

BÜLENT ECEVİT UNIVERSITY
FACULTY OF ENGINEERING
DEPARTMENT OF GEOMATICS ENGINEERING
COURSE LIST FOR PROGRAMME CODE: 6102

1ST YEAR – FALL SEMESTER

JDF105 Introduction to Engineering (2-0-2)-5

The historical development of engineering, the basic characteristics of engineering education, engineering disciplines, professional organizations and institutions for surveying engineering.

JDF113 Use of Basic Computer Techniques (1-2-2)-4

Introduction to Computer (definition, historical development, types of computers, computer hardware (motherboard, processor, memory, hard drive, video card, sound card, network card, modem, cd / dvd drive / writer drive, floppy drive, keyboard, mouse, monitor, speaker, microphone, printer, scanner, plotter), Operating systems, office programs and applications, word processors (Microsoft Word, and applications), data and graphics processors (Microsoft Excel and applications).

JDF115 Surveying I (2-2-3)-6

Introduction to surveying science, basic computations with Cartesian coordinates, basic surveying equipment and horizontal measurements, area computations with field measurements, point resection computations.

MAT181 Mathematics I (4-0-4)-6

Numbers, Lines, Circles and Parabolas, Functions and their Graphics, Trigonometric Functions, Limit and Limit Rules, Continuity, Derivative and Rules of Differentiation, Chain Rule and Parametric Equations, Derivative of Trigonometric Functions, Inverse Functions and their Derivatives, Derivative of Logarithmic and Exponential Functions, Implicit Differentiation, Monotone functions and First Derivative Test, Extreme Values of Functions, Theorems Related with Differentiable Functions, Concavity, Sketching the Graph of a Function, Indeterminant Forms and L'Hopital Rule, Differentials.

FİZ181 Physics I (3-0-3)-4

Physics and Measurement; Vectors; Motion in One and Two Dimensions; Newton's Laws of Motion; Circular Motion and Other Application of Newton's Laws; Work and Kinetic Energy; Potential Energy and Conservation of Energy; Linear Momentum and Collisions; Rotation of a Rigid Object About Fixed Axis; Torque and Angular Momentum.

FİZ191 Physics Laboratory I (0-3-1)-1

The learning measurement length and mass, the solving problems of equilibrium using vector methods, the measuring gravitational acceleration and coefficients of friction in an inclined plane, the analyze conservation of momentum and mechanical energy in the two body collision, the learning simple harmonic motion and the period of simple harmonic motion obtain from experimental results, the learning definition of center of mass, the investigation of physically pendulum motions, find the gravitational acceleration using the simple pendulum and the conical pendulum, obtain accelerations and angular velocities of rigid bodies, learn the moment of inertia.

TÜR181 Turkish I (2-0-2)-2

Students will be taught how to use the written communication tools accurately and efficiently in this course. Various types of written statements will be examined through a critical point of view by doing exercises on understanding, telling, reading, and writing. Punctuation and spelling rules, which are basis of written statement, will be taught and accurate usage of these rules for efficient and strong expression will be provided.

YDL185 Foreign Language I (2-0-2)-2

Reading passages and exercises, listening passages and drills, writing regarding a specific subject, holding discussion on a given topic.

1ST YEAR – SPRING SEMESTER

JDF120 Surveying II (3-2-4)-7

Traversing techniques and computations, resection methods and computations, transformation algorithms, electromagnetic distance measurements (EDM) and errors, establishing and measuring a calibration baseline for EDM purposes.

JDF122 Computer Programming (2-2-3)-8

Concept of the programming, development of the programming language. Programming languages. Programming applications of the geodetic problems.

MAT182 Mathematics II (4-0-4)-6

Definite Integral, Fundamental Theorem of Calculus, Indefinite integral, Basic Integration Formulas, Integration Techniques, trigonometric Integrals, Improper Integrals, Application of definite Integrals: Area, volume, surface area, length of a curve, Center of Mass, Sequence and Series, Convergence of Sequences and Series, Convergence Tests for Series, Power Series and Radius of Convergence, Taylor Formula, Parametric Curves and Polar coordinates, Area and Length in Polar Coordinates.

