



POLITÉCNICA

INTERNATIONAL
CAMPUS OF
EXCELLENCE

COORDINATION PROCESS OF
LEARNING ACTIVITIES
PR/CL/001



E.T.S. de Ingenieros
Industriales

ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

53001882 - Compatibilidad Electromagnética

DEGREE PROGRAMME

05AZ - Master Universitario En Ingeniería Industrial

ACADEMIC YEAR & SEMESTER

2019/20 - Semester 1

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1. Description

1.1. Subject details

Name of the subject	53001882 - Compatibilidad Electromagnética
No of credits	3 ECTS
Type	Optional
Academic year of the programme	First year
Semester of tuition	Semester 1
Tuition period	September-January
Tuition languages	English
Degree programme	05AZ - Master Universitario En Ingeniería Industrial
Centre	05 - Escuela Técnica Superior de Ingenieros Industriales
Academic year	2019-20

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Miroslav Vasic (Subject coordinator)		miroslav.vasic@upm.es	--

* 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

- Electrotecnia, Electrónica Analógica, Digital y de Potencia.

4. Skills and learning outcomes *

4.1. Skills to be learned

(a) - APLICA. Habilidad para aplicar conocimientos científicos, matemáticos y tecnológicos en sistemas relacionados con la práctica de la ingeniería.

(e) - RESUELVE. Habilidad para identificar, formular y resolver problemas de ingeniería.

(k) - USA HERRAMIENTAS. Habilidad para usar las técnicas, destrezas y herramientas ingenieriles modernas necesarias para la práctica de la ingeniería.

(n) - IDEA. Creatividad

4.2. Learning outcomes

RA108 - El alumno analiza los resultados obtenidos del experimento, extrae conclusiones a partir de ellos y formula explicaciones.

RA332 - -Resolver problemas electrónicos con circuitos y sensores reales.

RA330 - -Examinar los circuitos analógicos de instrumentación electrónica con mayor aplicación industrial

RA331 - -Analizar los parámetros reales y parásitos de los circuitos que afectan a su correcto funcionamiento.

RA109 - El alumno planifica completamente un experimento (define el procedimiento, selecciona la metodología o instrumentación, el tipo o número de muestras, etc.)

* 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 subject is organized so that the students can obtain a knowledge regarding the EMI and EMC, with a special emphasis on applications in power converters. EMI filters for three phase rectifiers will be analyzed in detail.

The idea is to form students to be capable of understanding the origin of all the mechanisms that generate electromagnetic noise (conducted and radiated), so that they can make optimized and reliable designs.

5.2. Syllabus

1. Introduction to EMC
2. Real components. Intrinsic Noise
3. ways to couple interference
4. Cabling. Connecting to ground and earth. Filters.
5. Device protection
6. Cables. Contact Protection. Error Detection.
7. Standards. Typical examples.

6. Schedule

6.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Other face-to-face activities	Assessment activities
1	Theory Duration: 05:00 Lecture			
2	Theory Duration: 05:00 Lecture			
3	Theory Duration: 05:00 Lecture			
4	Theory Duration: 05:00 Lecture			
5	Theory Duration: 05:00 Lecture			
6	Theory Duration: 05:00 Lecture			Exam Written test Continuous assessment and final examination Duration: 02:00
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

The independent study hours are training activities during which students should spend time on individual study or individual assignments.

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 subject schedule is based on a previous theoretical planning of the subject plan and might go through experience some unexpected changes along throughout the academic year.

7. Activities and assessment criteria

7.1. Assessment activities

7.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
6	Exam	Written test	Face-to-face	02:00	100%	5 / 10	(k) (n) (a) (e)

7.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
6	Exam	Written test	Face-to-face	02:00	100%	5 / 10	(k) (n) (a) (e)

7.1.3. Referred (re-sit) examination

Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
Examen extraordinario	Written test	Face-to-face	02:00	100%	5 / 10	(a) (e) (k) (n)

7.2. Assessment criteria

There is only a final exam. To pass the exam it is necessary to obtain a note of 5.

8. Teaching resources

8.1. Teaching resources for the subject

Name	Type	Notes
Internet	Web resource	Notas de aplicación de fabricantes y laboratorios oficiales
Slides	Bibliography	