

EASTERN MEDITERRANEAN UNIVERSITY

MECHANICAL ENGINEERING DEPARTMENT

COURSE DESCRIPTIONS

MENG104 Engineering Graphics

Principles of engineering graphics with the emphasis on laboratory use of AUTOCAD software. Plane Geometry, geometrical constructions, joining of arcs, Dimensioning principles, principles of orthographic projection, isometric and oblique drawing, principles of sectioning, reading engineering drawing from blueprints.

Credits: (2 / 3 / 0) 3

Prerequisites: None

MENG190 Introduction to Mechanical Engineering

This course aims to familiarize first year mechanical engineering students by introducing them to the fundamentals of discipline; job opportunities for mechanical engineers; basic study skills; an overview of fundamentals laws and principles of mechanical engineering; introduction to problem layout and problem solving methods; simplified engineering modeling and analysis of mechanical systems; collection, manipulation and presentation of engineering data; ethical issues; and the importance of computers and language skills for effective communication.

Credits: (1 / 0 / 1) 1

Prerequisites: None

MENG286 Materials Science

Crystal structure and crystal geometry phase diagrams of alloy systems, heat treatments applied to metallic materials and plain-carbon steels. Mechanical properties of metals stress-strain in metals, tensile test, hardness and hardness testing, fatigue and fracture of metals, impact test, creep of metals and creep test. Strengthening and plastic deformation of metals. Mechanical properties of ceramics, glasses, polymers and composites. Corrosion of metals. Material selection based on mechanical properties.

Credits: (3 / 1 / 0) 3

Prerequisites: CHEM101

MENG245 Thermodynamics-I

Basic concepts and definitions. Properties of pure substances. The first law of thermodynamics: closed and open systems. The second law of thermodynamics. Entropy. Second-Law analysis of engineering systems.

Credits: (3 / 1 / 0) 3

Prerequisites: None

MENG203 Experimental Methods for Engineers

Principles and methods of experimentation. Sensing devices, measuring devices and their limitations. Designing and planning experiments; data analysis, error analysis and uncertainty analysis. Performing and reporting of experiments.

Credits: (1 / 3 / 0) 2

Prerequisites: None

MENG246 Thermodynamics-II

Gas power cycles. Vapor and combined power cycles. Refrigeration cycles. Thermodynamic property relations. Gas mixtures. Gas-vapor mixtures and air conditioning. Chemical reactions. Chemical and phase equilibrium. Thermodynamics of high speed fluid flow.

Credits: (3 / 1 / 0) 3

Prerequisites: MENG245 & MENG203

MENG222 Strength of Materials

Definition of stress, strain. Hook's law. Constitutive relations for uniaxial stresses. Shearing stress and strain. Torsion of circular members. Thin walled pressure vessels. Relations between bending moment, shearing force and distributed loads. Bending of beams with symmetrical sections. Bending of composite beams.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG231 or CIVL211

MENG233 Rigid Body Dynamics

Kinematics of rigid bodies. 2-D rigid body dynamics, D`Alembert's principle. Energy Methods. Principle of impulse and momentum Angular momentum in 3-D Motion about a fixed axis. Un-damped vibration of rigid bodies.

Credits: (4 / 0 / 1) 4

Prerequisites :MENG231 or CIVL211

MENG201 Mechanical Workshop Practice

This is to be conducted in the Mechanical Engineering Department's workshops by all Mechanical Engineering students who have completed a minimum of three semesters in the program. Students will perform various hand and machine tool operations under staff supervision. It includes introduction to engineering materials, and selected practices on laying-out and setting out a job, using measuring devices. At the end of the training students will be required to complete a report regarding their training.

Credits: (1 / 3 / 0) 2

Prerequisites: None

MENG353 Fluid Mechanics

Fluid static's and forces on submerged bodies Introduction to kinematics of fluid flow. Energy, continuity and momentum equations. Navier-Stokes equations. Viscous flow through closed conduits. Fundamentals of boundary layer analysis. Dimensional analysis. Potential flow. Introduction to hydraulic machinery.

