NANOTECHNOLOGY IN ENVIRONMENTAL ENGINEERING

1	Course Title:	NANOTECHNOLOGY IN ENVIRONMENTAL ENGINEERING
2	Course Code:	CEV5273
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	1
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:	
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Doç. Dr. ARZU TEKSOY
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	arzu@uludag.edu.tr 0 224 2942121 Uludağ Üniversitesi, Çevre Mühendisliği Bölümü
17	Website:	
18	Objective of the Course:	to give information about using nanotechnology on environmental pollution control, to explain effect of nanomaterials on human health and environment and to teach legal regulations about nanotechnology
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	Students learn nanomaterials and their production technologies.
	2	Students have information about applications of nanotechnology on environmental engineering (removal of water, air and soil pollution).
	3	Students learn possible effects of nanomaterials on environment and human health.
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21	Course Content:	

Course Content:

Week	Theoretical	Practice
1	Introduction to nanotechnology , description of nanotechnology	
2	structural, chemical and optical characteristics of nanomaterials,	

3	Prodution Technologies of nanomaterials	
4	Characterization of nanomaterials (SEM,AFM,VSI etc.)	
5	Using nanosensors for determination of environmental pollution , and spesifications of nanosensors	
6	Application of nanotechnolgy	
7	Nanotechnology applications in soil pollution control	
8	Nanotechnology applications in air pollution control	
9	Midterm exam	
10	Nanotechnology applications in groundwater pollution control	
11	Potential ecological damages of nanomaterials	
12	Effect of nanomaterials on human health	
13	Future of nanotechnology, and related regulations	
14	Homework presentation	

22	Textbooks, References and/or Other Materials:	1.Wiesner, M.R., Bottero, J., Environmental Nanotechnology, McGraw Hill, 2007. 2.Thedore, L., Kunz, R.G., Nanotechnology: environmental implications and solutions, John Wiley & Sons Inc. 2005. 2004. 5.Masciangioli, T., Zhang, W., Environmental technologies March, 102-107, 2004. 6.EPA, 2003, EPA's program for nanotechnology. Development National Center for Environmental Research.
23	Assesment	
Midterm Exam	1	25.00
Home work-project	1	25.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		50.00
Contribution of Final Exam to Success Grade		50.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

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	3.00	42.00
Homeworks	1	40.00	40.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	20.00	20.00
Others	0	0.00	0.00
Final Exams	1	35.00	35.00
Total Work Load			179.00
Total work load/ 30 hr			5.97
ECTS Credit of the Course			6.00

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	4	0	0	0	0	0	0
ÖK2	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	5
ÖK3	0	0	0	0	5	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**			