

Course unit title:	Statics		
Course unit code:	ACES103		
Type of course unit:	Elective		
Level of course unit:	Bachelor		
Year of study:			
Semester when the unit is delivered:	3		
Number of ECTS credits allocated :	6		
Name of lecturer(s):			
Learning outcomes of the course unit:	<ol style="list-style-type: none"> 1. Relate forces to vectors and explain their properties and use. Introduce the different support types. Explain how they develop reactions and what type of forces they restrain. 2. Define a particle and how it can be used in engineering mechanics. Explain the equilibrium of particles. 3. Define a rigid body and how it can be used in engineering mechanics. Explain the equilibrium of Rigid Bodies. Model simple real structures in terms of particles and rigid bodies 4. Define a beam and its characteristics. 5. Differentiate between the point (concentrated) loads and the distributed loads. Apply the loads on statically determinate beams and analyze them to get the reactions. 6. Define a truss and its characteristics. Discuss the point loads that can be applied on a truss. Apply the loads on simple statically determinate trusses and analyze them using the method of joints. Apply the loads on simple statically determinate trusses and analyze them using the method of sections. 7. Calculate the centroid of regular shapes and sections. Calculate the centroid of irregular shapes and sections. 8. Define the concept of moment of inertia. Calculate the moment of inertia of various sections. 		
Mode of delivery:	Face-to-face		
Prerequisites:	AMAT111, APHY112	Co-requisites:	
Recommended optional program components:	None		
Course contents:	<ul style="list-style-type: none"> • Forces: Forces as vectors their properties and use. Introduction of the different support types. • Particles: Definition of a particle. Equilibrium of particles. • Rigid body: Definition of a rigid body. Equilibrium of Rigid Bodies. Model simple real structures in terms of particles and rigid bodies. • Beams: Definition of a beam and its characteristics, Differentiation between the point (concentrated) loads and the distributed loads. Application of loads on statically determinate beams. • Trusses: Definition of a truss and its characteristics. Application of loads on simple statically determinate trusses and analysis of them using the method of joints. Application of the loads on simple statically determinate trusses and analysis of them using the method of sections. • Centroid of regular and irregular shapes: Calculation of the centroid of regular shapes and sections. Calculation of the centroid of irregular shapes and sections. • Moment of inertia: Definition of the concept of moment of inertia. 		

	Calculation of the moment of inertia of various sections.
Recommended and/or required reading:	
Textbooks:	Russell C. Hibbeler, "Engineering Mechanics – Statics SI", Pearson Education Center; 2009
References:	<p>1. Ferdinand P. Beer / Johnson, "Vector Mechanics for Engineers – Statics in SI units", Tata McGraw Hill, 2007.</p> <p>2. Andrew Pytel, Jaan Kiusalaas, "Engineering Mechanics: Statics - SI version", CL-Engineering, 2010.</p>
Planned learning activities and teaching methods:	The taught material of the course is delivered to the students by means of lectures. Lecture notes and presentations are available through the web for students to use in combination with the textbooks.
Assessment methods and criteria:	<ul style="list-style-type: none"> ▪ Assignments 15% ▪ Tests: 35% ▪ Final Exam 50%
Language of instruction:	English
Work placement(s):	No