

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Concurrent programming</b>		Code <b>1010334551010335200</b>
Field of study <b>Information Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>3 / 5</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>elective</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>part-time</b>	
No. of hours Lecture: <b>16</b> Classes: <b>-</b> Laboratory: <b>12</b> Project/seminars: <b>-</b>		No. of credits <b>4</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>4 100%</b>
<b>Responsible for subject / lecturer:</b> dr inż. Krzysztof Zwierzyński email: Krzysztof.Zwierzynski@put.poznan.pl tel. +48 61 665 3755 Faculty of Electrical Engineering ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Mathematics in the basics of matrix calculus, linear algebra. Basic knowledge of object-oriented programming, using the Windows API, the basics of UNIX. Knowledge and understanding of the basic concepts of programming
2	<b>Skills</b>	Ability to programming in object-oriented language. Design and analysis of algorithms for combinatorial including sorting and processing base graphs. solve simple tasks in the field of mathematical analysis.
3	<b>Social competencies</b>	Conscientiousness in communicating the results of laboratories.
<b>Assumptions and objectives of the course:</b> Skills in concurrent programming		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. versed in the current state, and the latest development trends of computer science - [K_W19]		
<b>Skills:</b>		
1. potrafi dokonać krytycznej analizy sposobu funkcjonowania sprzętu komputerowego, systemu operacyjnego (lub ich fragmentów) i sieci komputerowych - [K_U11]		
<b>Social competencies:</b>		
1. ma świadomość ważności i rozumie pozatechniczne aspekty i skutki działalności inżyniera-informatyka i związaną z tym odpowiedzialność za podejmowane decyzje - [K_K02]		
<b>Assessment methods of study outcomes</b>		
Assignments, reports from laboratories		
<b>Course description</b>		

<p>Programming in languages: C, ADA, Java.          Overhead time associated with concurrency.          concurrent code optimization.          Programming in OpenMP, OpenCL, CUDA.          Memory models, synchronization, avoiding race conditions and deadlocks.</p>		
<p><b>Basic bibliography:</b>          1. Michael McCool, James Reinders, Arch Robison, Structured Parallel Programming: Patterns for Efficient Computation, 2013.</p>		
<p><b>Additional bibliography:</b></p>		
<p><b>Result of average student's workload</b></p>		
<p><b>Activity</b></p>		<p><b>Time (working hours)</b></p>
<p><b>Student's workload</b></p>		
<p><b>Source of workload</b></p>	<p><b>hours</b></p>	<p><b>ECTS</b></p>
Total workload	100	4
Contact hours	50	2
Practical activities	50	2