



COURSE: MATHEMATICAL PHYSICS		
ACADEMIC YEAR: 2016-2017		
TYPE OF EDUCATIONAL ACTIVITY: Basic		
TEACHER: PROF. VITO ANTONIO CIMMELLI		
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Language: Italian		
ECTS: 6	n. of hours: 60	Campus: Potenza
<b>EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES</b>		
<p>Knowledge: knowledge of the basic laws of mechanics of systems of particles and rigid bodies as well as their consequences.</p> <p>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.</p>		
<b>PRE-REQUIREMENTS</b> Basic knowledge of Mathematical Analysis.		
<b>SYLLABUS</b> 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 Mozzi theorem. Dynamics of rigid bodies. Motion of a solid with a fixed point and with a fixed axis.		
<b>TEACHING METHODS</b> Theoretical lessons, Classroom tutorials		
<b>EVALUATION METHODS</b> Written examination (one exercise on a problem of dynamics and statics). Oral examination (at least two questions on theoretical topics).		
<b>TEXTBOOKS</b> Mauro Fabrizio. <b>ELEMENTI DI MECCANICA CLASSICA</b> Zanichelli, Bologna, 2002		
<b>INTERACTION WITH STUDENTS</b> Direct meetings, by appointment set by e-mail. Short communications, just to information, by telephone.  Office hours: Friday – 11:30-13:30  Potenza, University Campus of Macchia Romana, Building 3D, Department of Mathematics, Computer Science and Economics, room 3D254.		

EXAMINATION SESSIONS (FORECAST) <sup>1</sup> 24/02/2017; 26/05/2017; 14/07/2017; 06/10/2017; 10/11/2017
SEMINARS BY EXTERNAL EXPERTS    YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>

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<sup>1</sup>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**

