CARTOGRAPHY

1	Course Title:	CARTOGRAPHY
2	Course Code:	TPR3903PDS
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	5
7	ECTS Credits Allocated:	4.00
8	Theoretical (hour/week):	1.00
9	Practice (hour/week):	2.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Doç. Dr. GÖKHAN ÖZSOY
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Bursa Uludağ Üniversitesi, Ziraat Fakültesi, Toprak Bilimi ve Bitki Besleme Bölümü 16059 Görükle Kampüsü, Nilüfer/Bursa Tel: 0-224-2941538 E-posta: ozsoyg@uludag.edu.tr
17	Website:	
18	Objective of the Course:	To gain knowledge and skills on definition and history of cartography; types and important characteristics of topographic maps and aerial photographs used for as a basic cartographic material in soil map design; their interpretation in order to delineate and to draw boundaries in between soil types, map (soil) drawing techniques; reflection characteristics and views of soil, rock, vegetation, water and man-made objects on aerial photographs; digital cartography
19	Contribution of the Course to Professional Development:	Understands the drawing of soil maps by learning the principles of cartography and map making. Understands maps and map drawing techniques. Understands the use and importance of aerial photographs in soil survey and mapping studies
20	Learning Outcomes:	
	1	Understands the history of mapping and cartography, mapping principles, map types, and importance of maps
	2	Comprehends the aerial photographs and topographic maps and the authority to use the determination and drawing of the land borders
	3	Interprets the reflection characteristics and views of earth surface objects such as soil, rock, water, vegetation, and human-made objects on aerial photographs
	4	Understands the basic principles of map (soil map) making
	5	Understands the place, importance and use of GIS in cartography
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Course aims and objectives. Definition and importance of cartography.	Introducing "cartography and soil survey practice laboratory" at Soil Science and Plant Nutrition department. Introduction of laboratory instruments. Rules to be followed in the laboratory.
2	History of maps and cartography. Cartography in the World and Turks.	Discussion on historical maps. Examples from Turkish and World cartography.
3	What is a map? definition and importance. Features of maps. Map elements (title, legend, scale and direction).	Various map examples. Universal colors and symbols used on maps. Map Scale calculation.
4	Classification of maps.	Soil Maps: definitions, legend, symbols. Land Use Capability Map: definitions, legend, symbols. Soil Fertility Map: definitions, legend, symbols.
5	Earth shape and dimensions. Coordinate systems. Datum. Map projections. Reference systems on the map.	Examples of maps produced in different projection systems. Selection of projection system according to map purpose. Deformations. GPS setup and GPS coordinate acquisition.
6	Topographic Maps	Contour lines and landforms on topographic maps. Reading coordinates from a topographic map, measuring distance.
7	History and importance of aerial photography.	Slope calculation on topographic map. Drawing of terrain structure (temporary soil boundaries) according to contour lines (hill, ridge, flat, etc.). Cross-section map work on the topographic map. (SUBJECT OF TERM PAPER - 1).
8	Properties of aerial photographs. Types of aerial photography. Differences between aerial photographs and a map.	Examination of aerial photographs at different scales. Information on the sidelines of aerial photographs. Factors to be considered in the use and storage of aerial photographs. The importance of aerial photographs in soil mapping studies. Basic natural and cultural aspects in black and white aerial photography.
9	Flight lines and overlays in aerial photographs. Basic principles of aerial photo interpretation.	Preparation of aerial photographs for interpretation. Determination of the flight line in aerial photographs. Determining and drawing the match-lines in aerial photographs. Identification of natural and cultural objects. (SUBJECT OF TERM PAPER - 2)
10	Scale and scale errors in aerial photographs. Deformations.	Basic properties of aerial photographs and interpretation of views. Factors affecting the appearance and light reflection of soil, vegetation, rock, water and man-made objects. Interpretation of soil, plant, water and cultural objects according to gray color tone in black and white aerial photographs.
11	Stereoscopic image and stereoscopic image theory in aerial photographs.	Introduction of instruments providing stereoscopic vision. 3D eye test with mirror stereoscope. Using a stereoscope to view aerial photos.
12	Interpretation of aerial photographs. Principles of photo interpretation.	3D view with black and white aerial photographs under a stereoscope. Determining and drawing temporary soil boundaries on black-and-white aerial photographs.
13	Charts and diagrams. Perspective views.	The importance of block diagrams (3D views) and relief views in soil survey and mapping studies.
14	Digital Cartography. Machine learning applications in digital soil mapping.	Digital soil mapping examples. Interpolation methods. Base data generation with Google Earth software.

22	Textbooks, References and/or Other Materials:	Özsoy, G. 2012. Kartoğrafya ders sunum notları (cource notes of Cartography). Sickle J.V. 2004. Basic GIS cordinates. CRC press, USA. 163p. ISBN:0415302161 Iliffe J. 2003. Datums and map projections for remote sensing, GIS and surveying. CRC press, Whittles publishing, Scotland, UK.143p. ISBN:1870325281 Falkner, E and Morgan, D. 2002. Aerial mapping: Methods and applications-2nd edit. CRC press, Lewis publishers, USA.183p. ISBN:1566705576 Dinç, U., Şenol, S., 1992. Kartoğrafya Ders Notu Ç.Ü. Ziraat Fakültesi yayınları, Adana. Zuidam, R.A.V. 1991. Aerial Photo Interpretation in Terrain Analysis and Geomorphologic Mapping. ITC International Institute for Aerospace Survey and Earth Sciences. 1985 Smits Publishers Goosen , D., 1967. Aerial Photo Interpretation in Soil Survey. FAO,Rome.
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	20.00
Quiz	0	0.00
Home work-project	2	20.00
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		Active attendance to class is important. Final evaluation is done with relative evaluation approach.

24 ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	1.00	14.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	14	1.00	14.00
Homeworks	2	18.00	36.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	15.00	15.00
Others	0	0.00	0.00
Final Exams	1	15.00	15.00
Total Work Load			122.00
Total work load/ 30 hr			4.07
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	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ÖK2	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ÖK3	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ÖK4	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ÖK5	0	3	0	0	0	3	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**