

SUBJECT TEACHING GUIDE

G319 - Calculus

Degree in Chemical Engineering

Academic year 2021-2022

| 1. IDENTIFYING DATA | | | | | |
|----------------------------------|---|------------------|--------------------|------------------|--------------|
| Degree | Degree in Chemical 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 | 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 |

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|------------------|--|--|--|--|--|
| Department | DPTO. MATEMATICA APLICADA Y CIENCIAS DE LA COMPUTACION | | | | |
| Name of lecturer | MARIA REYES RUIZ COBO | | | | |
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| Other lecturers | MARIA TERESA HERRERO MARTINEZ | | | | |

| 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

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| 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 | | | | |
| <p>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.</p> | | | | |
| 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.

Salas, Hille y Etgen. Calculus de una y varias variables. Volúmenes I y II. Editorial Reverté.

García y otros. Cálculo I y Cálculo II, Teoría y problemas. Editorial Glagsa.