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

Course Description - Bachelor of Science in Materials Engineering- Industrial Metallurgy

23143240 Polymers 2Cr.
Thermoplastics, Thermosets, Polymerization: Addition Polymerization, Condensation Polymerization, Ring opening Polymerization; Propagation, Termination, Star polymers, Copolymerization, Configuration, Conformation, Fringed-micell model, Spherulite model, DSC, Effects of temperature and Molecular weight on crystallinity of polymers, glass transition temperature, Amorphous Polymer, Free volume, Semi-crystalline polymer, Plastic deformation of polymers: Shear yielding, Crazing, Dilatational shear banding; Polymer manufacturing processes: Injection molding, Compression molding, Extrusion, Blow molding.

23143308 Advanced Materials Science 2Cr.
Piezoelectric materials, Photocatalysis, Superconductors, Mechanical alloying, Solution combustion, Cermet materials, Aerogel, Sol-gel process, CVD, Fiber reinforced composites, Stress-strain of composite, Hybrid composites, Polymer-based composite, Metal-based composite, Properties of composite, Shape memory alloys, Properties and applications of shape memory alloys

23141095 Metallography, Lab 1Cr.
Familiarizing with metallography devices, Methods of sample preparation, Familiarizing with metallurgical microscopes, Microscopic examination of Metals

23143411 Solid-State Physics 3Cr.
Types of chemical bonds: covalent bonds, ionic bonds, metallic bonds; Atomic vibration, Free-electron theory of metals, Electrical and thermal conductivity of Metals, Energy bands, Semiconductors, Theory of dielectric, Theory of magnetic, Superconductivity

23141017 Statics 2Cr.
Force systems, Equilibrium, Structures, Distributed forces, Beams, Cables, Friction, moments and products of inertia.

23141028 Strength of Materials 3Cr.

Continuum mechanics, responses of materials to external loading; analysis of stress-strain relation; Structure and deformation in materials; Plastic deformation and yield criteria; Strengthening mechanisms in materials; Engineering aspects of fracture, mechanisms of deformation and fracture in engineering materials; Assessment and analysis of material mechanical properties, analysis of the influences of material microstructure on mechanical behaviors of materials; Fracture mechanics and fatigue crack growth; Review of selected topics on mechanical behavior of materials

23141051 Physical Properties of Materials 1 3Cr.

Structure and bonding of atoms; crystallography e.g. crystal structures, symmetry in crystals, etc.; Electrons in metals and alloys, formations of intermetallic phases, ordering in alloys; defects in crystals; Applications of thermodynamics, crystallography, and defects in crystals for explanations of metallic materials behaviors

e.g. theory of dislocations and plastic deformation, strengthening mechanisms in metals and alloys, solidification of metals and alloys, formations of defects during the growth of crystals and their effects on the morphology of crystals, and solid state transformations, etc.; Microstructural evolution in some metals and alloy systems i.e. iron and steels, aluminum alloys, and copper alloys.

23141073 Physical Properties of Materials 2 2Cr.

Thermodynamics and phase equilibriums; Diffusions in solids, Interfaces; Solidification of metals and alloys, nucleation rate, growth rate according to Onsager relationship; Solid state transformations, Johnson-Mehl-Avrami-Kolmogorov (JMAK) equation; Diffusional transformations; Diffusionless transformations; Landau theory.

23141119 Physical Chemistry of Materials 3Cr.

The Properties of Gases, the state of gases, The Ideal gas rules, kinetic Theory of gases, relation of temperature with gas energy, heat capacity of ideal gases, real gas equation; The properties, state and structure of liquids; First law or thermodynamics, system and state definition, Intensive and Extensive properties, state equation, energy and process, principle of conservation of Energy, Mechanical, thermal, chemical and thermomechanical Equilibriums, reversibility, Debye theory for heat capacity, experimental equation of C, Kopp principal, Kirchhoft and Hess principals for entropy, formation enthalpy, Standard state, Second law of thermodynamics, Gibbs free energy, Maxwell equations, equilibrium criteria, third law of thermodynamics, zero level of temperature, experimental proof of third law, activity and constant of equilibrium, statistic explanation of entropy, Boltzman equation, statistic thermodynamics, electrochemistery and electrochemical reactions, reversible cells, Galvanic cells, drive force and cell reaction, standards electrode potential, types of cells.