FİZ182 Physics II (3-0-3)-4

Coulomb's force, the electric field, electric flux, Gauss's law, electric potential, capacitors, current and resistivity, direct current circuits, Kirchhoff's rules, magnetic field, Biot-Savart's law, Ampere's law, induction, Faraday's law, Lenz's law.

FİZ 192 Physics Laboratory II (0-3-1)-1

Ohm's law, Kirchhoff's rules, Electric Fields and Equipotential lines, the transmission of electrical current by using an electrolysis cell, measurement of current and voltage with the d'Arsonvalmeter, measurement of resistance with Wheatstone bridge, Analyze of RC circuits, Investigation of RLC circuits in series and measurement of alternating Current and voltage, observation magnetic field lines and determination of magnetic field intensity.

TÜR182 Turkish II (2-0-2)-2

Students will be taught how to use the written communication tools accurately and efficiently in this course. There will be exercises on understanding, telling, reading, and writing; types of speeches (panel, symposium, conference, etc.) will be introduced; the student will be equipped with information on using body language, accent and intonation, and presentation techniques.

YDL186 Foreign Language II (2-0-2)-2

Reading passages and exercises, listening passages and drills, writing regarding a specific subject, holding discussion on a given topic.

2ND YEAR – FALL SEMESTER

JDF209 Numerical Analysis (3-0-3)-4

Errors in numerical analysis, examples of solutions of linear and non-linear equations.

JDF217 Height Measurements (1-2-2)-4

Height, geoid, and other physical concepts, height systems, scientific heights. Methods for determining the height. Geometric, trigonometric, barometric leveling, modern and classic equipment used, measurement errors, precision, determine the impact of globalization and refraction. Tachometric measurement, calculation and drawing works. Surface leveling, the cross-sectional and longitudinal sectional measurement, calculation and drawing works. Volume calculations. Building height measurement techniques.

JDF219 Cartography (2-2-3)-6

Features of an earth spheroid. Computations on sphere, projecting sphere onto plane, surfaces and curvatures, geodetic curvature.

JDF223 Probability and Statistics (2-0-2)-3

Definition of probability and statistics, actions and properties. Statistical benchmarks. Variability and asymmetry measures. Covariance, correlation and regression. Independence, random variables, discrete and continuous distributions. Types of distributions. Normal and standard normal distribution. Artificial sample distributions. Test distributions and hypothesis testing.

JDF225 Realty Laws (2-0-2)-3

Introduction. Basic Concepts of Law. Real and personal rights. Property Law. Possession and the Land Registry. Law of the person. Family Law. Law of Succession.

MAT281 Mathematics III (3-0-3)-4

Introduction to vectors, Vectors in plane, in space (R^3) and in R^n , Linear transformations and matrices, Determinants, Solution of the system of linear equations with matrices, Orthogonal transformations, Orthogonal matrices, eigenvalues and eigenvectors, Quadratic equations and transformations, Rank of a matrix, Existence of the solution of the system of linear equations, Vector analysis, Cross product, Equations of lines and planes, Limit of a vector valued functions and derivative, Level surfaces, Directional derivative, gradient, diverjans, rotasyonel (delta differential operator) Tangent lines and normal planes of a curve, Tangent planes and normal lines of a surface, Some operations on vector valued functions, arc length, curvature, osculator plane, binormal, torsion, Line integrals, Green Formula, Surface integrals, diverjans, Stokes Theorems, Ostrogradski formulas.

AİT281 Principles of Atatürk and Revolution History I (2-0-2)-2

Events, thoughts and principles in the rise and development process of Modern Turkey.

YDL285 Foreign Language III (4-0-4)-4

Structures, phrases and tenses used frequently in technical and professional English, reading and understanding technical texts and translation techniques, answering questions related to a text.

2ND YEAR – SPRING SEMESTER

JDF220 Summer Practice I (0-0-0)-4

Course is done in accordance with the regulation by students in order to improve and apply their occupational knowledge and experience which they gain until this semester and perceive the implementations and method differences which are carried on by various corporations.

JDF232 Computer Aided Design (2-2-3)-3

Information about CAD softwares. Implementation and evaluation of coordinates in CAD environment. Various spatial calculations. Producing contour lines. Creating cartographic details. Making topographic maps. Referencing raster data and manual object extraction.

JDF234 Field Work I (0-4-2)-4

Establishment of traverse station, surveying and calculation, prismatic and tacheometric surveying, plot processes in office.

