POWER ELECTRONICS FOR HYBRID AND ELECTRIC VEHICLES

1	Course Title:	POWER ELECTRONICS FOR HYBRID AND ELECTRIC VEHICLES
2	Course Code:	OHE5020
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	2
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. GÜNEŞ YILMAZ
15	Course Lecturers:	-
16	Contact information of the Course Coordinator:	Prof. Dr. Güneş YILMAZ B.U.Ü. Elektrik-Elektronik Mühendisliği Bölümü gunesy@uludag.edu.tr
17	Website:	
18	Objective of the Course:	Introduction of structures containing power electronics systems in hybrid and electric vehicles. Investigation of semiconductor elements (thyristor, triac) used in these systems. Investigation of structures and design stages of rectifier, chopper and inverter circuits used in hybrid and electric vehicles.
19	Contribution of the Course to Professional Development:	-
20	Learning Outcomes:	
		1	Recognition of power electronics application areas in hybrid and electric vehicles
		2	To have the necessary theoretical foundations for the design of power electronics technologies in hybrid and electric vehicles.
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21	Course Content:	

Course Content:

Week	Theoretical	Practice

1	Power electronics introduction, historical development and power electronics circuit elements used in electric and hybrid vehicles	
2	Examination of semiconductor circuit elements diode, power diode, diac	
3	Examination of semiconductor circuit elements, thyristor, triac	
4	Structure of trigger circuits, working principles	
5	Rectification circuits 1-phase half, full, controlled and uncontrolled circuit designs and sample applications	
6	Rectification circuits 1-phase half, full, controlled and uncontrolled circuit designs and sample applications	
7	Rectification circuits 3-phase half, full, controlled and uncontrolled circuit designs and sample applications	
8	Midterm	
9	Rectification circuits 3-phase half, full, controlled and uncontrolled circuit designs and sample applications	
10	Chopper circuits AC and DC choppers	
11	Inverter circuits and applications	
12	Frequency choppers and their applications	
13	Power management in multiple storage and	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	7.00	98.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	40.00	40.00
Total Work Load			180.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	0	0.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	100.00
Total	1	100.00
Contribution of Term (Year) Learning Activities to Success Grade	0.00	
Contribution of Final Exam to Success Grade	100.00	
Total	100.00	
Measurement and Evaluation Techniques Used in the Course	Ölçme ve değerlendirme, Bursa Uludağ Üniversitesi Lisansüstü Eğitim Öğretim Yönetmeliği ilkelerine göre yapılmaktadır.	

24	ECTS / WORK LOAD TABLE

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives   PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High