23141062 Mechanical Properties of Materials 1 3Cr.

Defects in crystals, classification of defects in crystals; 0-dimensional defects; 1-dimensional defects or dislocations, characteristics of dislocations, elasticity theory and energy of dislocations, forces on dislocations and dislocation interactions; 2-dimensional defects, grain boundaries, phase boundaries; roles of defects on physical properties and mechanical properties of solids; defect investigation.

23143104 Mechanical Properties of Materials 2 3Cr.

Theories of brittle fracture in materials; Fracture mechanics; Linear-elastic fracture mechanics; Elastic-plastic fracture mechanics; Factors affecting fracture toughness of materials; Fracture analysis of engineering materials; Applications of fracture mechanics in engineering material designs; Theory of fatigue; Stress-life approach and strain-life approach; Fatigue crack propagation; Factors affecting fatigue

properties in metals; Design against fatigue failures, thermal fatigue, corrosion fatigue; Analysis of fatigue failures in engineering service conditions.

23143159 Heat Treatments 2Cr.

Pearlite, Bainite and Martensitic Transformations; TTT and CCT diagrams, drawing, usages and effect of carbon and elements effect of TTT and CCT diagrams; Full and Isothermal Annealing, Normalizing Treatment, Homogenizing, spheroidizing cementite. Stress relieving, harness and hardenability and effect of different parameters on steel hardenability, Tempering, secondary hardening, brittling, Austenit steel, Austempering, Martempering, Ausforming, Surface hardening treatment for steels like carbonizing, nitridizing, carbo-nitridizing, flame hardening, induction hardening; new methods of surface hardening like diffusion coatings, Ion beams; Furnace atmosphere, cooling atmospheres, Austiniding temperatures and timing, effect of dimensional change stress, heat treatment defects, case studies of heat treatment of some parts, differences of cast-iron and steels heat treatments.

23141039 Transport Phenomena 3Cr.

Transport phenomena equations; Applications of transport phenomena equations for metallurgical engineering; Viscosity; Thermal conductivity; Diffusion coefficient; Applications of transport phenomena principles

23141040 Thermodynamics of Materials 1 3Cr.

Structure of thermodynamic systems and laws of thermodynamics; Thermodynamic variables and relations; Equilibrium in unary systems and multicomponent systems; Thermodynamic stability and critical phenomena; Thermodynamics of phase diagrams and phase diagram constructions; Thermodynamics of multi-component systems; Effects of capillarity on equilibrium of thermodynamic systems; Statistical thermodynamics; Applied electrochemistry.

23143091 Modern Techniques of Material Analysis 2Cr.

Concepts of physical and chemical analysis of materials; Vacuum technology and principle of detectors; Diffraction analysis of crystal structure; X-ray diffraction; Optical microscopy; Electron microscopy and microanalysis; Surface chemical analysis; X-ray fluorescence technique; Atomic absorption spectrometry; Thermal analysis.

23143171 Extraction of Metals 1 2Cr.

Iron and steelmaking; Chemistry of blast furnace process; Chemistry of direct reduction and smelting processes; Thermochemical and transport properties of gases; Physicochemistry of molten steels and slags; Equilibrium data on liquid steel-slag reactions; Oxygen steel making; Kinetic reactions in electric arc furnace; Steel refining in the ladle furnace; Reactions during steel solidification.

23143182 Extraction of Metals 2 2Cr.

Thermodynamics of roasting, calcinations, and metal reduction; Predominance area diagrams for metal-sulfur- oxygen system at elevated temperature; Metal production from metal oxides, metal sulphides, or metal halides; Properties of slags and molten salts; Oxidizing refining of metals; Refining of metals by sulfur; Leaching techniques and selection of leaching solution and condition; Recovery of metal from solution by cementation, gaseous reduction and chemical precipitation; Electrolytic process including electrowinning and electrorefining of metals; Special assignment of selected topics on advanced chemical metallurgy.

