

Faculty of Mechanical Engineering / MECHATRONICS / KINEMATICS

Course:	KINEMATICS			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
256	Mandatory	2	5	2+2+0
Programs	MECHATRONICS			
Prerequisites	No prerequisites required.			
Aims	In this course geometry of motion of mechanical objects is studied. Various kinematic characteristics are defined and studied.			
Learning outcomes	In this course students learn the basic concepts and principles of kinematics. They study the movement of mechanical objects starting from the simple, such as a point, a rigid body, simple mechanisms. After completing the course and performing all the planned activities: regular attendance, active participation in class, independently done and defended homework, colloquiums and after passing the final exam, they should be able, at solving specific problems, to deal with the synthesis and analysis of mechanisms. In that way they would be prepared to identify, formulate and solve engineering problems			
Lecturer / Teaching assistant	Prof. dr Mila Kažić Stefan Čulafić - teaching assistant			
Methodology	Lectures, practice, homeworks, partial exams.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction, position, velocity of a particle, repetition of mathematics concepts			
I week exercises	Introduction, position, velocity of a particle, repetition of mathematics concepts			
II week lectures	Particle acceleration.			
II week exercises	Particle acceleration.			
III week lectures	Special cases of a particle motion - rectilinear motion			
III week exercises	Special cases of a particle motion - rectilinear motion			
IV week lectures	Special cases of a particle motion - circular motion.			
IV week exercises	Special cases of a particle motion - circular motion.			
V week lectures	Translatory motion. Rotation of rigid body around stationary axis.			
V week exercises	Translatory motion. Rotation of rigid body around stationary axis.			
VI week lectures	I exam			
VI week exercises	I exam			
VII week lectures				
VII week exercises				
VIII week lectures	Planar motion: velocities of points, pole of velocity			
VIII week exercises	Planar motion: velocities of points, pole of velocity			
IX week lectures	Planar motion: accelerations of points, pole of acceleration			
IX week exercises	Planar motion: accelerations of points, pole of acceleration. III home work.			
X week lectures	Planar motion: Examples of simple mechanisms			
X week exercises	Planar motion: Examples of simple mechanisms			
XI week lectures	Planar motion: Examples of simple mechanisms			
XI week exercises	Planar motion: Examples of simple mechanisms			
XII week lectures	Rotation of rigid body around stationary point			
XII week exercises	Rotation of rigid body around stationary point			
XIII week lectures	Relative motion of a particle			
XIII week exercises	Relative motion of a particle			

XIV week lectures	Relative motion of rigid body					
XIV week exercises	Relative motion of rigid body					
XV week lectures	II exam					
XV week exercises	oral exam					
Student workload	Weekly Lectures: 2 hours of lectures Practice: 1 hour of calculus practice Other lecturing activities: Individual student work: 2 hours individual work and consults Structure 3.75 ECTS x 40/30 =5 hours During semester: Lectures and final exam: 5hours x 16 weeks = 80 hours Necessary prapration (administration, enrollment, validation): 2 x 5 hours = 10 hours Total hours for the course : 3.75 x 30 = 112.5 hours Additional work: 112.5 - (80+10) = 22.5 hours Load structure: 80 hours (lecture)+10 hours (preparation) + 22.5 hours (additional work)					
Per week			Per semester			
5 credits x 40/30=6 hours and 40 minuts 2 sat(a) theoretical classes 0 sat(a) practical classes 2 excercises 2 hour(s) i 40 minuts of independent work, including consultations			Classes and final exam: 6 hour(s) i 40 minuts x 16 =106 hour(s) i 40 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 6 hour(s) i 40 minuts x 2 =13 hour(s) i 20 minuts Total workload for the subject: 5 x 30=150 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 30 hour(s) i 0 minuts Workload structure: 106 hour(s) i 40 minuts (cources), 13 hour(s) i 20 minuts (preparation), 30 hour(s) i 0 minuts (additional work)			
Student obligations			Students are obliged to attend classes ordinarily, to work on and submit homeworks and work all three exams.			
Consultations			Tuesday and Thursday from 9h to 11h			
Literature			R.C. Hibbeler, Engineering Mechanics- Dynamics			
Examination methods			4 home works: 4x4=16 ; attending classes: 4; 2 remedial exams: 2x30=60; final exam: 20}=100 Remedial exams are written and contain calculus tasks. Final exam is oral and contains theoretical questions.			
Special remarks			Students are on every class given a certain number of problems to work on at home as practice, and on next practice class to work on it at the blackboard. Besides this, they have 4 "big" home works which should be defended in front of the teacher and for			
Comment			Extra informations about subject - for all informations students can refer to professor.			
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points