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

Programs and syllabus of Bachelor's Degree in

Engineering Physics

Course	Units	Duration (weeks)	Description	Resources
General Mathematics I	4	16	Cartesian coordinates, polar coordinates, complex numbers, summation, multiplication, radical and geometrical representation of complex numbers, function, handed limit, continuum, derivative rules, inverse functions its derivative, derivative of trigonometric functions and their inverse functions, Rolle's theory, Mean theory, Taylor's expansion, application of derivative in approximation of equations root, definition of integral of continuous and piecewise continuous functions, basic theories of differential and integral calculus, primary function, approximation estimate methods of integral-application of integral in calculation of surface area and volume and curve length and momentum and center of gravity and work, etc. (in Cartesian and polar coordinates)	Calculus and analytic geometry, G.B. Thomas. R.L. Finney
General Mathematics II	4	16	Logarithm, exponential functions and its derivate, hyperbole function, methods of taking integral including: part to part variable and factorization of fraction, changing specific variables, sequence-series and related theories, exponent series, Taylor's theorem with remained value, parametric equations, spatial coordinate, spatial vector, numerical multiplication, 3×3 matrixes, 3 unknown item linear equation, operation on rows, inverse matrix, soling equation system, linear independence, linear transform and its matrix for determination of 3×3 matrix, specific value an vector, vector multiplication, multi variable function, 2^{nd} degree of vector function and its derivate, tangent page, vertical gradient line, chain rule for partial derivate, total differential, double and triple integral and its application on geometrical and physical problems according to the level of general mathematics books.	Calculus and analytic geometry, G.B. Thomas. R.L. Finney
Differential equations	3	16	Nature of differential equation and solving, family of curves and normal trajectories, physical models, separable equation, first order linear differential equation, homogeneous equation, homogeneous equation with constant coefficient, method of undetermined coefficients, method of parameter changing, application of second order equation in physics and mechanics, solving of differential equation with Bessel and Gamma functions, Legendre' polynomial.	Elementary differential equations. W.E. Boyce and R.C. Diprima
Basic Physics I	4	16	Measurement, Vectors, motion in one and two dimensions, dynamics of a particle, work and energy, conservation of linear momentum, dynamics of a system of particles, collisions, rotational cinematics and dynamics, equilibrium of hard particles, oscillations	Fundamentals of physics, D. Halliday, R. Resnick, J. Walker
Basic Physics II	4	16	Coulomb's law, electric field, Gauss law, electric potential, capacitors, electromotive force and circuits, magnetic field, Ampere's law, Faraday's law and induction, magnetic properties of materials, electromagnetic oscillations, alternating currents, Maxwell's equations, electromagnetic waves	Fundamentals of physics, D. Halliday, R. Resnick, J. Walker

Physics Lab I	1	16	Measurements of length, angle, etc., force constant of spring and determination of g, coefficients of friction, verification of Newton's laws, free fall and projectile motion, elastic and inelastic collisions, conservation of angular momentum, g determination by simple pendulum and compound pendulum, measurement of moment of inertia, measurement of velocity of precession, Kater's pendulum	
Physics Lab II	1	16	Measurement of resistivity, verification of Ohm's and Kirchhoff's laws, study of capacitors and EMF, hysteresis curves, R-C and R-L circuits, application of oscilloscope, Biot-Savart law	
Thermodynamics	3	16	Thermodynamic systems and ideal gas, first and second laws of thermodynamics, reversibility and irreversibility, Carnot's cycle, entropy, properties of pure substances and phase changes, Maxwell-Boltzmann and Fermi-Dirac statistics.	1- Heat and Thermodynamics, M.W. Zemansky, R.H. Dittman 2- Introduction to Thermal Physics, Daniel V. Schroder
Thermodynamics Lab	1	16	Linear thermal expansion coefficient measurement, heat capacity of the calorimeter - specific heat capacity of materials and latent heat of fusion of ice measurement, Boyle-Mariotte law verification, measurement of thermal conductivity in copper, mechanical and thermal method measurement of the number of joule, surface tension measurement, viscosity measurement, temperature measurement	
Waves and Vibrations	3	16	harmonic vibrating systems, normal modes of oscillating systems with finite and infinite degrees of freedom, forced oscillations, traveling waves, boundary conditions, reflection and refraction, wave packets, phase and group velocities, polarization, interference and diffraction	1- The physics of vibrations and waves, H.J. Pain 2- Waves, F.S. Crawford
Computer Programming (python)	3	16	Numbers and symbols, fixed and constant values, calculation statement, mathematical functions, input and output statements, assignment rules, conditional, repetition, arrays, thematic and general protection, function and formation of program	Python for informatics, Charles Severance
Workshop	1	16	Machining, welding, cutting, and turning metals	

