

course description



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

اسفاده از این فایل در صفحات مجازی و وبسایت ها با ذکر نام تهیه کننده بلامانع است.

کانال تلگرام
فلی تو ایتالی



کانال یوتیوب
فلی تو ایتالی



پیج اینستاگرام
فلی تو ایتالی



سایت
فلی تو ایتالی



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 خودشان 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 of Petroleum
Engineering
Major: Drilling and Petroleum
Extraction**

Title of the Course: Pre-university mathematics

Principle of Mathematical Induction, Complex numbers, Functions: Odd, Even and Periodic functions Hyperbola functions and their graphs

Title of the Course: Mathematics I

The set $\mathbb{R}$ of real numbers, Relation of order in $\mathbb{R}$, Principle of Mathematical Induction, Complex numbers; Analysis: Functions Odd, Even and Periodic functions Hyperbola, functions and their graphs; Co-ordinate geometry: Conic sections in rectangular coordinates, parabola, ellipse and hyperbola; Parametric equations: Plane polar co-ordinates, polar curves.

Title of the Course: Mathematics II

Determinants and their properties, Applications to systems of linear equations, Homogeneous systems, Eigen values and Eigen vectors; Convergence of series of real numbers, Tests of convergence, Series of functions and power series; convergence of power series; The Definite Integral; Definition: The Riemann Sum; Techniques of integration including advanced methods of substitution, partial fractions, by parts and reduction formulae, Applications; Improper Integrals; Convergence; Partial Differentiation, total derivations.

Title of the Course: Differential equations

Nature of differential equations and their solution, family of graphs and vertical routes, physical patterns, separable equation, first order linear differential equation, homogeneous equation, 2nd order linear equation, homogenous equation with fixed constants, method of indefinite constants, method of changing parameters, application of 2nd 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.

Title of the Course: Engineering mathematics

Engineering applications of mathematical methods, Topics include ordinary differential equations, linear algebra, calculus, Fourier analysis, Laplace transform and partial differential equations.

Title of the Course: Application of mathematics in petroleum Eng.

Mathematical Modeling: 1-Analytical 2-Numerical

Title of the Course: Physics I

Vectors: Equilibrium of a particle: introduction, Newton's First Law, neutral equilibrium (stable and unstable), Newton's Third Law, particle equilibrium, rigid body equilibrium friction: moment of force, second condition of equilibrium, center of gravity, couple. Motion on one dimension: motion, average and instantaneous velocity, mean and instantaneous acceleration, acceleration integral average velocity, motion on a uniform acceleration, free fall, motion with variable acceleration, relative velocity, gravity tension of two substances.

Motion on two dimensions (plane): motion on the plane, average and instantaneous velocity, average and instantaneous acceleration, components of acceleration, circular motion, centripetal force, circular motion perpendicular on the horizon, satellite motion, the effect of earth rotation on acceleration and gravity. Work and energy: introduction, work, kinetic energy, gravity potential energy, elastic potential energy, gravity potential, elastic potential energy, conservative and losing ranges, internal work, internal potential energy, power and velocity. Impulse: impulse, linear momentum conservation law, rubber and non-rubber percussions, return, principles of rocket motion, relative changes of mass and velocity, mass and energy, relative conversion of force, mass in length and width. Rotation: introduction, angular velocity, angular acceleration, rotation with variable angular acceleration, rotation with fixed angular acceleration, relation between linear and angular accelerations and velocities, angular acceleration moment (moment of inertia), computation of moment of inertia, kinetic energy of work and power, angular momentum, rotation around moving axes (gyroscope) Harmonic motions: elastic forces, equation of simple harmonic motion, motion of suspended matter, simple pendulum, angular harmonic motion, physical pendulum (compound), center of oscillation.

Tittle of the Course: Physics II

Treating electrostatics, magnetism, circuits, optics, relativity, atomic structure, the nucleus and fundamental particles.

Tittle of the Course: Physics I lab

Selected experiments covering the main subjects of Physics I.

Tittle of the Course: Physics II lab

Selected experiments covering the main subjects of Physics II.

Tittle of the Course: General chemistry

Electronic structures of atoms, Atoms properties and Ionic bonding, covalent bonding, geometric structure of molecules and molecular orbital, gases, liquids and solids, solutions.

Tittle of the Course: General chemistry lab

Selected experiments covering the main subjects of chemistry.

Tittle of the Course: Organic chemistry

Fundamental concepts of nomenclature, formulae, preparation and properties of organic compounds. Modern electronic and molecular orbital theories are introduced.

Tittle of the Course: Organic chemistry lab

Selected experiments covering the main subjects of organic chemistry.

Title of the Course: General geology

Survey of physical geology and introduction to historical geology. Elements of crystallography, mineralogy, petrology, geomorphology, seismology, structural geology, paleontology, historical geology, and plate tectonics.

