Program	Level of studies		First cycle	
	Program name		Educational Physics	
Course name	MECHANICS			
Course ID	Semester	Course status	ECTS credits	L+E
PHY1711	**I**	**MANDATORY**	**7**	**3+3**
Lecturer	**Prof. dr. Elvedin Hasović**			
Aims and intended learning outcomes	The goal of the course is to give students basic knowledge about motion of point-like and rigid bodies, their interaction, as well as the laws of classical mechanics and their application. At the end of the course the student should be able to: -describe the motion of the body in various representations; -apply the laws of mechanics; -solve numerical and conceptual problems in mechanics.			

Course content

Physical quantities and units. Vectors. The position of the body in space - the reference frame. The particle model. Displacement vector and particle velocity. Acceleration. Circular motion. Angular velocity and angular acceleration. Tangential and radial components of acceleration. Graphical representation of the motion. Concept of force. Newton's laws of mechanics. Motion with constant force. Inertial and non-inertial reference frames. Energy, work and power. Kinetic energy. Conservative and non-conservative forces. Potential energy. Conservation of Mechanical Energy. Mechanics of the many-particle system. Momentum. Collisions. Kepler's laws. Newton's law of gravity. Gravitational field. Motion in the gravitational field. Gravitational potential energy. Escape speed. Rotation of a rigid body. Rotation around the fixed axis. Work, power and energy of rotation. Mechanical equilibrium. Angular momentum. Rolling motion. Elasticity. Elastic deformation energy. Fluid mechanics. Bernoulli equation. Real fluids.

Student workload (hours)		Grading	
Lectures and Exercises	90	Assessment method	Points
Exam preparation	85	Course Test	50
Total	175	Final Exam	50
		Total	100

Literature

1. Lecture Notes.
2. C. Kittel, W. D. Knight, M.A. Ruderman, *Mehanika*, Tehnička knjiga Zagreb, 1982
3. L. Tanović, N. Tanović, *Fizika : mehanika, oscilacije, talasi*, Svjetlost Sarajevo, 1987
4. S. Bikić, *Zbirka riješenih zadataka iz fizike*, Zenica : Dom štampe, 1998
5. D. Halliday, R. Resnick, and J. Walker, *Fundamentals of Physics,* Wiley, Hoboken, NJ, 2013.

Remarks