Course	Units	Duration (weeks)	Description	Resources
Engineering mathematics	4	16	Vector Analysis, coordinate systems, tensor analysis, discrete groups and continuous groups, groups representation, infinite series, second order differential equations, linear spaces, matrix operations and determinants. Complex functions: analytic properties, conformal mapping, calculus of residues, Sturm-Liouville theory, linear space and operators, orthogonal functions, Fourier Series, calculus of variation	1- Advanced Engineering Mathematics, Erwin Kreyszig 2- Advanced Calculus, Wilfred Kaplan
Engineering Economics	3	16	Cost accounting and Time value of money, compering mutually exculsive and independent projects, analysis of alternative using net present value and internal rate of return, depreciation, taxes, inflation, risk and uncertainty	Engineering Economy, G.J. Thuefen, W.J. Sabrychy
Numerical Analysis	3	16	Errors and mistakes, interpolation and extrapolation, finding roots of equations with different methods, taking derivate and numerical integrals, limited differences, numerical calculations for solving 1^{st} and 2^{nd} rank ordinary differential equations, operation on matrixes and determining their specific value, solving linear and nonlinear equations, minimum square method.	Applied Numerical Analysis, Curtis F. Gerald, Patrick O. Wheatley.
Modern Physics	4	16	Relativity, Galilean-Newtonian, Michelson-Morley Experiment, Einstein's postulates, Lorentz Transformation and relativity of time Peculiar predictions, Origins of Quantum Physics, Blackbody Radiation and h, Photoelectric effect, X Rays, Compton scattering, atomic spectra Bohr atom - quantization of energy, Particle-Wave Mechanics, Electron waves, Electron waves - What is waving? Probability and Copenhagen, Electron wave packets, 1+1 dim PDQ, Particle in a box and standing waves, Finite square well, Expectation values of classical observables, Scattering over/through a barrier, 3 dim box and standing waves and energy levels, Simple Harmonic Oscillator, 2 identical particles, Quantum theory of atoms,	Modern Physics, Kenneth. S. Krane
Modern Physics Lab	2	16	Michelson - Morley Experiment, Franck-Hertz x-ray absorption, Zeeman effect, specific charge of the electron, Stern-Gerlach experiment, Compton effect, photoelectric effect, Planck's constant, black body radiation, Balmer series of Hydrogen line spectrum, Millikan experiment	
Analytical Mechanics	4	16	Newtonian mechanics, motion of particles in one, two and three dimensions, motion of a system particles, rigid bodies motion Statics, gravitation, moving coordinates, Lagrange's Eqs, Hamilton's Eqs, inertia and stress tensors, rotation of rigid bodies, Euler's Eqs, small vibration	Mechanics, Keith Symon
Electromagnetism	3	16	Review of differential and integral calculus, electrostatic, Coulomb's and Gauss' laws, Poison and Laplace equations, boundary value equations, dielectrics, polarizations, magnetic fields, Biot-savart's law, Amper's law, vector	Foundation of Electromagnetism Theory, Reitz and Milford

Electromagnetism fields and waves (Electromagnetism II)	3	16	Magnetization, magnetic dipoles, electromotive force, induction, Maxwell's equations, gauge transformation, wave equations, radiations, relativistic electrodynamics	1- Fields and Waves Electromagnetism, Cheng 2- Foundation of Electromagnetism theory, Reitz and Milford
Quantum Mechanics	3	16	The limits of classical physics, wave packet and uncertainty relations, schrodinger equation, general structure of quantum mechanics, angular momentum, the radial schrodinger equation	1- Quantum Physics, Gasiorowicz 2- Quantum Mechanics, Griffiths
Application of Quantum Mechanics (Quantum Mechanics II)	3	16	Hydrogen atom, operator spin and angular momentum addition, perturbation theory, real hydrogen atom, helium atom, structure of atoms, radiation of atom, scattering theory	1- Quantum Physics, Gasiorowicz 2- Quantum Mechanics, Griffiths
Electronics I	3	16	1- **physics and Electronics**: conductors and insulators, semi-conductors, hole and impure electrons at semiconductors and semiconductor type N and P, PN connection, drift and diffusion current, IV specifications, diode and its limitations, Zener Diode LED, diode tunnel, photo diode 2- **diode circuits**: concept of open line, quiescent point, semi-wave and full-wave rectifier linear models, calculating ripple, plan for nutrition resources of shear circuits, clamping circuits for increasing double some for voltage, RC and LC filters 3- **transistors**: current in transistors, PNP and NPN transistors, common emitter mode for charge line quiescent point, biasing, different forms of biasing, comparing biasing circuits, studying thermal stability of biasing transistor and stability coefficient 4- **transistor amplifier** in low frequency, hybrid mode, base amplifier, common amplifier, common collector, common emitter, Darlington circuit, cascade amplifier	Integrated Electronics, Millman and Halkias
Electronics Lab	2	16	Studying of electronics devices(power supply, voltmeter, oscilloscope, signal generator), Filters and integrator and differentiator circuits, i-v curve of diode, design and make power supply and the application of diodes in clamp circuits, drawing the i-v curve of transistor, common-emitter amplifier, common-base and common-collector, studying of capacitors effect in high frequencies and low frequencies in single stage amplifiers, investigating multi stages amplifiers, feedbacks, design and make colpitts and rc oscillators, Amplitude modulation.	

