Course	Credit	duration (hour)	Description
Geology Lab	1	24	
Engineering Geology	2	24	The nature and scope of physical geology, matter and energy. Minerals. Igneous activity and rocks, Sedimentary rocks, metamorphic rocks, erosion on hill slopes, running water, underground water, tectonic. Earthquakes.
Physics Lab I	1	24	Implementing theoretical principles of Mechanical Physics in a physical laboratory in practical ways.
Physical Education I	1	24	General Physical Education and Track and Field.
Industrial Drawing 1	2	24	Introduction to the concept of engineering drawing, orthographic drawing sketching, sections and conventions. Pictorial drawing and sketching, isometric and oblique, two point perspective, additional short problems in Architectural drawing.
Physics I	3	48	Principles of Mechanical Physics.
Calculus I	3	48	Mathematical principles such as limit, Integral, series and etc.
Islamic Thought 1 (Beginning and Resurrection)	2	24	
Analytical history of beginning Islam	2	24	
Thematic interpretation of the Quran	2	24	
Statics	3	48	Force systems, equilibrium, structures, distributed forces, friction, moments and products of inertia.
Principles of Arch. & Urban Planning	2	24	Lecture-seminar on aspect of aesthetic in architectural design, architectural criticism.
Persian Language	3	48	Discussing the poems and proses from old Persian literature.

Differential Equations	**3**	**48**	**Principles of Differential Equations, Different ways of solving equations with a programming project in a related subject.**
Physics II	**3**	**48**	**Principles of thermodynamics and electromagnetism Physics.**
Calculus II	**3**	**48**	**Advanced principles of mathematics and instructions for solving equations.**
Dynamics	**3**	**48**	**Dynamics of particles & rigid bodies at general plane motion including kinematics, dynamic equilibrium, work & energy, and impulse & momentum.**
Construction Materials	**2**	**24**	**Cement, aggregates, and concrete building units concrete admixtures, brick and tile, stone, ferrous and nonferrous metals, gypsum and lime, glass, bituminous materials, building papers, plastics, building boards, exterior wall materials, flooring & roofing materials, insulating materials, acoustical materials interior finishing materials, adhesives, sealers, sealants, protective and decorating coatings.**
Mechanics Of Materials I	**3**	**48**	**Tension, compression, torsion, bending, shear, combined stresses in beams and frames, Mohr circle, beam deflection, buckling of column.**
Surveying Theory and Practice 1	**2**	**24**	**Introduction, shape and size of the earth, theory of errors, measurement of distance, angle and elevation, surveying network, plane and topographic surveying.**
Probability & Statistics	**3**	**48**	**Principles of Statistics and Probabilities in civil engineering and Analysis of Probabilistic problems.**
Computer Programming	**3**	**48**	**taught Fortran programing language**
Sport 1	**1**	**24**	
Islamic Revolution in Iran	**2**	**24**	

Structural Analysis I	**3**	**48**	**Determinacy and Indeterminacy, stability, internal forces of frames, trusses, zero load method, influence line, deflection of structures, area moment method, virtual work, unit load method, settlement, thermal effect, misfit, force method, three moment equation.**
Concrete Technology	**2**	**24**	**Cement, aggregates, water, fresh concrete, mixing, handling,placing, compacting, admixtures, temperature problems, testing, mix design**
Mechanics Of Materials II	**2**	**24**	
Fluid Mechanics	**3**	**48**	**Fluid statics: pressure force on surfaces, buoyancy, fluid dynamics: continuity, energy and momentum principles, dimensional analysis & hydraulic similitude, drag force, laminar flow, flow in pipes.**
Soil Mechanics	**3**	**48**	**In this course, the physical and mechanical properties of soil are discussed. These properties are categorized in seven subjects as: Strength of soil, permeability, compaction, consolidation, stress distribution, slope stability and ranking states of equilibrium.**
Numerical Computation	**2**	**24**	**Numerical Calculations in mathematical problems and instructions to solving equations by numerical methods.**
Islamic Thought II (Prophethood and Imamat)	**2**	**24**	
Islamic Ethics (Principles and Concepts)	**2**	**24**	
Construction Materials Lab	**1**	**24**	**Evaluation of chemical, physical, and mechanical properties of Portland cement, lime, gypsum, stone, mineral aggregates, fresh and hard concrete, brick and tile, ... in accordance with specification and designation indicated in annual book of ASTM Standards.**

