RTU Course "Fundamentals of Computer Science"

15325 Teorēt.mehānikas un materiālu pretestības katedra

General data

Code	MMP101
Course title	Fundamentals of Computer Science
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Undergraduate Studies
Course type	Academic
Field of study	Computer Science
Responsible instructor	Jevstigņejevs Vladislavs
Academic staff	Smirnova Raisa Sokolova Svetlana Kononova Olga Uhanova Marina Jevsjukova Jeļena Harjkova Gaļina
Volume of the course: parts and credits points	1 part, 3.0 Credit Points, 4.5 ECTS credits
Language of instruction	LV
Possibility of distance learning	Not planned
Maximum auditorium capacity	25
Maximum number of students per semester	25
Abstract	Solving the mechanical engineering tasks using MathCad software. Simple operations and calculations. Function analysis: roots, extremes, increasing and decreasing intervals, intersection points. Solving linear and nonlinear equations and systems of equations. Operations with matrixes. Data processing: interpolation, extrapolation, and approximation. Symbolic operations. Solving differential equations.
Goals and objectives of the course in terms of competences and skills	The goal of the course is to provide students with the skills required to solve mechanical engineering tasks using MathCad software. The objective of the course is to provide students with the competence to choose proper MathCad operators and to estimate validity of the obtained results
Structure and tasks of independent studies	Studying the main topics of the study subject and preparing for test works consulting recommended literature and attending the tutorials of the lecturer
Recommended literature	1. Jansons V., Kozlovskis K., Fiļipovs A., Tambovceva T. Datormācība ekonomistiem. RTU, 2004. 2. Priede Č. MATHCAD 7. Lekciju konspekts. Rīga, 2000. 3. Bulavs F., Kiščenko I., Radiņš I., Skaitlisko aprēķinu realizācijas metodes būvniecības specialitātes studentiem, Rīga, 2008. 4. Акишин Б.А., Эркенов Н.Х. Прикладные математические пакеты. Учебное пособие. Часть 1: MathCAD. РадиоСофт, 2009. 5. Брент Максфилд. Mathcad в инженерных расчетах. КОРОНА-Век, 2010.
Course prerequisites	Informatics at the secondary school level

Course outline

Theme	Hours
Simple operations and calculations	3
Function analysis: roots, extremes, increasing and decreasing intervals, intersection points	9
Solving linear and nonlinear equations and systems of equations	6
Operations with matrices	6
Data processing: interpolation, extrapolation, and approximation	9
Symbolic operations	3
Solving differential equations	12

Learning outcomes and assessment

Learning outcomes	Assessment methods
Student can perform function analysis	Test work
Student can perform data processing	Test work
Student can solve differential equations	Test work
Student can apply MathCad software for mechanical engineering tasks	Examination test

Study subject structure

Part	CP	ECTS	Hours per Week			Tests		
			Lectures	Practical	Lab.	Test	Exam	Work

1.	3.0	4.5	1.5	0.0	1.5		*	