VNIVERSITAT ID VALÈNCIA

COURSE DATA

Data Subject

Code	34171
Name	Partial differential equations
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

Study (s)

Degree	Center	Acad. year	Period
1107 - Degree in Mathematics	Faculty of Mathematics	3	Second term

Subject-matter

Degree	Subject-matter	Character
1107 - Degree in Mathematics	12 - Differential equations	Obligatory

Coordination

Name	Department
MULET MESTRE, PEP	363 - Mathematics
YAÑEZ AVENDAÑO, DIONISIO FELIX	363 - Mathematics

SUMMARY

English version is not available

En esta asignatura se introducirán las ecuaciones en derivadas parciales (EDP) mediante leyes de conservación y otros ejemplos clásicos de la Física Matemática. Se estudiará el problema de Cauchy para ecuaciones lineales y semilineales de primer y segundo orden. Finalmente, se desarrollarán los métodos básicos para la resolución de EDPs, basados en 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.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	37,50	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	157,50	

TEACHING METHODOLOGY

EVALUATION

REFERENCES

Basic

- -Referencia b1:   Coleman, M. P., An Introduction to Partial Differential Equations with Matlab, Chapman&Hole/CRC, 2013.

  -Referencia b2:   Myint-U. T., Partial Differential Equations of Mathematical Physics, North-Holland, 1984.

  -Referencia b3:   Haberman, R., Ecuaciones en Derivadas Parciales con Series de Fourier y Problemas de Contorno, Prentice Hall, 2003.

Additional

- -Referencia c1:   Evans, L. C., Partial Differential Equations. Graduate Texts in Mathematics. Vol. 19. American Mathematical Society. Providence. 1998.

  -Referencia c2:   John, F., Partial Differential Equations. Applied Mathematical Sciences (1), 4ª edición, Springer, 1981.

  -Referencia c3:   Zill, D. G. and Cullen, M. R., Ecuaciones Diferenciales con Problemas de Valores en la Frontera. International Thomson, 2002.

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

In the event of a closure of the facilities due to the health situation, and if this affects all or part of the classes of the subject, these will be replaced by classes where physical attendance will be replaced by online synchronous classes following the established schedules, and with asynchrony work from home.

In the event of a closure of the facilities due to the health situation, and if this affects any of the face-to-face tests of the subject, these will be replaced by tests of a similar nature but in virtual mode through the supported computer tools by the University of Valencia. The evaluation percentages will remain the same as those established in the guide.