UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: ADVANCED MATHEMATICS
Code: 56311
Type: BASIC
ECTS credits: 6
Degree: 416 - UNDERGRADUATE DEGREE PROGRAMME IN INDUSTRIAL ELECTRONICS AND AUTOMATION ENG
Academic year: 2023-24
Center: 605 - SCHOOL OF INDUSTRIAL ENGINEERS. AB
Group(s): 14
Year: 2
Duration: First semester
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **JOSE CARLOS VALVERDE FAJARDO** - Group(s): **14**

Building/Office	Department	Phone number	Email	Office hours
INFANTE JUAN MANUEL/0C2	MATEMÁTICAS	926053253	jose.valverde@uclm.es	

2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

Not established

4. Degree competences achieved in this course

Course competences

Code	Description
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
CEB01	Ability to solve mathematical problems that may arise in engineering. Ability to apply knowledge of linear algebra; geometry, differential geometry, differential and partial differential equations, numerical methods, numerical algorithms, statistics and optimisation.
CG03	Knowledge of basic and technological subjects to facilitate learning of new methods and theories, and provide versatility to adapt to new situations.
CG04	Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of industrial engineering.
CT02	Knowledge and application of information and communication technology.
CT03	Ability to communicate correctly in both spoken and written form.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Ability to approximate functions and data by means of power series and de Fourier developments and their applications.

Ability to describe processes related to industrial engineering subjects by means of ordinary differential equations and partial differential equations, solve them and interpret the results.

Ability to express oneself correctly orally and in writing and, in particular ability to use the language of mathematics as a way of accurately expressing the quantities and operations that appear in industrial engineering. Acquired habits of working in a team and behaving respectfully.

6. Units / Contents

Unit 1:
Unit 2:
Unit 3:
Unit 4:
Unit 5:
Unit 6:

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Combination of methods		1.2	30	Y	N	

Problem solving and/or case studies [ON-SITE]	Combination of methods		0.6	15	Y	N	
Computer room practice [ON-SITE]	Practical or hands-on activities		0.4	10	Y	N	
Formative Assessment [ON-SITE]	Assessment tests		0.2	5	Y	N	
Study and Exam Preparation [OFF-SITE]	Self-study		3.6	90	Y	N	
Total:			**6**	**150**			
Total credits of in-class work: 2.4							**Total class time hours: 60**
Total credits of out of class work: 3.6							**Total hours of out of class work: 90**

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Laboratory sessions	10.00%	10.00%	
Final test	70.00%	90.00%	
Projects	20.00%	0.00%	
Total:	**100.00%**	**100.00%**	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	**hours**
Class Attendance (theory) [PRESENCIAL][Combination of methods]	30
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	15
Computer room practice [PRESENCIAL][Practical or hands-on activities]	10
Formative Assessment [PRESENCIAL][Assessment tests]	5
Study and Exam Preparation [AUTÓNOMA][Self-study]	90

Global activity

Activities	**hours**
Class Attendance (theory) [PRESENCIAL][Combination of methods]	30
Computer room practice [PRESENCIAL][Practical or hands-on activities]	10
Formative Assessment [PRESENCIAL][Assessment tests]	5
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	15
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Bellido Guerrero, J. Carlos	Ecuaciones diferenciales ordinarias /	Paraninfo,		978-84-283-3015-2	2014	
Simmons, George F.	Ecuaciones diferenciales: con aplicaciones y notas histórica	McGraw-Hill		84-481-0045-X	1996	
Edwards, C. Henry (Charles Henry) (1937-)	Ecuaciones diferenciales y problemas con valores en la front	Pearson Educación,		978-970-26-1285-8	2009	
Adams, Robert A.	Cálculo /	Pearson Educación,		978-84-7829-089-5	2012	
Kiseliov, Aleksandr I.	Problemas de ecuaciones diferenciales ordinarias /	Mir,		84-8041-015-9	1997	
Pedregal Tercero, Pablo	Iniciación a las ecuaciones en derivadas parciales y al anál	Septem Ediciones,		84-95687-07-0	2001	
Pérez García, Víctor M. (1968-)	Problemas de ecuaciones diferenciales /	Ariel,		84-344-8037-9	2001	
Nagle, R. Kent	Ecuaciones diferenciales : y problemas con valores en la fro	Pearson Educación,		970-26-0592-X	2005	
Bellido Guerrero, J. Carlos	Ecuaciones en derivadas parciales /	Paraninfo,		978-84-283-3016-9	2014	