Credits: (4 / 1 / 0) 4

Prerequisites: MATH207

MENG364 Manufacturing Technology

Fundamentals and principles of major manufacturing processes: casting, bulk deformation, sheet metalworking, powder metallurgy. Processing of polymers, ceramics, glass, rubber and composites. Metal cutting: cutting conditions, forces, temperatures, tool life, surface finish, coolants. Cutting tool materials. Principles, tools and process capabilities of basic machining operations: turning, milling, drilling, planning, shaping, boring, broaching. Gear manufacturing. Abrasive operations: grinding, finishing operations. Non-traditional processes. Basics of joining and assembling. Fusion and solid-state welding. Essentials of computer numerical control.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG286

MENG331 Dynamics of Machinery

Mechanical vibrations: 2-DOF vibrating systems, vibration measuring instruments, numerical methods for multi-degree of freedom systems, Dunkerley's equations, vibration of continuous systems, random vibrations. Balancing of machinery: rigid rotors, reciprocating machines, flywheels, planar linkages, balancing machines and instrumentation. Cam dynamics, gyroscopes and governors.

Credits: (4 / 1 / 0) 4 Prerequisites: (MENG233 or MENG231) and (MATH207 or MATH241)

MENG375 Machine Elements-I

The course covers fundamentals of machine design which include: general design rules, load analysis, materials selection, stress, strain and deflection analysis, failure theories, the concepts of reliability and safety, tolerances and fits; and introduces design guidelines.

Credits: (3 / 0 / 1) 3

Prerequisites: MENG222

MENG332 Systems Control

Control engineering mathematics, complex variables and Laplace transforms. Initial and final value theorems. Introduction to practical controllers and control principles. Mathematical modeling of dynamic systems, transfer functions and block diagrams, transient response analysis, stability analysis. Analysis of systems, deviation of transfer function and frequency response for various systems, devices and elements.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG331

MENG345 Heat Transfer

Introduction, Conservation Laws, Introduction to conduction, One-dimensional steady state conduction, thermal generation, and extended surface, Two-dimensional and transient conduction, Introduction to convection, External Flow, Internal Flow, Free Convection, Boiling and Condensation, Heat Exchangers, Thermal Radiation, Absorption, reflection, and transmission, Radiation exchange, Mass Transfer.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG245 & MATH207

MENG376 Machine Elements-II

Mathematical models and equations for: fasteners and power screws, springs, bearings, gears, shafts, clutches and brakes, belt and chain drives. Force and stress analysis of gears and gear systems. Cam and follower systems. Systematic approach to design. Students will have an opportunity to work on a design project using learned knowledge.

Credits: (3 / 0 / 1) 3

Prerequisites: MENG375

MENG303 Principles of Computer Aided Engineering

Integration of computers into the design cycle. Interactive computer modeling and analysis. Geometrical modeling with wire frame, surface, and solid models. Finite element modeling and analysis. Curves and surfaces and CAD/CAM data exchange. The integration of CAD, CAE and CAM systems.

Credits: (2 / 3 / 0) 3

Prerequisites: MENG104

MENG410 Introduction to Capstone Design

The course aims to prepare the senior year students for their capstone design projects, and to provide guidance with the selection of their project advisors, topics and teams. The students are introduced to the basic features of the Capstone Design process, elements of a Capstone Project Report and written oral presentation techniques.

Credits: (1 / 0 / 1) 1

Prerequisites: D.C**

MENG400 Summer Practice

This is a period comprising a minimum of 40 days' training to be completed in an industrial organization by all students who are effectively in their junior or senior year. Students should obtain approval of the Department before commencing training. Following this training, students will be required to write a formal report and give a short presentation before a committee regarding their training.

Credits: (0 / 0 / 0) 0

Prerequisites: MENG364

MENG411 Capstone Team Project

The purpose of the course is to develop an understanding of independent research through the study of a particular Mechanical Engineering topic of interest. The special project is an exercise in the professional application of specialist skills and experience developed in Mechanical Engineering program. Research topics, which may be principally experimental, theoretical or applied, will be chosen in consultation with a project supervisor.

