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	• Operating systems principles. • Real time systems principles. • Multi-programming, multi-tasking. • Scheduling and management of processes. • Communication and synchronization. • Memory management.

Themen der Lehrveranstaltung	• 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	Knowledge and understanding Know the fundamental principles and programming techniques of operating and real-time systems; Know the innovative aspects of the last generation of operating systems. Applying knowledge and understanding Ability to develop programs to interact with microcontrollers and the operating systems of modern computers. Making judgements Be able to work autonomously according to the own level of knowledge and understanding. Communication skills Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately. Ability to learn Have developed learning capabilities to pursue further studies with

	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	Written exam. The mark for each part of the exam is 18-30, or insufficient. The written exam comprises verification questions and open questions to test knowledge application skills on the arguments discussed during the course. In case of doubts on the final mark. the lecturer reserves the right to ask for an additional oral examination. 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.
Bewertungskriterien	The final mark is computed in proportion of the correct answers given in the written exam. The optional oral exam can increase or decrease the mark obtained in the written exam. 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. Non-attending students have the same evaluation criteria and requirements for passing the exam as attending students.
Pflichtliteratur	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