course description

Fly to Italy

این فایل به منظور کمک به متقاضیان تحصیل در کشور ایتالیا توسط گروه فلای تو ایتالی به صورت رایگان تهیه شده است لطفا از خرید این فایل خودداری فرمایید.

اسفاده از این فایل در صفحات مجازی و وبسایت ها **با ذکر نام تهییه کننده** بلا مانع است.

معرفی فلای تو ایتالی

سلام ...!
تیم فلای تو ایتالی متشکل از چند دانشجو که فعالیت خودمون را از ماه بهمن سال **1401** آغاز کردیم و هدف تیم ما این است که به شما کمک کنیم تا بتوانید به صورت مستقل و بدون نیاز به مشاوران مهاجرتی برای دانشگاه های ایتالیا اپلای کنید و پذیرش بگیرید . با توجه به اینکه بسیاری از موسسه های مهاجرتی هزینه های بالایی را برای اخذ پذیرش از دانشگاه های ایتالیا از دانشجو دریافت میکنند ، ما تصمیم گرفتیم با تلاش و تجربه خود به دانشجو ها کمک کنیم که بدون هزینه اضافه کار های مهاجرتی خودشون را انجام بدهند .
در این راستا در طی سال های گذشته ویدئو های مختلفی را برای نحوه اپلای کردن دانشگاه های ایتالیا ضبط و منتشر کردیم تا به دانشجویان کمکی کرده باشیم تا بتوانند در این مسیر با کمترین هزینه از دانشگاه های ایتالیا پذیرش بگیرند .

پس اگر سوال یا نیاز به راهنمایی در زمینه مهاجرت تحصیلی به کشور ایتالیا داشتید ، با ما همراه باشید و سوالات خودتون را از ما بپرسید . ما در کنار شما خواهیم بود و شما را همراهی خواهیم کرد .

مدیریت **fly to italy**

طریق استفاده از فایل

برای استفاده از این فایل ، صفحات بعد را کپی گرفته و به دانشگاه مبدا ببرید و تاییدات لازم را بگیرید

Description of Courses

Electrical Engineering

(Telecommunication)

General Physics I 3 Cr

Measurement, Motion in two and three dimensions, forces and Newton's laws and its application, momentum, systems of particles, rotational kinetics, rotational dynamics, angular momentum, work and kinetic energy, potential energy, conservation of energy, gravitation, Temperature, molecular properties of gasses, first law of thermodynamics, entropy and second law of thermodynamics.

Reference:

Fundamental of Physics: Fundamentals of Physics, Part 1&2. David Halliday, Robert Resnick

Calculus I 3 Cr

Cartesian coordinates; polar coordinates; complex numbers; addition, product, root & geometrical representation of complex numbers; polar representation of complex numbers; function; functions algebra; limit and relevant theorems; infinite limit and limit in infinite; left-hand and right-hand limit; connectivity; derivative; derivation formula; inverse function and its derivative; trigonometric functions derivative and their inverse functions; Rolle's theorem; mean theorem; Taylor expansion; geometrical and physical applications of derivative; curves and acceleration in polar coordinates; application of derivative in approximation of equations roots; definition of integral of continuous functions and piecewise continuous; basic theorems of differential & integral arithmetic; primitive function; approximate methods of integral estimate; application of integral in computation of area, volume, length of curve, moment, center of gravity and labor (in Cartesian and polar coordinates); logarithm and exponential function and their derivative; hyperbolic functions; integration methods such as change of variable, component and decomposition of fractions; transform of special variables of sequence and numerical series and relevant theorems. power series and Taylor theorem and recursive functions.

References:

Modern calculus and Analytic Geometry: R. A.Silverman.

Calculus: Louis Leithold

Advanced Calculus: Spiegel

Calculus II 3 Cr

Analytic Geometry in Euclidean Plane and Euclidean Space, Vector-Valued Functions, Elementary Theory of Curves and Surfaces, Ferenet-Serret Apparatus, Multivariable Functions (Limit and Continuity, Partial Derivative), Polar, Spherical and Cylindrical Coordinates, Multiple Integration, Green and Stokes Theorems, Elementary Account of Differential Forms.

References:
Modern calculus and Analytic Geometry: R. A.Silverman.
Calculus: Louis Leithold
Advanced Calculus: Spiegel

Prerequisite: Calculus I.

