

Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Betriebs- und Echtzeitsysteme
Code der Lehrveranstaltung	42429
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	IINF-05/A
Sprache	Italienisch
Studiengang	Bachelor in Elektrotechnik und Cyber-Physische Systeme
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Prof. Dr. Andrea Alexander Janes, Andrea.Janes@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/2237
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Zweites Semester
Studienjahr/e	2
KP	6
Vorlesungsstunden	40
Laboratoriumsstunden	20
Stunden für individuelles Studium	90
Vorgesehene Sprechzeiten	18
Inhaltsangabe	<ul style="list-style-type: none"> • Operating systems principles. • Real time systems principles. • Multi-programming, multi-tasking. • Scheduling and management of processes. • Communication and synchronization. • Memory management.

Themen der Lehrveranstaltung	<ul style="list-style-type: none"> • Operating systems principles. • Real time systems principles. • Multi-programming, multi-tasking. • Scheduling and management of processes. • Communication and synchronization. • Memory management.
Stichwörter	Processes, scheduling, synchronization, memory, real-time
Empfohlene Voraussetzungen	C programming at intermediate level, as taught in the Fundamentals of Programming II course; Data structures and algorithms key concepts, as taught in the Algorithms and Programming course
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Frontal lectures, exercises, labs
Anwesenheitspflicht	Attendance is not compulsory, but non-attending students have to contact the lecturers at the start of the course to agree on the modalities of the independent study.
Spezifische Bildungsziele und erwartete Lernergebnisse	<p>Knowledge and understanding</p> <p>Know the fundamental principles and programming techniques of operating and real-time systems;</p> <p>Know the innovative aspects of the last generation of operating systems.</p> <p>Applying knowledge and understanding</p> <p>Ability to develop programs to interact with microcontrollers and the operating systems of modern computers.</p> <p>Making judgements</p> <p>Be able to work autonomously according to the own level of knowledge and understanding.</p> <p>Communication skills</p> <p>Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately.</p> <p>Ability to learn</p> <p>Have developed learning capabilities to pursue further studies with</p>

	a high degree of autonomy.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	Students gain an understanding of the theoretical and practical concepts of operating systems with a focus on the algorithmic aspects orchestrating the underlying hardware structure of a computer and the basic parallel programming techniques. After this course the students are able to understand the main principles for designing an OS, operate on an OS through a terminal, and develop code with elements of parallelism.
Art der Prüfung	<p>Written exam. The mark for each part of the exam is 18-30, or insufficient.</p> <p>The written exam comprises verification questions and open questions to test knowledge application skills on the arguments discussed during the course.</p> <p>In case of doubts on the final mark. the lecturer reserves the right to ask for an additional oral examination.</p> <p>The oral exam comprises verification questions and open questions to test knowledge application skills. It can increase or decrease the mark obtained in the written exam.</p>
Bewertungskriterien	<p>The final mark is computed in proportion of the correct answers given in the written exam.</p> <p>The optional oral exam can increase or decrease the mark obtained in the written exam.</p> <p>Relevant for the oral exam: clarity of answers, ability to recall principles and methods, and deep understanding about the course topics presented in the lectures.</p> <p>Non-attending students have the same evaluation criteria and requirements for passing the exam as attending students.</p>
Pfichtliteratur	Silberschatz, P. B. Galvin, G. Gagne, Operating Systems Concepts
Weiterführende Literatur	Web resources provided by the lecturer during the lectures
Weitere Informationen	Software used: C compiler and debugger, Bash shell, GNU/Linux
Ziele für nachhaltige Entwicklung (SDGs)	Hochwertige Bildung