Credits: (1 / 4 / 0) 3

Prerequisites: MENG410 and **MENG400**

Area Elective Courses

MENG402 Finite Element Analysis

Analysis of stress and strain; constitutive equations; plane problems of elasticity; the finite element concept; one- and two-dimensional finite element formulation techniques; transformations, assembly and solution techniques; introduction to three-dimensional finite elements; project assignments of one-and two-dimensional problems.

Credits: (4 / 1/ 0) 4

Prerequisites: MENG375

MENG403 Reliability Engineering

Probability concept and probability distribution functions. Probability distributions for describing failures. Failure data. Reliability of simple system. Reliability and availability of system with repair. Redundancy. Fault tree and event tree analysis. Risk concept and risk assessment.

Credits: (4 / 1/ 0) 4

Prerequisites: MATH322

MENG421 Fracture Mechanics

Elements of fracture mechanics; transition temperature approach to fracture control; micro-structural aspects of fracture toughness; environment-assisted cracking and metallurgical embrittlement; fatigue crack propagation; analysis of engineering failures.

Credits: (4 / 1/ 0) 4

Prerequisites: MENG222

MENG422 Automotive Engines

Internal combustion engines; two stroke and four stroke engines; spark ignition engines; compression ignition engines; basic engine parts; valve trains and timing diagrams; lubrication systems; cooling systems; fuel injection systems and ignition systems; advanced engineering- materials in automotive field.

Credits: (4 / 1/ 0) 4

Prerequisites: MENG246 or MENG244

MENG423 Automotive Systems

Power train; gear box; clutch; drive shafts; differential; steering systems; directional stability; tires and thread patterns; suspension and intelligent suspension; chassis and body; body structure; aerodynamics; automobile air conditioning; airbag; brake systems and EBD; ABS; alternative fuel; electrical and electronic circuits; charging; lighting.

MENG487 Elasticity and Plasticity

Theory of deformation, stress and strain; three-dimensional equations of elasticity; plane theory of elasticity; prismatic bar subjected to end load; thermal stress; yield criteria of beams, rings, plates; mechanics of metal forming.

Credits: (4 / 1 / 0) 4 Prerequisites: MENG222

MENG473 Mechanical Vibrations

Undamped and damped free vibration; forced vibrations with harmonic excitation; transient vibrations; systems with two degrees of freedom; vibration of continuous systems and Modal Analysis.

Credits: (4 / 1 / 0) 4 Prerequisites: MENG331

MENG441 Internal Combustion Engines

Air standard cycle analysis; chemical stoichiometry and dissociation, chemical equilibrium; calculation of temperature rise in a combustion reaction with dissociation; combustion in SI engines; combustion in diesel engines; mixture requirements for SI and diesel engines; performance characteristics of internal combustion engines; turbocharging; supercharging of internal combustion engines.

Credits: (4 / 1 / 0) 4 Prerequisites: MENG246 or MENG244

MENG442 Solar Engineering

Introduction to solar energy; sun-earth geometric relations; solar radiation; energy requirements in buildings; solar energy collectors; energy storage; solar energy process economics; solar cooling processes; passive solar gain systems; solar thermal power; photovoltaic convertors.

Credits: (4 / 1 / 0) 4 Prerequisites: MENG345

MENG443 Heating, Ventilation and Air Conditioning

Psychrometrics and elementary psychrometric processes; simultaneous heat and mass transfer in external flows; direct contact transfer devices; heating and cooling coils-compact heat exchangers; thermal comfort; hot water heating systems; heating and cooling load calculations; vapor compression refrigeration cycles.

