


**AYDIN ADNAN MENDERES UNIVERSITY  
COURSE INFORMATION FORM**

Course Title	Power Electronics and Power Sources						
Course Code	AEK207		Couse Level		Short Cycle (Associate's Degree)		
ECTS Credit	3	Workload	76 (Hours)	Theory	1	Practice	2
Objectives of the Course	Efficiency and loss in power electronics, operation principles of semi-conductors used in power control, protection, control elements, circuits, driver circuit design, and power resource designs.						
Course Content	Power semi-conductors, diodes, transistors, tristors, triac, mosphet structures, operation principles and characteristics. Protection and control elements of semi conductors used in power control; UJT, PUT, SUS, SBS, Diacs. Designs of power electronics, controlled and uncontrolled rectifiers, DC invertors, driver circuits, resonance invertors, switched power resources, motor control applicaitons, correction of power coefficient.						
Work Placement	N/A						
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Case Study, Individual Study						
Name of Lecturer(s)	Ins. Emine ERTÜRK ŞAHİN						

**Assessment Methods and Criteria**

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

**Recommended or Required Reading**

1	D. W. Hart, Introduction to Power Electronics, Mc Graw Hill Co. 2008
2	B.K., Bose, Modern Power Electronics and AC Drives, Prentice Hall PTR

Week	Weekly Detailed Course Contents	
1	Theoretical	Güç Elektroniği devrelerinde verim analizi, yarı iletken tanımı, güç diyoitları. Entegre güç devreleri.
2	Theoretical	Bir fazlı denetimsiz doğrultucu devreler ve R-L yük uygulamaları.
3	Theoretical	Üç fazlı doğrultucu devreler ve çıkış gerilimi regülasyonu.
4	Theoretical	Denetimli yarıiletkenler, SCR ve denetimli doğrultucu devreler ve R-L yük uygulamaları.
5	Theoretical	Tristör- Triyak tetikleme devreleri ve tetikleme devre elemanları; PUT, DIYAK, UJT ve osislatörleri.
6	Theoretical	Tetikleme devresi yallım sistemleri ve söndürme devreleri.
7	Theoretical	Alternatif Gerilim Kiyıcılar ve açık-kapalı güç denetimi, faz denetimli güç devresi uygulamaları.
8	Intermediate Exam	Mid-term exam
9	Theoretical	MOSFET, IGBT ve Doğru Gerilim Çeviriciler; Azaltan Tip Doğru Gerilim Çevirici Tasarımı
10	Theoretical	Artıran tip doğru gerilim Çevirici, Azaltan-Artıran Tip Doğru Gerilim Çeviricilerin Tasarımı
11	Theoretical	DC Güç Kaynakları ve Geribeslemeli Transformatörlü Doğru Gerilim Çeviriciler. Rezonans tip çeviriciler.
12	Theoretical	Eviriciler; Bir fazlı kara dalga eviriciler, Yarım Köprü Eviriciler.
13	Theoretical	Tam köprü bir fazlı eviriciler, Üç fazlı eviriciler.
14	Theoretical	Eviricilerde modülasyon yöntemleri, Darbe genişlik modülasyonu ve sinüs modülasyonlu eviri.
15	Final Exam	Final exam

**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	13	0	2	26
Lecture - Practice	13	1	1	26
Assignment	5	0	2	10
Midterm Examination	1	6	1	7



Final Examination	1	6	1	7
		Total Workload (Hours)		76
		[Total Workload (Hours) / 25*] = ECTS		3

\*25 hour workload is accepted as 1 ECTS

### Learning Outcomes

1	
2	
3	
4	
5	

### Programme Outcomes (Alternative Energy Sources Technology)

1	To have knowledge about basic science and technology.
2	To have knowledge about basic energy and alternative energy sources.
3	To have knowledge about basic electrical and electronic laws.
4	To have knowledge about the installation and operation of energy facilities.
5	Learning the methods of recycling of waste and use of energy.
6	To have experience in energy generation and project design.

### Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P3	4	4	4	4	4

