p><b>4. Operations management</b> Duration: 01:00 Lecture</p>			
9	<p><b>4. Operations management</b> Duration: 01:50 Lecture</p>			<p><b>Test 2</b> Other assessment Continuous assessment Presential Duration: 00:10</p>



10	<b>5. Human Resources</b> Duration: 02:00 Lecture			
11	<b>6. Finance</b> Duration: 02:00 Lecture			
12	<b>6. Finance</b> Duration: 01:00 Lecture			<b>Case 2</b> Written test Continuous assessment Presential Duration: 01:00
13	<b>6. Finance</b> Duration: 01:50 Cooperative activities			<b>Test 3</b> Other assessment Continuous assessment Presential Duration: 00:10
14	<b>6. Finance</b> Duration: 02:00 Cooperative activities			
15				
16				
17				<b>Final case</b> Group presentation Continuous assessment and final examination Presential Duration: 00:50  <b>Case 1</b> Written test Final examination Presential Duration: 00:20  <b>Case 2</b> Written test Final examination Presential Duration: 00:20  <b>Test 3</b> Other assessment Final examination Presential Duration: 00:10  <b>Test 1</b> Other assessment Final examination Presential Duration: 00:10  <b>Test 2</b> Other assessment Final examination Presential Duration: 00:10

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

\* The schedule is based on an a priori planning of the subject; it might be modified during the academic year, especially considering the COVID19 evolution.

## 7. Activities and assessment criteria

### 7.1. Assessment activities

#### 7.1.1. Assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
5	Case 1	Written test	Face-to-face	01:00	15%	3 / 10	CG-MIB05 CG-MIB07 CG-MIB01 CE-MIB02
6	Test 1	Other assessment	Face-to-face	00:10	10%	3 / 10	CE-MIB02 CG-MIB07 CG-MIB08
9	Test 2	Other assessment	Face-to-face	00:10	10%	3 / 10	CE-MIB02 CG-MIB07 CG-MIB08
12	Case 2	Written test	Face-to-face	01:00	15%	3 / 10	CG-MIB01 CE-MIB02 CG-MIB05 CG-MIB07
13	Test 3	Other assessment	Face-to-face	00:10	10%	3 / 10	CE-MIB02 CG-MIB07 CG-MIB08
17	Final case	Group presentation	Face-to-face	00:50	40%	5 / 10	CG-MIB01 CE-MIB02 CG-MIB05 CG-MIB07 CG-MIB08 CG-MIB09

#### 7.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	Final case	Group presentation	Face-to-face	00:50	40%	5 / 10	CG-MIB01 CE-MIB02 CG-MIB05 CG-MIB07 CG-MIB08 CG-MIB09

17	Case 1	Written test	Face-to-face	00:20	15%	3 / 10	CG-MIB01 CE-MIB02 CG-MIB05 CG-MIB07
17	Case 2	Written test	Face-to-face	00:20	15%	3 / 10	CG-MIB01 CG-MIB05 CG-MIB07 CE-MIB02
17	Test 1	Other assessment	Face-to-face	00:10	10%	3 / 10	CE-MIB02 CG-MIB07 CG-MIB08
17	Test 3	Other assessment	Face-to-face	00:10	10%	3 / 10	
17	Test 2	Other assessment	Face-to-face	00:10	10%	3 / 10	CE-MIB02 CG-MIB07 CG-MIB08

### 7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Final Exam	Group presentation	Face-to-face	00:50	40%	5 / 10	CG-MIB01 CE-MIB02 CG-MIB05 CG-MIB07 CG-MIB08 CG-MIB09
Test 1	Other assessment	Face-to-face	00:10	10%	3 / 10	CE-MIB02 CG-MIB07 CG-MIB08
Test 2	Other assessment	Face-to-face	00:10	10%	3 / 10	CG-MIB07 CG-MIB08 CE-MIB02
Test 3	Other assessment	Face-to-face	00:10	10%	3 / 10	CG-MIB07 CG-MIB08 CE-MIB02
Case 1	Written test	Face-to-face	00:20	15%	3 / 10	CG-MIB01 CE-MIB02 CG-MIB05 CG-MIB07
Case 2	Written test	Face-to-face	00:20	15%	3 / 10	CG-MIB01 CE-MIB02 CG-MIB05 CG-MIB07

## 7.2. Assessment criteria

### **Progressive assessment**

In this mode, course assessment will be as follows:

- Individual assessment: students must complete tests, assignments and individual case studies related to the course topics. This component represents 60 percent of the total grade. It is necessary to get a grade of 3 points (out of 10) in each assessed task.
- Team assessment: students must deliver and defend (in an oral presentation) the final project. Team assessment has a weight of 40 percent of the total grade. The grade in this activity includes the document delivered and the oral presentation. Students who do not participate in the oral presentation will receive a grade of "Absent". The minimum grade necessary to pass this assessment is 5 points (out of 10). The deadline for submission of the deliverables is the official date of examination.

### **Global test assessment and extraordinary call**

In these modes, course assessment will be as follows:

- Individual assessment: students must complete tests or assignments related to the course topics. This component represents 60 percent of the total grade. It is necessary to get a grade of 3 points (out of 10) in each assessed task.
- Team assessment: students must deliver and defend (in an oral presentation) the final project. Team assessment has a weight of 40 percent of the total grade. The grade in this activity includes the document delivered and the oral presentation. Students who do not participate in the oral presentation will receive a grade of "Absent". The minimum grade necessary to pass this assessment is 5 points (out of 10). The deadline for submission of the deliverables is the official date of examination (in ordinary or extraordinary call, respectively). In both cases, students must deliver and defend an original project (that is, not submitted for assessment previously).

## 8. Teaching resources

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### 8.1. Teaching resources for the subject

Name	Type	Notes
Thompson, A. A., & Strickland, A. J. (2001). Strategic management: Concepts and cases. McGraw-Hill/Irvin. Chicago	Bibliography	
L. Boone, D. Kurtz. (2015) Contemporary Marketing (17th Edition)	Bibliography	
Kotler, P. (2015) Marketing Management (15th Edition)	Bibliography	
Slack, N., Chambers, S., & Johnston, R. (2009). Operations and process management: principles and practice for strategic impact. Pearson Education. Chicago	Bibliography	
<a href="http://moodle.upm.es/titulaciones/oficiales">http://moodle.upm.es/titulaciones/oficiales</a>	Web resource	Materials made by the course instructors: presentations, documents, cases, etc.

## 9. Other information

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### 9.1. Other information about the subject

#### Communications between the instructor and students

In order to facilitate the communication with the instructors, and whenever the questions or doubts cannot be solved during the class, e-mail will be the preferred way to direct any inquiry, question or doubt about the course to the instructors. Additionally, office hours and meetings will also be requested by e-mail.

#### Supporting tools and technologies

Certain tasks and activities might require the use of Moodle, Zoom or Microsoft Teams. If there is a mandate or recommendation for the use of other digital tools from the authorities (University, State), the information about the alternative means of communication/assessment/teaching will be communicated to the students in advance

#### Sustainable development goals

The course aims to foster awareness and knowledge about the Sustainable Development Goals through the development and presentation of projects that motivate students to work on different solutions from a biomedical engineering perspective. More specifically, the course will contribute to substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship (SDG 4.4)