JDF242 Geodetic Surveys (1-2-2)-2

Definition of Geodetic Survey. Definitions and varieties of triangulation and triangulation network. Preparation, establishing and description of triangulation points. Angle surveying and methods on triangulation networks. Out center angle surveying and demoting to ground. Determining datum parameters on triangulation networks. Horizontal positioning methods on triangulation networks. Establishing principles of national classic and modern triangulation networks. Defining and applying level by precisional and digital leveling on triangulation networks.

JDF244 Cadastral Foundations (3-0-3)-3

The Importance of Cadastre and Cadastre Map Introduction to Geomatics Engineering. The Historical Development of the land ownership and cadastre. Legislation on Cadastral. Cadastre Applied Methods and Evaluation. Cadastre Implementation of Legal Acts. Conduct technical studies, cadastre. Monitoring change in the Cadastre. Contemporary Practices Survey.

JDF246 Engineering Ethics (1-0-1)-1

Emphasizing of universal and individual ethic rules, the knowledge about the universal ethic principles, learning of engineering ethic rules and on this base the research, investigation and evaluation of problems about work disciplines,

MAT282 Mathematics IV (3-0-3)-4

Derivative under integral sign, Introduction to ordinary differential equations, Differential equations of first order, Differential equations with separable variables, Homogen differential equations, Linear, Bernoulli, Riccati, Lagrange, Clairaut differential equations, Exact differential, Integrating factor, Linear differential equations of higher order, Linear dependency, Wronsky determinant, Linear differential equations with constant coefficient, Linear differential equations with variable coefficient, Euler-Cauchy differential equations.

AİT282 Principles of Atatürk and Revolution History II (2-0-2)-2

Events, thoughts and principles in the rise and development process of Modern Turkey.

YDL286 Foreign Language IV (4-0-4)-4

Structures, phrases and tenses used frequently in technical and professional English, reading and understanding technical texts and translation techniques, answering questions related to a text.

3RD YEAR – FALL SEMESTER

JDF327 Adjustment I (3-0-3)-4

Error and residual concepts. Precision criteria. Correlation. Error propagation law. Weight and inverse weight. Subject and fundamentals of Adjustment. Kinds of adjustment. Comparison of kinds of adjustment.

JDF329 Photogrammetry I (2-2-3)-4

Definition of photogrammetry. Geometrical and mathematical principles. Optical principles. Photographic principles. 3 dimensional/stereoscopic view. Airborne photographs.

JDF333 Database Management Systems (3-0-3)-4

Database Management Systems (DBMS), Basic concepts, DBMS architecture and DBMS functions. Data models. Database schema and instance. Database design. Database Entity-Relationship model and conceptual design. Relational data model and database design. Relational algebra. SQL query language. Term Project, Microsoft Access DBMS environment, database design and development of a database for various fields, query the database and form design.

JDF335 Global Navi. Satellite Sys. (GNSS) (2-2-3)-4

Global Navigation Satellite Systems, Satellite Based Augmentation Systems and their segments, properties of their signals, receiver and antenna systems, coordinate systems and time systems used in GNSS and SBAS. Observations and observables, error sources affecting observations, positioning and observing methods and accuracy criteria.

JDF337 Geodesy I (2-0-2)-3

Features of an earth ellipsoid, computations on sphere, projecting sphere onto plane, surfaces and curvatures, geodetic curvature.

Vocational Elective I Courses:

JDF345 Basic Image Information (2-0-2)-4

Optics, microwave and laser imaging, 2D-3D image, image coordinate systems, 3D imaging/display techniques.

JDF347 Surveying Applications for Local Governments (2-0-2)-4

Local governments, local authorities and central government relations. The powers and responsibilities of local governments. Municipalities Act and legislation. Geomatics Engineering applications in Local governments. Zoning applications, condominium, building controls, urban renewal. And approval of the construction of the current map. Releases slum housing and urban development. Built-up urban renewal areas. Detection and land development areas for improvement. Implementation of development plans and judicial relations. Land use, municipal and zoning practice relationships. The use of the forest and coastal areas, public benefit relationships.

