



POLITÉCNICA

INTERNATIONAL
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PR/CL/001



E.T.S. de Ingenieros de
Telecomunicacion

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

93001320 - NeuroÉtica

DEGREE PROGRAMME

09BQ - Master In Science In Neurotechnology

ACADEMIC YEAR & SEMESTER

2024/25 - Semester 1

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1. Description

1.1. Subject details

Name of the subject	93001320 - Neuroética
No of credits	3 ECTS
Type	Compulsory
Academic year of the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	09BQ - Master In Science In Neurotechnology
Centre	09 - Escuela Tecnica Superior De Ingenieros De Telecomunicacion
Academic year	2024-25

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Fco. Javier Llorca Martinez (Subject coordinator)		javier.llorca@upm.es	--

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

2.3. External faculty

Name and surname	Email	Institution
Maria Celia Fernandez Ayer	mariacelia.fernandez@upm.es	Escuela Técnica Superior de Ingeniería de Sistemas Informáticos

3. Skills and learning outcomes *

3.1. Skills to be learned

C2 - Analizar y evaluar los problemas éticos y sociales relacionados con las neurotecnologías, aplicando los principales conceptos y principios avanzados de la neuroética, así como los códigos deontológicos, normativas legales, directrices y estándares profesionales relevantes para analizar situaciones relacionadas con aspectos éticos y de seguridad del ámbito de la neurotecnología. Competencias

C6 - Realizar, presentar y defender ante un tribunal público y constituido al efecto, de un proyecto original en el ámbito de la neurotecnología, de naturaleza profesional, investigadora o académica, en el que se sinteticen e integren las competencias adquiridas en las enseñanzas. Competencias

S4 - Comunicar trabajos y conclusiones a comunidades de iguales o a públicos generales de una manera razonada, clara y sin ambigüedades, elaborar artículos o memorias técnicas, y transmitir de un modo claro los avances científicos y tecnológicos o de la innovación más avanzada a audiencias especializadas y no especializadas. Habilidades

3.2. Learning outcomes

RA1 - C2

RA2 - C6

RA3 - S4

* 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.

4. Brief description of the subject and syllabus

4.1. Brief description of the subject

The main objective of this subject is to analyse and evaluate ethical and social problems related to neurotechnologies, applying the main advanced concepts and principles of neuroethics as well as deontological codes, legal regulations, guidelines and relevant professional standards to analyse situations related to ethical aspects of the field of neurotechnology.

4.2. Syllabus

1. Introduction to neuroethics and neurorights. Presentation
2. What is ethics?. A phenomenological approach to the ethical behaviour of humans
3. Ethical, legal and social questions in neurotechnology. The meaning of privacy
4. Implications of neurotechnology on the ethical and legal thought.
5. Applied neuroethics.
6. Free will and personal responsibility
7. Neurodiversity: Disorders or valuable differences?

5. Schedule

5.1. Subject schedule*

Week	Type 1 activities	Type 2 activities	Distant / On-line	Assessment activities
1	Introduction to neuroethics and neurorights. Presentation of the course Duration: 02:00			
2	What is ethics? A phenomenological approach to the human behavior Duration: 00:00			
3	What is ethics? A phenomenological approach to the human behavior (II) Duration: 02:00			
4	Ethical, legal and social questions in neurotechnology. The meaning of privacy. Duration: 02:00			
5	Implications of neurotechnology on the ethical and legal thought Duration: 02:00			
6	Applied neuroethics. A methodology to include ethical challenges in real projects Duration: 02:00			
7	Applied neuroethics. Ethical issues related to decoding thought from neural activity by linking the brain directly to digital networks. Duration: 02:00			Written report on the practical case presented in this week Individual presentation in the classroom Progressive assessment Not Presential Duration: 02:00
8	Applied neuroethics. Ethical issues related to privacy and behavioral prediction raised by neuroimaging. Duration: 02:00			Written report on the practical case presented in this week Individual presentation in the classroom Progressive assessment Not Presential Duration: 02:00 Written report on the practical case presented in this week Individual presentation in the classroom Progressive assessment Not Presential Duration: 02:00

9	Applied neuroethics. Ethical issues related to neural interventions and neuroprosthetic technologies. Duration: 02:00			Written report on the practical case presented in this week Individual presentation in the classroom Progressive assessment Not Presential Duration: 02:00
10	Applied neuroethics. Ethical issues between therapy and the improvement of cognitive ability Duration: 02:00			Written report on the practical case presented in this week Individual presentation in the classroom Progressive assessment Not Presential Duration: 02:00
11	Applied neuroethics. Implications for national security and society, dual use of neurotechnologies. Duration: 02:00			
12	Free will and personal responsibility Duration: 02:00			
13	Neurodiversity: Disorders or valuable differences? Duration: 02:00			
14	Evaluation Duration: 04:00			
15				
16				
17				The student will be asked to present and defend orally in presence of a committee one of the reports of the practical cases Individual presentation in the classroom Global 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.

6. Activities and assessment criteria

6.1. Assessment activities

6.1.1. Assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
7	Written report on the practical case presented in this week	Individual presentation in the classroom	No Presential	02:00	10%	3 / 10	C2 S4 C6
8	Written report on the practical case presented in this week	Individual presentation in the classroom	No Presential	02:00	10%	3 / 10	C2 S4 C6
8	Written report on the practical case presented in this week	Individual presentation in the classroom	No Presential	02:00	10%	3 / 10	C2
9	Written report on the practical case presented in this week	Individual presentation in the classroom	No Presential	02:00	10%	3 / 10	C2 S4 C6
10	Written report on the practical case presented in this week	Individual presentation in the classroom	No Presential	02:00	10%	3 / 10	C2 S4 C6

6.1.2. Global examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
17	The student will be asked to present and defend orally in presence of a committee one of the reports of the practical cases	Individual presentation in the classroom	Face-to-face	00:10	50%	3 / 10	C2 S4 C6

6.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
The student will be asked to present and defend orally in presence of a committee one of the reports of the practical cases	Individual presentation in the classroom	Face-to-face	00:10	100%	5 / 10	C6 C2 S4

6.2. Assessment criteria

The global evaluation will be given by the 5 reports of the practical cases (50%) and the oral defence of one of the reports (50%). To have access to the ordinary exam, it is mandatory to have presented the five reports.

The global evaluation for the extraordinary exam will be given by the 5 reports of the practical cases (50%) and the oral defence of one of the reports (50%). To have access to the extraordinary exam, it is mandatory to have presented the five reports.

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
The Risks and Challenges of Neurotechnologies for Human Rights	Bibliography	Book
https://www.unesco.org/en/ethics-neurotech	Bibliography	UNESCO reference
https://plato.stanford.edu/entries/neuroethics/	Bibliography	Stanford encyclopedia of philosophy