

General Information	
Academic subject	Physics
Degree course	Bachelor programme: Food Science and Technology
ECTS credits	6 ECTS
Compulsory attendance	No
Teaching language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Paolo Damiani	paolo.damiani@uniba.it	FIS/07

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

Class schedule	
Period	I semester
Course year	First
Type of class	Lecture – Practical

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

Academic calendar	
Class begins	October 7 th , 2019
Class ends	January 24 th , 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	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ 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. <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Developing the ability to apply what has been learned to real cases <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ Ability to deviate from superficial knowledge so to be able to independently reason in order to attempt at the solution of non-standard problems <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Ability to express themselves in a clear and scientifically rigorous language <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Learning the basics and consolidation of logical and scientific attitudes useful in following years studies. <p>The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification)</p>
Contents	Generality Physical dimensions and measurement. Dimensions, Measurement systems. Scalar and vectorial dimensions. Geometrical and cartesian

	<p>representation of vectors. Calculation on vectors: addition, difference, product with a scalar, scalar product, vectorial product.</p> <p>Kinematics</p> <p>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.</p> <p>Dynamics</p> <p>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</p> <p>Calorimetry and thermodynamics</p> <p>Temperature and heat. Ideal gas and state equations: thermodynamic transf. Thermodynamics laws, thermal machine</p> <p>Fluid statics and dynamics</p>
Course program	
Reference books	D. Halliday, R. Resnick, J. Walker, "Fondamenti di Fisica", Casa Editrice Ambrosiana, 2015
Notes	Lesson notes integrate the contents of bibliography
Teaching methods	<p>Lectures will be held using PowerPoint slide shows and exercises using the blackboard with involvement of the students</p> <p>Lecture notes and educational supplies will be provided by means of a mailing list or online platforms (i.e.: Edmodo, Google Drive...)</p>
Evaluation methods	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in the laboratory/production plants, as reported in the Academic Regulations for the Bachelor Degree in Food Science and Technology (article 9) and in the study plan (Annex A).</p> <p>Students attending at the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will concur to the final evaluation and will be considered valid for a year.</p> <p>The evaluation of the preparation of the student occurs on the basis of established criteria, as detailed in Annex B of the Academic Regulations for the Bachelor Degree in Food Science and Technology.</p> <p>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ The student must demonstrate knowledge of the main theoretical models of physics in relation to the subjects dealt with during the lessons <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ The student must be able to solve simple physical problems based on the acquired knowledge <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ The student must demonstrate that he / she is able to follow alternative explanatory pathways to standardized models <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ The student must demonstrate sufficient mastery of reference scientific terminology

	<i>Capacities to continue learning</i> <ul style="list-style-type: none">○ The student will be able to independently examine and deepen problems in which the use of the laws of physics is required
Receiving times	Wednesday 9-11