JDF349 Cadastral Data and Applications (2-0-2)-4

City and outside, inside or outside of the contiguous area, places with or without the development plan, cadastral registration in the fields after the fields and villages built-in applications subject to change depending on demand operations (allotment, allotment, leaving the road, the road established, et al.) the initial stage up to the stage of the process of registration as a practical expression of and project work make for it.

JDF351 Mine Surveying (2-0-2)-4

The place of mine surveying in geodesy and photogrammetry engineering.

JDF353 Infrastructure Cadastre (2-0-2)-4

The scope and historical development of Infrastructure cadastre. Issue of infrastructure facilities registered in a cadastre. the legal and administrative arrangements related to Cadastral infrastructure. Infrastructure cadastre stages. surveying and mapping work related to Seen and unseen infrastructure lie and facilities. Infrastructure kadastrisunda automation.

JDF355 Urban and Regional Planning (2-0-2)-4

Introduction. Historical development. General definitions. Settlement, the settlement process. Since ancient times the city to present the structure of the core function areas, and density. Development plans, the creation of urban parcels, zoning scheme. Transportation impacts, centralization phenomenon, city type. Contemporary urbanism. City and regional planning guidelines and scales.

JDF357 Cartographic Map Production (2-0-2)-4

Cartographic methods of spatial data collection, editing and structuring. Data quality and standards, spatial data infrastructure, the vector-raster conversion, cartographic presentation of spatial data.

JDF359 Geodetic Astronomy (2-0-2)-4

Basics in geodetic astronomy. Fundamental definitions. Celestial coordinate system, hour angle and right-ascension systems. Ecliptic coordinate system. Astronomical triangle. Relations in coordinate systems. Special positions of stars. Solar movements and their problems. Changes in star coordinates. Time definitions and transformations. Star catalogues and almanacs. Celestial maps, definitions of azimuth, latitude and longitude.

JDF361 Equipment Handling (2-0-2)-4

Geometric optic. Optic laws. Lenses and prisms Binocular and theodolites. General structure of conventional theodolites. Axes requirements, control of axes requirements and elimination of axis errors. Optical levels. General structure of levels, control of axes requirements and elimination of axes errors. Digital levels, laser levels and equipment. Principles of electromagnetic distance measurements (EDM) General structure of EDM. Electronic angle measurement methods. Corrections to measured distances. Calibration of EDM's. Applications with EDM. Data transfer between PC and EDM. Digital leveling.

JDF363 Error Theory and Estimation (2-0-2)-4

Geodetic measurements, measurement errors, and relations with the probability theory. Hope value, variance, covariance, correlation, and the concepts of the normal distribution. Accuracy measures. Cofactor and weight concepts. The rules of propagation of variances. Linear models for parameter estimation. Ordinary least squares (OLS) method, the implementation of direct and indirect measures.

3RD YEAR – SPRING SEMESTER

JDF314 Adjustment II (3-0-3)-3

Constraint and unconstrained adjustment of Horizontal, vertical and three dimensional networks, reliability analysis, statistical analyses, datum transformation.

JDF320 Summer Practice II (0-0-0)-4

Course is done in accordance with the regulation by students in order to improve and apply their occupational knowledge and experience which they gain until this semester and perceive the implementations and method differences which are carried on by various corporations.

JDF332 Geodesy II (3-0-3)-3

Surfaces and curvatures, geodetic curvature, projection of a surface to another, conform projection, conform projection of ellipsoid, UTM projection.

JDF334 Geographical Information Systems (2-2-3)-3

GIS concepts and applications of graph theory and topology, topological data structures, Topology building, designing a database in GIS, Spatial Analysis, Spatial analysis operations classification, Spatial analysis, vector overlay operations, neighborhood analysis (slope, orientation, adjacency) , Re-classification procedures, raster overlay, proximity, network analysis, WebGIS, GIS-related trends.

JDF336 Photogrammetry II (2-1-2)-2

Aerial photographs. Geometric and mathematical basis of photogrammetry. Single image evaluation. Analogue, analytical evaluation. Photogrammetric triangulation. Production of orthophoto and digital elevation model. Digital photogrammetry. Evaluations.

JDF338 Digital Image Processing (2-0-2)-2

To give enough informatin about term, processes and products of digital image.

SSP900 Social Responsibility Project (1-2-2)-3

Forming a working group, determination of the objectives and the study areas, procurement of the necessary connections with the institution or organization, preliminary preparations and distribution of tasks, starting of the studies, reported to results of the study and transfer to web page of the department of the presentations prepared.

