Syllabus

Kursbeschreibung

Titel der Lehrveranstaltung	Grundlagen der Regelungstechnik
Code der Lehrveranstaltung	42411
Zusätzlicher Titel der Lehrveranstaltung	
Wissenschaftlich-disziplinärer Bereich	ING-INF/04
Sprache	Englisch
Studiengang	Bachelor in Elektrotechnik und Cyber-Physische Systeme
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	2
KP	6
Vorlesungsstunden	36
Laboratoriumsstunden	0
Stunden für individuelles Studium	114
Vorgesehene Sprechzeiten	12
Inhaltsangabe	The course covers the following topics: 1. Introduction a. Time response of 1st/2nd order systems b. Block diagrams c. Linear stability d. Effects of feedback 2. Classical Control

	a. root locus – fundamental ideas b. frequency methods – fundamental ideas and design approach 3. Basics of Digital Control (time-permitting)
Themen der Lehrveranstaltung	The basic principles of dynamics systems modelling, stability and automatic control for linear time-invariant systems are presented.
Stichwörter	Dynamic modelling, linear time-invariant systems, automatic control
Empfohlene Voraussetzungen	Mathematical Analysis I and II; Physics I and II; Basics of Electronics; Fundamentals of Programming (Module 1)
Propädeutische Lehrveranstaltungen	
Unterrichtsform	Classroom lectures and in-class exercises
Anwesenheitspflicht	Attendance at lectures is strongly recommended. Attendance at exercise sessions is required
Spezifische Bildungsziele und erwartete Lernergebnisse	The course belongs to the type "caratterizzanti - ingegneria elettronica".The course introduces the fundamentals of linear control theory. Topics covered include: The dynamic response of 1st and 2nd order systems; linear stability; root locus stability analysis; control design and stability analysis in the frequency domain; and time-permitting, basics of digital control systems. The course is aimed at 1st/2nd year undergraduate level students and focuses on building understanding and intuition. Examples and exercises that use Matlab and Simulink will be given.
Spezifisches Bildungsziel und erwartete Lernergebnisse (zusätzliche Informationen)	
Art der Prüfung	Formative assessment Form: Exercises Length /duration: 24 hours total Summative assessment Form : Exercises (30%) and Final Exam (70%) Length/duration: 4 hours
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 (final mark of 18/30) to pass the course.
Pflichtliteratur	Lecture notes and exercises will be available on Teams.
Weiterführende Literatur	Additional books and articles may be recommended by the instructor during the course
Weitere Informationen	Subject Librarian: David Gebhardi, David.Gebhardi@unibz.it and Ilaria Miceli, Ilaria.Miceli@unibz.it Software used : Matlab and Simulink.
Ziele für nachhaltige Entwicklung (SDGs)	Hochwertige Bildung