

SUBJECT TEACHING GUIDE

G415 - Calculus II

Degree in Industrial Technologies Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Industrial Technologies Engineering			Type and Year	Core. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Mathematics Basic Training Module				
Course unit title and code	G415 - Calculus II				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICA APLICADA Y CIENCIAS DE LA COMPUTACION				
Name of lecturer	MARIA REYES RUIZ COBO				
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Other lecturers					

3.1 LEARNING OUTCOMES
- Parametric equations in curves and surfaces. Scalar and vector fields integration.
- Engineering problem solving with vector calculus
- Identification and solutions of some differential equations
- Physical modelling with ordinary and partial differential equations. Some solution techniques.
- Problem solving with mathematical software
- Problem solving with mathematical software.

4. OBJECTIVES

Application of integral and vector calculus concepts to problem solving
 Laplace transforms concepts and applications
 Basic concepts in ordinary and partial differential equations . Application to engineering problem solving.
 Problem solving with mathematical software.

6. COURSE ORGANIZATION

CONTENTS	
1	Several variable integration. Vector fields.
1.1	Vector fields. Line integrals.
1.2	Surface integrals
2	Differential equations and Laplace transform
2.1	First order ordinary differential equations
2.2	Second order linear ordinary differential equations
3	Fourier Series, Partial Differential Ecuations and Laplace Transform
3.1	Fourier Series
3.2	Introduction to partial differential equations
3.3	Laplace transform

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Written exams and computer based exams (Continuous evaluation)	Written exam	No	Yes	90,00
Progress control exercices (Continuous evaluation)	Laboratory evaluation	No	Yes	10,00
Final exam	Written exam	Yes	Yes	0,00
TOTAL				100,00
Observations				
Students that have failed one or two blocks will have another chance with those blocks in the final exam. Final grade is the average of block grades, provided all of them are greater than 40% The course will be passed if that final grade is above 50%				
Observations for part-time students				
Part-time students can choose between continuous evaluation and final exam. In both options they will have the chance of achieving a 100% grade				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Álvarez, E., Herrero, M^ªT. y Ruiz, R. Colección Fundamentos Matemáticos, Tomos III, IV y V.

García, A. y otros "Cálculo I: Teoría y problemas de funciones de varias variables". Editorial Glagsa. ISBN: 84-921847-0-1

Nagle, R.K. y Staff, E.B. "Fundamentos de ecuaciones diferenciales". Editorial Addison-Wesley. ISBN: 0-201-51836-8

Gerald L. Bradley y Karl J. Smith. "Cálculo de varias variables". Volumen II. Editorial Prentice-Hall. ISBN: 84-8322-041-5

O'Neil, P.V. "Matemáticas avanzadas para ingeniería". Volúmenes I y II. Editorial Cecsca. ISBN: 968-26-1236-5

Salas, S. y Hille, E. "Calculus". Tomo 2. Editorial Reverté. ISBN: 978-84-291-5156-5