SUSTAINABLE ENGINEERING

1	Course Title:	SUSTAINABLE ENGINEERING
2	Course Code:	END5119
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	7.50
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:	Doç. Dr. ASLI AKSOY
15	Course Lecturers:	Dr. Seval Ene
16	Contact information of the Course Coordinator:	asliaksoy@uludag.edu.tr 0224 294 2078
17	Website:	
18	Objective of the Course:	Objective of this course is to provide students knowledge of sustainability and achieve perspective of considering interactions between industry-society-environment.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Ability to define sustainability and industrial ecology
	2	Grasping importance of sustainability in industrial engineering applications
	3	Ability to present connections between production, consumption, sustainability and industrial ecology
	4	Ability to model and solve industrial engineering problems related with environmental and sustainability issues
	5	Ability to review current literature about sustainability in industrial engineering
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction to industrial ecology and sustainability	
2	Introduction to industrial ecology and sustainability	
3	Quantifying sustainability and associating sustainability with industrial ecology activities	

4	Sustainability concepts in industrial engineering	
5	Technological, risk and social dimensions of industrial ecology	
6	Sustainable engineering applications	
7	Sustainable engineering applications	
8	Sustainable engineering applications	
9	Course review and midterm exam	
10	Design for environment and sustainability	
11	Life cycle assesment	
12	System analysis for sustainability	
13	Analysis of technological systems for sustainability	
14	Project presentations	

22	Textbooks, References and/or Other Materials:	T.E. Graedel and B.R. Allenby, Industrial Ecology and Sustainable Engineering 1st edition, Prentice Hall, 2010 Chang, N.B., “Systems Analysis for Sustainable Engineering: Theory and Applications”, McGraw-Hill, 2010. Hendrickson, C., Lave, L., Matthews, H.S., “Environmental Life Cycle Assessment of Goods and Services: an Input-Output Approach”, RFF Press, Washington, D.C., 2006.

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	8.00	112.00
Homeworks	0	0.00	0.00
Projects	1	68.00	68.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			226.00
Total work load/ 30 hr			7.53
ECTS Credit of the Course			7.50

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Quiz	0	0.00
Final Exam	1	40.00
Contribution of Term (Year) Learning Activities to		60.00
Contribution of Final Exam to Success Grade		40.00
Measurement and Evaluation Techniques Used in the		

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	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
ÖK2	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0
ÖK4	0	4	5	0	0	0	0	0	0	0	0	4	0	0	0	0

ÖK5	0	0	0	0	0	4	0	5	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**