Syllabus for Petroleum Engineering Department

2017

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In this section are given brief descriptions of the course offered in the petroleum engineering department. For convenience, the courses *classified as:*

Gs = General Sciences

Ge = General Engineering Sciences

Math = Mathematical

Phys = Physics

Chem = Chemistry

Arb = Arabic

Eng = English

Pol = Political

Pte = Petroleum Engineering courses

Math 101: Mathematics I   4 Units

Sets, relations, absolute value, functions; Algebra of functions, inverse function, parametric representation of a function. Limits, continuity, derivative, differential, higher derivative, extreme value theorem, intermediate value theorem, Rolle's Theorem and mean value theorem.

Math 102: Mathematics II   4 Units

L,Hopital's rule. Applications; Maxima and minima, curve tracing, related rates. Conic sections, polar coordinates. Complex number. Definite and indefinite integral. Fundamental theorem. Transcendental function, their derivation and integration. Techniques of integration – Area, length, volume and surface of solid revolution – sequences and series.

Phys 101: Physics I   3 Units

Mechanics: Linear and circular motion, Newton Laws of motion, Work, Energy, and Conservation laws of energy. Properties of Mater: Elasticity of matter, Hydrodynamics. Heat and Thermodynamics: Heat, thermodynamics, Laws, ideal gas. Waves and vibrations: Simple harmonic motion, waves, Propagation of waves, standing waves, Properties of optical waves.

Phys 103: Physics Lab I   1 Unit

Laboratory work includes experiments on the acceleration of gravity (g), Nook's law, Young's modulus, surface tension, thermal conductivity and specific heat, Newton's Law of cooling, Sonometer, frequency measurements and the velocity of sound.

Phys 102: Physics II   3 Units

Electricity and Magnetism:

Mirror lenses and their application. Charge, Coulomb's law, electric field, capacitors and dielectric, current, resistance, electromotive force, electric circuits, magnetic field, magnetic induction , Hall effect. Ampere's law, circular coils, self inductance, RC, RL circuits. Magnetic properties of materials. Oscillators electromagnetic waves, Maxwell's equations, Transmission lines, traveling waves, potential and alternating current . Waves and optical, optical waves, reflection and reflection laws, mirrors lenses and their application.

Phys 104: Physics Lab II   1 Unit

Verification of Ohm's law, Determination of unknown resistance, some measurement using a cathode ray tube, Determination of change magnetic field, Determination of the capacity, Measurement of focal length of an Inaccessible converging law. Measurement of Radii of curvature of converging lens, measurement of focal length of diverging lens.

Chem 101: Chemistry I   3 Units

Atomic structure, periodic table, gas state, thermo chemistry, organic group. Isomerism and fundamental concepts structure and reactivity.

Chem 103: Chemistry Lab I   1 Units

Laboratory rules and techniques, common reagents, chemical equations, cations and anions, reactions of cations and anions, classification of cations and anions into groups, group reagents and group precipitate of cations, identification of cations and anions from simple inorganic compounds.

Chem 102: Chemistry II   3 Units

Radio activity, chemical bonding, covalent bond theory, classification component, element chemical behavior, thermodynamic, electrochemistry, solid state, organic alkene reaction , cycling alkene, alkane, alkyne, alkylhalid, alcohol, aldehyde, ketone with detail study for mechanism reaction, An analytical volumetric, using volumetric apparatus, standard solution, volumetric solution. Titration methods, indicator titration, using acid base, complex compound, oxidation reaction.

Chem 104: Chemistry Lab II   1 Units

Volumetric Analysis: use of volumetric apparatus, standard solutions, volumetric calculations, procedure of titrations, indicators, titrations involving acid-base, argentometric, complexometric and oxidation-reduction reactions, determination of strength of unknown samples utilising the above methods of titration.

Arb 101and102: Arabic Language I and II   2 Unit

The courses stress lingual approach to mastery of the language and include the study of basic grammar and selected readings in science and literature.

Eng 101 English I   2 Units

Objective: The English I course for first year students has been designed to enable them to communicate in written and spoken English and to develop their ability to deal with concepts used in scientific discussion and writing.

Reading comprehension: Topics: Heat energy, atomic structure, ultrasonic, periodic table of elements, computers and some topics of general interest etc.

English in communication: Parts of speech, punctuation, simple sentence structure, tenses, passive voice, description of lab ware. Ordinal and cardinal numbers, simple geometry.

Laboratory report writing: Lay out of a report: title, abstract, aim, introduction/theoretical background, experiment and materials, procedure, results discussion of results, conclusions, references, appendices.

Eng 102: English II   2 Unit

Objectives: The course is for those students who have gone through the first semester. It builds upon the work done in the previous semester and continues with the objectives to enhance the student's ability to communicate in written and spoken English. The following areas of scientific English are specially stressed upon.