23143148 Corrosion and Oxidation 3Cr.

Engineering aspects of corrosion and its control; Classification of electrochemical corrosion cells; Types of corrosion damage, simplified mechanisms of corrosion and methods for combating corrosion; Pourbaix diagrams; Electrode kinetics; Potentiostatic studies and applications to engineering designs; Environment aspects of aqueous corrosion; Prevention of aqueous corrosion; Oxidation-dry corrosion; Fundamentals of mechanochemistry for corrosion.

23143080 Metal Solidification 2Cr.

Heat transfer, solute redistributions, and capillarity effects; Solidification models; Solidification of metals and alloys, atomic transfer at the solid/liquid interfaces, morphological instability of a solid/liquid interface; Cells and dendrites; Eutectic and peritectic solidifications; Directional solidification and solute redistribution; Rapid solidification; Solidifications in metal processing .

23143137 Metal Forming 1 3Cr.

Advanced mechanical metallurgy for metal forming; Plastic deformation in crystalline; Ideal work and actual work in metal forming; Friction in metal forming; Analysis of metal behavior during metal forming process; Problem analysis on metal forming and its solutions; Development of new metal forming technologies.

23143295 Metal Selection 2Cr.

Effective parameters in Materials Selection, Searching Methods, Steel grades, Using steel key, Aluminum alloys grades and properties, cast and Wrought alloys, Economic Selection of Materials; Copper and Nickel Alloys and Properties, heat resist alloys, high strength alloys, wear resistant alloys, creep resistant alloys, fatigue resistant alloys, hard metals, high formable materials, cutting tool materials, tool metals, Corrosion resistant metals, high melting point metals, low melting point metals, shape memory alloys, bio-materials, Automotive materials and metals, Powder Metallurgy Parts, Metal composites.

23143206 Powder Metallurgy 2Cr.

Advanced theory of powder metallurgy; Atomization theory and industrial practice; Consolidation theory of metal powders; Sintering theory and practices; Thermodynamics of sintering atmosphere; Powder metallurgy materials; Design of powder metallurgy processes and parts; Design consideration for the production of powder metallurgy parts; Metallographic interpretation of sintered products; Advanced analytical method for powder metallurgy; Case studies in powder metallurgy; New development in powder metallurgy processes.

23143193 Welding Metallurgy 3Cr.

History and definition of welding; Welding technology; Phase transformation during welding; Transport phenomena concerning with welding; Mechanical phenomena concerning with welding; Welding problems as well as welding standards; Applications of theoretical background for the development of new welding technologies.

23143217 Metal Casting 1 3Cr.

Foundry raw materials and molding processes for metal casting; Melt preparation, reaction of melts with environment; Energy and material balance in Cupola; Fluid mechanics and gating design; Heat transfer and solidification of metals and alloys; Die casting; Squeeze casting; Semi-solid casting; Lost wax casting, lost foam casting; Analysis of casting defects; Special assignment of selected topics on casting technology.

23143331 N.D.T (Non-Destructive Testing) 2Cr.

Introducing methods of Non-destructive testing; measuring hardness; Color Liquid testing; Leak detection; Emulsions, developers and penetrations; Testing by magnetic particles, fields and inducers, Eddy current; Industrial Radiography, Properties and usages of X, gamma and neutron ray; quality effective parameters on radiography; Radiography equipments; Radiography sensitivity; Safety and hazard of beams; Ultrasonic methods, scattering ultrasonic waves in solids, collision of ultrasonic waves with heterogonous layers; holography; Optical and sound Holography; Electromagnetic beams; reflective and transient methods; Laser beams and usages; spark test; Quantometery; NDT for Quality control.

23105046 Numerical Analysis 2Cr.

Error analysis; Roots of nonlinear equations; Approximation of functions; Numerical integration and differentiation; Solution of linear equation systems; Finite difference method.

23143353 Metallurgy of coating Surfaces 3Cr.

Scope and definition of surface engineering; Surface characteristics; Tribology and degradation of material surfaces; Various techniques of surface engineering technology; Thermal hardening, Mechanical hardening; Thermochemical treatments; Vapor deposition processes; Ion implantation, Surface engineering by laser beam and electron beam; Coating processes; Characterization of surface engineered materials, case studies of surface engineered materials; Special assignment of selected topics on surface engineering.

