

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2023 SEMESTER 1

<i>Course title</i>	<i>System programming</i>
<i>Course Code</i>	IVB340ANMI
<i>Hours/Week: le/pr/lab</i>	0/0/2
<i>Credits</i>	4
<i>Degree Programme</i>	Computer Science Engineering BSc
<i>Study Mode</i>	<i>full-time</i>
<i>Requirements</i>	exam
<i>Teaching Period</i>	spring
<i>Prerequisites</i>	
<i>Department(s)</i>	Systems and Software Technologies
<i>Course Director</i>	
<i>Teaching Staff</i>	<i>Dr. Péter Iványi, Tamas Storcz</i>

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).

Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

Students would practice generalization and transition of their previously acquired procedural and object oriented programming knowledge.

In the course, students meet syntax and application possibilities one of the most widely used programming language of nowadays for system administration, common software development and special software development, like artificial intelligence based image processing or estimation of time series data.

In the second part of the course Students will learn to create small, “throw-away” scripts to manage and process data in a text format or in an object-oriented way in PowerShell.

Modern computer science engineers can not miss contents of this practice oriented course.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.

Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

The purpose of this course is to make students understand and able to utilize fundamental concepts and tools of different programming paradigms in Python programming language, including object oriented programming for solving most common administrative and programming tasks. They will learn most used modules and how to find the appropriate for special tasks, including artificial intelligence based ones. Students will also learn to handle Bash, GAWK, and PowerShell scripting languages to automate different development or administration tasks.

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

TOPICS

LECTURE PRACTICE LABORATORY PRACTICE	<ol style="list-style-type: none"> <i>Python introduction, installation, virtual environments, console, scripting</i> <i>Running scripts, Jupyter Notebook, Procedural programming</i> <i>IDE, Object oriented programming</i> <i>Data handling and management</i>
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5. Machine learning
6. Bash programming
7. GAWK programming
8. PowerShell programming

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

PRACTICE, LABORATORY PRACTICE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.				
2.	Python, packages, console, scripting,	[1]	Python homework	Week 6
3.	JupyterNotebook, procedural programming	[1]/2, [2]/1		
4.	IDE, Object Oriented Programming	[1]/3, [2]/2		
5.	Data handling, visualization, GUI	[2]/3		
6.	Process automation and support	[2]/4		
7.	Introduction to GAWK programming	[4.]	GAWK homework	Week 10
8.	GAWK programming	[4.]		
9.	Spring break			
10.	Introduction to Bash programming	[5.]	GAWK quiz	
11.	Bash programming	[5.]		
12.	Introduction to PowerShell programming	[6.]	Bash quiz PowerShell homework	Week 15
13.	PowerShell programming	[6.]		
14.	Retake 1		PowerShell quiz	
15.	Retake 2		Retake of GAWK, Bash, PowerShell quizes	

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance (e.g.: attendance sheet / online test/ register, etc.)

Attendance at 70% of classes is mandatory. The participation rate does not affect the grade, but an absence of more than 30% results in the subject being failed.

Attendance is checked on the basis of an attendance sheet

ASSESSMENT

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course-unit with final examination

Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam

(The samples in the table to be deleted.)

Type	Assessment	Weighting as a proportion of the
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		<i>pre-requisite for taking the exam</i>
1. <i>python test</i>		20%
2. <i>python homework</i>		30%
3. <i>GAWK quiz, correct answer +1, wrong answer -1</i>	<i>min 40%</i>	14%
4. <i>GAWK homework</i>	<i>success/failure</i>	4%
5. <i>Bash quiz, correct answer +1, wrong answer -1</i>	<i>min 40%</i>	14%
6. <i>PowerShell quiz, correct answer +1, wrong answer -1</i>	<i>min 40%</i>	14%
7. <i>PowerShell homework</i>	<i>success/failure</i>	4%

Requirements for the end-of-semester signature

(Eg.: mid-term assessment of 40%)

Successful mid term assessments

Re-takes for the end-of-semester signature (PTE TVSz 50§(2))

The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Tests can be retaken once during the semester and once during the exam period.

Homework can be resubmitted 1 week later of the deadline.

Type of examination (written, oral): -

The exam is successful if the result is minimum 40 %. (The minimum cannot exceed 40%.)

Calculation of the grade (TVSz 47§ (3))

The mid-term performance accounts for **100 %**, the performance at the exam accounts for **0 %** in the calculation of the final grade.

Calculation of the final grade based on aggregate performance in percentage.

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

- [1.] Course presentation slides
- [2.] Course practice JupyterNotebooks
- [3.] Guido van Rossum - Python Tutorial (Python Software Foundation)
- [4.] <http://hexahedron.hu/personal/peteri/gawk/index.html>
- [5.] https://regi.tankonyvtar.hu/hu/tartalom/tamop425/0046_hejprogramozas/adatok.html
- [6.] <https://docs.microsoft.com/en-us/powershell/scripting/learn/ps101/00-introduction?view=powershell-7.2>

RECOMMENDED LITERATURE AND AVAILABILITY

- [7.] Mark Summerfield – Python 3 programozás - Átfogó bevezetés a Python nyelvbe (Kiskapu)
- [8.] Allen B. Downey – Think Python (O'Reilly)
- [9.] <https://github.com/powershell/powershell>
- [10.] <https://powershell.org/>