■ CC31 - Infinitesimal Calculus III

GENERAL

SCHOOL	EXACT SCIENCES
DEPARTMENT	MATHEMATICS
LEVEL OF STUDIES	UNDERGRADUATE

COURSE CODE	CC31	**SEMESTER**	C

COURSE TITLE	INFINITESIMAL CALCULUS III

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	5	8

COURSE TYPE	Scientific Field
PREREQUISITE COURSES	Infinitesimal Calculus I-II
LANGUAGE OF TEACHING AND EXAMINATIONS	Greek/English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://eclass.uowm.gr/

LEARNING OUTCOMES

Learning Outcomes
After the successful completion of the course, the students will be able to: • find the domain of functions of several variables, • calculate partial derivatives of functions of several variables as well as find their total differential, • find the extrema of functions of several variables, • find the limits of functions of several variables, • check the continuity of functions of several variables,

- make approximations to functions of several variables with the help of the Taylor formula

General Competencies

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Making decisions.
- Production of free, creative and inductive thinking, which is based on mathematical processes.

CONTENT OF THE COURSE

Calculus of many variables. Limits, continuity, partial derivatives and geometric interpretation. Formulas and theorems of partial derivatives. Extrema of functions of many variables. Limits of functions of several variables with constraints. The concept of total differential. Partial higher order derivatives. Distance of points, open and closed sets of R^n, boundary of a set.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Software Mathematica. e-Lectures. Use of e-class. Communication through face-to-face discussions and e-mails.
TEACHING ORGANIZATION	<table><tr><th>Activity</th><th>Semester Workload</th></tr><tr><td>Lectures</td><td>65 hours</td></tr><tr><td>Projects</td><td>47 hours</td></tr><tr><td>Individual Study</td><td>88 hours</td></tr><tr><td>Course Total (25 hours per ECTS)</td><td>200 hours</td></tr></table>
STUDENT EVALUATION	Projects 10%. Progress-Exams 20%. Written final examination 70%.

RECOMMENDED BIBLIOGRAPHY

1. J. Marsden, A. Tromba, Vector Calculus, Sixth Edition, University Publications of Crete, 2020 (Greek).
2. B. Papantoniou, Functions of Several Variables: Theory and Exercises, Publications Gartaganis (Greek).
3. R.L. Finney, M.D. Weir, F.R.Giordano, Infinite Calculus, University Publications of Crete, 2004 (Greek).
4. Chatziafratis T, Calculus of Functions of Several Variables, Symmetria Press, 2009 (Greek).
5. L. Tsitsas, Applied Vector Infinite Calculus, Publications Symmetria, 2003 (Greek).