Università degli Studi della Basilicata

DIPARTIMENTO DI MATEMATICA, INFORMATICA ED ECONOMIA

ACCADEMIC YEAR:	2016/17
COURSE:	General Mathematics/Linear Algebra + Complements of Calcolous
TYPE OF EDUCATIONAL ACTIVITY: (Basic, Characterizing, Affine, Free choice, Other)	Basic
TEACHER:	Rinauro Silvana + Alberto Cialdea
e-mail: silvana.rinauro@unibas.it + cialdea@email.it	web site:
phone: 0971 205888	mobile (optional):
Language: italian	

ECTS: (lessons and tutorials/practice) 6 (4	n. of hours: (lessons and tutorials/practice) 48 (32	Campus: Potenza Dept./School: DiMIE Program: Businnes administration	Semester: Primo

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES:

This course deals with functions, limits, derivatives.
Principal knowledge are:
- basics on real numbers and functions
- real functions: maximus, minimum, monotony, convexity, flexes
- definitions and theorems on limits and continuos functions
- derivatives
- graphs of functions
- integrals

Principal abilities are:
- to calculate limits
- to calculate of derivatives
- to draw graphs of functions

PRE-REQUIREMENTS:

It is necessary to know the following basic arguments:
- algebraic geometry (cartesian plane, line);
- algebraic equations and disequations (polynomial, fractional, irractional exponential e logarithmic).

SYLLABUS:

(8 hours) Functions and sequences.
Basic set theory – Real numbers – Intervals – Elementary functions and their cartesian graph – Invertible functions – Definition of sequence – Bounded functions – Monotone functions
(8 hours) Limits and continuity.
Definition of limit – Computation of elementary limits – Indeterminate forms – Limits of extra interest – Asymptotes – Continuity at a point – Continuous functions
(8 hours) Derivability.
Derivative at a point – Computation of elementary functions derivative – The derivative function – Theorems on the calculus of derivatives – Geometric interpretation of the derivative
(8 hours) Theorems on derivatives
Monotony intervals of a derivable function – Local maxima and minima – Fermat's Theorem – De L'Hopital Theorem – Concavity and convexity intervals for a twice derivable function – Flex points.
(6 hours) To draw the graph of a function

TEACHING METHODS:

48 hours of Theoretical lessons

EVALUATION METHODS:

Written examination,Oral examination (optional).
The aim of examination is to verify the level of the achievement of the above educational goals. The final test consist of a written examination which requires both numerical exercises and theoretical ones. The time for the written examination is 2 hours. In order to overcome the exam it is necessary to achieve at least 18/30. The student that wants to improve the grade may require to do also an oral examination.
The student that achieves 15/30, 16/30 or 17/30 to the written examination, has to do also an oral examination in order to overcome the final test.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL:

Main Texbook
-A. Guerraggio, Matematica, Pearson ed. 2009
Other suggested textbook
- P. Marcellini, C. Sbordone, Esercitazioni di Matematica , Volume 1 parte prima (1995), Liguori Editore, Napoli;
- P. Marcellini, C. Sbordone, Esercitazioni di Matematica , Volume 1 parte seconda (1995), Liguori Editore, Napoli.

INTERACTION WITH STUDENTS:

Educational goals, syllabus and evaluation methods are described at the beginning of the course.
Office hours.
Dr. Rinauro: Monday 10:30-11:30, Tuesday 10:30-11:30, at the office n. 3D257 of the Department of Mathematics, Computer Science and Economics.
It can be possible to contact the professor also by e-mail.
Prof. Cialdea: Wednesday 15:00-17:00, Thursday 12:30-13:30 at the office n. 3D497 of the Department of

EXAMINATION SESSIONS (FORECAST)[1]

08/02/2017, 22/02/2017, 05/04/2017, 17/05/2016, 05/07/2017, 20/09/2017, 15/11/2017.

SEMINARS BY EXTERNAL EXPERTS YES ☐ NO ☑

FURTHER INFORMATION:

[1] Subject to possible changes: check the web site of the Teacher or the Department/School for updates.