A.Y.2014-2015
Master Degree
Basic Mathematics
ECO0211

CFU/ Credits	**SSD Subject Code**	**Lectures** (hours)	**Tutorials** (hours)	**Lab** (hours)	**Seminars** (hours) [*inserire voce: es.*]	**Year**	**Teaching Language**
3	SEC/S-06	20	0	0	0	2014/15	ENG

Goals and Learning outcomes

At the end of Basic Mathematics, students

- can communicate about their understanding, skills and activities on quantitative subjects, with peers and supervisors;
- have the learning skills to undertake further studies on quantitative subjects of the master degree with some autonomy;
- can apply their knowledge, understanding and problem solving abilities on "Basic Mathematics" in new or unfamiliar topics within broader and multidisciplinary contexts of quantitative subjects.

Upon finishing the course, the student have developed those learning skills in basic mathematics that are necessary for them to continue to undertake further study with a high degree of autonomy.

Prerequisites

None.

Course Content

The course review major topics in calculus and integration focusing on refreshing problem solving abilities and the autonomous understanding of further studies on quantitative methods. The course aims to provide tools that are needed to attend fruitfully "Applied Mathematics Mod. 1".
Main topics:

- Basic mathematical terms and notation: sets, functions, sequences.
- One variable calculus: the intuitive notion of derivative, calculus rules, first, second and higher order derivatives. Differentiability.
- Introduction to optimization: necessary and sufficient conditions for one real variable functions.
- Introduction to vector and matrices: algebra of vectors and matrices, determinant of square matrices.
- Partial derivatives: calculus rules, gradient vector and Hessian matrix.
- Integration: areas and integral, basic techniques of integration-

Mode of Delivery

The course is delivered through class lectures. Students are strongly recommended to read the references provided in advance. Active participation is encouraged.
During the course some Home Assignment are provided and evaluated to assess the class learning. Team work on the assignment is allowed.

Recommended reading list (Bibliography)

Selected chapters from:
M. Anthony and N. Biggs, *Mathematics for economics and finance*, Methods and Modelling, Cambridge University Press, 2013.

Assessment

40% Assignments + 60% Written final exam.
Final exam assess the skills and problem solving abilities on quantitative topics covered during lectures. Assignments also assess the ability to apply the knowledge acquired to unfamiliar topics within the subject area of the course.

Office hours

TBA