Reading comprehension: Topics: Latent heat, Bunsen burner, Spirit burner, computers, Kipp's apparatus, alloys, metals distillation, fire extinguishers, modern atomic theory, refining petroleum, refrigerators.

English in communication: Adjectival clauses, omission of relative pronouns, use of infinitive and gerund, (mathematical concepts: Powers and roots, dimensions of two/three dimensional figures, the use of graphs). Introduction to technical report writing. (Kinds of technical reports: The short informal report, the long informal report, the formal report (their format/structure and style).

Pol 101: Political Culture: 2 Units

Introduction and concepts of political culture, the state (elements, theories, sovereignty, functions, unitary state, welfare state, federal state), Ancient political thought, Contemporary political thought, Comparative Western political systems (reference to USA and UK), Comparative Government and politics, Libyan political system (1952 – 1969), International organization (United Nation UN), Human rights.

Ge 101: Engineering Drawing I: 2 Units

Introduction, definitions, terminology and general rules. Tools used in engineering drawing and methods of its use, geometrical processes, engineering curves, kinds of lines and it's applications, Arabic engineering alphabetic, English engineering alphabetic, drawing scale and dimension, isometric projection, inclined projection, normal projection (isometric and oblique drawing), deduction of third projection, sections and it's types (complete, half, revolved, partial and its application).

Ge 103: Workshop Engineering   2 Units

Classification of engineering materials. Properties and applications of important engineering materials. Primary manufacturing process: casting, welding, forging extrusion, drawing, rolling and metal joining. Basic measurements and inspection. Machining process: basic cutting tools, the centre lathe, basic operations, turning, taper turning, thread cutting and drilling. Engineering management, industrial safety and professional health. Training on using hand tools and production management and maintenance.

Math 201: Calculus   3 Units

<u>Functions and several Variables</u>: Limits, continuity, partial differentiation, Jacobian coordinates, multiple integrals, applications, liner integrals. <u>Vector Analysis</u>: Div, Grad, Curl, Green's, Gauss and stokes theorems and their application. Surface integrals and surface area.

Math 202: Differential Equations   3 Units

Differential equation of the first order and first degree; different forms, non-linear differential equations of the first order; linear differential equations of higher orders; differential operators; linear differential equations with constant coefficients; homogeneous case; method of inverse operator; method of variation of parameters; method of undermined coefficients, Laplace transform; basic theorems, convolution theorem, solution of differential equation by Laplace transform.

Math 301: Numerical Analysis in Engineering   3 Units

Solution of linear equation (Gauss elimination methods, iterative methods, Solution of nonlinear equation (Iterative methods, the approximate method, Newton's – Raphson method). Interpolation (Difference tables, Newton's interpolation formula, Sterling's formula, Lagrange's method. Numerical differentiation (Approximation of derivatives, formulas for numerical differentiation), Numerical integration (Simpson's rules, Trapezoidal method, Romberg's integral) Numerical Solution of initial value differential equations (Euler's method, Picard's method, Rung-Kutta methods), Finite difference method for boundary value differential equations, elliptic equations and parabolic equations.

Tw 307: Technical Writing and oral presentation   2 Units

<u>Objective</u>: The course is intended to develop the students' ability on the oral presentation skills and to deal with concepts in scientific discussions and writings. It is to improve their concepts of Technical English enabling them to write Technical Reports, Technical essays as well as Business letters. The course lays stress upon the following areas of technical English:

- Different types of technical reports: The short informal report, The long informal report and the formal report; their format structure and style (Foreword and summary: Organizing main points for Non-specialist readers; Details or discussion: Organizing details for specialist readers; The abstract; conclusions and recommendations, etc.); Feasibility and project report; articles on technical topics and business letters.
- Technical terms of importance to engineering, with emphasis on spelling, and usage in sentences; technical terms used in computer applications.
- Symbols, abbreviations, glossaries, nomenclature, titles and sub-titles, tabular, graphical and pictorial presentation of data and the like, with examples.
- The course also abreast the students with concepts of research. The following main points are stressed upon: Selecting a suitable subject, writing a tentative thesis sentence, developing a preliminary bibliography, - Taking notes, writing précis and paraphrases, developing the first draft, preparing the final documentation notes, formatting the final draft.

Ge 102: Engineering Mechanics: 3 Units

Introduction (Definitions, Newton's laws, units), Concurrent forces on a particle (Analyzing forces and determining the resultant of forces, Concurrent forces in plane, Concurrent forces in space), Rigid Bodies (Equivalent forces, principle of Transmissibility, Moment of a force acting on a rigid body about a point, Moment of a force acting on a body about a given Axis, Moment of a couple Reduction of a system of forces on a body to a resultant force only). Equilibrium of rigid bodies (Forces acting on a rigid body and structures, Kinds of supports and reactions, Drawing free body diagrams and calculating reactions), Analysis of trusses, (Method of joints, Method of sections) , Determining the centroid (centre of area) of Certain area by Dividing the area into certain areas and by Integration.

