



POLITÉCNICA

INTERNATIONAL
CAMPUS OF
EXCELLENCE

COORDINATION PROCESS OF
LEARNING ACTIVITIES
PR/CL/001



E.T.S. de Ingeniería
Agronómica, Alimentaria y de
Biosistemas

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

203000037 - Technological Innovation

DEGREE PROGRAMME

20BC - Master Universitario en Biología Computacional

ACADEMIC YEAR & SEMESTER

2020/21 - Semester 2

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1. Description

1.1. Subject details

Name of the subject	203000037 - Technological Innovation
No of credits	3 ECTS
Type	Optional
Academic year of the programme	First year
Semester of tuition	Semester 2
Tuition period	February-June
Tuition languages	English
Degree programme	20BC - Master Universitario en Biología Computacional
Centre	20 - E.T.S. de Ingeniería Agronómica, Alimentaria y de Biosistemas
Academic year	2020-21

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Antonio Molina Fernandez (Subject coordinator)		antonio.molina@upm.es	M - 12:00 - 14:00 Th - 12:00 - 14:00 Tutorías en Despacho del CBGP (Lab 234)

* 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

3.1. Recommended (passed) subjects

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

3.2. Other recommended learning outcomes

- Benchmark of Computational Biology Enterprises (National and International)
- Technological markets in the Computational Biology field

4. Skills and learning outcomes *

4.1. Skills to be learned

CE06 - Identificar las necesidades bioinformáticas de los centros de investigación y las empresas del sector de la biotecnología y la biomedicina.

CG06 - 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 para adaptarse a la rápida evolución prevista en el área de la Biología Computacional.

CT04 - Capacidad para comunicar a todo tipo de audiencias en lengua inglesa, tanto de forma oral como escrita.

4.2. Learning outcomes

RA56 - Adquirir conocimientos y experiencia sobre la legislación aplicable a la comercialización de tecnología de biología computacional Adquirir conocimientos en los aspectos legales de la transferencia de material y tecnología entre entidades publicas y privadas

RA57 - Adquirir conocimiento sobre valorización tecnológica y cadena de valor de la tecnología Adquirir conocimiento sobre aspectos legales de registro de propiedad intelectual(industrial y negociación de acuerdos de explotación entre entidades públicas y/ o privadas

RA58 - Adquirir conocimiento sobre los aspectos legales y económicos a considerar en la creación de empresas de base tecnológica (EBTs)

RA59 - Adquirir conocimiento sobre los aspectos legales y administrativos a considerar en la creación de empresas biotecnológicas y su gestión

RA60 - Adquirir conocimiento sobre la gestión del valor económico de la inversión en I+D+i.

* 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

5.1. Brief description of the subject

The aims of this topic is to provide fundamental knowledge in valorization and technology transfer. Among the topics to be studied are the following:

- To acquire knowledge and experience on the legislation applicable to the commercialization of computational biology technology
- To gain knowledge on the legal aspects of the transfer of material and technology between public and private entities.
- To understand the technology value chain and technology valorization and technology value chain
- To study the legal aspects of intellectual property.

- To acquire knowledge about the legal and economic aspects in the creation of technology-based companies (EBT).
- To gain knowledge about the legal and administrative aspects to consider in the creation of biotechnological companies and their management.
- To understand the management of the economic value of investment in R + D + i.

5.2. Syllabus

1. Management of a research and innovation project

1.1. Innovation project life-cycle

1.2. Task breakdown:

1.2.1. Work packages, tasks and milestones

1.2.2. Gantt diagrams

1.3. Allocation of human and material resources

1.3.1. Distribution of human resources

1.3.2. Material resources

1.4. Governance

1.4.1. Project management committees

1.4.2. Risk management

1.4.3. Tax deductions of R&D

1.5. The case of H2020 consortium-based projects

1.5.1. Consortium structure

1.5.2. Consortium agreement

2. Protection of research results

2.1. Rationale for protection

2.2. Types of protection instruments

2.2.1. The case of patents

2.2.2. The case of know-how: industrial secret

2.2.3. The protection strategy at the UPM

- 2.3. Technology watch and commercialisation of result
 - 2.3.1. Diffusion of technology
 - 2.3.2. Technology watch
 - 2.3.3. The UPM support to commercialisation of technology
 - 2.3.4. UPM Innovatech Programme
- 3. Exploitation of research results
 - 3.1. Alternatives for Exploitation of research results
 - 3.1.1. Creating advanced products and services: proof of concepts
 - 3.1.2. Technology licensing
 - 3.1.3. Spin-off creation
 - 3.2. Entrepreneurship
 - 3.2.1. Business model creation
 - 3.2.2. Investment (Risk capital, VC, other)
 - 3.3. The UPM support to entrepreneurship: Actúa UPM Progr
- 4. Innovation and Tech transfer in computational biology associated to life sciences
 - 4.1. Specific regulatory aspects in biotechnology
 - 4.1.1. Biosecurity
 - 4.1.2. Biomedical regulation
 - 4.1.3. Personal/Genomics data
 - 4.2. The value chain in Computational Biology/Biotechnology 3. The value chain in Computational Biology/Big data/Artific
 - 4.3. The value chain in Computational Biology/Big data/Artificial Intelligence
- 5. Students cases of innovation and Tech-transfer in Computational Biology

6. Schedule

6.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Distant / On-line	Assessment activities
1	Topic Introduction Duration: 02:00			
2			Topic 1. Management of a research and innovation projects Duration: 02:00	
3	Topic 1. Management of a research and innovation projects Duration: 02:00			
4	Topic 2. Protection of research results Duration: 02:00			
5			Topic 2. Protection of research results: Exercises Duration: 02:00	
6	Topic 3. Exploitation of research results Duration: 02:00			
7	Topic 3. Exploitation of research results Duration: 01:00		Topic 3. Exploitation of research results: Exercises Duration: 01:00	
8	Topic 3. Exploitation of research results: ACTUA UPM Program Duration: 01:30			Test Topic 1-2 Continuous assessment Presential Duration: 00:30
9	Topic 4. Innovation and Tech transfer in computational biology associated to life sciences Duration: 02:00			
10	Topic 4. Innovation and Tech transfer in computational biology associated to life sciences Duration: 02:00			
11			Topic 4. Innovation: Approaches and Questions Duration: 02:00	

12				Class Participation Continuous assessment Presential Duration: 01:00
13				Evaluation Topics 3 and 4 Continuous assessment Presential Duration: 01:00 En caso de alumnos sin evaluación continua Final examination Presential Duration: 01:00
14			Topic 5. Students cases of innovation and Tech-transfer in Computational Biology Duration: 02:00	
15				Students Cases presentations Continuous assessment Presential Duration: 02:00
16				
17				

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. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
8	Test Topic 1-2		Face-to-face	00:30	25%	4 / 10	CE06 CG06
12	Class Participation		Face-to-face	01:00	20%	4 / 10	
13	Evaluation Topics 3 and 4		Face-to-face	01:00	30%	4 / 10	CE06 CG06
15	Students Cases presentations		Face-to-face	02:00	25%	4 / 10	CE06 CT04

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
13	En caso de alumnos sin evaluación continua		Face-to-face	01:00	100%	5 / 10	CE06 CT04 CG06

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Evaluación Extraordinaria		Face-to-face	00:00	100%	5 / 10	CE06 CT04 CG06

7.2. Assessment criteria

- Acquisition of knowledge of the Subject: Test exam (70%)
- Presentation of a Practical case: 30%

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Moodle of the Topic	Web resource	The presentations of the Topic will be download in the UPM Web page (Moodle) of the Subject