

Programmer's Toolkit

Course description

Basic information

Field of study : Analytical Computer Science

Path : -

Organizational unit : Faculty of Mathematics and Computer Science

Education level : first-cycle studies

Form of study : full-time studies

Study profile : general academic

Obligatory status : mandatory

Education cycle : 2022/23

Course code : UJ.WMIIANS.110.03336.22

Languages of instruction : Polish

Disciplines : Computer Science

ISCED classification : 0611 Computer use

USOS code : WMI.TCS.SP.OL

Course coordinator

Grzegorz Gutowski

Course instructor

Grzegorz Gutowski

Period Semester 1	Form of verification of learning outcomes	
	grade assessment	
	Teaching methods and hours	Number of ECTS credits 3.0
	laboratory classes: 30	

Educational aims of the course

C1	The student knows basic tools supporting the work of a computer scientist
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C2	The student knows the principles of versioning and can use a version control system
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C3	The student can navigate Linux from the command line at a basic level and write scripts to automate the work of a computer scientist
C4	The student knows how to use a debugger and write a simple "makefile"
C5	The student can use the learned tools to test programs and find errors in their own code
C6	The student can speak in an understandable language about issues covered in class and formulate questions to better understand the topic

Learning outcomes for the course

Code	Effects in terms of	Directional learning outcomes	Verification methods
Knowledge – The student knows and understands:			
W1	basic tools supporting the analytical work of a computer scientist, including the principles of versioning (version control systems)	IAN_K1_W03, IAN_K1_W15	grade assessment
Skills – The student can:			
U1	navigate Linux from the command line at a basic level and write scripts to automate the work of a computer scientist, knows how to use a debugger and write a simple "makefile"	IAN_K1_U04, IAN_K1_U05, IAN_K1_U11, IAN_K1_U12, IAN_K1_U21	grade assessment
Social competences – The student is ready to:			
K1	speak in an understandable language about issues covered in class and formulate questions to better understand the topic	IAN_K1_K01	grade assessment

ECTS credits balance

Form of student activity	Average number of hours* devoted to completed types of activities
laboratory classes	30

test preparation	10	
preparation for classes	10	
independent study of topics covered in class	10	
independent solving of computer tasks	30	
Total student workload		ECTS credits 3.0

* hour (lesson) means 45 minutes

Course content

No.	Course content	Learning outcomes for the course
1.	Linux shell commands: basic operations on files and directories, displaying file contents, regular expressions, processes, tasks, system variables.	W1, U1, K1
2.	The grep, sed commands and awk language as tools for searching and editing text streams.	W1, U1, K1
3.	Scripts in Linux: handling conditional statements, loops, functions, and streams in the Bash shell.	W1, U1, K1
4.	Version control systems: Git, file updates, change tracking, communication with external repositories.	W1, K1
5.	Debugging: gdb, examples of errors.	W1, U1, K1
6.	Makefile: basic creation principles.	W1, U1, K1

Extended information

Teaching methods:

problem solving, laboratory classes

Type of classes	Forms of credit	Course credit requirements
laboratory classes	grade assessment	Credit based on point accumulation - assessment according to scale. Detailed assessment criteria are determined each time by the module instructors.

Literature

Required

1. The module has an original character, a prepared script with materials is binding.

Additional

1. Additional literature is supportive:

1. <http://www.tutorialspoint.com/unix/index.htm>
2. <http://www.tutorialspoint.com/awk/index.htm>
3. <https://git-scm.com/book/pl/v1>
4. <http://www.unknownroad.com/rtfm/gdbtut/gdbtoc.html>
5. <http://mrbook.org/tutorials/make/>

2. Additional topics:

- http://wazniak.mimuw.edu.pl/index.php?title=%C5%9Arodowisko_programisty
- <http://hginit.com/>
- <http://heather.cs.ucdavis.edu/~matloff/debug.html>
- <http://valgrind.org/docs/manual/index.html>
- <ftp://ftp.gust.org.pl/TeX/info/lshort/english/lshort.pdf>
- <http://ece.uprm.edu/~caceros/latex/introduction.pdf>