Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Automatic Control
Code der Lehrveranstaltung	47511
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	ING-INF/04
Sprache	Englisch
Studiengang	Master in Industrie- und Maschineningenieurwesen
Andere Studiengänge (gem. Lehrveranstaltung)	
Dozenten/Dozentinnen	Prof. Karl Dietrich von Ellenrieder, Karl.vonEllenrieder@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/37038
Wissensch. Mitarbeiter/Mitarbeiterin	
Semester	Erstes Semester
Studienjahr/e	1
KP	5
Vorlesungsstunden	28
Laboratoriumsstunden	18
Stunden für individuelles Studium	79
Vorgesehene Sprechzeiten	15
Inhaltsangabe	The course provides an introduction to the fundamentals of control theory, at an introductory/intermediate level. Topics covered include: Laplace Transform, Root Locus, Frequency Design Methods and State Space Techniques (time permitting). The course is aimed at beginning graduate students and focuses on building understanding and intuition. Examples and exercises that use Matlab and Simulink will be given.

Themen der Lehrveranstaltung	The basic principles of stability and automatic control for linear time-invariant systems are presented.
Stichwörter	Automatic Control, Stability, Linear Time-Invariant Systems
Empfohlene Voraussetzungen	None.
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Classroom lectures and exercises.
Anwesenheitspflicht	Attendance at lectures is strongly recommended. Attendance at exercise sessions is required.
Spezifische Bildungsziele und erwartete Lernergebnisse	Knowledge and understanding: 1. Applying basic feedback principles to a broad range of dynamic system models (such as those typically learned in the 1st cycle). 2. Defining feedback loop requirements for improving system steady state response. 3. Understanding conditions that guarantee closed loop system stability. 4. How to design controllers via Root Locus, Frequency Response and State Space Techniques. Applying knowledge and understanding: 5. Analyzing, developing and presenting control systems for applications that span multiple disciplines through exercises, which complement the lectures. Making judgements: 6. On the choice of analytical and numerical tools to use in the exercises. This may require you to integrate knowledge, handle complexity, and formulate judgements with incomplete data. Communication skills 7. In-class exercises will require you justify your solutions/conclusions concisely (in clear and simple language). Learning Skills: 8. Students will be required to develop a proficiency in Matlab and Simulink with a few in-class examples, but mostly on their own. This is intended to help students develop the ability to study

	in a manner that is largely self-directed or autonomous.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	- Formative assessment: Exercises: 20 hours total; ILOs assessed: 1 - 8; - Summative assessment: 15% exercises; ILOs assessed: 1 - 8; 85% final exam: 4 hours; ILOs assessed: 1 - 6.
Bewertungskriterien	In-Class Exercises: Completeness and correctness of answers; level of understanding Written Final Exam: Completeness and correctness of answers. Students are required to receive an overall grade of greater than 60/100 points in order to pass the course.
Pflichtliteratur	Lecture notes and exercises will be available on the UniBZ Open Learning Environment (OLE).
Weiterführende Literatur	Additional books and articles may be recommended by the instructor during the course.
Weitere Informationen	
Ziele für nachhaltige Entwicklung (SDGs)	Hochwertige Bildung