



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Basics of programming - Scripting languages [S1MiBM2>JSPP]

### Course

Field of study

Mechanical Engineering

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

elective

### Number of hours

Lecture

15

Laboratory classes

30

Other

0

Tutorials

0

Projects/seminars

0

### Number of credit points

4,00

### Coordinators

mgr inż. Marek Trączyński

marek.traczynski@put.poznan.pl

### Lecturers

### Prerequisites

- Ability to use a computer (working with an operating system, file and folder operations) - Knowledge of basic mathematics at a high school level - Ability to solve problems independently and think algorithmically

### Course objective

The aim of the course is to familiarize students with the fundamentals of programming in high-level languages (using a selected language). During the classes, basic concepts and structures in programming (variables, data types, instructions, user interaction handling, subroutines) are introduced, as well as the construction of programs utilizing these structures (combined with problem analysis in an algorithmic context) and the verification of their correctness.

### Course-related learning outcomes

Knowledge:

-

Skills:

-

Social competences:

-

## Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Passing is based on a written exam consisting of 30 multiple-choice questions on a 0/1 scale. Passing requires a minimum score of 51%.

Laboratory: Passing is based on a practical exam during lab sessions worth 60 points and tasks completed during labs worth 40 points. The final grade is determined according to the following scale: 100 points based on the adopted grading system - 3.0 from 41 points, 3.5 from 56 points, 4.0 from 71 points, 4.5 from 81 points, 5.0 from 91 points.

## Programme content

The course is organized in such a way as to present programming concepts in scripting languages, using MATLAB and Python as examples, in an accessible manner for both individuals without programming experience and those who wish to deepen their knowledge. During the classes, through writing simple programs, students will have the opportunity to develop their programming skills

## Course topics

In the first part of the lecture, number systems, variable types, the ASCII table, basic instructions and operators, computer architecture, logical operations, the concept of an algorithm and methods of its notation, as well as basic control instructions and language syntax will be discussed. The later part will cover topics related to program debugging, functions, and the use of AI tools in code generation. Laboratory - practical application of the knowledge learned in the lecture.

## Teaching methods

Lecture: A multimedia presentation-illustrated with examples and videos, problem analysis including visual representation on the board, followed by discussion and problem analysis.

Laboratory: The practical part will involve hands-on computer work, during which the instructor and students will write programs illustrating the discussed topics. In the later stages of the laboratory sessions, students will individually write programs assigned by the instructor.

## Bibliography

Basic:

1. Rudra Pratap: Matlab dla naukowców i inżynierów. PWN, Warszawa
2. Waldemar Sradomski: MATLAB. Praktyczny podręcznik modelowania. Helion, Gliwice.
3. P. Norton, A. Samuel : Python. Od podstaw. Helion, Gliwice.
4. M. Lutz : Python. Wprowadzenie. Helion, Gliwice.

Additional:

Internet sources, for example:

1. <https://www.mathworks.com/help/matlab/>
2. <https://docs.python.org/3/library/index.html>

## Breakdown of average student's workload

|                                                                                                                                         | Hours | ECTS |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------|------|
| Total workload                                                                                                                          | 0     | 0,00 |
| Classes requiring direct contact with the teacher                                                                                       | 0     | 0,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 0     | 0,00 |