

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
ANALOG CIRCUIT DESIGN	EEE4268070	Spring Semester	3+0	3	6
Prerequisites Courses	ELEKTRONİK II				
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Elective				
Course Coordinator	Assist.Prof. Mustafa AKTAN				
Name of Lecturer(s)	Assist.Prof. Mustafa AKTAN				
Assistant(s)					
Aim	The goals of the course are to develop a solid understanding of complex subjects of frequency response, electronic noise, distortion and feedback in analog circuit design and their importance at various applications.				
Course Content	This course contains; MOSFET Operation and Modeling Review, BJT Operation and BJT Modeling, Elementary BJT Amplifier Stages with comparison to MOSFET Amplifier Stages, Elementary BJT Amplifier Stages with comparison to MOSFET Amplifier Stages (Cont'd), Frequency Response of amplifiers, Frequency response, Biasing circuits, Noise in circuits, Noise in circuits, Linearity in circuits, Distortion analysis in circuits, Common Mode Feedback, Bandgap/PTAT/CTAT Circuits, Linear Voltage Regulators (LDOs), Fully Differential OTA, Transconductor amplifiers, Output stages.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
MOSFET, BJT transistor operation, its modeling and applications.			10, 12, 14, 16, 6, 9	A, E, F	
Feedback structures and their applications			10, 12, 14, 16, 19, 2, 21, 5, 6, 9	A, E, F	
OpAmps, Transimpedance Amplifiers and Broadband Gain stages			10, 12, 14, 16, 19, 2, 21, 5, 6, 9	A, E, F	
Circuit noise			10, 12, 14, 16, 19, 2, 21, 6, 9	A, E, F	
Distortion Analysis.			10, 12, 14, 16, 19, 2, 21, 5, 6, 9	A, E, F	
Bias generation.			12, 14, 16, 19, 6, 9	A, E, F	
Teaching Methods	10: Discussion Method, 12: Problem Solving Method, 14: Self Study Method, 16: Question - Answer Technique, 19: Brainstorming Technique, 2: Project Based Learning Model, 21: Simulation Technique, 5: Cooperative Learning, 6: Experiential Learning, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam, E: Homework, F: Project Task				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
0	MOSFET Operation and Modeling Review	Read the book			
1	BJT Operation and BJT Modeling, Elementary BJT Amplifier Stages with comparison to MOSFET Amplifier Stages	Read the book			
2	Elementary BJT Amplifier Stages with comparison to MOSFET Amplifier Stages (Cont'd), Frequency Response of amplifiers	Read the book			
3	Frequency response, Biasing circuits	Read the book			
4	Noise in circuits	Read the book			
5	Noise in circuits	Read the book			
6	Linearity in circuits	Read the book			
7	Distortion analysis in circuits	Read the book			
8	Common Mode Feedback	Read the book			
9	Bandgap/PTAT/CTAT Circuits	Read the book			
10	Linear Voltage Regulators (LDOs)	Read the book			
11	Fully Differential OTA	Read the book			
12	Transconductor amplifiers	Read the book			
13	Output stages	Read the book			
Evaluation Methods		Weight(%)			
Midterm Exam		30			
General Exam		70			

Resources
Sedra/Smith: Microelectronic Circuits, 7E Gray, Hurst, Lewis, and Meyer: "Analysis and design of Analog Integrated Circuits", 4th Edition