

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
ELECTRONICS I	COE3133980	Fall Semester	3+2	4	8
Prerequisites Courses	ELEKTRİK DEVRELERİ				
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Elective				
Course Coordinator	Lect. Mustafa AKTAN				
Name of Lecturer(s)	Assoc.Prof. Hakan DOĞAN				
Assistant(s)					
Aim					
Course Content	This course contains; Introduction.Introduction of amplifiers.Review of PN junctions.,DiodesCircuits with diodes: Rectifier, Limiter, Voltage Doubler,Review of BJT and MOSFET Physics,BJT and MOSFET Small Signal Model,Biasing,Resistive degeneration and current mirrors.,1 transistor stages,Current mirrors, cascodes,Differential amplifiers.,Active loads and OPAMPs.,Telescopic and Folded Cascode Opamps.,Continue with Opamps.,Introduction to frequency response.,Frequency response and finals review..				
Course Learning Outcomes		Teaching Methods	Assessment Methods		
Review of integrated circuit device characteristics & models.		1, 10, 12, 14, 15, 2, 3, 4, 9			
Analysis of diodes and circuits with diodes.		1, 10, 13, 14, 15, 17, 2, 3, 4, 8, 9	A, C		
Analysis and design of Current Mirrors, active loads.		1, 10, 12, 13, 14, 15, 19, 3, 4	A, C		
Analysis of output stages.		1, 10, 14, 15, 17, 19, 2, 3, 4	A, C		
Understanding, design and analysis of OPAMPs.		1, 10, 14, 15, 2, 3, 4, 8, 9	A, C		
Introduction to frequency response of circuits.		1, 10, 14, 15, 17, 18, 19, 2, 3, 4, 8, 9	A, C		
1 and 2 transistor amplifiers with BJT and MOS devices.		1, 10, 12, 13, 14, 15, 17, 18, 19, 2, 3, 4, 8	A, C		
Teaching Methods	1: Lecture, 10: Brainstorming, 12: Case study, 13: Experiment / Laboratory, 14: Self-Study, 15: Problem solving, 17: Reflective Thinking, 18: Case Study, 19: Concept map, 2: Question - Answer, 3: Discussion, 4: Exercise, Practice, 8: Teamwork, 9: Simulation				
Assessment Methods	A: Written Exam, C: Homework				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Introduction.Introduction of amplifiers.Review of PN junctions.	Read the book chapter.			
2	DiodesCircuits with diodes: Rectifier, Limiter, Voltage Doubler	Read the book chapter.			
3	Review of BJT and MOSFET Physics	Read the book chapter			
4	BJT and MOSFET Small Signal Model	Read the book chapter			
5	Biasing	Read the book chapter			
6	Resistive degeneration and current mirrors.	Read the book chapter.			
7	1 transistor stages	Read the book chapter			
8	Current mirrors, cascodes	Read the book chapter.			
9	Differential amplifiers.	Read the book chapter.			
10	Active loads and OPAMPs.	Read the book.			
11	Telescopic and Folded Cascode Opamps.	Read the book.			
12	Continue with Opamps.	Read the book.			
13	Introduction to frequency response.	Read the book chapter.			
14	Frequency response and finals review.	Read the book chapter.			
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