

FACULTY ELECTRONICS					
SUBJECT CARD					
Name of subject in Polish:		Systemy i środowiska programistyczne			
Name of subject in English:		Programming Systems and Environments			
Main field of study (if applicable):		Electronic and Computer Engineering			
Specialization (if applicable):				
Profile:		academic			
Level and form of studies:		1 st level/ full-time			
Kind of subject:		obligatory			
Subject code:		ECEA00010			
Group of courses:		YES			
	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30		30		
Number of hours of total student workload (CNPS)	60		60		
Form of crediting	Examination		Crediting with grade		
For group of courses mark (X) final course	X				
Number of ECTS points	4				
including number of ECTS points for practical (P) classes			2		
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)	1		1		

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1.

SUBJECT OBJECTIVES

C1 Gaining understanding of the operating systems and API libraries, their advantages and limitations.
 C2 Mastering the principles of using system functions and APIs, building simple GUI and multithread applications, porting software to mobile devices.

SUBJECT LEARNING OUTCOMES

relating to knowledge:

PEU_W01 knows how an operating system is designed, understands system functions pertaining to process and memory management, interprocess communication.
 PEU_W02 knows how to use multithread and GUI libraries in various environments
 PEU_W03 knows how to develop programs using an OOP language (e.g. Java)

relating to skills:

PEU_U01 can develop simple multithread applications

PEU_U02	can develop simple GUI applications
PEU_U03	is able to port programs to mobile devices (e.g. with Android OS)

PROGRAMME CONTENT		
Lecture		Number of hours
	Operating systems environment	
Lec 1	Introduction to operating systems, system functions	2
Lec 2	Memory management and virtual memory	2
Lec 3	Processes and process management, system functions for process and memory management	2
Lec 4	Process synchronization, semaphores	2
	Application programming interfaces (API)	
Lec 5	Program compilation, linking and loading, static and dynamic libraries	2
Lec 6	Graphical user interfaces and toolkits (Windows, X System)	2
Lec 7	Multithread programming (POSIX threads, Windows threads)	2
	Java environment	
Lec 8	Java language	4
Lec 9	Java Virtual Machine, IDE, build managers	2
Lec 10	Java threads and synchronization	2
Lec 11	Java graphical user interface libraries	4
	Android programming	
Lec 12	Android platform and programming environment	2
Lec 13	Android GUI programming	2
	Total hours	30
Laboratory		Number of hours
Lab 1	Developing multithread server applications in C++	8
Lab 2	Developing GUI applications in Java	8
Lab 3	Java multithread applications	8
Lab 4	Android Java programming	6
	Total hours	30
TEACHING TOOLS USED		
N1. Traditional lecture using video projector		
N2. Activity in laboratory		
N3. Consultations		
N4. Individual work – literature study and preparation for the test		
N5. Individual work – study to prepare for the laboratory tasks		

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end))	Learning outcomes code	Way of evaluating learning outcomes achievement
F1	PEU_W01 - PEU_W03	Written test
F2	PEU_U01 - PEU_U03	Assessment of laboratory activity and documentation
P = 0,4*F1+0,6*F2 if F1>2 and F2>2		
PRIMARY AND SECONDARY LITERATURE		
<u>PRIMARY LITERATURE:</u>		
[1]	A. Silberschatz, P.B. Galvin, G. Gagne, Operating systems concepts	
[2]	B. Eckel, Thinking in Java	
[3]	Ch. Schildt, Java, A Beginner's Guide	
[4]	Ch. Collins, M. Galpin, M. Kaeppler, Android in Practice	
<u>SECONDARY LITERATURE:</u>		
[1]	A.S. Tanenbaum, Operating System: Design and Implementation	
[2]	J. Gray, Interprocess Communications in Linux: The Nooks and Crannies	
[3]	D.Griffiths, D.Griffiths, Head First Android Development	
SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)		
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