

## 330061 - M3 - Mathematics III

Coordinating unit:	330 - EPSEM - Manresa School of Engineering
Teaching unit:	749 - MAT - Department of Mathematics
Academic year:	2019
Degree:	BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2016). (Teaching unit Compulsory) BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2016). (Teaching unit Compulsory) BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2016). (Teaching unit Compulsory) BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory) BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Teaching unit Compulsory)
ECTS credits:	6
Teaching languages:	Catalan, Spanish

### Teaching staff

Coordinator:	MARGARITA DOMENECH BLAZQUEZ
Others:	MONTSERRAT ALSINA AUBACH - JOSEP M. CORS IGLESIAS - JOSEP FREIXAS BOSCH - JOSE MIGUEL GIMENEZ PRADALES - M. ANTONIA MOLINA HERNANDEZ - XAVIER MOLINERO ALBAREDA - FRANCISCO PALACIOS QUIÑONERO - MONTSERRAT PONS VALLES - M. ALBINA PUENTE DEL CAMPO - JOSEP MARIA ROSSELL GARRIGA - JOSEP RUBIÓ MASSEGÚ - ENRIC VENTURA CAPELL

### Degree competences to which the subject contributes

#### Specific:

1. (ENG) CE1: Capacitat per la resolució dels problemes matemàtics que puguin sorgir en l'enginyeria. Aptitud per aplicar els coneixements sobre: àlgebra lineal, geometria, geometria diferencial, càlcul diferencial i integral, equacions diferencials i en derivades parcials, mètodes numèrics, algorísmica numèrica, estadística i optimització.

#### Transversal:

2. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.
3. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.
4. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

### Learning objectives of the subject

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### Study load

Total learning time: 150h	Hours large group:	30h	20.00%
	Hours medium group:	0h	0.00%
	Hours small group:	30h	20.00%
	Guided activities:	0h	0.00%
	Self study:	90h	60.00%

### Content

(ENG) 1. EQUACIONS DIFERENCIALS ORDINÀRIES.	Learning time: 25h Theory classes: 5h Laboratory classes: 5h Self study : 15h
(ENG) 2. TRANSFORMADA DE LAPLACE.	Learning time: 30h Theory classes: 6h Laboratory classes: 6h Self study : 18h
(ENG) 3. SÈRIES NUMÈRIQUES I SÈRIES DE FOURIER.	Learning time: 40h Theory classes: 9h Laboratory classes: 10h Self study : 21h
(ENG) 4. TRANSFORMADA DE FOURIER.	Learning time: 40h Theory classes: 9h Laboratory classes: 9h Self study : 22h
(ENG) 5. EQUACIONS EN DERIVADES PARCIAIS.	Learning time: 15h Theory classes: 1h Self study : 14h

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### Planning of activities

(ENG) A1: EQUACIONS DIFERENCIALS I TRANSFORMADA DE LAPLACE.	Hours: 4h Laboratory classes: 1h Self study: 3h
(ENG) A2: SÈRIES I TRANSFORMADA DE FOURIER.	Hours: 4h Laboratory classes: 1h Self study: 3h
(ENG) A3: EQUACIONS EN DERIVADES PARCIALS.	Hours: 3h Self study: 3h
(ENG) E1  E2: PROVES ESCRITES.	Hours: 16h Theory classes: 4h Self study: 12h

### Bibliography

#### Basic:

Zill, Dennis G. Ecuaciones diferenciales con problemas con valores en la frontera. 9a ed. Cuajimalpa: Cengage Learning, 2018. ISBN 9786075266305.

Blanchard, Paul; Devaney, R. L.; Hall, Glen R. Differential equations. 4th ed. Pacific Grove: Brooks/Cole, 2011. ISBN 9781133110590.

Harris, K.; López, R. J. Discovering calculus with Maple. 2nd ed. New York: John Wiley & Sons, 1995. ISBN 0471009733.

Hsu, Hwei P.; Mehra, R. Análisis de Fourier. Argentina: Addison-Wesley Iberoamericana, 1987. ISBN 0201029421.

#### Complementary:

Gabel, R. A.; Roberts, R. A. Señales y sistemas lineales. México: Limusa, 1975.