



Università degli Studi della Basilicata

DIPARTIMENTO DI MATEMATICA, INFORMATICA ED ECONOMIA

ACCADEMIC YEAR: 2018/2019

COURSE: HIGHER GEOMETRY

TYPE OF EDUCATIONAL ACTIVITY: (Basic, Characterizing, Affine, Free choice, Other) **Basic**

TEACHER: Prof. Alessandro Siciliano

e-mail: [alessandro\[dot\]siciliano\[at\]unibas.it](mailto:alessandro[siciliano@unibas.it])

web site:

phone: 0971 2065860

mobile (optional):

Language: italian/english

ECTS: (lessons and tutorials/practice) 12

n. of hours: (lessons and tutorials/practice)

Campus: Potenza ▼
Dept./School: DiMIE ▼
Program:

Semester: Annuale ▼

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES:

The aim of the course is to overview the geometry of the general linear group and the classical groups associated with non-degenerate bilinear forms of a vector space. It will be also showed the simplicity of some of these groups.

At the end of the course, the student will know the basics of the geometry of classical groups and their action on the associated geometry.

PRE-REQUIREMENTS:

The students are asked to know the contents of the undergraduate courses in Geometry, Linear Algebra and Group Theory.

SYLLABUS:

Permutation groups. The general linear group. The simplicity of the projective special group. Polarity and bilinear and sesquilinear forms. Alternating bilinear forms. The symplectic geometry and symplectic group. The simplicity of projective symplectic group. Symmetric bilinear forms and quadratic forms. The orthogonal geometry and the orthogonal group in odd characteristic. The simplicity of the projective group $P\Omega(V)$. Hermitian forms. The unitary geometry and unitary group.



TEACHING METHODS:
Room Lessons

EVALUATION METHODS:
Oral exam

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL:

Lary C. Groove, Classical Groups and Geometric Algebra, Graduate Studies in Mathematics, Volume 39, American Mathematical Society.

E. Artin, Geometric Algebra, Wiley Classic Library

D. Taylor, The geometry of the classical groups. Sigma Series in Pure Mathematics, 9. Berlin, 1992

INTERACTION WITH STUDENTS:

individual appointments to assist students on Monay 11.30-12.30; Wednesday 10.30- 12.30

Other times are available after contacting the teacher via phone or e-mail

EXAMINATION SESSIONS (FORECAST)¹

8 Febbraio 2018

14 Giugno 2018

5 Luglio 2018

20 Settembre 2018

10 Ottobre 2018

8 Novembre 2018

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.