Credits: (4 / 1 / 0) 4 Prerequisites: MENG345

MENG445 Thermal System Design

Analysis, design and optimization of thermal systems using microcomputers; modeling of thermal systems and components; analysis of thermal system component characteristics and their effect on overall system performance; relationship among thermal sciences in design process; safety, reliability and economic considerations of thermal system.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG345

MENG446 Thermal Power Engines

Application of the basic principles of thermodynamics, fluid mechanics and heat transfer; fuels, combustion, nuclear reactors, steam generating units; steam and gas turbines, pumps, blowers and compressors; design of power cycles and the associated component parts.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG246

MENG449 Introduction to Energy Management

Fundamentals of energy; energy audit and energy audit report; energy auditing on mechanical and electrical systems; energy efficiency in buildings with an emphasis on passive and active solar energy use; project work on energy audit/energy-efficient design of buildings.

Credits: (4 / 1 / 0) 4

Prerequisites: None

MENG452 Hydraulic Machinery

Similarity relations and general theory; Pelton wheel; Francis turbine and propeller turbine; centrifugal pumps; axial and mixed pumps; pump combination; cavitation in hydraulic machines.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG353

MENG453 Gas Dynamics

Introductio; integral forms of conservation equations; differential forms of conservation equations; one-dimensional flow; oblique shock and expansion waves; quasi one-dimensional flow; unsteady wave motion; linearized flow; numerical techniques.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG246

MENG454 Fundamentals of Flow Measurement

Fluid properties; measurement and accuracy; influence quantities; flow-meter selection; introduction to differential producers; differential producers design information; linear flow-meters.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG353

MENG461 Injection Mold Design

Classification of tools; plastic materials; injection mold design for thermo multi-plastics; injection and feed system; mold cooling; worked example of simple injection molds; molding internal undercuts and threaded components; introduction of multi-daylight and runnerless molds; molds for thermo-setting materials: compression, transfer and injection mold tools; extrusion and blow molding dies.

Credits: (4 / 1/ 0) 4

Prerequisites: MENG364

MENG462 Metrology and Quality Control

Basic consideration of measurement and review of standards; geometric and kinematic principles of instrument design; magnification systems; sources of error in measurement; interferometry and interferometers; flatness and surface texture; machine tool alignment; measurement of gears and screw threads; control of quality; factors affecting quality; statistical methods; sampling schemes; control charts and their interpretations; sampling techniques.

Credits: (4 / 1/ 0) 4

Prerequisites: MATH322

MENG463 Tool Drawing and Design

Principles of tool design; location systems; principles and methods of clamping; cutting tool guidance; fool-proofing; swarf removal; table fixing; ejection; jig feet; trunnions and indexing mechanisms; the use of standard parts; jig and fixtures construction; cutting tools: types, geometry, and important features; press tool design; design assignments on jigs and fixture.

Credits: (4 / 1/ 0) 4

Prerequisites: MENG364

MENG464 Computer Integrated Manufacturing

What is CIM; CIM definition; CIM environment; CIM benefits; Business perspectives for CIM; objectives of manufacturing business; the business characteristics of CIM systems; components of a CIM architecture; simulation, group technology; networks; concurrent engineering; decision support systems; expert system; CAD/CAM; information and material flow in manufacturing; modeling methodology and related tools in analysis and design of CIM for medium size companies.

Credits: (4 / 1/ 0) 4

Prerequisites: None

MENG471 Mechanisms

Mobility and structural analysis; kinematic analysis of planar mechanisms; kinematic analysis and synthesis of linear mechanical systems; direct rolling and sliding contact; involute and cycloidal curves; speed ratios; simple and compound gear trains; kinematic analysis of four-link mechanisms; kinematic synthesis of planar mechanisms; two and three positions of a plane; designing with four positions; cam mechanisms and design; intermittent motion mechanisms; introduction to spherical mechanisms; Hooke's joint; the rotary step mechanisms.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG233

MENG472 Machine Design

Concepts of design and engineering design; design process; modeling and simulation; use of computers in engineering design; introduction to cad; design optimization; reliability; case studies in machine design; special topics in machine design.

