COURSE: Introduction to Mathematics			
ACADEMIC YEAR: 2019/2020			
TYPE OF EDUCATIONAL ACTIVITY: Basic			
TEACHER: Carmelina Frammartino			
e-mail: carmfra@yahoo.it		web:	
phone:		mobile (optional):	
Language: italian			
ECTS: 9	n. of hours: 60 lessons and 30 practice	Campus: Potenza Dept./School: Scuola di Ingegneria Program: 237	Semester: first

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The general learning outcome is to develop the students' abstract thought, to provide them with basic mathematical concepts, tools and rigorous language, together with problem solving abilities and the capacity to read and understand simple mathematical texts.

To this purpose, the methods of calculus will be illustrated and applied to the analysis of real valued functions in one variable. The matrix methods for solving systems of linear equations will be presented, the basic methods of descriptive statistics in the context of life sciences and the numerical methods in order to solve some numerical problems. In this way the students will become skillful at differential and integral calculus, matrix Operations, statistical data analysis and numerical problems.

PRE-REQUIREMENTS

Knowledge and skill in the following arguments: equations and inequalities of first and second degrees; the equation of a line; trigonometric functions and main identities; properties of powers and logarithms.

SYLLABUS

- Elements of calculus (30 hours lessons and 15 practice): sets, number sets, numerical sequences, functions, limits, continuity, differential calculus in one variable, analysis of a function, integral calculus in one variable.
- Linear Algebra (10 hours lessons and 5 practice): matrices, matrix operations, invertible matrices, matrix determinant, inverse matrix. Systems of linear equations and the gaussian elimination method.
- Elements of Statistics (10 hours lessons and 5 practice): Data and sampling. Graphic presentations. Measures of location: arithmetic mean, geometric mean, median, mode. Measures of dispersion: quartiles, interquartile range, variance and standard deviation. Normal distribution. Coefficient of correlation and linear regression line.
- Elements of numerical analysis and linear programming (10 hours lessons and 5 practice): Newton method, interpolation, spline, numerical differential calculus and numerical integral calcus.

TEACHING METHODS

Theoretical lessons and classroom tutorials.

EVALUATION METHODS

Written examination and oral examination in case of a close to sufficient result obtained in the written examination (18/30 is the sufficient grade).

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

J. Stewart: Calcolo. Funzioni di una variabile, Apogeo Education 2013
P. Marcellini e C. Sbordone: Elementi di Calcolo, Liguori Editore 2004
P. Marcellini e C. Sbordone: Esercitazioni di Matematica, I volume, Liguori Editore 1995
E. Sernesi: Geometria Vol. 1, 2a edizione, Bollati Boringhieri 1989
G.Monegato: Fondamenti di Calcolo Numerico, CLUT 1998
V. Comincioli: Analisi numerica, McGraw-Hill 1995
Lecture notes written by the professor.

INTERACTION WITH STUDENTS
Further information about the course may be requested to the professor by the institutional email.
Office hours: Tuesday from 18:00 to 19:00 at Dipartimento di Matematica, Informatica ed Economia.

EXAMINATION SESSIONS (FORECAST)[1]
March 25 2020, June 9 2020, July 21 2020, September 8 2020, December 22 2020.

SEMINARS BY EXTERNAL EXPERTS YES □ NO x

FURTHER INFORMATION

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