

## SUBJECT TEACHING GUIDE

G283 - Calculus II

Degree in Telecommunication Technologies Engineering

Academic year 2020-2021

1. IDENTIFYING DATA					
Degree	Degree in Telecommunication 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	G283 - 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	BEGOÑA SANCHEZ MADARIAGA				
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Other lecturers	ANA CASANUEVA VICENTE				

### 3.1 LEARNING OUTCOMES

- Solve mathematical problems in engineering world. Apply algebra methods, geometry, differential and integral methods to solve telecommunication engineering problems. Use approximating methods.

### 4. OBJECTIVES

Understand and use the most important concepts and tools in double and volume integrals, line and surface integrals

Comprehend the introduction about ordinary differential equations and partial differential equations. To be able to apply previous concepts to solve real problems.

Use mathematical software to solve problems.

6. COURSE ORGANIZATION	
CONTENTS	
1	PART 1
1.1	Chapter 1: Double integrals. Volume integrals.
1.2	Chapters 2: Introduction to vector calculus. Vector fields. Line integrals.
2	PART 2
2.1	Chapter 3: Surface integrals. Basic theorems of vector calculus (Green, Gauss and Stokes).
2.2	Chapter 4: First order ordinary differential equations. Analytic resolution. Numerical resolution.
3	PART 3
3.1	Chapter 5: Second order ordinary differential equations. First order equation systems. Analytic resolution. Numerical resolution.
3.2	Chapter 6: Introduction to partial differential equations.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
EVALUATION FOR PART 1 (EV1) Continuous evaluation for the chapters 1 and 2.	Others	No	Yes	36,00
EVALUATION FOR PART 2 (EV2) Continuous evaluation for the chapters 3 and 4.	Others	No	Yes	34,00
EVALUATION FOR PART 3 (EV3) Continuous evaluation for the chapters 5 and 6.	Others	No	Yes	30,00
FINAL EXAM This exam has theory questions, exercises and questions of Matlab.	Written exam	Yes	Yes	0,00
TOTAL				100,00
Observations				
<p><b>FOR CONTINUOUS EVALUATION</b></p> <p>To pass Cálculo II for continuous evaluation, the student mean mark of EV1 (36%), EV2 (34%) and EV3 (30%) must be greater than or equal to 5 points over 10. Moreover, the EV1, EV2 and EV3 marks must be greater than or equal to 4 points over 10. The students that fail EV1 or EV2 or EV3 in continuous evaluation can repeat the exam of the parts failed in final exam (ordinary convocatory).</p> <p>The students that fail Cálculo II in the ordinary convocatory must repeat the exam of all the Cálculo II contents in the extraordinary convocatory.</p> <p>It is possible on line evaluation of theory questions, home works, exercises and Matlab questions if new sanitary restrictions for COVID-19 became.</p>				
Observations for part-time students				
The part-time students can choose between the continuous evaluation previous or the final exam for the complete course (100%).				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Bradley, G.L. y Smith, K. J. "Cálculo de una variable". Editorial Prentice Hall.  
<http://catalogo.unican.es.unican.idm.oclc.org/cgi-bin/abnetopac/?TITN=145826>

Bradley, G.L. y Smith, K. J. "Cálculo de varias variables". Editorial Prentice Hall.  
<http://catalogo.unican.es.unican.idm.oclc.org/cgi-bin/abnetopac/?TITN=145826>

Nagle, R.K. y Saff, E.B. "Fundamentos de Ecuaciones Diferenciales". Editorial Addison-Wesley Iberoamericana.  
<http://catalogo.unican.es.unican.idm.oclc.org/cgi-bin/abnetopac/?TITN=72061>

Salas, S. y Hille, E. "Calculus". Tomo 2. Editorial Reverté.  
<http://catalogo.unican.es.unican.idm.oclc.org/cgi-bin/abnetopac/?TITN=110844>

Álvarez, E., Herrero, M<sup>a</sup>T. y Ruiz, R. Colección Fundamentos Matemáticos. Tomos 3, 4 y 5.  
<http://catalogo.unican.es.unican.idm.oclc.org/cgi-bin/abnetopac/?TITN=163560>

Stewart, J. "Cálculo multivariable" (2002). Thomson & Learning.  
<http://catalogo.unican.es.unican.idm.oclc.org/cgi-bin/abnetopac/?TITN=175358>

Frank Ayres, J.R. "Teoría y problemas de ecuaciones diferenciales". Editorial MacGraw-Hill.  
<http://catalogo.unican.es.unican.idm.oclc.org/cgi-bin/abnetopac/?TITN=30434>