Vocational Elective II Courses:

JDF342 Rural Land Evaluation (2-0-2)-5

Rural areas, and rural development. And the historical development of agricultural policy in Turkey. Structural analysis of the agricultural sector in Turkey and the EU's common agricultural policy. Agriculture and agricultural production concepts, factors affecting agricultural production. Soil, Land Classification. And characteristics of agricultural enterprises in Turkey. The effect of fragmentation of agricultural land and businesses. Causes fragmentation of agricultural land, land fragmentation in Turkey. General information about the land consolidation. Consolidation activities in Turkey. Land consolidation efforts in some other countries, and rural land management practices (village renewal, rural development). Land consolidation phases. Aggregation, measurement tasks and applications.

JDF344 Coordinate Systems (2-0-2)-5

Terrestrial coordinate systems. Celestial coordinate systems. Orbital coordinate systems. Transformation between coordinate systems.

JDF346 Terrestrial Photogrammetry (2-0-2)-5

Terrestrial Photogrammetry Definitions and Concepts, Uses Terrestrial photogrammetry, terrestrial photogrammetry mathematical and geometric relations, Terrestrial Photogrammetry Imaging Equipment and Systems, Terrestrial Photogrammetry Planning, land Image Acquisition, Image Coordinate Systems, Optics and Laser Imaging, 3D Solid Model Creation, Image Overlay techniques.

JDF348 Programming in Database Man. Sys. (2-0-2)-5

DB and DBMS concepts, Programming, DBMS with VBasic youth programming techniques.

JDF350 Hydrographic Surveys (2-0-2)-5

Determining of the location and depth of bathymetric measurements, planning Hydrographic surveying, application areas of hydrographic measurements, classification of underwater hydrographic measurements

JDF352 Cartographical Database Man. Sys. (2-0-2)-5

Cartographic presentation DBMS. Relations with DBMS maps and cartography are used. Cartographic design and implementation of database management systems.

JDF354 Underground Surveying Techniques (2-0-2)-5

The importance of underground surveying in Geomatics Engineering.

JDF356 Photogrammetric Project Management (2-0-2)-5

Photogrammetric project concept, planning and running projects, controlling, inspecting and managing. Mapping projects and management. Projects requirements and preparation of technical provisions. Application of new techniques in projects.

4TH YEAR – FALL SEMESTER

JDF427 Land Management (2-2-3)-4

Introduction to Land Management. The concept of Property. The concept of Sustainable Land Management. Local authorities and their duties. Revision of large scale topographic maps. Kinds of plans, environmental, regional and zoning. Kinds of zoning plans and their implementation. Regulation for urbanization and the concept of urbanization. Roles of surveyors in preparing zoning plans. Methods of implementing zoning plans. Land compensation. Land Readjustment. Application of zoning plan reforms (articles 10-b/c of related regulation) . Evaluation of alternative land parcel allocation methods. An overview of land valuation. Application of condominium rights. Coastal law. The use of Geographical/Urban/Land Information Systems in Land Management.

JDF437 Public Surveys (1-2-2)-3

To acquire students the ability to implement engineering projects.

JDF439 Remote Sensing (2-1-2)-3

Definition, function, application areas, classification and history of remote sensing. Electromagnetic (EM) energy, EM spectrum, atmospheric affect, interaction with ground objects, spectral reflection, response of objects in microwave region. Optical sensors, microwave sensors, examples, image interpretation, electro-optical systems, microwave sensors, optical-mechanical scanners, digital imagery, data recording formats, resolution, natural and artificial color images, 3D view, images with distortion, thermal imagery, image enhancement, filtering, classification, pixel based classification, object based classification, accuracy of classification, 3D satellite images, orthorectification, usage of remote sensing imagery in GIS.

JDF463 Academic Writing & Presentation (2-0-2)-2

History of scientific writing and types. Preparing title and abstract. Writing introduction, methods, result and discussion parts. Citation of references. Impressive table and representation techniques. Typing on computer. Writing thesis, poster and presenting them.

JDF441 Summer Practice (0-0-0)-4

Course is done in accordance with the regulation by students in order to improve and apply their occupational knowledge and experience which they gain until this semester and perceive the implementations and method differences which are carried on by various corporations.

