## Course Description

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| Course Code | YZ 445 |
| Course Name | GEOGRAPHICAL INFORMATION SYSTEMS |
| Prerequisite Courses | none |
| Language of the Course | The English |
| Course Coordinator | |
| Instructor(s) | |
| Course Assistants | |
| The aim of the course | To give information on spatial and non-spatial information systems, to teach fields that GIS is utilized, to provide detailed knowledge on databases and database systems, to teach basic functions of GIS so that they can conduct a GIS project. |
| Course Content | Data, Information and System concepts, System design, Data and acquiring methods in the Geographic Information System, Geographic Information System software and hardware, Geographic Information System analysis functions, Geographic Information System Applications. |

## Weekly Course Content

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| Week 1 | History of geographic information systems (GIS), basic descriptions and concepts, related basic concepts with GIS |
| Week 2 | To introduce software, hardware and tools of GIS Laboratory |
| Week 3 | The elements of geographic information systems; software, hardware, data, staff and method. |
| Week 4 | Use of GIS, Where? and Why? |
| Week 5 | The elements of geographic information systems; software, hardware, data, staff and method. |
| Week 6 | Former systems used in GIS. Digitizers and digitizing using tablets. |
| Week 7 | The tasks of geographic information systems; data entry, operation, administration, search and analysis, visualization |
| Week 8 | Midterm exam. |
| Week 9 | Applications on toolbox and modules of the ArcGIS software. |
| Week 10 | Vector Data |
| Week 11 | Presenting vector data and their properties in ArcGIS media. |
| Week12 | Raster Data |
| Week 13 | Presenting raster data and their properties on different satellite data in ArcGIS media |
| Week 14 | Kinds of GIS Analysis, remote sensing and GIS integration |
| Week 15 | Final exam. |

## Course Learning Outcomes

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| 1 | To be able to describe the elements of geographic information systems; the topics such as software, hardware, data, staff, method and use of GIS. |
| 2 | To be able to use Geographic Information System Software and Hardware |
| 3 | To be able to comprehend Data storage techniques, Data Base Management Systems and basic principles of spatial analysis methods |
| 4 | To be able to design and practice Geographic Information System Design in professional field |
| 5 | To be able to learn basic principles of Remote Sensing and Geographical Information System, and examples of present projects |

## Contribution of the Course to Program Qualifications

| | | Contribution Level |
|---|---|---|
| 01 | The student will have the ability to apply analytical approach, mathematics and science knowledge in software and engineering issues. | 5 |
| 02 | The student will have the ability to identify, define, formulate and solve a problem in software and computer systems. | 5 |
| 03 | The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process. | 5 |
| 04 | The student will have the ability to use the design capability, techniques and tools required for engineering applications. | 3 |
| 05 | The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results. | 5 |
| 06 | The student will have the ability to work between disciplines and teamwork. | 5 |
| 07 | The student will have the ability to work in international environments and adapt to different cultures. | 3 |
| 08 | The student will have verbal and written communication skills in Turkish and English. | 5 |
| 09 | The student will have the awareness of the necessity of lifelong learning and the ability to realize it. | 5 |
| 10 | The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility. | 2 |
| 11 | The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.). | 5 |
| 12 | The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way. | 5 |
| 13 | The student will have the ability to find unusual ways and produce projects. | 4 |
| 14 | The student will have professional self-confidence, being an entrepreneur and taking initiative. | 3 |
| 15 | It is sensitive about the problems of the age and looks after the national interests. | 5 |

## ECTS WORKLOAD

| | Number | Duration (hours) | Number*Duration |
|---|---|---|---|
| Face to face education | 14 | 2 | 28 |
| Out-of-class study time (pre-study, reinforcement) | 3 | 5 | 15 |
| Homeworks | 2 | 7 | 14 |
| Presentation / Seminar preparation | 3 | 1 | 3 |
| Quizzes | 0 | 0 | 0 |
| Preparation for midterm exams | 1 | 7 | 7 |
| midterm exams | 1 | 2 | 2 |
| Project (Semester assignment) | 1 | 8 | 8 |
| Lab | 0 | 0 | 0 |
| field work | 0 | 0 | 0 |
| Preparation for the final exam | 1 | 15 | 15 |
| Semester final exam | 1 | 2 | 2 |
| Research | 0 | 0 | 0 |
| **TOTAL WORKLOAD** | | | 94 |
| **ECTS** | | | **3** |

## Evaluation

| SEMESTER EVALUATION | Number | Contribution Percentage |
|---|---|---|
| Midterm | 1 | 20 |
| Quiz | 0 | 0 |
| Homework | 2 | 20 |

| | | |
|---|---|---|
| **SEMESTER TOTAL** | | **40** |
| Contribution rate of mid-term evaluations to success | | 40 |
| Contribution rate of the final exam to success | | 60 |
| **GRAND TOTAL** | | **100** |

**RESOURCES**

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| Textbook | 1. Coğrafi Bilgi Sistemleri (CBS) Teknolojisi ve Veri Analiz Yöntemleri, Çukurova Üni. Fen Bil. Ens. Yayın No: FBE-2000-1, Dinç, A.O., 2000. |
| | 2. Coğrafi Bilgi Sistemleri: Temel Kavramlar ve Uygulamalar, 3. Baskı Akademi Kitapevi, Trabzon, Yomralıoğlu, T., 2005. |
| | 3. Getting to Know Arc View GIS, the geographic information system (GIS) for everyone. Redlands CA: Environmental Systems Research Institute, Inc., ESRI, 1996. |
| | 4. Principles of Geographical Information Systems for Land Resurces, Assesment. Univ. Of Utrecht, The Netherlands. Clarendon Press, Oxford, Burrough, P.A., 1986. |
| | 5. The ESRI Guide to GIS Analysis: Vol.2, Spatial measurements and statistics. ESRI press, USA. 238p., Mitchell, A. 2005. |
| | 6. Geographic Information Systems and Science, John Wiley & Sons, New York., Longley, P.A., Goodchild, M. and Rhind, D.W., 2001. |
| Helpful Resources | In addition lesson content is compiled from multiple sources |