Credits: (4 / 1 / 0)

Prerequisites: MENG233 or MENG231

MENG481 Engineering Fracture Mechanics

Griffith energy balance approach; Irwin's modification to the Griffith theory; stress intensity approach; crack tip plasticity; fracture toughness; elastic stress field approach; finite specimen width for the stress intensity factor; centered crack specimen; edge-notched specimen; elliptical cracks; fatigue factors affecting crack propagation; prediction of fatigue crack growth; SN curves; cyclic stresses; fatigue life calculations; materials design for fracture toughness; failure analysis.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG375

MENG482 Engineering Metallurgy

Mechanical and non-destructive tests; equilibrium diagrams and their interpretation; hardening of metals; deformation and annealing of metals; heat treatment of steels; corrosion and oxidation phenomena; alloy steels; non-ferrous metals and alloys; cast irons.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG286

MENG483 Mechanical Metallurgy

Elastic and plastic behavior; engineering stress-strain curve; true stress-true strain curve; yielding criteria for ductile metals; combined stress tests; torsion test; strengthening mechanisms: strengthening from grain boundaries; solid-solution hardening; strengthening from fine particles; fiber strengthening; martensite strengthening; fracture mechanics; Griffith theory; strain-energy release rate; fracture toughness and design; toughness of materials; transition-temperature curve; fatigue of materials; creep and stress rupture.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG286

MENG485 Fatigue Failure

Factors affecting fatigue behavior; fatigue analysis of combined stress systems; cyclic material behavior; formation of fatigue cracks; low cycle fatigue (LCF); high cycle fatigue (HCF); failure mechanisms in practice; materials aspects of fatigue; assessment of crack formation life; determination of stress and strain at a concentration; predicting crack formation life; fracture mechanics and fatigue crack propagation; critical flaw size in fatigue; factors influencing crack propagation life.

Credits: (4 / 1 / 0) 4

Prerequisites: MENG286

MENG475 Biomechanics

Introduction to Mechanics and Biomechanics. Statics, Kinematics and Dynamics. Coordinate Systems. Musculoskeletal Tissues and Biomaterials. Stress-Strain Analysis and Joint Contact Problems. Software for Biomechanical Analysis.

Credits: (4 / 0 / 1) 4

Prerequisites: MENG233 and MENG286

Compulsory Courses Offered by Other Academic Units

CMPE108 Algorithms and Programming

Introduction to Fortran, Visual Basic (VB) and Matlab programming languages: data types, constants and variables; program structures. Selection, and repetition structures and functions. Concepts of Object Oriented programming. Loops and Multi dimensional arrays. File processing. Formatted I/O. Random file access. Index structures, file organization and database applications.

Credits: (2 / 3 / 0) 3

Prerequisites: None

Department offering the course: CMPE Department

ENGL191 Communication in English I

ENGL 191 is a first semester freshman academic English course The purpose of this course is to consolidate and develop students' knowledge and awareness of academic discourse, language structures and lexis. The prime focus will be on the further development of writing, reading, speaking and listening skills in academic settings, and on improving study skills in general.

Credits: (3 / 1 / 0) 3

Prerequisites: None

Department offering the course: Department of General Education

MATH151 Calculus – I

Limits and continuity. Derivatives. Rules of differentiation. Higher order derivatives. Chain rule. Related rates. Rolle's and the mean value theorem. Critical Points. Asymptotes. Curve sketching. Integrals. Fundamental Theorem. Techniques of integration. Definite integrals. Application to geometry and science. Indeterminate forms. L'Hospital's Rule. Improper integrals. Infinite series. Geometric series. Power series. Taylor series and binomial series.

Credits: (4 / 0 / 1) 4

Prerequisites: None

Department offering the course: 41 – Department of Applied Mathematics & Computer Science

PHYS101 Physics I

Families of physical quantities having different dimensions, units and rules of mathematics. Vector mathematics and calculus, their applications to motion. Newton's laws. Integrals of the second law, work-energy, impulse-momentum, conservation of energy and momentum, applications. Rotations. Static equilibrium.

