SYLLABUS

Name: ***Computer methods in engineering (BioAIS-BF>SMs2CMp4O)***
Name in Polish:
Name in English: ***Computer methods in engineering***

Information on course:

Course offered by department: Faculty of Energy and Environmental Engineering
Course for department: Silesian University of Technology
Term: Winter semester 2022/2023
Cordinator of course edition: Dr hab. inż. Witold Nocoń

Default type of course examination report:

EGZ

Language:

English

Course homepage:

https://platforma2.polsl.pl/rau1/course/view.php?id=569

Short description:

The objective of this course is to present the newest modern programing environments used for implementation of control-measurements systems, data analysis application and data analysis results visualization and data storage.
The objective of laboratory exercises is to teach students the practical aspects of control algorithms implementation, controller tuning and programing of PLCs (Programmable Logic Controllers)

• Modern programming environments
• Synchronization methods in programming
• Multithreaded programming
• Implementation of user interfaces
• Implementation of control algorithms
• Modern environments for advanced data analysis
• Massive data processing, machine learning
• Web applications and creating independent applications

Description:

Lectures
• Modern programming environments
• Synchronization methods in programming
• Multithreaded programming
• Implementation of user interfaces
• Implementation of control algorithms
• Modern environments for advanced data analysis
• Massive data processing, machine learning
• Web applications and creating independent applications

Laboratory
• Introduction in LabView programing
• Synchronization methods in LabView
• Data save and archiving, algorithms implementation
• Introduction in data analysis in R and Matlab
• Masive data analysis, multithreads programing
• Basic web interface development in data analysis application

Bibliography:

1. J. Travis, J. Kring. LabVIEW for Everyone - Graphical Programming Made Easy and Fun (3rd Edition). Prentince-Hall, London, 2006.
2. Floria H, Huber W, Gentleman R, Falcon S. Bioconductor Case Study. Springer, 2008.
3. P.A. Blume. LabVIEW Style Book, Prentice Hall; 1 edition, 2007
4. Trevor H, Tibshirani R, Friedman J. The Elements of Statistical Learning: Data Mining, Inference, and Prediction, 2008.

Learning outcomes:

Knowledge: Knows and understans:

1 "Modern programming environments, Synchronization methods in programming,Multithreaded programming, Implementation of user interfaces, Implementation of control algorithms, Modern environments for advanced data analysis, Massive data processing, machine learning, Web applications and creating independent applications (K2A_W01)

Assessment methods and assessment criteria:

Written exam

Information on course edition:

Default type of course examination report:

EGZ

Bibliography:

missing bibliography in English

Details of classes and study groups

lecture (15 hours)

Study groups details

Group number 1

Class instructors:
Dr hab. inż. Witold Nocoń
Dr inż. Krzysztof Psiuk-Maksymowicz

laboratory classes (15 hours)

Study groups details

Group number 1

Class instructors:
Dr hab. inż. Witold Nocoń
Dr inż. Krzysztof Psiuk-Maksymowicz

project (15 hours)

Study groups details

Group number 1

Class instructors:
Dr hab. inż. Witold Nocoń
Dr inż. Krzysztof Psiuk-Maksymowicz

Element of course groups in various terms:

Course group description	First term	Last term
missing group description in English (BioAIS-BF>2(1))	2020/2021-Z	

Course credits in various terms:

Biotechnology, full-time master degree studies 3 sem. (BioAIS-SM3)			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	4	2020/2021-Z	