COURSE LIST FOR PROGRAMME CODE:

1ST YEAR – FALL SEMESTER

GEO105 Introduction to Engineering (2-0-2-3)

The introduction of the University and the Faculty. The regulations, directives and procedures of the University. The introduction Campus, Rectorate, Library and gymnasiyum. The industrial revolution and extensions. The historical development of engineering, the basic characteristics of engineering education, engineering disciplines, professional organizations and institutions for surveying engineering.

GEO113 Use of Basic Computer Techniques (1-2-2-3)

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).

GEO115 Surveying I (2-2-3-5)

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.

FIZ181 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.

FIZ191 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 rigit bodies, learn the moment of inertia.

KIM193 General Chemistry (3 0 2 4)

Basic Chemical Concept. Atomic and Molecular Structure. Chemical Bonds. Chemical Kinetic and Balance. Acid-Bases and Solubility Balance. Oxidization - Reduction Events and Electrochemistry. Chemistry of Water. Chemistry of Energy Resources. Basic Environmental Problems.

TUR181 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

GEO120 Surveying II (2-2-4-5)

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

GEO122 Computer Programming (2-2-3-4)

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

GEO124 Electronical Measurement Technologies and Metrology (2-1-3-3)

Basic Concept of Metrology. Principals, Methods and Types of Measurement. Tolerances and Standards of Measurement. Error Sources of Measurement. Sensor and Measurement Technique. Basic Measurement Devices. Calibration, Procedures and Errors at Calibration. Angle Measurements. Planarity, regularity, perpendicularity and circularity measurements. Laser Micrometer. Margin templates. Screw templates. Linear Displacements. Relative measurement. Measurement techniques at Manufacturing. Traceability, Scheme of Traceability. Electronical Measurement Technologies.

GEO182 Linear Algebra (3 0 3 3)

Lines and Planes, Algebra and Geometry of Vectors, Systems of Linear Equilibrium, Matrix Algebra, Linear Independency, Linear Transformations, Determinant, Complex Numbers, Eigenvalues and Eigen Vectors, Diagonalization, Rotation Matrices, Quadratic Forms, Least Squares.

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.

FIZ182 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.

FİZ192 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

GEO209 Numerical Analysis (3-0-3-4)
Errors in numerical analysis, examples of solutions of linear and non-linear equations.

GEO217 Height Measurements (2-1-3-4)
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.

GEO219 Cartography (3-1-3-4)
Sherical Trigonometry, spherical trianles and solutions, Features of an earth shypherial. Computations on sphere, projecting sphere onto plane, surfaces and curvatures, geodetic curvature.

GEO223 Probability and Statistics (2-1-3-4)
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.

GEO225 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 Engineering Mathematics (3-0-3-4)
Introduction to vectors, Vectors in plane, in space (R3) and in Rn, 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, Ostragradski formulas.

GEO229 Academic Writing & Presentation (1-1-2-2)
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.

AIT281 Principles of Atatürk and Reolution History I (2-0-2-2)
Events, thoughts and principles in the rise and development process of Modern Turkey.

GEO285 Foreign Language III (3-0-3-3)
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

GEO220 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.

GEO232 Computer Aided Drawing (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.

GEO234 Field Work I (1-3-3-3)
Establishment of traverse station, surveying and calculation, prismatic and tacheometric surveying, plot processes in office.

GEO244 Cadastral Foundations (2-0-2-2)
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.

GEO246 Engineering Ethics (1-0-1-1)
Emphasing 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 diciplines.

GEO248 Coordinate Systems (2-0-2-2)
Coordinate Systems and types, the movements of the earth, concept and types of Datum, the movements of earth rotation axis,Terrestrial coordinate systems, Celestial coordinate systems, Orbital coordinate systems, Datum transformations, concept and types of Time.