Title of the Course: Structural geology

Introduces the techniques of structural geology through a survey of the mechanics of rock deformation, a survey of the features and geometries of faults and folds, and techniques of strain analysis. Regional structural geology and tectonics are introduced.

Stress and Strain: Introduction and primary structures, Force and stress, Deformation and strain, Brittle Structures and Deformation Processes: Brittle behavior, Joints and Veins, Faults and Faulting, Ductile Structures and Deformation processes: Ductile behavior, Dislocation theory, Deformation regimes, Folds, Foliations and Lineation, Shear Zones, Tectonics and Regional Deformation: Thrust mechanics, Plate Tectonics, Extensional Tectonics, Convergence and collision, Strike-slip tectonics

Title of the Course: Computer programming

Studying of flowcharts and C and MATLAB programming language.

Title of the Course: Statics and strength of materials

Review of quantities; vector algebra; Newton's laws and unit systems; Determining resultant of unidirectional forces; equilibrium Laws; free body diagram of forces; moment of force on line and point; internal and external multiply of vectors; force couple; resultant of one system of general force; determining of equivalent for plane force system; system of parallel forces and system of general force; balance equations of rigid bodies and determination of supports force; free body diagram of forces; static equilibrium conditions; statistical uncertainty and constrains components.

Title of the Course: Fluid mechanics

Fundamental Concepts of Fluids: Fluid Statics and Pressure Measurements: (Manometers, Hydrostatics Forces, Solid-like motion, Buoyancy, Stability) Fluid Kinematics and Reynolds Transport Theorem, Some concepts of fluid motion, Acceleration, Reynolds Transport Theorem Conservation of Mass, Momentum and Energy for Control Volume, Integral form of Continuity, Linear, Momentum, Angular Momentum, Conservation of Energy. The Bernoulli Equation and Applications, Flow measurements based on Bernoulli equation. Dimensional Analysis and Similitude, Viscous Flow in Pipes and Ducts, Reynolds number, Laminar flow, Turbulent Flow, Flow Measurements.

Title of the Course: Fluid mechanics Lab

Selected experiments covering the main subjects of fluid mechanics.

Title of the Course: Material and energy balance

Engineering problems involving material and energy balances. Batch and continuous reactive systems in the steady and unsteady states. Introduction to phase equilibrium for multicomponent systems. Examples drawn from a variety of chemical and biomolecular processes.

Basic engineering calculations: convert units quickly and accurately; define, calculate and estimate properties of process materials such as fluid density, concentrations, pressure, etc.

Material and energy balance calculations: draw and label process flow sheets from verbal descriptions of processes; carry-out degree-of-freedom analyses; write and solve mass and energy balance equations for single unit and multiple unit processes with and without chemical reaction. Physical chemistry: perform pressure-volume-temperature calculations for ideal and non-ideal gases; perform vapor-liquid equilibrium calculations for systems containing one condensable component and for ideal multicomponent solutions; calculate internal energy and enthalpy changes for process fluids undergoing specified changes in temperature, pressure, phase, and chemical compositions; incorporate such calculations into mass and energy balance problems. Explain the difference between transient and steady-state processes and make simple mass and energy balance calculations for transient processes; work effectively in teams and know your classmates; produce a written report on the design and analysis of a large scale process addressing a technical problem of national importance.

Title of the Course: Thermodynamics 1

Definition of thermodynamics & the application in industry

System & control volume, state, process, properties, units, temperature scale & zeroth law of thermodynamics. Pure substance, definition & properties, quality and thermodynamical tables, equation of state for ideal gases. Work and Heat in thermodynamics

Conservation of energy or first law of thermodynamics, enthalpy, steady state, steady flow process, uniform state uniform flow process throttling, Joule Thompson factor, heat capacity, internal energy, conservation of mass, volumetric & mass flow rate. Heat engines and Heat pumps, thermal efficiency & coefficient of performance second law of thermodynamics, reversible process, Carnot cycle. The Clausius inequality, entropy, change of entropy for reversible and irreversible process, lost work, the increase in entropy principles. Entropy and change of entropy for ideal gases, efficiency in thermodynamics Irreversibility, reversible work, availability.

Title of the Course: Heat transfer 1

One dimensional steady state conduction with variable thermal conductivity and with internal distributed heat source, Local heat source in non-adiabatic plate, Thermocouple conduction error, Extended Surfaces-Review, Optimum fin of rectangular profile, straight fins of triangular and parabolic profiles, Optimum profile, Circumferential fin of rectangular profile, spines and design considerations. 2D steady state conduction, semi-infinite and finite flat plates,

Temperature fields in finite cylinders and in infinite semi-cylinders, spherical shells, Graphical method, relaxation technique. Unsteady state conduction, Sudden changes in the surface temperatures of infinite plates, cylinders and spheres using Groeber's and Heisler charts for plates, cylinders and spheres suddenly immersed in fluids. Radiation: Review of radiation principles, diffuse surfaces and the Lambert's cosine law. Radiation through non absorbing media, Hottel's method of successive reflections, Gebhart's unified method, Poljak's method. Radiation through absorbing media, Logarithmic decrement of radiation, Apparent absorptivity of simple shaped gas bodies, Net heat exchange between surfaces separated by absorbing medium, Radiation of luminous gas flames.

