FREE UNIVERSITY PEREIRA SECTION

UNDERGRADUATE PROGRAM IN ENVIRONMENTAL ENGINEERING

SUBJECT:	**CALCULUS II**
CODE:	**----------**
SEMESTER:	**SECOND**
HOURS	**WEEKLY: 4**
	THEORETICAL: 4
	PRACTICES: 0
REQUIREMENTS:	**CALCULATION I -**
	BASIC MATHEMATICS

GOALS.

That the student is able to maximize or minimize functions subject to given restrictions; that is equally able to use the gradient to determine the tangent plane to the level surfaces

That the student is able to use triple, double or line integrals to determination of the mass, the centroid or the center of mass, of an area, of a line, inter alia.

That the student is able to use the Theorems of Green, Gauss or

Stokes in problems of direct application of the race

METHODOLOGY.

The course will be developed with master lectures by the professor on the content basics of the subject; for their part, students will strengthen their knowledge of the subject through recommended readings, consultations with the teacher and the development of problems of application.

WORK PROGRAM.

ÿ Functions of several variables; continuity limits of scalar fields

- Partial derivatives; differentials and their applications; the chain rule; derivatives directional; gradient; tangent planes and normal lines

ÿ Extremes of functions of two variables; applications

- Lagrangian multipliers

ÿ Iterated integrals and area in the plane; volumes by double integrals

ÿ Change of variables. Jacobians

- Center of mass; moment of inertia

ÿ Triple integrals and their applications

ÿ Vector fields. Path independence

- Green's Theorem

- Surface integral

ÿ Divergence and Stokes' theorem

LITERATURE.

APOSTLE THOMAS, Calculus, Volume 1

AYRES, MENDELSON Differential and Integral Calculus Schaum Series, McGraw Hill

MEDINA, Introduction to Calculus, McGraw Hill