



COURSE: Mathematical Physics	
ACADEMIC YEAR: 2017/2018	
TYPE OF EDUCATIONAL ACTIVITY: Basic	
TEACHER: Antonio Sellitto	
e-mail: ant.sellitto@gmail.com	web:
phone:	mobile (optional):
Language: Italian	

ECTS: 60	n. of hours: 36 (lessons) n. of hours: 24 (practice) n. of hours: 60 (total)	Campus: Potenza School of Engineering Program: Mechanical Engineering/ Civil and Environmental Engineering	Semester:
----------	--	--	-----------

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

- **Knowledge:** knowledge of the basic laws of mechanics of systems of particles and rigid bodies as well as their consequences.
- **Skills:** to be able to set some basic problems of statics and dynamics. In the case of statics, to be able to calculate the equilibrium positions and to determine the reaction forces. In the case of dynamics, to be able to solve the differential equations of motion in simple situations leading to linear differential equations with constant coefficients.

PRE-REQUIREMENTS

Basic knowledge of Mathematical Analysis.

SYLLABUS

Representation of the motion of material points in different systems of reference. Motion under constraints. Degrees of freedom, Lagrangian coordinates, configuration and phase space. Dynamics of material points and Newton's Laws. Principle of virtual power and its application to the motion of constrained mechanical systems. Balances of linear momentum, angular momentum and energy for systems of material points. Motion with respect to the center of mass. Koenig's decomposition theorem for energy and angular momentum. Principle of virtual power and Lagrange equations. Conservation laws for Lagrangian systems. Representation of rigid body motion and Mozi theorem. Dynamics of rigid bodies.

TEACHING METHODS

Theoretical lessons, Classroom tutorials.

EVALUATION METHODS

Written (necessary) examination and oral (facultative) examination.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Mauro Fabrizio. ELEMENTI DI MECCANICA CLASSICA Zanichelli, Bologna, 2002.

INTERACTION WITH STUDENTS

Office hours: Friday – 11:30-13:30.

EXAMINATION SESSIONS (FORECAST)¹

21/02/2018; 04/05/2018; 19/06/2018; 03/09/2018; 05/10/2018

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.



Università degli Studi della Basilicata
Scuola di Ingegneria



Scuola di Ingegneria – Viale dell'Ateneo Lucano, 10 – 85100 Potenza

<http://ingegneria.unibas.it> - e-mail: scuolaingegneria.segreteria@unibas.it - tel 0971.205032/33 - fax (+39)0971 22115