JDF499 Dissertation Study (0-2-1)-5

A study which includes a subject on vocational research and application will be performed.

Vocational Elective III Courses:

JDF433 Physical Geodesy (3-0-3)-5

Potential theory, earth's gravity field, earth gravity models, relationship between geoid and refence ellipsoid, gravity measurements, astrogeodetic and gravimetric methods for geoid determination, height systems.

JDF443 Realty Valuation (3-0-3)-5

The concepts of value and real value. Urban and rural immovable assessment. The parameters that affect the evaluation and the relationships between them. In terms of legislation and the expropriation of immovable real property assessment. Real estate valuation methods. Statistical analysis for the assessment of real property anketsel basis. Valuation of the production of maps.

JDF451 Land Info Systems (3-0-3)-5

The current and future human-earth relations. Urban and rural areas, land management concepts. Economic, social and environmental effects of land use on looks. Approaches to the concept of ownership and property management. The concepts of multi-purpose cadastre, cadastral systems and applications. Land Information Systems (ABS), conceptual development, functions and requirements for the establishment and survival. Land management policies and strategies for sustainable development of land management.

JDF459 GNSS Applications (3-0-3)-5

GNSS surveys. GNSS surveying and positioning techniques and their types. GNSS observations and observables, data formats. Planning field work and evaluating observations.

JDF465 Expropriation (3-0-3)-5

Expropriation law. Purpose and scope of the expropriation of doing. Expropriation throwing hand. Quick expropriation. The expropriation process applications.

JDF467 Forestal Cadastre (3-0-3)-5

The Importance of Forestry and Forest cadastre, Definition of Forest and Terms of forest legislation. Implementation of Forest Cadastral Maps.

JDF469 Digital Photogrammetry (3-0-3)-5

Presentation of the examples of digital photogrammetric image acquisition, processes, products and opportunities.

JDF471 Photogrammetric Info Systems (3-0-3)-5

Definitions. Photogrammetric products: digital maps, orthophotos. Relationship between GIS and photogrammetry, stereo digitization, image straightening, photogrammetric products, data structure and symbology, Accuracy and application fields, the use of photogrammetric products in GIS.

JDF473 Laser Scanner Techniques (3-0-3)-5

Concept of laser scanning, history of laser scanners and classification. Comparison with other remote sensing techniques. Main theory of laser scanning its components, equations, system requirements, time synchronization, reference windows and transformation of these windows, accuracy analysis. Application areas of laser scanning. Used measurement tools and specifications. Derived data and contribution to mapping activities.

JDF475 Photogrammetric Applications (3-0-3)-5

Introduction of photogrammetric applications, mathematical principals. Digital workstation, image processing softwares, Terrestrial photogrammetric applications. Mono and stereo orientation, 3D view applications and using in applications. 3D modelling applications. Image digitization, automatic feature extraction, photogrammetric data acquisition and evaluation via UAV.

JDF477 Geoid and Vertical Datum (3-0-3)-5

Description, importance of geoid. Geoid as the real shape of the earth. Geoid and vertical datum. Geoid determinations. Modelling geoids.

4TH YEAR – SPRING SEMESTER

JDF414 Dissertation Study (0-2-1)-5

A study which includes a subject on vocational research and application will be performed.

JDF430 Field Work II (0-4-2)-5

Establishing a triangulation network in a chosen region. Measuring all horizontal and vertical angles and distances in a triangle network, performing observation and computation controls and applying corrections to these measurements. Checking and calibrating all the instruments involved. Determining the heights of triangulation points by trigonometric leveling with the aid of all known heights in the vicinity of the network. Computing the orthometric height of a point using precise leveling measurements and performing geodetic corrections to these. Presenting all the observations and computations in a thesis format.

JDF432 Road Management (2-1-2)-3

Determination and application of the geometry of the horizontal and vertical position for roads.

JDF434 Project Management Information (2-0-2)-2

Project management, organization, planning, coordination, control and auditing.

Vocational Elective IV Courses:

JDF446 Urban Info Systems (3-0-3)-5

Urban information system (UIS) concepts. Municipal information systems. Urban information system modeling. Technical, legal and economic requirements. Re-organization of urban information system activities. Analysis of spatial information. Software - hardware needs. GIS in urban planning in place. A detailed description and design of UIS applications.