GEO250 Engineering Mechanic (2-1-3-3)
Basic principles of Static. Intersecting Forces at One Point in a Plane. General Forces in a Plane. Distributed Load. Link Forces and Conveyor Systems (Basic Systems, Jointed Systems, Cage Systems, Ropes and Wires). Forces in Space. Center of Gravity. Friction. Kinematic of a Kinematic of a Physical Point. Kinetic of a Physical Point (Force, Mass, Acceleration, Labor and Energy, Impulse and Moment). Planar Movement of Rigid Bodies. Mechanical Vibrations.

GEO282 Differential Equations (3-0-3-4)
Derivative under integral sign, Introduction to ordinary differential equations, Differential equations of first order, Differential equations with seperable 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 Reolution History II (2-0-2-2)
Events, thoughts and principles in the rise and development process of Modern Turkey.

GEO286 Foreign Language IV (3-0-3-3)
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.

GEO327 Theory of Error and Parameter Estimation (3-0-3-4)
Error and residual concepts. Precision criteria. Correlation. Error propagation law. Weight and invers weight. Subject and fundamentals of Adjustment. Kinds of adjustment. Comparison of kinds of adustment. Calculation of datum transformation parameters.

GEO329 Photogrammetry I (2-2-3-4)
Definition of photogrammetry. Geometrical and mathematical principles. Optical principles. Photographic principles. 3 dimensional/stereoscopic view. Airborne photographs.

GEO333 Database Management Systems (3-0-3-3)
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 data base 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.

GEO335 Global Navigation Satellite Systems (GNSS) (2-1-3-3)
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.

GEO337 Geodesy I (3-0-3-3)
Introduction to Geodesy. The principles, tasks and applications of the geodesy. Geodetic measurements and location methods. The shape of the earth and gravity field. The mathematical model of the earth: rotational ellipsoid. Geoid determination. Gravimetry. Height systems. Gravimetry and altimeter of satellite.

GEO371 Engineering Economics (2-0-2-2)
Basic concept of Management Economy. Purposes and classification of Business. Choosing a Site for Business and Its Establishment. Financial Statements in Management and financial analysis. Depreciation and Depreciation Methods. Time Value of Money, Simple and Compound Interest Calculations, Evaluation of Investment Projects, Profitability Ratio, Payback Period, Net Present Value Analysis, Internal Rate of Return, Benefit Cost Analysis and Purchasing-Lease Analysis.

Vocational Elective I Courses:

GEO345 Basic Image Information (3-0-3-4)
Optics, microwave and laser imaging, 2D-3D image, image coordinate systems, 3D imaging/display techniques.

GEO347 Surveying Applications for Local Governments (3-0-3-4)
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.

GEO349 Cadastral Data and Applications (3-0-3-4)
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.

GEO351 Mine Surveying (3-0-3-4)
The place of mine surveying in geodesy and photogrammetry engineering.

GEO355 Urban and Regional Planning (3-0-3-4)
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.

GEO359 Geodetic Astronomy (3-0-3-4)
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.

GEO361 Equipment Handling (3-0-3-4)
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.

3RD YEAR – SPRING SEMESTER

GEO314 Design and Computation of Geodetic Networks (3-0-3-4)
The concept of the geodetic network and applications. Reference systems and reference surfaces, The reduction of measurements to computation surface.Datum and fiducial networks. Observation models. The precise and accurate coordinate measurements. Adjustment methods. Geodetic Networks Analysis: validity and statistical tests. Optimal design of geodetic networks. New network concepts. The concept of WADGPS and dynamic network.

GEO320 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.

GEO332 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.

GEO334 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.

GEO336 Photogrammetry II (2-2-3-3)
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.

GEO338 Digital Image Processing (2-0-2-2)

General concepts and references about digital image processing. Basics of digital images and image geometry. Digitizing and sampling of images. Aspects of digital image, elements of visual detection. Data structures and algorithms of compression in image processing. Image pre-processing, pixel brightness transformations, geometric transformation. Contrast optimization, linear contrast optimization, image treshholding. Histogram, non-linear optimization. Spatial optimization, spatial, filtering, noise elimination. Image processing at frequency space, low transitive filters, high transitive filters. Morphological image processing algorithms, image segmentation. Image classification, object recognition.

