General Information	
Academic subject	Physics
Degree course	Scienze e tecnologie Agrarie (STA)
Curriculum	
ECTS credits	6
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Francesco Santoro	francesco.santoro@uniba.it	FIS/07

ECTS credits details			
Basic teaching activities	Lectures (4)	Practical (2)	

Class schedule	
Period	II term
Year	I
Type of class	Lecture – Practical

Time management	
Hours	150
In-class study hours	60
Out-of-class study hours	90

Academic calendar	
Class begins	02/03/2020
Class ends	12/06/2020

Syllabus	
Prerequisites/requirements	Knowledge of basic mathematics: I and II grade equations, equation systems, geometric properties of flat figures and regular solids and basic trigonometry notions
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	*Knowledge and understanding* Knowledge of the main theoretical models of physics and the hypotheses on which these models are founded. Acquisition of the principles of mechanics of solids and liquids, of thermodynamics, of electrostatics and electrical circuits, of hydrostatic and fluid dynamics *Applying knowledge and understanding* Developing the ability to apply what has been learned to real cases *Making informed judgements and choices* Ability to deviate from superficial knowledge so to be able to independently reason in order to attempt at the solution of non-standard problems *Communicating knowledge and understanding* Ability to express themselves in a clear and scientifically rigorous language *Capacities to continue learning* Learning the basics and consolidation of logical and scientific attitudes useful in following years studies. The expected learning outcomes, in terms of knowledge and

	skills, are provided in Annex A of the academic regulations of the Degree Course (expressed through the European Descriptors of the qualification, field of mathematical disciplines, physical, IT and Statistics – Applied physics sector)
Contents	Generality Physical dimensions and measurement. Dimensions, Measurement systems. Scalar and vectorial dimensions. Geometrical and cartesian representation of vectors. Calculation on vectors: addition, difference, product with a scalar, scalar product, vectorial product. Kinematics Definition of mass point. Frames of reference. Average and instantaneous speed. Average and instantaneous acceleration. Cartesian representation. Space-time laws. Straight line motions. Motion of falling objects. Planar motion: motion, velocity and acceleration. Bullet motion. Uniform circular motion. Dynamics Forces and mass. The three Newton's laws. Weight. Friction (static and kinetic). Hooke's law forces. Dynamics of uniform circular motion: inward force. Force work: the case of a constant and a varying force. Kinetic energy. Work and energy theorem. Conservative forces and potential energy. Conservation of mechanical energy. Power. Momentum of a force and elements of rigid body dynamics. Statics: conditions of equilibrium and leverages Calorimetry and thermodynamics Temperature and heat. Ideal gas and state equations: thermodynamic transf. Thermodynamics laws, thermal machine Fluid statics and dynamics Fluid. Pressure, density, unit weight. Stevino's law, Pascal's law, Archimede's law. Mercury barometer and open-tube manometer. Steady motion of ideal fluid . Fluid flow and the continuity equation. Bernoulli's theorem and applications (Torricelli's theorem, idrodynamic poaradox, venturi meter, carryng capacity) Electrostatic and electrodynamics Coulomb's law. Electric field. Potential difference. Capacitors. Electric current. Ohm's law. Joule effect. Resistors
Course program	
Bibliography	D. Halliday, R. Resnick, J. Walker, "Fondamenti di Fisica", Casa Editrice Ambrosiana, 2015
Notes	Lesson notes integrate the contents of bibliography
Teaching methods	Lectures will be held using PowerPoint slide shows and exercises using the blackboard with involvement of the students
Assessment methods (indicate at least the type written, oral, other)	The final examination consists of an oral examination on the topics developed during the hours of theoretical and practical lectures held both in the classroom and in the laboratory, as reported in the academic regulations for the Degree Course (article 9) and in the study curriculum (Annex A). The evaluation of the student's knowledge level is based on pre-established criteria, as detailed in Annex A to the didactic regulations of the study curriculum.

	For students who have carried out the intermediate test, the result of the final examination is expressed at the end of the final examination as the arithmetic mean of the result of the intermediate and final examination
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are.	*Knowledge and understanding* The student must demonstrate knowledge of the main theoretical models of physics in relation to the subjects dealt with during the lessons *Applying knowledge and understanding* The student must be able to solve simple physical problems based on the acquired knowledge *Making informed judgements and choices* The student must demonstrate that he / she is able to follow alternative explanatory pathways to standardized models *Communicating knowledge and understanding* The student must demonstrate sufficient mastery of reference scientific terminology *Capacities to continue learning* The student will be able to independently examine and deepen problems in which the use of the laws of physics is required
Further information	