



COURSE DATA

Data Subject

Code	34171
Name	Partial differential equations
Cycle	Grade
ECTS Credits	6.0
Academic year	2024 - 2025

Study (s)

Degree	Center	Acad. year	Period
1107 - Degree in Mathematics	Faculty of Mathematics	3	First term
1928 - Double Degree Program Physics-Mathematics	Double Degree Program Physics and Mathematics	3	First term

Subject-matter

Degree	Subject-matter	Character
1107 - Degree in Mathematics	12 - Differential equations	Obligatory
1928 - Double Degree Program Physics-Mathematics	3 - Tercer Curso (Obligatorio)	Obligatory

Coordination

Name	Department
MULET MESTRE, PEP	363 - Mathematics
SEGURA DE LEON, SERGIO	15 - Mathematical Analysis
YAÑEZ AVENDAÑO, DIONISIO FELIX	363 - Mathematics

SUMMARY

English version is not available

Se introducen a los estudiantes las ecuaciones en derivadas parciales (EDP) mediante leyes de conservación y otros ejemplos clásicos de la Física Matemática. Se estudia el problema de Cauchy para ecuaciones lineales y semilineales de primer y segundo orden, así como algunas condiciones de contorno para ecuaciones de segundo orden. Se desarrollan los métodos básicos para la resolución de EDP, basados en características, separación de variables, series de Fourier y convoluciones.



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 necessary basic knowledge for the start of this course will have studied in previous courses of Mathematical Analysis and Ordinary Differential Equations.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1107 - Degree in Mathematics

- Capacity for analysis and synthesis.
- Capacity for criticism.
- Solve problems that require the use of mathematical tools.
- Ability to work in teams.
- Learn autonomously.
- Possess and understand the mathematical knowledge.
- Expressing mathematically in a rigorous and clear manner.
- Capacity of abstraction and modeling.
- Knowing the time and the historical context in which occurred the great contributions of women and men in the development of mathematics.
- Visualize and interpret the solutions obtained.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

English version is not available

DESCRIPTION OF CONTENTS

1. Introduction to EDPs



2. Semilinear equations

3. Method of separation of variables

4.

5.

6.

7.

8.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	22,50	100
Other activities	7,50	100
Development of group work	20,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	20,00	0
Preparation of practical classes and problem	20,00	0
Resolution of online questionnaires	20,00	0
TOTAL	150,00	

TEACHING METHODOLOGY



EVALUATION

REFERENCES

Basic

- Coleman, M. P., An Introduction to Partial Differential Equations with Matlab, Chapman&Hole/CRC, 2013.
- Myint-U. T., Partial Differential Equations of Mathematical Physics, North-Holland, 1984.
- Haberman, R., Ecuaciones en Derivadas Parciales con Series de Fourier y Problemas de Contorno, Prentice Hall, 2003.

Additional

- Evans, L. C., Partial Differential Equations. Graduate Texts in Mathematics. Vol. 19. American Mathematical Society. Providence. 1998.
- John, F., Partial Differential Equations. Applied Mathematical Sciences (1), 4ª edición, Springer, 1981.
- Zill, D. G. and Cullen, M. R., Ecuaciones Diferenciales con Problemas de Valores en la Frontera. International Thomson, 2002.