Computer Programming 3 Cr

Introducing organization and main parts of computer, machine language and assembly, numeric and non-numeric data representation, algorithms and sub- algorithms and flowchart, basic concepts such as frequency, familiarity with Pascal Programming language: constants and variables, computational and logical phrases, different types of instructions, different types of conditional operations loops, vectors and matrices, subprograms, input and output instructions, common algorithms such as methods of search and arrangement, practical examples of programming.

Reference:
Pascal 5th Edition: Elliot B. Koffman

Prerequisite: Calculus I.

Technical Drawing 1 Cr

introduction to origin of industrial drafting and its application; definition of projection; drawing of projection, point, line, plane; substance on a projection plane; introduction of main pages of projection; three projections drawing principles; geometrical relation between different projections; drafting tools and their application; standard dimensions of drafting papers; different types of lines and their application; table of map specifications; geometrical drawings; different methods and introduction of first and third order of dihedron; method of drawing three images of a substance in third order of dihedron; method of drawing six images of a substance in first order of dihedron; dihedron transform; image drawing from simple models; measure writing and application of letters and figures; drawing image of a substance through its determined images using method of identification of surfaces and volumes; definition of shear, simple shear (symmetric & asymmetric); broken shear; slant and radial broken shear; simple semi-shear; broken semi-shear; local shear; circulation and transformed shears; exceptional in shear; definition of concrete projection and its application; classification of concrete projections; normal concrete projection (isometric, diametric, trimetric); slant concrete projection including isometric slant (cavalier) and diametric slant

(cabinet); bolt and nut junctions; rivet, welding and method of drawing of their different types; method of drawing of modulated maps in brief.

General Physics II 3 Cr

Electric charge and Coulomb's law, the electric field, Gauss' law, Electric Potential Energy and Potential, the electric properties of materials, Capacitance and Capacitors, DC Circuits, the magnetic field and magnetic field of a current, Faraday's law in induction, magnetic properties of materials, inductance, AC circuits, Ampere's law.

Reference:
Fundamental of Physics: Fundamentals of Physics, Part 3 : David Halliday, Robert Resnick

Prerequisite: Physics I

General Physics Lab. I 1 Cr

Practical Experiments Related to "Physics I" Course

Casting (Melting & Modeling) Workshop 1 Cr

Objective: familiarize with casting and foundry tools in industry, learning to build various models and their application. by two workshops :

1: Melting Workshop, casting tools and types of sand molding with simple uniform, and non-uniform models, the pouring of molten, models with the movable wet sands. Molds with dry sands, multi piece models casting, and pouring molten inside them.

2: Modeling Workshop, Creating a pentagon model, making model (simple cam gears), making cylinder model and place it inside a hollow cylinder, calculations related to shrinkage and slope value.

General Physics II Lab. 1Cr

Practical Experiments Related to "Physics II" Course.

Differential Equations 3 Cr

Nature of differential equations and their solution, family of graphs and vertical routes, physical patterns, separable equation, first order linear differential equation, homogeneous equation, second order linear equation, homogenous equation with fixed constants, method of indefinite constants, method of changing parameters, application of second order equations in physics and mechanics, solution of differential equation with series, Bessel and Gamma functions, Legendre polynomial, an introduction to differential equations set, Laplace transform and its application in solving differential equations.

Reference:
Elementary Differential Equations and Boundary Value Problems: W. E. Boyce and R.C. Diprima.

Prerequisite: Calculus I.

Electrical Circuits I 3 Cr.

Network graph-Kirchhoff's laws-Linear and nonlinear components-Dependent and independent sources-nodal and mesh analysis-Analysis of resistor circuits-Norton's and Thevenin's theorems - Equivalent resistance-Superposition theorem-Operational amplifier-Capacitor and inductor- RC, RL and RLC circuits- Step response-Impulse response-Transient and steady-state responses-Linear time-invariant circuits-Convolution integral-Sinusoidal steady-state analysis-Frequency response-Three-Phase circuits.

Prerequisite, Differential Equations, General Physics II

Electromagnetic 3 Cr.

Vector analysis, Coulomb's and Gauss' laws, electric potential, Laplace's and Poisson's equations, electrostatic fields in material media, electrostatic energy, electric current, Biot Savart's law, magnetic potentials, Faraday's law, magneto static fields In material media, magneto static energy, magnetic circuits, displacement current, Maxwell`s Equations .

Prerequisite: Calculus II, General Physics II

Electric Measurement 3 Cr.

