

Academic Year: ( 2019 / 2020 )

Review date: 07/05/2020 18:40:48

Department assigned to the subject:

Coordinating teacher: ALVAREZ CAUDEVILLA, PABLO

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 2

**REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)**

Corresponding University access exams - High or secondary School

**OBJECTIVES**

To identify functions, their dependence on variables and their basic properties

To understand the concept of limit and compute easy limits.

To understand the definition of derivative and use its interpretation as tangent line. TO compute derivatives

To understand the difference between indefinite and definite integral and compute easy integrals

**DESCRIPTION OF CONTENTS: PROGRAMME**

Functions and their graphs (4 lessons)

- Lines and quadratic functions
- Functions
- Combinations of functions
- Inverse functions

Polynomial and rational functions (4 Lessons)

- Polynomial functions of Higher Degree
- Polynomial division
- Rational functions
- Inequalities and absolute values

Limits and their properties. Continuous functions (4 lessons)

- Evaluating limits analytically
- Infinite limits
- Limits at infinity
- Continuity and one-side limits

Definition and basic differentiation rule (4 lessons)

- The derivative and tangent line
- Basic differentiation rules
- Product and quotient rules and higher-order derivatives
- The Chain rule
- L'Hôpital's rule

Primitives (4 lessons)

- Antiderivatives and indefinite integration
- Area and definite integrals
- Integration by substitution

- Integration by parts

#### LEARNING ACTIVITIES AND METHODOLOGY

The learning methodology will include:

- Attendance to compulsory classes for students, in which core knowledge will be presented that they must acquire. The recommended bibliography will facilitate the students' work
- Resolution of exercises by the student that will serve as a self-evaluation method and to acquire the necessary skills. The lessons will be mainly practical
- Tests
- Final Exam
- Tutorial sessions
- The instructors may propose additional homework and activities

#### ASSESSMENT SYSTEM

Tests (50%)

Final exam (50%)

#### BASIC BIBLIOGRAPHY

- Larson, R., Edwards, B. H. Calculus of a single variable, Cengage.
- Larson R; Hostetler, R.P Precalculus, Cengage, 2014