GEO340 Field Work II (1-3-3-3)

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 appoint using precise leveling measurements and performing geodetic corrections to these. Presenting all the observations and computations in a thesis format.

Vocational Elective II Courses:

GEO346 Terrestrial Photogrammetry (3-0-3-4)

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.

GEO348 Programming in Database Man. Sys. (3-0-3-4)

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

GEO350 Hydrographic Surveys (3-0-3-4)

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

GEO352 Cartographical Database Man. Sys. (3-0-3-4)

Cartographic DBMS definition. Relations of DBMS and maps which are used in cartography. Cartographic database management systems design and application.

GEO354 Underground Surveying Techniques (3-0-3-4)

The importance of underground surveying in Geomatics Engineering. Special and geodetic measurements techniques at underground.

GEO356 Photogrammetric Project Management (3-0-3-4)

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

GEO362 Entrepreneurship and Small Business Administration (2-2-3-4)

Concept of Entrepreneurship, Small Business Types, Establishment process of Small Businesses, Small Business Administration, Production, Marketing and Financing, Problems of Small Businesses and Solution Ways.

GEO427 Land Management Project I (2-1-3-3)
Theory and History of Land Use Planning. Laws Related with Land Management. Urban Renewal and Planning the Progress. Sustainable Progress. Approval Requirements at Municipality and City Management. Public Cooperation. Spatial Evaluations. Urban Land Management and Project Application.

GEO437 Engineering Surveys (2-1-3-3)
The Concept Of Surveying Engineering, Processing of Geodetic Data, Digital Elevation Models, Cross-Section, Plan Applications, Area And Volume Calculations, Point Positioning, Building Survey Studies, Cadastral Applications, Alignment Calculations, Curves And Transition Curves, Slope Calculation, Design Of Micro Geodetic Networks, Measurement And Calculation, Control Of Engineering Structures And Deformation Measurements, Industrial Measurements.
To acquire students the ability to implement engineering projects.

GEO439 Remote Sensing (2-1-3-3)
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.

GEO445 Occupational Safety and Health (1-0-1-1)
Concept and History Occupational Safety, Occupational Accidents and Types. Occupation Sickness and Protection. Ergonomy. Occupational Safety for Electrical and Non-electrical Equipment. Protectors at Occupational Safety. Rules of First Aid. Safety Measures at Fire and Explosions. Occupation Law and Regulations. Occupational Safety Investigation.

GEO499 Dissertation Study (0-2-1-5)
A study which includes a subject on vocational research and application will be performed.

GEO441 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.

Vocational Elective III Courses:

GEO443 Realty Valuation (3-0-3-4)
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.

GEO451 Land Information Systems (3-0-3-4)
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.

GEO459 GNSS Applications (3-0-3-4)
GNSS surveys. GNSS surveying and positioning techniques and their types. GNSS observations and observables, data formats. Planning field work and evaluating observations.

GEO465 Expropriation (3-0-3-4)
Expropriation law. Purpose and scope of the expropriation of doing. Expropriation throwing hand. Quick expropriation. The expropriation process applications.

GEO469 Digital Photogrammetry (3-0-3-4)
Definition of Digital photogrammetry, evaluation techniques of digital photogrammetry. Analog and digital cameras, Digital data acquisition techniques. High precision scanners and video digitisers. Raster and vector scanning techniques. Digital image types. Digital image matching methods

GEO473 Laser Scanner Techniques (3-0-3-4)
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.

GEO475 Photogrammetric Applications (3-0-3-4)
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.