Soil Mechanics Lab	**1**	**24**	**Standardized laboratory tests for determination of soil engineering properties which are defined in soil mechanics.**
Engineering Economics	**2**	**24**	
Structural Analysis II	**2**	**24**	**Indeterminate structures, displacement methods, slope deflection, moment distribution, influence lines, non-prismatic beams.**
Reinforced Concrete Structures I	**3**	**48**	**Introduction, physical and mechanical properties ofconcrete, design methods and requirements, analysis and design of rectangular, T, I section in bending, shear,torsion, members in compression and bending, interaction curves for columns, effect of slenderness in design ofcolumns.**
Steel Structures I	**2**	**24**	**General principles of structural design, mechanical properties of steel, tension member, design of beam, design of compression member, design of member in bending and compression, castellated beams, design of base plates.**
Environmental Engineering	**2**	**24**	**Principles of physical and chemical treatment of water and wastewater, Hydraulic analysis of water systems, air quality, waste of factories & … .**
Hydrology	**2**	**24**	**Hydrological cycle, atmospheric water, precipitation, hydrological abstractions, surface water, rainfall-runoff relationships, groundwater, statistical hydrology.**
Hydraulics	**2**	**24**	**Types of flow in open channels, specific energy, critical depths, constant head energy, principles of momentum in open channels flow, uniform flow, gradually varied flow.**
Highway Engineering	**2**	**24**	**Earthwork, circular curves, compound and reverse curves, parabolic vertical curves, transition spirals, element of highway safety: curve super elevation, widening on curves, sight distance, intersections**

Hydraulics Lab	**1**	**24**	**Friction pipes & joints, hydraulic jump in open channel, hydrostatic force on surfaces, flow discharge measuring devices, jet impact**
Loading	**2**	**24**	**Probability laws for wind, earthquake and live loads, forces generated by wind, Iranian code, forces generated by earthquakes, Iranian code & U.B.C. approach, vertical loads, approximate solutions for vertical & horizontal loads, some systems to carry vertical & horizontal loads.**
Hydraulic Structures	**3**	**48**	**Design principles for small dams. Design of openchannels. Intakes and turnouts. Design of weirs on permeable foundations. Design of hydraulic jump stillingbasins. Water conveyance structures.**
Reinforced Concrete Structures II	**2**	**24**	**Bond stress and development length, one way slabs, two way slabs, yield line theory, foundations, crack widths and deflection, shear friction, corbels.**
Steel Structures II	**2**	**24**	**Analysis and design of beams by plastic methods design of composite beams, design of plate girders; torsion in I beams bolts, welds, design of connections.**
Construction Equipment	**2**	**24**	**Operational hydraulic systems excavators, loaders, crawler road engineering tractors, rollers, graders, scrapers, management project control, road construction Method**
Water & Wastewater Engineering	**2**	**24**	**Practices in the analysis and design of municipal water distribution system.**
English Language	**3**	**48**	**Describing English Grammar and Vocabulary with reading and writing homework and periodical English Exams.**
Family Schematization and Population	**2**	**24**	
Training I	**2**	**24**	
Pavement Lab	**1**	**24**	**Perform bitumen and asphalt tests.**

Principles Of Earthquake Engineering	**3**	**48**	**Earthquake signals & filtration, baseline correction, frequency filtering method, low-pass & high-pass filters, modal analysis under earthquake loading, spectra & response spectrum, earthquake codes, earthquake damage, shaking table tests.**
Water & Wastewater Engineering Project	**1**	**24**	**Introduction to municipal water and wastewater treatment and network systems: sources of public water supply, water quality and quantity requirements, design and analysis of water distribution network, quantity and characteristics of wastewater, design of wastewater collection systems, fundamentals of water and wastewater treatment processes.**
Foundation Engineering I	**2**	**24**	**Subsurface exploration, ultimate bearing capacity ofshallow foundations, settlement of shallow foundations, lateral earth pressure and retaining walls, pilefoundations.**
Mechanical & Electrical Equipment	**2**	**24**	
Pavement Engineering	**2**	**24**	**Stress in flexible pavements, materials characterization, climate and environmental effects, sub grade stabilization, design of flexible pavements, pavement distress, flexible overlay design, geo grade use in asphalt overlays.**
Technical English Language	**2**	**24**	**Technical terms in areas of: Drawing, concrete, materials, construction, soil, road, structures, transportation, water, etc... are discussed.**
Traffic Engineering	**2**	**24**	**Elements of traffic engineering, travel time and delay studies, spot speed studies, volume studies, traffic theory, highway capacity, parking studies, traffic control devices.**
Physics Lab II	**1**	**24**	
Foundation Engineering Project	**1**	**24**	**Design and analysis of foundations of different structures. This course had a final project by Safe software.**

Highway Engineering Project	**1**	**24**	**Design of a highway, and highway facilities**
Reinforced Concrete Structures Project	**1**	**24**	**A complete concrete structure project design including a building site concrete slab and shear wall. Design of all structural elements in the building.**
Steel Structures Project	**1**	**24**	**Analysis and design of a building and or an industrial building.**
Railway Engineering	**2**	**24**	
Construction Methods	**3**	**48**	
Project Evaluation & Cost Estimation	**1**	**24**	**General Introduction to get acquainted with types of contract,conditions of contract and getting tenders. Developing relationship with employer, consulting engineers,contractor, and formulating duties of groups. Methods of measurement for some type of constructions. Costanalysis for different types of constructions.**
Transportation Engineering	**2**	**24**	**Trip generation, distribution modeling, modal split, traffic assignment**
Introduction To Construction Project Management	**2**	**24**	**A basic project management and working with Microsoft Project**