

COURSE LIST Faculty of Engineering and Architecture

Geophysics Engineering Dept.

Course Title	Code	ECTS Credit	COMU Credit	Lecturer
Anatomy of Earthquake	ULP-04-026	6	3	Assoc. Prof. Dr.Tolga Bekler
Marine Geophysics	ULP-04-028	6	3	Lecturer Dr. Şebnem Elbek
Project	ULP-04-029	10	5	Assoc. Prof. Dr. Tolga Bekler Assoc. Prof. Dr. Özcan ÇAKIR Assist. Prof. Dr. Timur Tezel
Seminar	ULP-04-030	6	3	Assoc. Prof. Dr. Tolga Bekler Assoc. Prof. Dr. Özcan ÇAKIR Assist. Prof. Dr. Timur Tezel
Geographical Information Systems	ULP-04-042	5	2	Assist. Prof. Dr. Öznur Karaca
Ordinary Differentian Equations in Geophysics	ULP-04-047	5		Assoc. Prof. Dr. Özcan ÇAKIR
Partial Differentian Equations in Geophysics	ULP-04-048	5		Assoc. Prof. Dr. Özcan ÇAKIR
Inverse Problems in Geophysics	ULP-04-049	5		Assoc. Prof. Dr. Özcan ÇAKIR
Archaeological Geophysics	ULP-04-050	5		Assoc. Prof. Dr. Nart COŞKUN

Course Code	ULP – 04- 026
Name of the course in English	Anatomy of Earthquake
Name of the course in Turkish	Deprem Anatomisi
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate
Lecturer	Assoc. Dr. Tolga Bekler
ECTS Credits	6
COMU Credits	3
Description	Earth Structure, Earthquakes, Seismology, Elastic wave propagation, Faulting systems, Early Warning, Effects of an earthquake, , Major earthquakes in Turkey and the World, Structural problems, Earthquake risk, Geophysical Engineering studies, Regulations.

Course Code	ULP – 04- 028
Name of the course in English	Marine Geophysics
Name of the course in Turkish	Deniz Jeofiziği
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate

Lecturer	Lecturer. Dr. Şebnem ELBEK
ECTS Credits	6
COMU Credits	3
Description	<p>Applied geophysics in the marine environment Seismic method and basic seismic processing operations are introduced, including correlation, convolution, econvolution, frequency filtering and migration.</p> <p>Application of potential field theory to geophysical exploration is discussed, with a particular emphasis on marine gravity and magnetic surveying.</p> <p>Marine elegromagnetic survey</p>

Course Code	ULP – 04- 029
Name of the course in English	Project
Name of the course in Turkish	Proje
Language of the course	English
Level of Course	<p>(*) Bachelor's / Undergraduate</p> <p>() Master</p> <p>() Doctorate</p>
Lecturer	<p>Assoc. Prof. Dr. Tolga BEKLER</p> <p>Assoc. Prof. Dr.Özcan ÇAKIR</p> <p>Assist. Prof. Dr. Timur Tezel</p>
ECTS Credits	10
COMU Credits	5
Description	<p>Search the literature ,evaluate literature, criticise the literature, be able to identify relevant issues, and recommend solutions, learn scientific methods organize his or her time, develop writing skills</p> <p>learn scientific debate and preparing presentation</p>

Course Code	ULP – 04- 030
Name of the course in English	Seminar
Name of the course in Turkish	Seminer
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate
Lecturer	Assoc. Prof. Dr. Tolga BEKLER Assoc. Prof. Dr.Özcan ÇAKIR Assist. Prof. Dr. Timur Tezel
ECTS Credits	6
COMU Credits	3
Description	A weekly meeting dedicated to discussing Fundamentals of Theoretical Geophysics, Introduction to Geophysical Methods, - Physics of the Earth's Interior Plate Tectonics, Geomagnetism and Paleomagnetism Introduction to Seismology, Electromagnetic Methods in Geophysics,- Seismic Instrumentation, Geophysical Data Processing

Course Code	ULP – 04- 042
Name of the course in English	Geographical Information Systems
Name of the course in Turkish	Cografi Bilgi Sistemleri
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate

Lecturer	Assist. Prof. Dr. Öznur Karaca
ECTS Credits	5
COMU Credits	2
Description	The use and aim of Geographical information systems (GIS). Fundamentals of GIS, basic map characteristics and data models, essential functions of GIS, usage area of GIS and the use of GIS, application -practice of simple tools of ArcGIS.

Course Code	ULP – 04- 047
Name of the course in English	Ordinary Differential Equations in Geophysics
Name of the course in Turkish	Jeofizikte Adi Diferansiyel Denklemler
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate
Lecturer	Assoc. Prof. Dr. Özcan ÇAKIR
ECTS Credits	5
COMU Credits	3
Description	Table of derivatives, power series solutions to differential equations, Leibnitz theory, Leibnitz- Maclaurin method, Frobenius method, Laplace transform, inverse Laplace transform, differential equations solved by Laplace transform, multiple integrals, exact differentials, problem solutions

Course Code	ULP – 04- 048
Name of the course in English	Partial Differential Equations in Geophysics
Name of the course in Turkish	Jeofizikte Kısmi Diferansiyel Denklemler
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate
Lecturer	Assoc. Prof. Dr. Özcan ÇAKIR
ECTS Credits	5
COMU Credits	3
Description	Multiple integrals, coordinate systems, volume integrals, coordinate transforms, solutions to linear systems, vectoral analysis, scalar and vector fields, related operations, Gauss theorem, Stokes theorem, partial differential equations, one-dimensional wave equation, separation of variables, initial and boundary conditions, solution to Laplace equation, problem solutions.

Course Code	ULP – 04- 049
Name of the course in English	Inverse Problems in Geophysics
Name of the course in Turkish	Jeofizikte Ters Çözüm Problemleri
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate
Lecturer	Assoc. Prof. Dr. Özcan ÇAKIR
ECTS Credits	5
COMU Credits	3
Description	Numerical integration, numerical differentiation, Leibniz rule, Wiechart-Herglotz problem, linearization by Taylor series, Cramer's rule, least-squares solution to linear system, damped least-squares solution to linear system, Eigen values and Eigen vectors, Singular Value Decomposition, generalized inverse matrix, determination of earthquake parameters, travel time tomography, software development, problem solutions, introduction to genetic algorithm.

Course Code	ULP – 04- 050
Name of the course in English	Archaeological Geophysics
Name of the course in Turkish	Arkeoloji Jeofiziği
Language of the course	English
Level of Course	(*) Bachelor's / Undergraduate () Master () Doctorate
Lecturer	Assoc. Prof. Dr. Nart COŞKUN
ECTS Credits	5
COMU Credits	3
Description	<p>Geophysical survey techniques are used to map subsurface archaeological features without excavation. Using geophysical methods, we can measure various physical properties, such as the density, magnetic susceptibilities and remnant, electrical conductivity, propagation velocities of seismic waves, and the response of subsurface features to electromagnetic pulses. Therefore, geophysical survey methods use these physical properties distorted by man-made features such as walls, floors, pits and ovens immediately beneath the ground surface that can be measured and mapped. The course is designed to teach the students fundamental theory and methods of archaeological geophysics.</p>