Concepts and importance of electrical measurements, primary definitions, components of measurement systems, errors and error analysis, classification of measurement equipment, ordinary oscilloscope, recorders, analog measuring equipment (with permanent magnets, moving coils, moving soft iron, electrodynamics, inductive Ferro dynamic, electrostatic), DC/AC ammeters and voltmeters, methods of measuring very low and very high values of voltage and current, measuring equipment with multipliers, single and three phase, active and reactive power meters, measurement of resistance, capacitance, and inductance, Q meters, bridges and their applications, Electric calibration, transducers, digital measuring equipment.

Prerequisite: Electrical Circuits I

Electrical Circuits II 3 Cr.

Coupling components and coupled circuits, nodal and mesh analysis, loop and cut-set analysis, natural frequencies, system function and frequency response of LIT Networks, state equations Analysis, network analysis in frequency domain, network theorems (Reciprocity, Thevenin, Norton, substitution, superposition, Telegan), two port networks (Impedance, AdmiHance, Hybrid and Transmission Matrixes), Graph theory in network analysis, Laplace transform and its application in LIT networks.

Prerequisite: Electrical Circuits I

Signals and Systems 3 Cr.

Primary definitions of systems and signal, various kinds of systems, introduction to modeling of various physical systems, analysis of linear and time independent (continuous and discrete) systems, impulse response, convolution integral, Fourier analysis, energy density, spectrum and power sampling theorem, system analysis by Laplace transform, signal flow graphs, system analysis in state space (continuous and discrete), Z transform, discrete systems analysis by the Z transform.

Prerequisite: Electric Circuits II, Engineering Mathematics

Electric Machines I 3 Cr.

Magnetic circuits, magnetic field energy, force and torque in electromagnetic system, DC machines: machine construction, review and determination of electromotive force (emf), armature winding, armature reaction, compensating windings, types of machine excitations, load characteristics of motor and generators.

Control of DC motors, loss and efficiency, parallel connection of DC generators, various applications of DC machines.

Prerequisite: Electromagnetic, Electric Circuits

Electronics I 3 Cr.

N and P type semiconductors, current and voltage equations, diode equivalent circuit, diode circuit, half-wave and full-wave rectifiers, clipping circuits, clamping circuits, multipliers, transistors and their biasing, operating points for various transistor circuit configurations, low
frequency and small signal equivalent circuits of transistors, single stage transistor amplifier, transistors in switching circuits, Multi – stage amplifiers.

Prerequisite: Electric Circuits I

Fields and Waves 3 Cr.

Maxwell's equations in time varying fields; boundary conditions, wave equations, plane wave propagation in unbounded media, polarization, poynting theorem, reflection and transmission at boundaries between media, wave equation in cylindrical waveguides, rectangular and cylindrical waveguides ,dielectric waveguides, transmission lines, steady state and transient response, Smith chart, impedance matching, stub tuning.

Prerequisite: Electromagnetic, Engineering Mathematics

Electric Measurement Laboratory 1Cr.

Study of galvanometer movement and determination of its parameters, methods of measurement of ohmic resistance, resistance of ground connection, capacitance, self-inductance and mutual inductance, range extension of the electrical measuring equipment, scaling and adjustment of electrical measuring equipment with the aid of potentiometers, measurement of power in electrical circuits (DC,AC,single phase, AC three phase), measurement of electric energy, error analysis, adjustment of counters, bridges, locating faults and measurement of cable insulation resistance, star connection with symmetrical and unsymmetrical loads, operating oscilloscopes and curve tracers and their application for tracing element characteristics.

Prerequisite: Electrical measurement

Electronics II 3 Cr.

Physics of FET transistor, FET bias and amplification circuits, power amplifiers, current sources, feedback in amplifiers, DC amplifiers, differential amplifiers, operational amplifiers, offset in OP Amps and its compensation, various linear and nonlinear applications of OP Amps , regulated power supplies.

Prerequisite: Electronics I

Logic Circuits 3 Cr.

Number systems, Boolean algebra and related rules, Logic functions and their reduction, Logic gates and logic families (such as RTL, DTL,TTL, ECL, CMOS). Combinatorial circuits (such as comparators, coders, code converters, combiners), Sequential circuits(such as flip flops, shift registers, counters, synchronous and Asynchronous logic circuits), study of various types of codes.

Prerequisite: Electronics I

Electric Machines II 3 Cr.