Industrial Graphics	1	16	Interpret drawings and technical information, describe industry practices in drafting and modelling tasks, demonstrate fundamental drawing skills, construct model from drawing, create technical drawings from industry requirement	Engineering Graphics with AutoCAD, Bethune
Technical English	2	16	The aim of this course is the understanding of specialized physics terms and improving students' abilities to reading physics textbooks in English. The students study some textbooks in English about these subjects: Fluid Mechanics, Electricity, Magnetism, Optics, Lasers, Modern physics, Quantum Mechanics, Elementary Particles, Relativity, Nuclear Physics, Thermodynamics, Solid state physics, Statistical physics, astronomy	The Feynman lectures on physics, Feynman

Course	Units	Duration (week)	Description	Resources
Optics Engineering	3	16	Fundamental of geometrical optics, Wave optics: Interference, Diffraction, Gaussian beams, Fourier optics: optical Fourier transform, Imaging, Holography, Electromagnetics optics: EM Wave propagation, Dielectrics materials, absorption and dispersion, polarization, anisotropic media, Guided wave optics: optical wave guides, waveguide modes, coupling, pulse, propagation, photon optics	1- Optics, Hecht and Zajac 2- Fundamentals of photonics, B.E.A. Saleh & M.C. Teich
Optics lab	2	16	Measurement of prism Refraction index and calculation of Cauchy coefficient, measurement of wavelength using light dispersion curve, a study of quarter/half/full wave plate and Malus's law, interference by Young's double slit and Fresnel double prism, investigation of thickness of lens, Fraunhofer diffraction, investigation of polarized light using dielectrics, Michelson interferometer, Fresnel diffraction, Fabry-Perot interferometer, investigation of Photo-elasticity Using a polarizing Microscope	
Solid State Physics	3	16	Crystal structures, wave diffraction and the reciprocal, crystal, binding and elastic constants, phonons, crystal vibrations and thermal properties, free electron fermi gas, energy bands, semiconductor crystals, fermi surface and metals	1- Introduction to Solid state physics, C. Kittel 2- Elementary solid state physics, M. Ali Omar
Solid state physics Lab	2	16	Magnetism, Hall effect in semiconductors, electrical conductivity in solids, impedance spectroscopy, the film thickness measurement, crystallography using xrf, optical conductivity, thermoelectric effect, young modulus measurement, Radiation, waves interference, piezoelectric	
Physics of Semiconductor Devices	3	16	Crystal properties and growth of semiconductors, atoms and electrons, energy bands and charge carriers in semiconductors, excess carriers in semiconductors, junctions, field effect transistors, bipolar junction transistors, optoelectronics devices, integrated circuits, high-frequency, high-power and Nano electronics devices,	Solid state electronic devices, Ben. G. Streetman
Fundamentals of Nano-Engineering	3	16	Lithography and etching processes, vacuum systems, analysis systems in Nano technology, Fullerenes and carbon nanotubes, Nano wires, Ultimate electronics, carbon nanotubes and their applications in Nano electronics	Nano physics and Nano technology, an introduction to modern concepts in Nano science, E.L. Wolf
Fundamental of Photonics	3	16	Spontaneous and stimulated emission, absorption, pumping schemes, properties of laser beams, interaction of radiation with atoms and ions, energy levels, radiative and nonradiative transitions, ray and wave propagation through optical media, passive optical resonators, pumping processes, continuous wave laser behavior, transient laser behavior, solid-state, dye, and semiconductor lasers, gas, chemical, free electron, and x-ray lasers, properties of laser beams	1- Fundamental of photonics, Baha E. A. Saleh 2- Principle of Lasers, O. Svelto

