COURSE DATA

DATA SUBJECT

Code: 34871
Name: Mathematics II
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1403 - Degree in Telematics Engineering	Escola Tècnica Superior d'Enginyeria	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1403 - Degree in Telematics Engineering	Mathematics	BASIC

COORDINATION

GARCIA RODRIGUEZ DOMINGO

SUMMARY

This course develops the classic content of Mathematical Analysis: Differential and integral calculus in several variables, ordinary differential equations, complex functions and Fourier series and Fourier and Laplace transforms. Addressed to engineering students, with content based on relevant applications, maintaining a consistent order in the presentation and development of different concepts to be introduced.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS

The contents of the course Mathematics I, which is taught in the first semester.

COMPETENCES / LEARNING OUTCOMES

1403 - Degree in Telematics Engineering

B1 - Ability to solve any mathematical problems that may arise in engineering. Ability to apply knowledge of: linear algebra, geometry, differential geometry, differential and integral calculus, differential equations and partial derivatives, numerical methods, numerical algorithms, statistics and optimization.

G3 - Acquisition of the knowledge of the basic and technological subjects that allows students to learn new methods and theories and endows them with the versatility to adapt to new situations.

G4 - Ability to solve problems with initiative, decision-making and creativity, and to communicate and transmit knowledge, abilities and skills, understanding the ethical and professional responsibility of the activity of a telecommunications technical engineer.

DESCRIPTION OF CONTENTS

1. Differential calculus of functions of several variables.

Partial derivatives, directional derivatives. Derivation of composite functions (chain rule). Implicit differentiation. Curves and surfaces.

Schedule: 5 h theory, 3 h problems, laboratory 2 h.

2. Multiple integration

Integral functions of two and three variables. Integration by change of variables. Fundamental theorems of integral calculus.

Schedule: 4 h theory, 3 h problems, laboratory 2 h

3. Ordinary differential equations

Equations of separable variables, homogeneous, linear equations of first order, linear differential equations of higher order with constant coefficients. Systems of differential equations. Laplace Transformation. Application of the Laplace transform to solve differential equations and systems.

Schedule: 4 h theory, 3 h problems, laboratory 2 h

4. Sequences and series. Complex variable functions.

Sequences and series of complex numbers. Series convergence criteria. Complex variable functions. Power series.

Schedule: 5 h theory, 4 h problems, laboratory 2 h

5. Series and Fourier transform

Fourier series. Trigonometric form and complex form. Fourier series representation of periodic functions. Fourier transform, properties and inversion formula.

Schedule: 5 h theory, 6 h problems, laboratory 2 h

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	30,00
Laboratory	10,00
Classroom practices	20,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	0,00
Independent study and work	15,00
Preparation of lessons	45,00
Preparation for assessment activities	27,00
Resolution of case studies	0,00
Total hours	**87,00**

TEACHING METHODOLOGY

It is based on the following strategies:

a) Lectures
b) Interactive activities: problem-based independent learning.

Theoretical activities (G3, G4, B1)

Lectures (single group)

Practical activities
Solving problems (2 subgroups)

Laboratories: (G3, G4, B1)

Working in the classroom computer (5 subgroups)

EVALUATION

The evaluation consists of :

- Final exam with a weight of 70% of the final grade.

- Continuous Assessment: will assess the ongoing work of the student through active participation in class, or giving some problems / assignments given by the teacher, or by conducting regular checks. The weight of this part is 20%. The atendance to the Labs is mandatory and has a weight of 10%.

If for some reason, continuous assessment of a student failed to make full, its weight will decrease proportionally, increasing the weight of the test to a maximum of 75% complete 100% of the mark.

The obvious copying or plagiarism of any activity that is part of the evaluation will mean the impossibility of passing the subject, subsequently subjecting yourself to the appropriate disciplinary procedures indicated in the PROTOCOL FOR ACTION AGAINST FRAUDULENT PRACTICES AT THE UNIVERSITAT DE VALÈNCIA (

ACGUV 123/2020).

In any case, the evaluation will be regulated by the Reglamento de Evaluación y Calificación de la Universitat de València para Grados y Masters:

https://webges.uv.es/uvTaeWeb/MuestraInformacionEdictoPublicoFrontAction.do?idEdictoSeleccionado=5639

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REFERENCES

- (1) G. James . Matemáticas avanzadas para la ingeniería. Segunda Edición. Pearson Education. (2002) ISBN: 970-26-0209-2

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- (4) M. Molero, A. Salvador, T. Menárguez, L. Garmendia. Análisis matemático para ingeniería. Pearson Education. (2007) ISBN: 978-84-8322-346-8.

- (3) J.E. Marsden, A.J. Tromba. Cálculo vectorial. Cuarta Edición. Pearson Educación (1998) ISBN: 968-444-276-9

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