

SUBJECT TEACHING GUIDE

G319 - Calculus

Degree in Chemical Engineering First Degree in Chemical Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Chemical Engineering First Degree in Chemical Engineering			Type and Year	Core. Year 1 Core. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Mathematics Basic Training Module				
Course unit title and code	G319 - Calculus				
Number of ECTS credits allocated	6	Term	Semester based (1)		
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	IVAN LEON MERINO				
E-mail	ivan.leonmerino@unican.es				
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 5. DESPACHO (S5017)				
Other lecturers	ELENA ESPERANZA ALVAREZ SAIZ MARIA REYES RUIZ COBO				

3.1 LEARNING OUTCOMES
- Complete number operation in different formats
- Properties and graphical representation of elementary functions
- Taylor approximation
- Basic integration techniques for single variable functions. Application to areas and volumes. Introduction to numerical integration.
- Calculation and geometrical interpretation of partial and directional derivatives in two-variable functions. Higher order derivatives. Composition.
- Optimization problems solved with differential calculus

4. OBJECTIVES

Application of differential calculus main concepts
Application of integral calculus main concepts for one-variable functions
Mathematical software application in problem solving

6. COURSE ORGANIZATION

CONTENTS	
1	Complex numbers. Real functions of one real variable
1.1	Complex numbers
1.2	Real functions of one real variable
2	Real functions of several variables
2.1	Differential calculus in functions of two variables
2.2	Taylor polynomials and optimization
3	Integral calculus with one-variable functions
3.1	Indefinite integrals
3.2	Riemann integrals
3.3	Applications

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Written exams (Continuous evaluation)	Written exam	No	Yes	75,00
Computer based exam (continuous evaluation)	Laboratory evaluation	No	Yes	15,00
Progress control exercises (continuous evaluation)	Activity evaluation with Virtual Media	No	Yes	10,00
Final exam	Written exam	No	Yes	0,00
TOTAL				100,00
Observations				
Each block is considered passed with more than 50% points Block 1 is worth 3.5 points. Block 2 is worth 3.5 points. Block 3 is worth 3 points. The course is considered passed if the sum of block points reaches 5 with no less than 40% points in each block Students will have another chance to pass non-passed blocks in the final exam. In order to enter continuous evaluation, students will be required to show participation in specific activities that will be identified along the course. This requirement does not hold for the final exam. This final exam will be worth all points of the course for students not meeting above criteria.				
Observations for part-time students				
Part-time students can enter continuous evaluation or final exam. Those who choose the final exam will have the chance to get all course points there.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Álvarez, E., Herrero, M^aT. y Ruiz, R. Colección Fundamentos Matemáticos. Tomo I y II.

Bradley, G.L. and Smith, K. Cálculo de una variable y Cálculo de varias variables. Volúmenes I y II. Prentice Hall. ISBN: 84-8322-041-5 (O.C.)

Salas, Hille y Etgen. Calculus de una y varias variables. Volúmenes I y II. Editorial Reverté. ISBN: 84-291-5156-7 (O.C.) ; 978-84-291-5156-5 (O.C.)

García y otros. Cálculo I y Cálculo II, Teoría y problemas. Editorial Glagsa. ISBN: 84-605-0944-3 y 84-921847-0-1