Credits: (4 / 1 / 0) 4

Prerequisites: None

Department offering the course: 42 – Department of Physics

CHEM101 General Chemistry

Atoms, molecules and ions; Mass relations in chemistry, stoichiometry; Gasses, the ideal gas law, partial pressures, mole fractions, kinetic theory of gases; Electronic structure and the periodic table; Thermo chemistry, calorimetry, enthalpy, the first law of thermodynamics; Liquids and Solids; Solutions; Acids and Bases; Organic Chemistry.

Credits: (4 / 0 / 1) 4

Prerequisites: None

Department offering the course: 43 – Department of

ENGL192 Communication in English II

ENGL 192 is a second semester freshman academic English course. The purpose of this course is to further consolidate and develop students' knowledge and awareness of academic discourse, language structures and lexis. The prime focus will be on the further development of writing, reading, speaking and listening skills in academic settings, and on improving study skills in general.

Credits: (3/ 1/ 0) 3

Prerequisites: ENGL191

Department offering the course: Department of General Education

MATH152 Calculus-II

Vectors in R^3 . Lines and Planes. Functions of several variables. Limit and continuity. Partial differentiation. Chain rule. Tangent plane. Critical Points. Global and local extrema. Lagrange multipliers. Directional derivative. Gradient, Divergence and Curl. Multiple integrals with applications. Triple integrals with applications. Triple integral in cylindrical and spherical coordinates. Line, surface and volume integrals. Independence of path. Green's Theorem. Conservative vector fields. Divergence Theorem. Stokes' Theorem.

Credits: (4 / 0 / 1) 4

Prerequisites: MATH151

Department offering the course: 41 – Department of Applied Mathematics & Computer Science

PHYS102 Physics-II

Kinetic theory of ideal gases. Equipartition of energy. Heat, heat transfer and heat conduction. Laws of thermodynamics, applications to engine cycles. Coulombs law and electrostatic fields. Gauss's law. Electric potential. Magnetic field. Amperes law. Faradays law.

Credits: (4 / 1 / 0) 4

Prerequisites: PHYS101

Department offering the course: 42 – Department of Physics

TUSL181 Turkish as a Second Language

TUSL181 is a Basic Turkish course introducing the Turkish language. It incorporates all four language skills and provides an introduction to basic grammar structures. Students will be encouraged to develop their writing skills through a variety of tasks. The aim of this course is for students to be able to understand and communicate in everyday situations, both in the classroom and in a Turkish-speaking environment.

Credits: : (2 / 0 / 0) 2

Prerequisites: None

Department offering the course: Department of General Education

HIST280 History of Turkish Reforms

19. century state of the Ottoman Empire (Constitutional Period), Tripoli and the Balkan Wars, World War II and the results, the Guilds, the War of Independence, Cease Fire Ant., Lausanne, Ant.

Credits: (2 / 0 / 0) 2

Prerequisites: None

Department offering the course: HC – ATATÜRK Research Center

CIVL211 Statics

Basic definitions, concepts and principles. Statics of particles, resultant of forces in space, equilibrium and free-body concept. Statics of rigid bodies, moments, force couples and equivalent force systems. Equilibrium of rigid bodies. Distributed forces, centroids and centers of gravity. Definition of determinacy of structures, analyses of statically determinate structures including trusses, beams, frames and arches. Analysis of cables. Shear force and bending moment diagrams. Friction. Moment of inertia.

Credits: (4 / 0 / 1) Prerequisites:PHYS101

Department offering the course: Civil Engineering

MATH106 Linear Algebra

Matrices, systems of Equations and Inevitability, Diagonal, Triangular and Symmetric Matrices, The Determinant Function, Evaluating Determinants by Row Reduction, Properties of the Determinant Function, Cofactor Expansion; Cramer's Rule, Euclidean n-space, Linear Transformation, Properties of Linear Transformations, Real Vector Spaces, Subspaces, Linear Independence, Basis and Dimension, Row Space, Column Space and Nullspace, Rank and Nullity, Inner Products, Angle and Orthogonality in Inner product Spaces , Orthogonal Bases; Gram-Schmidt Process, Eigenvalues and Eigenvectors, Diagonalization.