23143320 Non-Ferrous Alloys 2Cr.

Failure mechanisms and strengthening mechanisms; structure, properties, Metallurgical processing and applications of non-ferrous alloys including light metals, copper, zinc and their alloys, low-melting, solders and bearing metals, precious metals, refractory metals and superalloys.

23141108 Crystallography 3Cr.

Bonding, crystal systems, Bravais lattice, elements of crystal symmetry, reciprocal lattice, stereographic projection, elements of X-ray crystallography.

23143342 Quality Control 2Cr.

Significance of quality in business; quality policy and its objectives , economic aspects of quality, Statistical interpretation, role of Statistical Quality Control (SQC) in Total Quality Management (TQM) and Six Sigma; SQC tools and techniques, methods of statistical process control and capability analysis, control charts for variables and attributes, process and measurement system capability analysis, sum and exponentially weighted moving average control charts, multivariate process monitoring and control, engineering process control and SPC tools, acceptance sampling, OC curve, AOQL, LTPD, Dodge-Romig Sampling Plans. Lot-by-Lot acceptance sampling for attributes, Design of Experiments (DOE).

23143057 Welding Metallurgy, Lab 1Cr.
Safety issues and procedures of welding, different types of welding methods and instruments, and power supplies. Electric arc welding, creating electric arc, setting the correct electrode gap, and electrode angles, oxidation conditions. Basic weld joints: butt joint, lap joint, corner joint, edge joint, and T-joint. Oxyacetylene welding.

23143319 English for the students of Material engineering 2Cr.
The vocabulary and readings related to the Material engineering, advanced grammar instruction

23143126 Metal Casting 1, Lab 1Cr.
Familiarize with casting and foundry tools in industry, learning to build various models and their applications

23143068 Heat Treatment, Lab 1Cr.

Physical metallurgy and the heat treatment of steel, normalizing, annealing, quenching, tempering, case hardening of steel, hardenability, austempering, martempering and precipitation hardening.

23143035 Mechanical properties of Materials 1, Lab 1Cr.
Tensile and compression tests, Plastic Torsion in different Materials, impact test, creep test, Fatigue test and Hardness

23143046 Metal solidification, Lab 1Cr.
Practical experiments related to “Metal solidification” course contents

23143115 Presentation of Technical Scientific Topics 1Cr.
Practicing the presentation skills, Giving presentation in front of a group of people

23143364 Project 3Cr.

Original research work leading to the preparation of a thesis in the fulfillment of the Bachelor of Science degree requirement.

23143079 Training 2Cr.
Students have to work in a company or manufacturer in a field related to their interests or project for 300 hours.

23130021 General Chemistry 3Cr.
The properties of solids, liquids and gases, Stereochemistry; thermochemistry; and the electronic structure of atoms and molecules, Speed of chemical reactions, Acids and bases and ionic balance, Oxidation and reduction.

401 & 273 Physics I & II 7Cr.
An intermediate-level course dealing with classical mechanics: the principles of Newtonian mechanics through Lagrange's equations. The other topic would be about thermophysics. Various ways of formulating of motion and for solving specific problems are developed. Intermediate level course in electricity and magnetism. Covers vector calculus; electrostatics, including Poisson's and Laplace's equations and associated boundary conditions and boundary value problems; electric current; Lorentz force law; magnetic fields and Biot-Savart law; electromagnetic induction; Maxwell's equations.

23130032 General Chemistry, Lab 1Cr.
Practical Experiments Related to “General Chemistry” Course

22113082 Basic Physics 1, Lab 1Cr.
Practical Experiments Related to “General Physics” Course

23105024 & 23130010 General Mathematics I & II 6Cr.
The calculus of one variable including limits; differentiation; maxima and minima, and the chain rule for polynomials, rational functions, trigonometric functions, and exponential functions, Introduction of integration with applications to area and volumes of revolution. Further development of integration, inverse trigonometric and logarithmic functions, techniques of integrations, and applications which include work and pressure, Infinite series, power series, Taylor's formula, polar coordinates, parametric equations, introduction to differential equations, and numerical methods. Fundamentals of calculus, and includes infinite series, power series, paths, and differential equations of first and second order, Geometry of three-dimensional space; partial derivatives; Lagrange multipliers; double, surface, and triple integrals; vector analysis; Stokes' theorem and the divergence theorem, with applications to electrostatics and fluid flow.