Convection: Heat transfer in laminar flow, free convection between parallel plates, forced internal flow through circular tubes, fully developed flow, Velocity and thermal entry length, solutions with constant wall temperature and with constant heat flux, Forced external flow over a flat plate, two-dimensional velocity and temperature boundary layer equations, Karman Pohlhausen approximate integral method. Heat transfer in turbulent flow, Eddy heat diffusivity, Reynold's analogy between skin friction and heat transfer, Prandtl-Taylor, Von Karman and Martinelli's analogies, Turbulent flow through circular tubes.

Title of the Course: Heat transfer lab

Selected experiments covering the main subjects of Heat transfer.

Title of the Course: Properties of reservoir rocks

basic understanding of the rock properties that are necessary for reservoir management and recovery calculations. It covers the basic understanding of the measurement of rock properties in order to allow participants to become more effective in correctly interpreting well logs and core test results. The course also covers the integration of these data. The course carries the participants through a comprehensive sequential study of the geological and engineering processes that have a bearing on hydrocarbon recovery. The sequential study covers how fluids flow through the reservoir rock and how this flow can be altered to produce greater recovery and profits. Generation, migration and accumulation of hydrocarbons: - Theories about the origin of hydrocarbons. Primary and secondary migration. Accumulation of hydrocarbons. Structural and stratigraphic traps. Characteristics of reservoir rocks: Porosity. - Types and characteristics. Measurement of porosity from well logs and cores. Permeability: Relationships between Porosity and permeability. Permeability characteristics. Types of permeability. Intergranular and fracture permeability. Single phase permeability for oil and gas. Klinkenberg gas permeability. Laboratory measurement techniques. Basic flow concepts. Darcy's law. Capillary pressure: Surface forces and definition of capillary pressure. Laboratory measurement of reservoir wettability. Initial saturation distribution from well logs and capillary pressure data. Multiphase systems and relative permeability: Steady-state permeability measurement. Determination of end-point saturations. Water-oil and oil-water systems. Determination of relative permeability curves. Electrical properties: Electrical conductivity of fluid saturated rocks. Measurement of electrical resistivity of rocks. Empirical correlations for electrical properties of rocks.

Title of the Course: Properties of reservoir rocks lab

Selected experiments covering the main subjects of reservoir rock.

Title of the Course: Properties of reservoir fluids

Basic understanding of the fluid properties that are necessary for reservoir management and recovery calculations. It covers the basic understanding of the measurement of fluid properties in order to allow participants to become more effective in correctly interpreting well logs and core test results. The course also covers the integration of these data. The course carries the participants through a comprehensive sequential study of the geological and engineering processes that have a bearing on hydrocarbon recovery. The sequential study covers how fluids flow through the reservoir rock and how this flow can be altered to produce greater recovery and profits.

Properties of petroleum fluids: - Phase diagrams, multicomponent systems. Flash calculations. Gases and non-ideal gas law. Formation volume factors, Isothermal compressibility of gases. Viscosity of gas mixtures, properties of liquid hydrocarbons: bottom hole sampling. Recombination sampling, conventional Pressure-Volume-Temperature (PVT) analysis. Density, specific gravity and API gravity. Differential and flash liberation experiments. Solution gas-oil ratio. Thermal expansion of liquid hydrocarbons. Compressibility. Oil viscosity. Converting laboratory measured solution gas-oil ratios and formation volume factors to field conditions. Properties of formation waters: - Chemical composition of formation waters. Importance of this information for geological and engineering programs. Density and specific gravity, solubility of natural gas in water compressibility, Thermal expansion. Formation volume factors Viscosity.

Title of the Course: Properties of reservoir fluids lab

Selected experiments covering the main subjects of reservoir fluids.

Title of the Course: Petroleum geology

Introduction: what is petroleum? Economic importance, geologic factors, porosity and permeability in sedimentary rocks, burial Histories; Burial and diagenesis, paleohydrology in sedimentary basins, reservoirs and traps, source Rocks; organic geochemistry of oil and gas. diagenesis, catagenesis, and metamorphism, thermal markers. Basin Analysis I: basin formation and types, sequence stratigraphy and basin analysis, drilling and geophysical logging methods. Basin analysis II: primary and secondary migration.

