Załącznik nr 9
do Zarządzenia Rektora PŚk Nr 35/19
w brzmieniu ustalonym Zarządzeniem Nr 12/22

COURSE DESCRIPTION

Course code	full-time studies	
	part-time-studies	
Course name	**Podstawy Programowania 2**	
Course name in English	**Fundamentals of Programming 2**	
Valid from academic year	**2022/23**	

PLACEMENT IN THE TEACHING PROGRAM

Field of study	**Computer Science**
Level of education	**1st degree**
Studies profile	**General**
Form and method of teaching classes	**Full-time and part-time studies**
Specialization	**All specializations**
Organizational unit responsible for the course	**Department of Information Systems**
Course coordinator	**Arkadiusz Chrobot, PhD**
Approved by	**Dean of the Faculty of Electrical Engineering, Automatic Control and Computer Science Roman Deniziak, KUT prof., DSc, PhD**

GENERAL CHARACTERISTIC OF THE COURSE

Course affiliation		**Introductory Course**
Course status		**Mandatory**
Language		**English**
Semester	full-time studies	**2nd semester**
	part-time-studies	**2nd semester**
Requirements		**Fundamentals of Programming 1**
Exam (YES/NO)		**NO**
ECTS		**4**

Course form		**lecture**	**classes**	**laboratory**	**project**	**other**
Hours per semester	full-time studies	**15**		**15**	**15**	
	part-time-studies	**9**		**9**	**9**	

LEARNING RESULTS

Category	Result Symbol	Learning Results	References to the field of study results
Knowledge	W01	The student knows the concepts of dynamic memory management and selected abstract data structures.	INF1_W07
	W02	The student knows the concepts of recursive algorithms, data structures and functions.	INF1_W07
Skills	U01	The student is able to apply the dynamic memory management and abstract data structures in programs.	INF1_U07
	U02	The student is able to apply recursive algorithms, data structures and functions in programs.	INF1_U07
Social competence	K01	The student understands the need of developing her or his skills in programming and team work.	INF1_K1
	K02	The student understands the risk associated with the lack or inadequate competences of people developing software individually or in a team.	INF1_K2

COURSE CONTENT

Course Form	Content
lecture	1. Pointers, dynamic memory management. 2. Lists. 3. Recursion, Divide-And-Conquer. 4. Graphs
laboratory	1. Pointers, dynamic memory management. 2. Lists. 3. Recursion, Divide-And-Conquer. 4. Graphs
project	Assignments, that the students work on, consists on designing, developing and documenting a computer program. The problem that the program solves could be any, but the assignment is formulated in such a way that students have to use programming techniques and elements of the high-level programming language syntax that they learn in lectures and laboratories. Students work in teams, but each of them should individually carry out a part of the project and also be able to propose a method of verifying the correctness of designing decisions that she or he has taken.

LEARNING RESULTS VERIFICATION METHODS

Result Symbol	Learning results verification methods					
	Oral Exam	Written Exam	Midterm	Project	Report	Other
W01			X	X		X
W02			X	X		X
U01			X	X		X
U02			X	X		X
K01			X	X		X
K02			X	X		X

ASSESSMENT FORMS AND CRITERIA

Course Form	Assessment Form	Assessment Criteria
lecture	passing grade	The student should obtain at least 50% of points at the final test.
laboratory	passing grade	The student should obtain at least 50% of points from short tests and midterms.
project	passing grade	The student should obtain at least 50% of points by completing an assignment that consists of developing a computer program, writing a documentation and defending the project.

STUDENT'S VOLUME OF WORK

ECTS Balance												
No.	**Activity Type**	**Student Involvement**										**Unit**
		full-time studies					**part-time-studies**					
1.	Participation in classes according to the schedule	Lec	C	Lab	P	S	Lec	C	Lab	P	S	h
		15		15	15		9		9	9		
2.	Other (consultations, exams)	1		1	1		1		1	1		h
3.	**Total with the direct assist of an academic teacher**	**48**					**30**					h
4.	**Number of ECTS, that student obtains with the direct assist of an academic teacher**	**1,92**					**1,2**					ECTS
5.	**Hours of unassisted student work**	**52**					**70**					h
6.	**Number of ECTS that student obtains working unassisted**	**2,08**					**2,8**					ECTS
7.	**Practical classes volume of work**	**30**					**20**					h
8.	**Number of ECTS obtained by student at practical classes**	**1,2**					**0,8**					ECTS
9.	**Total student's volume of work expressed in hours**	**100**					**100**					h
10.	**ECTS**	**4**										ECTS

BIBLIOGRAPHY

1. Brian W. Kernighan, Denis M. Ritchie, "The C Programming Language", Second Edition, Prentice-Hall Inc., Upper Saddle River, 2012
2. Stephen Prata, "C Primer Plus", 6th Edition, Addison-Wesley, Upper Saddle River, 2015
3. Robert Sedgewick, Kevin Wayne, "Algorithms", 4th edition, Addison-Wesley Inc., Reading, Massachusetts, 2011
4. Jon Bentley, "Programming Pearls" Addison-Wesley, Inc., Upper Saddle River, 2000
5. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, "Data Structures and Algorithms", Addison-Wesley Inc., Upper Saddle River, 1987
6. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, "Introduction to Algorithms", 3rd edition, MIT Press, Cambridge US, 2009

7. Donald E. Knuth, "The Art of Programming", Vol. 1 -3, Addison-Wesley Inc., Reading, Massachusetts, 1998
8. Steven S. Skiena, "The Algorithm Design Manual", Springer-Verlag, Londyn, 2008