Laser Lab	2	16	According to fundamental of photonics course	
Electronics II	3	16	Review of multistage amplifiers, studying frequency response of transistor amplifiers in middle frequency, effect of couple capacitor and bypass, feedback, positive and negative feedback: effects and properties, feedback amplifiers, voltage-voltage, voltage-current, current-current, current-voltage, power amplifiers, class A in large signal, class B and AB amplifiers and push-pull plan, differential amplifiers, current resources and linear circuits, Linear and non-Linear applications of OPAMP, regulator of voltage, series plans and parallel plans	Integrated Electronics, J. M. Millman
Logics circuits	3	16	Numerical systems and codes, Boolean algebra and logical gates(XOR, NOT, NAND, NOR, AND, OR, XNOR), simplifying methods for Boolean function, mixed logical circuits(decoder, encoder, multiplexer, di-multiplexer, comparator, subtraction, adder, logical circuits with several input and output) planning mixed logical circuits(PLA, PAL, ROM) heterogeneous logical circuits, ASM design, Introduction to logical IC and its internal structure, Introduction to FPGA and its planning	Digital Electronics Technology, D. C. Green
Logics circuits Lab	2	16	According to the logic circuit course	
Microprocessors	3	16	History of computers, microprocessors and microcomputers, structure of microprocessors, representation of their information, format of numbers, set of instructions for microprocessors, format of instructions, different instruction, programming by assembly language, quasi instructions, main points for designing ALU, designing sections, diagram block for calculation section of floating point, main idea for controller section, introduction controllers type hardwired or microprogrammed, introducing internal structure of 8bit microprocessors (8085 0r Z80), introducing instructions, additional hardware for obtaining to memories and points, some timings, some structure of additional JC type parallel port(from family of 8 bit microprocessors), introducing register control, introducing structure of additional IC type counter/timer(from family of 8 bit microprocessors).	1- Microprocessors Architecture, programming and applications with Ramesh S. Gaonkar 2- Computers and Microprocessors : components and systems, A. C. Downtown
Statistical Mechanics	3	16	Entropy, temperature, Boltzmann distribution function, ideal gas, fermion gas, boson gas, heat and work, phase transitions, kinetic theory of gases	Fundamental of Statistical Mechanics and Thermal Physics, F. Reif
Nuclear Physics I	3	16	Binding energy, liquid drop model, semi- empirical mass formula, shell model, energy levels of nuclides, charge symmetry and charge independence of nuclear forces, interactions of nuclear radiations with matter, interactions of charged particles with matter, interactions of neutron with matter, radioactive decays	Introductory to nuclear physics, K.S. Krane
Music Physics	3	16	The art and science of music, vibrating systems, transverse waves, longitudinal waves, sound transmission, resonance beats and the Doppler effect, diffraction and interference, harmonics and wave combinations, sound intensity and hearing, perception of loudness, vibrating strings, vibrating	Physics and music: the science of Musical sound,

			air columns, vibrating bars plates and membranes, musical intervals and scales, combination tones and aural harmonics, strength instrument design, strength instruments, wind instruments, brasses and the human voice, percussion instruments, high-fidelity sound reproduction, transducers, sound recording and transmission, electronic music, reflection absorption and reverberation, acoustical parameters, architectural design	Harvey E. White and Donald H. White
Historical introduction to the philosophy of science	3	16	thematic imagination in science, Johannes Kepler's Universe: its physics and metaphysics, thematic and stylistic interdependence, the roots of complementarity, hesitant rise of quantum physics research, origins of the special theory of relativity, March Einstein and the search for Reality, Einstein Michelson and the "Crucial" experiment, the duality and growth of physical science, models for understanding the growth of research, Niels Bohr and the integrity of science	Thematic origins of scientific thought, Gerald Holton
Project	3		It is determined by education council of the university	
Workshop Project	1		It is determined by education council of the university	

Foreign language	3	16	English course
Persian language	3	16	Persian course
Physical education I	1	16	Physical education
Sport I	1	16	Physical education
Islamic thought I	2	16	History
Islamic thought II	2	16	History
Islamic Ethics	2	16	History
Thematic interpretation of Quran	2	16	History
Islamic Revolution in Iran	2	16	History
Family schematization and population	2	16	Introduction to family principles