



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Math software [S1MNT1>OM]

Course

Field of study

Mathematics of Modern Technologies

Year/Semester

1/1

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

0

Laboratory classes

30

Other

0

Tutorials

0

Projects/seminars

15

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

The student has a basic knowledge of mathematics

Course objective

Showing the differences between the calculation methods: (approximate) numerical and symbolic. Getting to know the basic capabilities of the Maxima, the Python library - SymPy. Bring the GeoGebra program closer as a geometric 'calculator'. Showing how to use the above programs to automate writing texts in LaTeX

Course-related learning outcomes

Knowledge:

- He knows the limitations of symbolic computational methods. Knows how to create a function graph in GeoGebra [K_W01(P6S_WG), K_W05(P6S_WG), K_W07(P6S_WG), K_W10(P6S_WG)].

Skills:

- He can use a symbolic package for calculations. He can use the GeoGebra program. Can write a mathematical text using the above programs [K_U01(P6S_UW), K_U02(P6S_UW), K_U03(P6S_UW),

K_U04(P6S_UW), K_U05(P6S_UW), K_U07(P6S_UW), K_U08(P6S_UW), K_U14(P6S_UK)].

Social competences:

- He is responsible and is aware of the need for reliability at work. Can edit the correct text in Polish [K_K01(P6S_KK)].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Laboratory classes: projects and final test - pass mark: 50% of points;

Projects/seminars: projekt.

Programme content

Laboratory classes:

getting to know the software:

- Maxima, SymPy
- GeoGebra
- LATEX

Course topics

Laboratory classes:

- Maxima, SymPy: solving systems of equations, integration, differentiation;
- GeoGebra: function graphs, geometric graphs;
- LATEX: Marcin Woliński's class and LATEXpolonization.

Teaching methods

Laboratory classes: laboratories;

Projects/seminars: presentations.

Bibliography

Basic:

- Maxima manual;
- GeoGebra;
- LaTeX - <http://mirrors.ctan.org/info/lshort/polish/lshort-pl.pdf>;
- Paulo Ney de Souza, Richard J. Fateman, Joel Moses, Cliff Yapp, The Maxima Book, <http://maxima.sourceforge.net/docs/maximabook/maximabook-19-Sept-2004.pdf>;
- R.Filipów, J.Gulgowski, Zastosowanie pakietu Maxima w Analizie Matematycznej, Uniwersytet Gdański, Gdańsk 2010.

Additional:

- W.Młoczek, Matematyka wyższa z Maximą, Akademia Rolnicza w Krakowie, Kraków 2006;
- C. T. Lachowicz, Matlab, Scilab, Maxima. Opis i przykłady zastosowań, Wydawnictwo Politechniki Opolskiej, Opole 2005.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation)	55	2,00