FACULTY OF **ENGINEERING**

DEGREE COURSE: **INDUSTRIAL ENGINEERING BS**

SUBJECT: CALCULUS

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OBJECTIVES
The course is aimed at providing the fundamental mathematical analysis tools required to:
1) describe, formulate, analyze and interpret phenomena and problems
2) solve problems that arise in natural (physical) and engineering sciences, from differential and integral calculus to series, in single and multiple variables.

CONTENTS

Part I: real and complex numbers, real functions, limits and continuity, differentiability, extrema, integral calculus, numerical series.

Part II: differential equations, multivariable functions (limits, continuity, differentiability and extrema), vector fields, line integrals, multiple integrals, surface integrals, series of functions, power and Taylor series, Fourier series.

LEARNING OUTCOMES
At the end of the course students:
- will master the language and the most important computation techniques of mathematical analysis
- will be able to apply these skills to formulate, interpret and solve several typologies of problems
- will have developed correct reasoning and problem solving abilities.

ASSESSMENT

Written exam: multiple choice and open questions

RECOMMENDED TEXTBOOKS
Hass, Weir, Thomas. University Calculus, Early Transcendentals, Single Variable. Second Edition, Pearson (Addison Wesley).

Hass, Weir, Thomas. University Calculus, Early Transcendentals, Multivariable. Second Edition, Pearson (Addison Wesley).
Electronic versions of the texts are available within MyMathLab (www.mymathlab.com), along with other material, or at CourseSmart.com (textbook rental site).