Credits: (3 / 1 / 0) 3 Prerequisites: None

Department offering the course: 41 – Department of Applied Mathematics & Computer Science

MATH207 Differential Equations

First-order differential equations. Higher order homogeneous linear differential equations. Solution space. Linear differential equations with constant coefficient. Non-homogeneous linear equations; variation of parameters, operator methods. System of linear differential equations with constant coefficients. Laplace transforms. Power series solutions. Bessel and Legendre equations. Orthogonal functions and Fourier expansions. Introduction to partial differential equations. First- and second-order linear PDE's. Separation of variables. Heat and wave equations.

Credits:(3/1/0)3 Prerequisites:MATH151

Department offering the course: 41 – Department of Applied Mathematics & Computer Science

ENGL201 Communication Skills

ENGL 201 is a second year Mainstream Communication Skills course for students at the Faculty of Engineering. The course aims to introduce a range of skills, including effective written and oral communication, research skills and study skills. Throughout the course the students will be involved in project work intended to help them in their immediate and future academic and professional life. This will include library research, technical report writing and an oral presentation. By investigating a topic of their own choice, students will develop their understanding of independent research skills. During the report writing process, students will improve their writing and develop the ability to produce organized, cohesive work. The oral presentation aims to enhance spoken fluency and accuracy and provide training in the components of a good presentation.

Credits:(3 / 0 / 0) 3

Prerequisites: ENGL192

Department offering the course: Department of General Education

EENG225 Fundamentals of Electrical Engineering

This course provides the basic phenomenon of Electrical Engineering to Industrial and Mechanical Engineering students. Topics covered are: Basic electrical quantities, fundamental circuit laws, sinusoidal steady-state analysis and transformers, three-phase circuits, principles of electromechanical energy conversion, DC and AC machines.

Credits: (3 / 1 / 0) 3

Prerequisites: PHYS102

Department offering the course: 21 – Department of Electrical and Electronics Engineering

MATH373 Numerical Analysis for Engineers

Numerical error. Solution of nonlinear equations, and linear systems of equations. Interpolation and extrapolation. Curve fitting. Numerical differentiation and integration. Numerical solution of ordinary differential equations.

Credits: (3 / 0 / 1) 3

Prerequisites: MATH207 or MATH241 or MATH203

Department offering the course: 41 – Department of Applied Mathematics & Computer Science

MATH322 Probability and Statistical Methods

Introduction to probability and statistics. Operations on sets. Counting problems. Conditional probability and total probability formula, Bayes' theorem. Introduction to random variables, density and distribution functions. Expectation, variance and covariance. Basic distributions. Joint density and distribution function. Descriptive statistics. Estimation of parameters, maximum likelihood estimator. Hypothesis testing.

Credits: (3 / 0 / 1) 3

Prerequisites: MATH151

Department offering the course: 41 – Department of Applied Mathematics & Comp. Science

IENG420 Engineering Economy

An introduction to the basics of economic analysis for decisions in engineering design, in manufacturing, in manufacturing equipment, and in industrial projects. Time value of money. Cash flow analysis. Cost of capital. Return on investment. Elements of cost and cost estimation. Break-even analysis. Decision making among alternatives. Effects of depreciation. Taxes. Replacement analysis. Inflation.

Credits: (3 / 0 / 0) 3 Prerequisites: None

Department offering the course: 26 – Department of Industrial Engineering

IENG355 Ethics in Engineering

This course is designed to introduce moral rights and responsibilities of engineers in relation to society, employers, colleagues and clients. Analysis of ethical and value conflict in modern engineering practice. Importance of intellectual property rights and conflicting interests. Ethical aspects in engineering design, manufacturing, and operations. Cost-benefit-risk analysis and safety and occupational hazard considerations.

Credits: (3 / 0 / 0) 3 Prerequisites: None

Department offering the course: 26 – Department of Industrial Engineering