

# CONTAMINATED SOIL TREATMENT TECHNOLOGIES

<b>1</b>	Course Title:	CONTAMINATED SOIL TREATMENT TECHNOLOGIES	
<b>2</b>	Course Code:	CEV4108E	
<b>3</b>	Type of Course:	Optional	
<b>4</b>	Level of Course:	First Cycle	
<b>5</b>	Year of Study:	4	
<b>6</b>	Semester:	8	
<b>7</b>	ECTS Credits Allocated:	4.00	
<b>8</b>	Theoretical (hour/week):	2.00	
<b>9</b>	Practice (hour/week):	0.00	
<b>10</b>	Laboratory (hour/week):	0	
<b>11</b>	Prerequisites:	Non	
<b>12</b>	Language:	English	
<b>13</b>	Mode of Delivery:	Face to face	
<b>14</b>	Course Coordinator:	Prof. Dr. FATMA OLCAY TOPAÇ	
<b>15</b>	Course Lecturers:	-	
<b>16</b>	Contact information of the Course Coordinator:	Prof.Dr. F. Olcay Topaç olcaytopac@uludag.edu.tr 224 2942109 Bursa Uludağ Üniversitesi, Mühendislik Fakültesi, Çevre Mühendisliği Bölümü.	
<b>17</b>	Website:		
<b>18</b>	Objective of the Course:	<ul style="list-style-type: none"> <li>-To give information related to soil pollution and different types of soil contaminants.</li> <li>-To teach general aspects of management of contaminated soils and related regulations.</li> <li>-To teach soil remediation methods and the criteria for choosing the most appropriate method.</li> </ul>	
<b>19</b>	Contribution of the Course to Professional Development:	The course provides professional skills in the management of contaminated soils.	
<b>20</b>	Learning Outcomes:		
		<b>1</b>	- Have an understanding of soil pollution and causes of soil pollution
		<b>2</b>	-Became aware of general aspects of contaminated soil management .
		<b>3</b>	-Have an information about soil remediation technologies and be able to choose the most appropriate remediation method.
		<b>4</b>	-Able to examine the studies on soil treatment technologies, and able to make presentation by researching existing literature on the subject.
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<b>21</b>	Course Content:		
	<b>Course Content:</b>		
<b>Week</b>	<b>Theoretical</b>	<b>Practice</b>	
<b>1</b>	Introduction to the course		
<b>2</b>	The causes and effects of soil pollution.		
<b>3</b>	Different types of soil contaminants.		
<b>4</b>	The movement of contaminants in soil and related mechanisms.		
<b>5</b>	Management of contaminated soils: general aspects		
<b>6</b>	Regulations related to management of contaminated soils.		
<b>7</b>	Regulations related to management of contaminated soils.		
<b>8</b>	Soil remediation technologies (oxidation, solidification-stabilization)		
<b>9</b>	Soil remediation technologies (soil washing)		
<b>10</b>	Soil remediation technologies (electrokinetic treatment)		
<b>11</b>	Soil remediation technologies (bioremediation)		
<b>12</b>	Soil remediation technologies (phytoremediation)		
<b>13</b>	Homework presentations		
<b>14</b>	Homework presentations		
<b>22</b>	Textbooks, References and/or Other Materials:	-Biodegradation and Bioremediation. (1994), Alexander M, Academic Press, San Diego. -Bioremediation engineering: design and applications. (1995), Cookson JT, Mc –Graw – Hill, New York. -Handbook for Evaluating Remedial Action Technology Plans. (1983) Ehrenfeld, J. ve Bass J., U.S. EPA.	
<b>23</b>	Assesment		
<b>TERM LEARNING ACTIVITIES</b>		<b>NUMBE R</b>	<b>WEIGHT</b>
Midterm Exam		1	20.00
Quiz		1	10.00
Home work-project		1	10.00
Final Exam		1	60.00
Total		4	100.00

Contribution of Term (Year) Learning Activities to Success Grade	40.00
Contribution of Final Exam to Success Grade	60.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	Midterm exam, quiz, homework and final exam

**24 ECTS / WORK LOAD TABLE**

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	2.00	28.00
Homeworks	1	20.00	20.00
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	30.00	30.00
Total Work Load			126.00
Total work load/ 30 hr			4.20
ECTS Credit of the Course			4.00

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

**LO: Learning Objectives PQ: Program Qualifications**

<b>Contribution Level:</b>	<b>1 very low</b>	<b>2 low</b>	<b>3 Medium</b>	<b>4 High</b>	<b>5 Very High</b>
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