Faculty of Science and Mathematics / COMPUTING AND INFORMATION TECHNOLOGY / DISTRIBUTED COMPUTER SYSTEMS

Course:	DISTRIBUTED COMPUTER SYSTEMS			
Course ID	**Course status**	**Semester**	**ECTS credits**	**Lessons** (Lessons+Exercises+Laboratory)
1359	Mandatory	3	6	2+2+0
Programs	COMPUTING AND INFORMATION TECHNOLOGY			
Prerequisites	No prerequisites required.			
Aims	Through this course, students gain basic knowledge about: the hardware and software structure of distributed and parallel computer systems, the basics of parallel programming and algorithms for execution of competitive programs.			
Learning outcomes	On successful completion of this course students should be able to: 1. Understand the concept and importance of distributed computer systems. 2. Understand advanced architectures of parallel (multiprocessor) computer systems. 3. Define the concept of high performance computer system. 4. Analyze the advantages and disadvantages of specific parallel computing system architecture. 5. Understand the rules and algorithms for competitive program execution, precisely the competitive process. 6. Are familiar with the distributed computer systems development trends.			
Lecturer / Teaching assistant	Prof. Dr. Stevan Šćepanović - teacher, MSc. Ivana Vukotić - assistant			
Methodology	Lectures, exercises in computer classroom / lab. Learning and individual work on practical assignments. Consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Introduction. Basic concepts. Properties of high-performance computers.			
I week exercises	Examples and practical assignments.			
II week lectures	Classification and history of parallel and distributed systems. Software concept of distributed systems.			
II week exercises	Examples and practical assignments.			
III week lectures	Performances of parallel and distributed computer systems. Basic principles of distributed system design. Further development of super computers.			
III week exercises	Examples and practical assignments.			
IV week lectures	The basics of parallel programming. Task and data parallelism.			
IV week exercises	Examples and practical assignments. Homework.			
V week lectures	Client / server technology. Three-layered P-A-D model of data processing.			
V week exercises	Examples and practical assignments.			
VI week lectures	Cloud Computing.			
VI week exercises	Examples and practical assignments.			
VII week lectures	First test.			
VII week exercises	Examples and practical assignments.			
VIII week lectures	Processes and threads. Communication and synchronization of concurrent processes. Time synchronization in distributed systems.			
VIII week exercises	Examples and practical assignments.			
IX week lectures	Algorithms for mutual exclusion of critical intervals.			
IX week exercises	Examples and practical assignments.			
X week lectures	Defining the state of a distributed system. Coordination of distributed processes.			
X week exercises	Examples and practical assignments.			
XI week lectures	Distributed shared memory.			
XI week exercises	Examples and practical assignments.			
XII week lectures	Distributed file system.			
XII week exercises	Examples and practical assignments.			

XIII week lectures	File duplication (multiplication).
XIII week exercises	Examples and practical assignments.
XIV week lectures	Second test.
XIV week exercises	Consultations. Examples and practical assignments.
XV week lectures	Correction of first or second test.
XV week exercises	Consultations.
Student workload	7 credits x 30 hours = 210 hours

Per week	**Per semester**
6 credits x 40/30=8 hours and 0 minuts 2 sat(a) theoretical classes 0 sat(a) practical classes 2 excercises **4 hour(s) i 0 minuts** of independent work, including consultations	Classes and final exam: **8 hour(s) i 0 minuts x 16 =128 hour(s) i 0 minuts** Necessary preparation before the beginning of the semester (administration, registration, certification): **8 hour(s) i 0 minuts x 2 =16 hour(s) i 0 minuts** Total workload for the subject: **6 x 30=180 hour(s)** Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) **36 hour(s) i 0 minuts** Workload structure: **128 hour(s) i 0 minuts (cources), 16 hour(s) i 0 minuts (preparation), 36 hour(s) i 0 minuts (additional work)**
Student obligations	Lessons attendance is mandatory for students, as well as doing home exercises, all tests and laboratory exercises.
Consultations	Every week.
Literature	1. A. S. Tanenbaum, M. van Steen - “Distributed Systems – Principles and paradigms”, Prentice-Hall, Inc., New Jersey, 2002. 2. A. S. Tanenbaum, - “Distributed Operating Systems”, Prentice-Hall, Inc., New Jersey, 1995. 3. G. Coulouris, J. Dollimore, T. Kin
Examination methods	Homework assignments are evaluated with a total of 6 points. Two tests are evaluated with a total of 64 points. Final exam 30 points. Student gets the passing grade by collecting 50 points at least.
Special remarks	
Comment	

Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points