Transformers: Derivation of equivalent circuit Transformer performance, efficiency, Voltage regulation, and per-unit values autotransformers, parallel operation, three-phase transformers. Three-phase induction motors: machine structure, AC machine windings, rotating field, , equivalent circuit, speed-torque characteristics, speed control, starting methods. Introduction to single – phase induction motors, Introduction to synchronous machines

Prerequisite: Electric Machines I

Communications I 3 Cr.

Short description of an analog communication system, analysis of deterministic signals in frequency domain, analysis of random signals, noise in communication systems, white noise, noise temperature, noise band-width, signal transmission in base band, linear distortion, nonlinear distortion, analog modulation systems, analysis of linear modulations such as AM, VSB, DSB, and SSB, linear modulation and demodulation techniques also combined with FDM, nonlinear modulation techniques such as PM and FM, noise and interference effects on various types of modulation, pulse modulation, survey of sampling techniques for analog pulse modulations such as PAM, PPM, and PDM, familiarity with digital modulation systems such as FSK, PSK, and ASK.

Prerequisite: Engineering Probability and Statistics, signals and Systems

Microwaves I 3 Cr.

Cavity resonators, microwave network analysis , waveguide and cavity excitations, passive microwave components, directional couplers, power dividers, microstrip lines and coplanar waveguides, propagation of waves In ferrites, ferrite components, microwave tubes, klystrons, magnetrons, TWT.

Prerequisite: Fields and Waves

Linear Control Systems 3 Cr.

Feedback systems, definitions of stability, transfer functions F(S), zeros and poles of transfer functions and their representations in the coordinate systems (S plane), criteria of system efficiency in transient and stable states, kinds of systems, servo-mechanisms, controllers (such as O,PI,PD,PID)investigation of the stability of a system by the methods of root locus and Hurwitz, extended fractions, frequency response and Bode diagram, and M curves and their applications approximate methods for the reduction of high order systems, state space, control system design and compensators, analog modeling.

Prerequisite: Electric Circuits II, Systems Analysis

Electronics I Laboratory 1 Cr.

Familiarization with diodes and their volt-ampere characteristics, diode applications in rectifiers, diode applications as clipper ,clamper and limiter, voltage multipliers, familiarization with transistors, such as their types, measurement of leakage currents (ICBO,ICEO,ICES)and, input/output characteristics curves of transistors (such as PNP and NPN), determination of h parameters by transistor characteristics, investigation of active states of transistors (cut-off, saturation, operating point), transistor amplification in configurations of common-emitter, common-collector and common-base, Darlington amplifiers, two – stage amplifier, simple power supplies using Zener diode and transistors.

Prerequisite: Electronics I, Electric Circuits I Lab

Logic Circuits Laboratory 1Cr.

Logic gates, familiarization with several logic circuits and determination of parameters of digital IC's, several combinational circuits (decoder, multiplexer, parity generators and checkers), displays, Study of types of flip flops, asynchronous counters, synchronous counters, familiarization with several IC counters, shift registers.

Prerequisite: Logic Circuits

Electronics III 3 Cr.

Small signal models of field – effect transistors and Bipolar junction transistors at high frequencies, frequency response of the circuits, design and analyze of cascade amplifiers at low and high frequencies using open circuit and short circuit time constants, tuned amplifiers wideband amplifiers, feedback and stability, frequency compensation, high frequency oscillators, current mirrors and active loads, operational amplifier behavior at high frequency, unity gain compensation.

Prerequisite: Electronics II, Linear Control Systems

Communications II 3 Cr.

A brief description of a digital communication system and its comprising parts, information theory, information criterion, its comprising parts, information theory, information criterion, Entropy, Markov sources, Huffman Coding, Shannon - Fano, coding, data transmission in baseband, inter symbol interference(ISI), Nyquist condition, Duobinary signaling, M-ary baseband modulations, techniques of digital modulation, PSK/FSK/ASK modulation, Optimum Receiver for Digitally modulated signals in Additive White Gaussian Noise(AWGN), envelope detection, DPSK modulation, M-ary digital modulations(MQAM,MPSK,MFSK), error control coding, analog signal transmission by digital techniques, sampling theory ,aliasing and aperture distortion, signal quantization, PCM, delta modulation(DM), DPCM,TDM/PCM, Digital Transmission Hierarchies.

Prerequisite: Communication Systems I

Antenna I 3 Cr.

