

# CARTOGRAPHY

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| 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,<br>Toprak Bilimi ve Bitki Besleme Bölümü<br>16059 Görükle Kampüsü, Nilüfer/Bursa<br>Tel: 0-224-2941538<br>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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| <b>21</b>                  | Course Content:  |   |                               |
|                            | <b>Course Content:</b>   |   |                               |
| <b>Week</b>                | <b>Theoretical</b>   | <b>Practice</b>   |                               |
| <b>1</b>                   | Course aims and objectives.<br>Definition and importance of cartography.   | Introducing "cartography and soil survey practice laboratory" at Soil Science and Plant Nutrition department.<br><br>Introduction of laboratory instruments.<br>Rules to be followed in the laboratory. |                               |
| <b>2</b>                   | History of maps and cartography.<br>Cartography in the World and Turks.  | Discussion on historical maps.<br>Examples from Turkish and World cartography.  |                               |
| <b>3</b>                   | What is a map? definition and importance.<br>Features of maps.<br>Map elements (title, legend, scale and direction). | Various map examples.<br>Universal colors and symbols used on maps.<br>Map Scale calculation.   |                               |
| <b>4</b>                   | Classification of maps.  | Soil Maps: definitions, legend, symbols.<br>Land Use Capability Map: definitions, legend, symbols.<br>Soil Fertility Map: definitions, legend, symbols.   |                               |
| <b>5</b>                   | Earth shape and dimensions.<br>Coordinate systems.<br>Datum.<br>Map projections.<br>Reference systems on the map.    | Examples of maps produced in different projection systems.<br>Selection of projection system according to map purpose.<br>Deformations.<br>GPS setup and GPS coordinate acquisition.                    |                               |
| <b>6</b>                   | Topographic Maps   | Contour lines and landforms on topographic maps.<br>Reading coordinates from a topographic map, measuring distance.   |                               |
| <b>7</b>                   | History and importance of aerial photography.  | Slope calculation on topographic map.<br>Drawing of terrain structure (temporary soil boundaries).  |                               |
| <b>Activites</b>           |  | <b>Number</b>   | <b>Duration (hour)</b>        |
|                            |  |   | <b>Total Work Load (hour)</b> |
| <b>8</b>                   | Theoretical Properties of aerial photographs.<br>Types of aerial photography.  | 4   | 4.00                          |
| Practicals/Labs            |  | 14  | 28.00                         |
| Self study and preperation |  | 14  | 14.00                         |
| Homeworks                  |  | 2   | 36.00                         |
| Projects                   |  | 0   | 0.00                          |
| Field Studies              |  | 0   | 0.00                          |
| Midterm exams              |  | 1   | 1.00                          |
| Others                     |  | 0   | 0.00                          |
| Final Exams                |  | 1   | 15.00                         |
| Total Work Load            |  |   | 122.00                        |
| Total work load/30 hr      |  |   | 4.07                          |
| ECTS Credit of the Course  |  |   | 4.00                          |
|                            |  | Soil, vegetation, rock, water and man made objects.<br>Interpretation of soil, plant, water and cultural objects according to gray color tone in black and white aerial photographs.                    |                               |
| <b>11</b>                  | Stereoscopic image and stereoscopic image theory in aerial photographs.  | Introduction of instruments providing stereoscopic vision.<br>3D eye test with mirror stereoscope.<br>Using a stereoscope to view aerial photos.  |                               |
| <b>12</b>                  | Interpretation of aerial photographs.<br>Principles of photo interpretation.   | 3D view with black and white aerial photographs under a stereoscope.<br>Determining and drawing temporary soil boundaries on black-and-white aerial photographs.  |                               |
| <b>13</b>                  | Charts and diagrams.<br>Perspective views.   | The importance of block diagrams (3D views) and relief views in soil survey and mapping studies.  |                               |
| <b>14</b>                  | Digital Cartography.<br>Machine learning applications in digital soil mapping.                                       | Digital soil mapping examples.<br>Interpolation methods.<br>Base data generation with Google Earth software.  |                               |

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| <b>22</b> | Textbooks, References and/or Other Materials: | <p>Özsoy, G. 2012. Kartoğrafya ders sunum notları (course notes of Cartography).</p> <p>Sickle J.V. 2004. Basic GIS coordinates. CRC press, USA. 163p. ISBN:0415302161</p> <p>Iliffe J. 2003. Datums and map projections for remote sensing, GIS and surveying. CRC press, Whittles publishing, Scotland, UK.143p. ISBN:1870325281</p> <p>Falkner, E and Morgan, D. 2002. Aerial mapping: Methods and applications-2nd edit. CRC press, Lewis publishers, USA.183p. ISBN:1566705576</p> <p>Diñç, U., Şenol, S., 1992. Kartoğrafya Ders Notu Ç.Ü. Ziraat Fakültesi yayınları, Adana.</p> <p>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</p> <p>Goosen , D., 1967. Aerial Photo Interpretation in Soil Survey. FAO,Rome.</p> |
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| <b>23</b> | Assesment |
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| TERM LEARNING ACTIVITIES   | NUMBER   | WEIGHT |
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| 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. |        |

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| <b>24</b> | <b>ECTS / WORK LOAD TABLE</b> |
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| <b>25</b> | <b>CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS</b> |
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|     | 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    |

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| <b>LO: Learning Objectives PQ: Program Qualifications</b> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|----------------------------|-------------------|--------------|-----------------|---------------|--------------------|
| <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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