Università degli Studi della Basilicata
Scuola di Ingegneria

COURSE: MATHEMATICAL PHYSICS

TEACHER: VITO ANTONIO CIMMELLI

e-mail: vito.cimmelli@unibas.itimmelli | website:

Language: Italian

ECTS: 6	n. of hours: 60	Academic year: 2015-2016	Campus: POTENZA	Semester: I

TOPICS

Fundamentals of the dynamics of material points.

TEACHING METHODS (please tick one or more options)

X Theoretical lessons
X Tutorials in classroom
□ Tutorials in laboratory
□ Project works
□ Technical visits
Other activities (please specify) _____

TEXTBOOKS

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

ON-LINE EDUCATIONAL MATERIAL

web address:

LEARNING OUTCOMES

Basic knowledge concerning the motion of the systems of particles and rigid bodies.

REQUIREMENTS

Basic knowledge of Mathematical Analysis.

EVALUATION METHODS (please tick one or more options)

□ Intermediate verifications
X Written examination
□ Discussion of a project work
□ Practical test
□ Oral examination
Other methods (please specify) _____

DETAILED CONTENT

Representation of the motion of material points in different systems of reference. Motion under constraints. Degrees of freedom, Lagrangian coordinates, configuration and phasespace. 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. Priciple of virtual

power and Lagrange equations. Conservation laws for Lagrangian systems. Legendre transformations and Hamilton equations of motion. Representation of rigid body motion and Mozzi theorem. Dynamics of rigid bodies. Motion of a solid with a fixed point and with a fixed axis. Stability of the equilibrium. Small perturbations of the equilibrium states and linearized equations of motion.

25-02-2016; 17-03-2016; 28-04-2016; 09-06-2016; 21-07-2016; 06-10-2016; 24-11-2016

SEMINARS BY EXTERNAL EXPERTS YES □ NO X

FURTHER INFORMATION