



	Course name: EE325 Analog Electronics	Department: Electrical and Electronics Engineering					Semester 6
	Methods of Education						Credit (ECTS)
	Lecture	Recitation	Lab	Project/Field Study	Homework	Other	Total
42			40	60	15	157	5
Language	English						
Compulsory/Elective	Compulsory						
Prerequisites	EE325 - Introduction to Electronics						
Course Contents	Cascode stages as a Current Source and an Amplifier BJT and MOS Current mirrors. Bipolar and MOS differential pairs and their small and large signal analysis Cascode Differential Amplifiers Common Mode Rejection of Cascode stages High-Frequency Models of Transistors, Frequency Response of CE and CS Stages, Frequency Response of CB and CG Stages, Frequency Response of Followers, Frequency Response of Cascode Stages Differential Pairs and Common-Mode Frequency Response						
Course Objectives	To know the operation and the structure of Cascode stages as a Current Source and an Amplifier. To design Cascode Differential Amplifiers. To design and analysis of Bipolar and MOS differential pairs and their small and large signal analysis. To analysis of frequency response transistors circuits.						
Learning Outcomes and Competences	Learn designing cascode amplifiers with using bipolar junction transistors, and field effect transistors. Learn how to analyze frequency response transistors						
Textbook and /or References	Razavi, Fundamentals of Microelectronics, 2nd. Ed., Wiley, 2012. Adel & Sedra and Kenneth C. Smith; Microelectronic circuits; 3rd Ed; Saunders College Pub.; 1991. Jacob Milkman and Arvin Grabel; Microelectronics; 2nd Ed; McGraw - Hill Pub.; 1988.						
Assessment Criteria				If any, mark as (X)			Percentage (%)
	Midterm Exams			X			30
	Quizzes			X			15
	Homework						
	Projects			X			15
	Term Paper						
	Laboratory work						
	Attendance						
	Final Exam			X			40
Instructor							
Week	Subject						
1	Cascode Stages as a Current Source, Cascode as an Amplifier						
2	Bipolar Current Mirror, MOS Current Mirror.						
3	Bipolar Differential Pair, Small Signal Analysis and Large Signal Analysis of Bipolar Differential Pair						
4	MOS Differential Pair, Small Signal Analysis and Large Signal Analysis of MOS Differential Pair						
5	Cascode Differential Amplifiers						
6	Common Mode Rejection of Cascode stages						
7	Differential Pair with Active Load						
8	Differential Pair with Active Load						
9	Midterm						
10	Miller's Theorem, General Frequency Response, High-Frequency Models of Transistors						
11	Frequency Response of CE and CS Stages, Low Frequency Response, High Frequency Response, Use of Miller's Theorem						

12	Frequency Response of CB and CG Stages, Low Frequency Response, High Frequency Response
13	Frequency Response of Followers, Input and Output Impedances
14	Frequency Response of Cascode Stages, Input and Output Impedances
15	Differential Pairs and Common-Mode Frequency Response