Title of the Course: Fundamentals of petroleum industries processes

This course introduces students to the science of petroleum engineering. It covers the following topics: a basic overview of the petroleum industry, covering exploration, leasing, drilling, production, enhanced recovery, transportation, and refining. Introduction to the geology of the earth and the conditions which lead to the formation and accumulation of hydrocarbons.

Discussion of the methodology utilized exploring for and locating oil and gas reserves. Description of the drilling and well control equipment. Prevention of accidents, petroleum production, refining and marketing.

Title of the Course: Two-phase fluid mechanics

Principle of two phase flow: the general energy equation, evaluation of friction losses-the friction factor, single phase flow, definition of variables used in two phase flow, modification of the pressure gradient equation, flow patterns, fluid property correlation, vertical flow. horizontal flow, inclined flow

Title of the Course: Process control

Introduction to process control, control objectives and benefits, mathematical modeling principles, modeling and analysis for process control, dynamic behavior of typical process systems, empirical Model Identification, the feedback loop.

Title of the Course: Process control lab

Selected experiments covering the main subjects of Process control, MATLAB software.

Title of the Course: Drilling engineering

The study of the drilling process, including basic rotary drilling, drilling fluids and hydraulics, drill string design, directional drilling, and well control.

Title of the Course: Drilling engineering lab

Selected experiments covering the main subjects of drilling engineering, survey drilling rig.

Title of the Course: Drilling engineering 2

Directional drilling (tangential, ROC and Minimum Curvature Methods). Drill string design (neutral point of tension and compression, neutral point of bending, Lubinski's stresses, and margin of over pull). Casing design (biaxial, triaxial). Casing setting (buckling and well head loads).

Title of the Course: Drilling engineering lab

Selected experiments covering the main subjects of drilling engineering2.

Title of the Course: Advanced drilling engineering

Review of basic concepts related to Newtonian fluid flow. Rheology of drilling fluids. Introduction to non-Newtonian fluid flow, hydraulic design, conventional and polymer muds. Maximum hydraulic horse power and maximum hydraulic impact concepts in bit hydraulic optimization.

Title of the Course: Fundamentals of electrical engineering

Basic concepts of electricity, electrostatics: coulomb's law, electric field, electric flux - gauss's law (examples of field determination), electrostatic potential energy, electric potential and potential difference, conductors in electrostatic field (electric influence), dielectrics in electrostatic field (polarization, boundary conditions), electrostatic field effects, capacitors and capacitance, electric force and electric energy in electrostatic field, experiments in electrostatics-demonstration. Time-constant electric currents: electric values, basic laws of electric circuit - Ohm's and Kirchhoff's laws, equivalent resistance, basic electric circuit, electric power, work and energy.

Title of the Course: Drilling cement

Manufacture of Portland cement, standardization of drilling cement, cement characteristics, slurry features, purposes of oil well Cementing, calculation of drilling cement, cement additive, cement testing, cement placement techniques.

Title of the Course: Drilling cement lab

Selected experiments covering the main subjects of drilling cement.

Title of the Course: Drilling fluid

Functions and characteristics of drilling fluids, mud measurement, different types of drilling mud and main components, mechanical treatment of drilled solids, chemical hazards.

Title of the Course: Reservoir engineering 1

Properties of reservoir fluids and rocks, volumetric estimation, the material balance equation and applications, secondary and tertiary oil recovery process.

Title of the Course: Fundamentals of well testing

Steady-state, pseudo steady-state, and transient well testing methods to determine well and reservoir parameters used in formation evaluation.

Title of the Course: Well logging

Introduction mud logging, coring and core analysis, open hole logging, history of well logging, field operations and tools, logging while drilling, log presentation, tool positioning and combination, lateral and vertical resolution. Rock and fluid properties, summary of interpretation procedures, gamma ray logging, spontaneous Potential log, sonic log, density log, neutron log, resistivity tools, quick look evaluation

Title of the Course: Dynamic

Overview the application of Newton's Laws to rectilinear and curvilinear motion problems. Plane motion, work/energy, impulse/ momentum, force analysis, and mechanical vibration will be studied as well as motivation to understand and analyze linkages

Title of the Course: Acidizing

Formation damage (definition, mechanism, counter measures, etc.). Acidizing (matrix acidizing, acid fracturing, etc.). Hydraulic fracturing, Introducing new “innovative” EOR/IOR stimulation technologies presently being.

Title of the Course: Engineering statics& probability

Fundamentals of probability, random processes, statistics, and decision analysis are covered, along with random variables and vectors, uncertainty propagation, conditional distributions, and second-moment analysis. System reliability is introduced. Other topics covered include Bayesian analysis and risk-based decision, estimation of distribution parameters, hypothesis testing, simple and multiple linear regressions, and Poisson and Markov processes. There is an emphasis placed on real-world applications to engineering problems.