23105035 Differential Eqution s 3Cr.
The wave equation, the heat equation, Laplace's equation, and other classical equations of mathematical physics and their generalizations. Solutions in series of eigenfunctions, maximum principles, the method of characteristics, Green's functions, and discussion of well-posedness problems. Calculus on manifolds. Differential forms, integration, Stokes' formula on manifolds, with applications to geometrical and physical problems, the topology of Euclidean spaces, compactness, connectivity, convexity, differentiability, and Lebesgue integration

23142021 Engineering Mathematics 3Cr.
Complex differentiability, Cauchy-Riemann differential equations, contour integration, residue calculus, harmonic functions, and geometric properties of complex mappings, elementary operations with complex numbers, derivatives, integrals, Cauchy's Theorem and consequences such as the integral formula, power series, residue theorem, applications to real integrals and series.

23142010 Computer Basics and Programming 3Cr.
The introduction of computer**,** algorithm and flow chart**,** C language including arithmetic and logic expressions**,** data types**,** Input output statements**,** control statements, pointers, functions and recursive functions, arrays, subprograms, strings, records and files

23143013 Industrial Drawing 2Cr.
Projection concepts, drawing standards, volume and surface analysis for drawing, the 3D view projection, Isometric and demetric (oblique & no oblique) projections, types of sectional views, industrial (assembly and workshop) drawings and dimensioning.

23181160 Fundamentals of Electrical Engineering 3Cr.
Production and transmission and distribution of power, industrial power distribution, three-phase power, magnetism and magnetic circuits, magnetic force calculations, the core losses in magnetic circuits, DC electric machines, DC generators, DC motors. Principles of work and types of permanent flow generator, permanent flow generating characteristics, principles and types of permanent flow engines work, synchronized permanent flow engines, construction of the alternating current generators (alternator),

synchronous induction motors, asynchronous induction motors, single phase and three phase motors.

23110012 General Workshop 1Cr.
An introduction to principles of safety and health in workshops, modality of application of tools and instruments, Methods of work with workshop tools and equipment in the workshop

23143024 Fundamentals of Electrical Engineering, Lab. 1Cr.
Practical experiments related to “Fundamentals of Electrical Engineering” course contents

250 General Persian 3Cr.
A review on the prominent proses and poems of the Persian literature through the history of Iran

251 General English Language 3Cr.
A review on the English grammar, English vocabulary and reading skills.

105 Physical Education 1 1Cr.
Physical education and training, including stretch exercises, running and etc.

110 Physical Education 1Cr.
Being trained professionally in the chosen favorite sport - Volleyball.

525 Family Planning and Population 2Cr.
Family life and population control methods.

511 Islamic thought I (Origin & Resurrection) 2Cr.
A review on the Islamic thoughts, beliefs and values.

512 Islamic thought II (Prophetship & Imamate) 2Cr.
A review on the lives of the prophets and Islam’s Imams.

542 Analytical History of the Early Days of Islam 2Cr.
History of early Islamic civilization and how Islamic culture shaped through the time.

551 Thematic Exegesis of Quran 2Cr.
Description and interpretation of Quran’s Chapters (Surahs): Al-fatihal, Al-‘Ikhlas, Al-falagh and Al-Baqarah.

522 Islamic Ethics 2Cr.
Instructions on how to have a better life and future, and how to positively interact in the society.

21193000 Introduction to Sacred Defense Culture and Values 2Cr.

An introduction to the beliefs, values, events, defense strategies, and geographical and political situations of Iran in the 8 years' sacred defense against Iraq.

533 Political Thought of Imam Khomeini 2Cr.

Political life of Imam Khomeini, Political thoughts of Imam Khomeini about Islamic Republic Revolution