COURSE: Principles of Physics

ACADEMIC YEAR: 2019/20

TYPE OF EDUCATIONAL ACTIVITY: Basic

TEACHER: Guido Masiello

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Language: Italian

ECTS: 9 = 6+3 (6 lessons, 3 practice)
n. of hours: 90 = 60+30 (60 lessons, 30 practice)
Campus: Potenza
School of Engineering
Program: Techniques for Building
and Land Management (L23)

Semester: II

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

- **Skills**: Ability to formalize and solve problems of cinematics, mechanics and electricity. Capability to deal with problems, which require usage of basic concepts of Physics and tools of linear algebra, analytical geometry and calculus.

PRE-REQUIREMENTS
Basics of algebra, analytical geometry and calculus

SYLLABUS

1. **Measurements and Physics quantities** (6 hours of lessons) Scientific method, System of units, Scalars and vectors, Operations between vectors.
2. **Kinematics of the Material Point** (6 hours of lessons + 3 hours of practice). Position and displacement vectors, mean and instantaneous velocity vector, mean and instantaneous acceleration vector, one-dimensional motions, plane motions.
4. **Dynamics of system of particles** (12 hours of lessons + 6 hours of practice). Center of mass, Internal and External Forces, linear momentum, law of conservation of linear momentum, Collisions and impulse.
5. **Statics and dynamics of Rigid Body** (12 hours of lessons + 6 hours of practice). Angular Momentum, Torque, Static Equilibrium, Rotational inertia and rotational kinetic energy, Euler’s equations, law of conservation of angular momentum.

TEACHING METHODS
Theoretical lessons for a total of 60 hours. Classroom practical tests for a total of 30 hours. Mock examinations are organized to prepare students for the final, written, examination.

EVALUATION METHODS
Written examination, eventually followed by an oral discussion.
The written examination consists of 5 exercises to be solved in a time of 2.5 hours. Students mark a score of 6 for each correctly solved exercise, otherwise they mark 0. The final mark assigned to each student is the sum of scores. The exam is passed if the total score reach 18. If not, the examination has to be repeated. At the end of the written examination there is an interview for the assessment of the final grade. Students who have marked more than 18 can ask to skip the interview; in that case the final mark is that of the written examination.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Textbooks
- J. Walker, Halliday – Resnick Fondamenti di Fisica, Casa Editrice Ambrosiana
- Halliday, Resnick, Krane, Fisica 1 e 2, Casa Editrice Ambrosiana
- P. Tipler, G. Mosca, Corso di Fisica 1 e 2: Meccanica Onde Termodinamica, Zanichelli

INTERACTION WITH STUDENTS

On the very first day of lessons, the teacher organizes the classroom by presenting the main objectives of the course together with textbooks. A list is formed of students who intend to enrol. They are asked to register as students of the course using the dedicated web site. Tutorial activities and interaction with the teacher are programmed each Wednesday and Thursday, 11 to 13 a.m. Students can interact with the teacher also via e-mail.

EXAMINATION SESSIONS (FORECAST)

01/07/2020, 28/07/2020, 02/09/2020, 29/09/2020, 21/12/2020, 28/01/2021, 25/02/2021, 05/05/2021

SEMINARS BY EXTERNAL EXPERTS

NO

FURTHER INFORMATION

1 Subject to possible changes: check the web site of the Teacher or the Department/School for updates.