GEO421 Web-based GIS Applications (3-0-3-4)
Technology of Web-based GIS applications. OGC standards (WMS, WFS, WCS etc.). GIS Server (GeoServer and ArcGIS for Server) and GIS databases. Publishing GIS data and Geoprocessing tools. Implementing GIS applications at the GIS server. Implementing mobile GIS applications . Geoportals and Mashup applications. Application areas of GIS applications. GIS applications in business and public organizations.

GEO423 Global Positioning Applications (3-0-3-4)
GNSS units and principals; GNSS measurements; GNSS Positioning methods; GPS observations and data formats; Pre observation planing, observations and processing.

4TH YEAR – SPRING SEMESTER

GEO434 Project Management and Innovation (2-1-3-4)
Definition of project management. Historical progress of project management. Components of project management and main definitions. Project and project management terms for engineers. Planning and programming. Project management, organization, planning, coordination, control and auditing. Project planning and CPM-Pert diagram applications. Creativity, inovation, problem solving, progress, product optimization.

GEO474 Land Management Project II (2-1-3-3)
Theory and History of Land Use Planning. Laws Related with Land Management. Planning of Progress and Management of Rural Lands with Respect to the Urban Renewal Law. Sustainable Progress Rural Lands. Public Cooperation. Spatial Evaluations at Rural Lands. Urban Land Management and Project Application.

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.

GEO494 Dissertation Study(ii) (0-2-1-5)
A study which includes a subject on vocational research and application will be performed.

Vocational Elective IV Courses:

GEO432 Road Management (3-0-3-5)
Historical background of roads in the world, Classification of roads, main concept of roads. Geometric components of roads, Main definitions about horizontal and vertical curves and mathematical concepts, Determination and application of the geometry of the horizontal and vertical position for roads. Bruckner and cubage computations. Applications abour road projects.

GEO446 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.

GEO460 Deformation Measurement (3-0-3-5)
Tectonic movements. landslides and subsidence. Man-made deformations. Structural deformations. Deformation monitoring techniques. Analysis methods.

GEO464 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.

GEO468 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.

GEO476 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.

GEO478 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.

GEO482 Industrial Measurements (3-0-3-5)
Geodesic Expectations in Industrial Production, Scale of Shape and Position, Tolerance, Tolerance of Shape, Tolerance of Position, Machine, Product and Facility Coordinate System, Technological Measurement Methods, CCD Line and Area Cameras, Tachometric Survey Systems, Polar Scanners, Interferometric Shape Control, Coordinate Measurement Equipment, Example Applications.

GEO484 Environment Protection and Disaster Applications (3-0-3-5)
Disaster Management. Compounds of Disaster Management. Natural Disasters. Technological Disasters. Global and Regional Disasters. Hazard Analysis. Damage Reduction Strategies. Damage Assessment. GIS-Based Disaster Management. Creating Disaster Scenarios. Applications. Knowledge of Environment Regulations, Risk Analysis, Waste Storage, Personal Protection Precautions. International Health and Safety Warnings, Employee Health and Occupational Safety Regulations.

GEO486 Irrigation and Drainage (3-0-3-5)

Irrigation, Plant, water, and soil relationships. Crop water requirement calculations. Irrigation methods. Irrigation networks. Water distribution methods. Drying of agricultural land drainage. Drainage network design.

Free Elective Course for Other Departments

GEO901 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 occured around it. The scientists who supported the science history and the determination of their supports.

GEO902 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.

GEO903 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.

GEO904 Satellite Images and Usage Areas (2-0-2-3)

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

GEO905 Orienteering (2-0-2-3)

Oryantiring dersine giriş, Oryantiring'in tanım ve tarihçesi, Oryantiring ile ilgili kavramlar, Harita kavramı ve sembolleri, harita okuma, harita-kenar bilgileri, Yön bulma ve mesafe tahmini, Arazi topoğrafyası ve kesit kavramı, Oryantiring sporu ve yarışması hakkında bilgiler, uygulama.