Fundamentals and definitions, solution of Maxwell;s equations for radiation, potential functions, current

element, pattern, field pattern, directivity, gain, impedance, efficiency, power, polarization, receiving properties of antennas, applications of antennas in communications and radar, reciprocity, short dipole, half-wave dipole, antennas above a perfect ground plane, image method, small loop antennas, duality. Arrays: linear arrays, array factor, uniformly (non-uniformly) excited and equally spaced linear arrays, endfire and broadside arrays, Hansen-Woodyard endfire array, pattern multiplication, mutual impedance, phased arrays. Line sources, uniform line source, tapered line source.

Wire antennas: dipoles, folded dipoles, Yagi-Uda, travelling wave antennas (such as vees and rhombic),circular and rectangular loops, feeding wire antennas, wire antennas in front of an imperfect ground plane. Broadband Antennas: helical, biconical sleeve, sleeve, spiral, log ground plane. Broadband Antennas: helical, biconical, sleeve spiral, log periodic antennas.

Aperture antennas: radiation from apertures and Huygen's principle, rectangular apertures, rectangular horns (E and H plane), pyramidal horns, circular apertures, reflector antennas, gain calculation. Antenna synthesis: line source method (Fourier transform, woodward-Lawson sampling), linear array methods (fourier series, woodward-lawson sampling, Dolph-chebyshev, Taylor).

Prerequisite: Fields and Waves

Computer Principles 3 Cr.

An introduction to the structure of programming languages. Formal specification of syntax and semantics structure of algorithmic, list processing string manipulation, data description, and simulation languages basic data types operations statement types and program structure, macro languages and their implementation and run-time representation of programs and data.

Prerequisite: Calculus I

Power System Analysis I 3 Cr.

Transmission line parameters (resistance, inductance, capacitance), transmission line models (distributed and simple model), per unit calculations, voltage - current relations in transmission lines, control of power flow on transmission line, distribution network and its calculations, an introduction to switching and lightning transients per unit calculations, systems modeling , load flow study using Gauss – Seidel method.

Prerequisite: Electric Machines II

Filters and Network Synthesis 3 Cr.

Introduction to network functions and their reliability conditions, amplitude characteristics approximations (such as Butterworth, Chaebyshev, inverse Chebyshev and elliptical approximations),synthesis of driving point functions, frequency transformation, transfer function realization with two ports network terminated

in one and two resistors, synthesis of time – delay filters, sensitivity, introduction to active filters, active synthesis of second order transfer functions, synthesis procedures for high order transfer functions, active synthesis with element substitution, introduction to switched capacitor filters.

Prerequisite: Systems Analysis, Electronics II

Communication Circuits 3 Cr.

Introduction to RF circuits, impedance matching circuit design. RF transistors and small signal RF amplifier design, LC oscillator design, introduction to phase locked loops (PLL), design and their application in RF circuits. Mixer, Modulator/ Demodulator circuits, architecture of transceivers.

Prerequisite: Electronics II, Communication Systems I

Microwave Laboratory 1 Cr.

Investigation of the characteristics of reflex Klystron, modulation and detection, measurement of SWR, propagation and reflection of waves, determination of the radiation pattern of horn antennas, measurement of power and impedance, characteristics of directional couplers, tees, filters, isolators and circulators, measurement of return loss, internal loss, reflection coefficient and SWR by directional couplers: measurement of scattering parameters.

Prerequisite: Microwave

Linear Control Systems Laboratory 1 Cr.

Familiarization with DC servo- motors, position and speed feedback control systems. Designing Lead, Lag controllers for improvement of response of a position control system, Time – delay systems, implementation PID controller for the improvement of the response of a third order system. AC servo motor systems,

Prerequisite: Linear Control Systems

Electronic III Laboratory 1 Cr.

Modulation and demodulation, Transmitters and receivers, Frequency response of LC and ceramic filters, Tunable RF resonant circuits, Buffers and Antenna impedance matching, AM/FM super heterodyne receiver, FSK demodulator, FM quadrature detector, various types of oscillators, Vco and PLL.

Prerequisite: Electronic III

Electric Machines III 3 Cr.

Three-phase transformers: transformer connection, transformer groups, study of no-load and on-load conditions, transformer performance in unsymmetrical systems, parallel operation of transformers, special transformers. Synchronous machines: construction and principles of operation, synchronous machines with flat and salient poles, types of windings and winding factors, vector diagram and operation of synchronous machines, two axis theory, saturation effects in machines with flat and salient poles, continuous and sudden short circuits, parallel operation of synchronous generators, power equation in terms of power angle, synchronous motors, Transient of synchronous machines performance.

Prerequisite: Electric Machines II