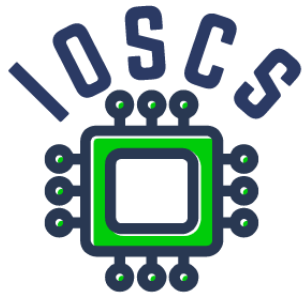

Project: Innovative Open Source Courses for Computer Science

Programming language Lua
Syllabus

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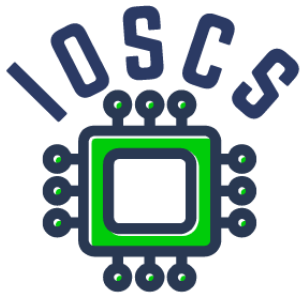
29. 1. 2020

Innovative Open Source Courses for Computer Science



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Project information

Project was implemented under the Erasmus+.
Project name: **"Innovative Open Source courses for Computer Science curriculum"**
Project nr: **2019-1-PL01-KA203-065564**
Key Action: **KA2 – Cooperation for innovation and the exchange of good practices**
Action Type: **KA203 – Strategic Partnerships for higher education**

Consortium
ZACHODNIOPOMORSKI UNIWERSYTET TECHNOLOGICZNY W SZCZECINIE
MENDELOVA UNIVERZITA V BRNE
ZILINSKA UNIVERZITA V ZILINE

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Erasmus+ Programme
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COURSE SYLLABUS

Field of study:	Computer science
Level:	first cycle
Name of the course:	**Programming language Lua**
ECTS credits:	5
Instruction forms:	lecture, seminar
Instruction hours:	24/24
Type, extent and method of teaching activities:	2/2 (lectures/exercises) hours weekly, presence study
Prerequisites:	none

Goals: Studying the course student will get basic knowledge of prorgamming language Lua and will gain practical skills solving exercises.

Contents:

	lectures	*seminars*
1	**Introduction and description of programming language Lua**	
	history, data types, values, expressions, numbers, boolean, nil, strings	variables, assingment, data type conversions, input and output, math functions
2	**Operators**	
	arithmetic operators, bitwise operators, boolean operators, relational operators, concatenation	expression evalution, precedence
3	**Basic structures of Lua**	
	conditions and if command, loop commands while, repeat/until, loop command for,	data processing
4	**Strings**	
	string functions, UTF-8 encoding, shortened syntax	searching patterns, captures
5	**Tables**	
	array, hash, access to hash elements, ordering and its modification	table initialisation, number of elements, table operations
6	**Functions**	
	declaring, call, return values, parameters, optional parameters, recursion	recursive algorithms, serialisation, structure listing

7 Functions

function as a data type, function as a parameters, iterators, closures — use of outer subroutines, construction of user iterator

8 Text files

description and properites of text files, text file operations — use of different modes for text files

9 Binary files

description and properites of binary files, binary file operations — conversions between binary and text data, direct access to data

10 Modules

structure and use of module, interface diagram — proposal of user abstract data type, implementation of abstract data type

11 Communication with OS

command line, enviromental variable, executing commands, date and time — library os, configuration files processing

12 Use of lua in applications

principles of use, description of applications, — Lua and programming language C, Lua in ConTEXt, use for games development

Student workload – forms of activity: individual work on computer with programming language Lua

Teaching methods/tools: lectures and laboratories, computer room with standard equipment, connection to the internet.

Evaluation methods: evaluation is based on two components – the continuous evaluation during the semester and final exam. Continuous examination consist of a practical test on use of language Lua at the end of 12th week of semester, max. 50 points and max. 10 points for special activities. To enroll for an exam the student must have at least 30.0 points. Final exam contain theoretical and questions or tasks, max. 40 points, min. 10 points are required.

Final evaluation: Successful completion presume to obtain at least 61 points, including at least 10 points for theoretical problems.

Marks and points: A: 93–100, B: 85–92, C: 77–84, D: 69–76, E: 61–68.

Planned learning outcomes: After completing the course the student: knows the basic concepts of programming language Lua, is familiar with typical Lua structures, is able to create programmes in language Lua.

Bibliography:

Roberto Ierusalimschy. *Programming in Lua.* Lua.org. 2016. ISBN 85-903798-6-8.

Gabor Szauer. *Lua quick start guide : the easiest way to learn Lua programming* Birmingham ; Mumbai : Packt Publishing. [2018]. ISBN 978-1-78934-013-6