JDF460 Deformation Measurement (3-0-3)-5

Tectonic movements. landslides and subsidence. Man-made deformations. Structural deformations. Deformation monitoring techniques. Analysis methods.

JDF464 Zoning Applications (3-0-3)-5

Turkey's administrative structure. Zoning regulations, development program, current map, and applying analytical work, plan the steps, plan statements. Zoning of property relations, the development plan application methods. Expropriation, parcel, land and land regulation. Building works, areas of application, selection and preparation of the plans development, the regulation of land according to the principles of equivalence and realization of applications. Special zoning practices law number 3194.

JDF468 Geospatial Applications in Remote Sensing (3-0-3)-5

To teach the application areas and importance of remotely sensed data in geospatial applications with examples and applications.

JDF470 Cartographical Info Systems (3-0-3)-5

Digitizing vector data, is transmitted to the data in a GIS cartographic algorithms, transfer to the raster data in a GIS, cartographic creation of objects in GIS, cartographic creation of GIS maps.

JDF472 Cadastral Info Systems (3-0-3)-5

Introduction to the Cadastral GIS. The importance of GIS cadastre. Cadastral GIS applications in the world and in our country. And designing all the details required for the removal of NSDIs and TUCBS.

JDF474 Zoning Apps. in Urban Areas (3-0-3)-5

Development and utilization of urban areas in the world and In Turkey. Built-up areas and the historic building relationships rotten areas. Built-up areas, methods of regulation and legislation. The general criteria for the selection of regulatory regions of urban transformation. To urban renewal projects. Geomatics Engineer tasks of urban regeneration. Applications and interpretations of urban transformation in Turkey.

JDF476 Microwave Sensing Systems (3-0-3)-5

Concept of microwave sensing, history of it, systems and classification. Microwave radar systems, technological development and its importance on job. Basic and advanced microwave sensing systems and their characteristics. Quality assessment of derived data and contributions to map production.

JDF478 Digital Terrain Models (3-0-3)-5

Digital Terrain Models (DTM). Basic Concepts, curve and surface fitting, regular and irregular SAM. SAM 'the data structures. DTM data formats. Creating a DTM. Perspective views of the terrain, slope, aspect, visibility, etc. analysis.

JDF480 Evaluation of Satellite Data (3-0-3)-5

Introduction to GNSS abd comparing with conventional method. Positioning with code observations. Space geodetic techniques. Positioning with carrier phase observations. Error sources in GNSS. Interpreting GNSS results. GNSS heighting. Baseline solutions, analyzing GNSS networks. International standards and organizations. Commercially available GNSS software.

JDF482 Satellite Geodesy (3-0-3)-5

Coordinate systems utilized in satellite positions, satellite orbits, orbital elements, movements of objects in orbital plane and orbital computations.

JDF484 Geodetic Network Design (3-0-3)-5

Introduction to geodetic network design. Classification of geodetic networks. Turkish National Networks. Test Statistics and Hypothes tests. Global and local precision reliability criteria. Methods for geodetic network design. Design and optimization.

Free Elective Course for Other Departments

JDF901 History of Surveying Science (2-0-2)-3

General information about historical improvement and emergence of mapping. Concept of mapping and the presentation of information and equations which were occurred around it. The scientists who supported the science history and the determination of their supports.

JDF902 Scientists in Surveying History (2-0-2)-3

Names and biographies of scientists who contributed to geodesy. Their scientific achievements and contributions to scientific community of geodesy in chronological order.

JDF903 Mining Subsidence and Problems Caused By (2-0-2)-3

Underground Mining causes ground movements (subsidence) in ground and surface. These subsidences create problems and damages natural and cultural structures which are within the domain. This formation and problems caused by Mining Subsidence will be covered in this course.

JDF904 Satellite Images and Usage Areas (2-0-2)-3

Remote Sensing Satellites and Images, History of development, Usage Areas, Visual Globe Applications (Google Earth, Nasa World Wind etc.) and Samples.

SSP900 Social Responsibility Project (1-2-2)-3

Forming a working group, determination of the objectives and the study areas, procurement of the necessary connections with the institution or organization, preliminary preparations and distribution of tasks, starting of the studies, reported to results of the study and transfer to web page of the department of the presentations prepared.