Stat 101: Statistics and Probability   3 Units

<u>Statistics:</u> Collection of data, Arithmetic mean, Median and Mode, Measures of Variation, Range, Mean deviation, Standard Deviation, The Moments, The Ratio of Moments, The Skewness, The Kurtosis, Correlation and Regression Theorems, Kinds of correlation, Calculation of correlation coefficient.

<u>Probability:</u> Definitions, The experiment, The event, the sample space, Distributions, Expections and Variance, Theorem of samples, Theorem of statistical estimation, the estimators, the point estimations, unbiasedness, sampling estimation of normal distribution.

Comp 101: Introduction to computer and Programming: 3 Units

<u>Theoretical Part:</u> Computer definition, computer components, computer languages, flow charts, The steps of solving problems by computer, introduction visual BASIC, variables and constant, arithmetic operations, string operations, comparison operations, logical operations, operators, Control Statements, Arrays, Subroutines, Some of the V.B. Functions, The most important tools and some of their properties and events.

<u>Laboratory Part:</u> Work area, menu bar, form, and tool bar, project window, tool box, properties box.

Ge104: Engineering Thermodynamics: 2 Units

<u>Basic concepts:</u> Thermodynamic properties, ideal gas, mixture of ideal gases, equation of state.

<u>First law of thermodynamics:</u> Conservation of mass, work and heat, internal energy, specific heat, enthalpy, entropy. Process on ideal gases: Isochoric process, isobaric process, isothermal process, isentropic process, polytropic process. <u>Second law of thermodynamics:</u> Entropy change, heat engines and refrigerators, Carnot cycle, Clausis inequality, principle of increase of entropy.

<u>Properties of a pure substance (steam):</u> Steam generation, steam tables, Mollier diagram, basic thermodynamic processes of steam, outflow and throttling of gases and steam.

<u>Power and refrigeration systems:</u> Internal combustion engines, the Ranklin cycle, Prayton cycle, Gas-turbine cycle.

Gs 101: General Geology   3 Units

Introduction to geology, definitions of geology and engineering geology, general outline of the structure of the earth, most abundant elements and mineral of the earth crust. Magma, rocks cycle, minerals, physical properties of minerals. Classification of mineral on basis of chemical composition. Rocks classification: Igneous rocks, sedimentary rocks, metamorphic rocks, Weathering, erosion and soil formations. Introduction to simple geologic structures: fold, fault, joint and unconformity. Deformation and failure behavior of rocks and factors controlling these behaviors.

<u>Laboratory:</u> identification and classification of minerals and rocks, exercises of contour maps, topographic maps, geological maps and cross sections.

Gs 102: Structural Geology   3 Units

Mechanical principles; force, stress, strain, stress-strain diagrams, factors controlling behavior of rock materials, folds; description, field study, mechanics and causes of folding, concentric folds and associated faults and oil accumulation, faults; description, classification and recognition, diapers and related structures, dating of the structural events, tectonic and tectonic classification.

Gs 203: Sedimentology   3 Units

Stratigraphic column, stratigraphic units, methods of stratigraphic analysis principles of comparisons and correlation of rock units, physical properties of recent sedimentary environments, stratigraphic relations classification of elastic and non-elastic rocks physical and mineralogical characteristic of elastic and non-elastic sedimentary rocks, sedimentary structure and rules in environmental analysis, porosity and permeability.

<u>Laboratory:</u> Grain size analysis for depositional analysis, microscopic analysis, stratigraphic analysis.

Pte 102: Petroleum Geology   3 Units

Introduction, structure of the earth, geological times, determination of different environments for petroleum formation, types of reservoir rocks for oil and natural gas, features and distributions of sediments, geographic distribution of oil field in all over the world and in Libya, theories of petroleum generation, migration and accumulation , hydrocarbons traps, different environment for reservoir formation, subsurface geology of Sirte basin, stratigraphy of Sirte basin, source rocks, hydrocarbon exploration, preparation of maps, section and diagrams, oil reserves estimation.

Gs 204: Fluids Mechanics   3 Units

Fluid properties; fluid static, velocity and shear; continuity, momentum and energy questions; Bernoulli equation; laminar and turbulent flow regimes; frictional loss in pipes; transportation and metering of fluids; pumps and compressors; agitation of liquids; compressible flow; flow around submerged objects; fluidization.

Laboratory:

Measurement of pressure, velocity, temperature and mass flux. Hot wire anemometry, laser doppler anemometry. Water tables, water tunnels and wind tunnels. Friction and total pressure losses in pipes. Axial and radial compressors, turbines and fans. Turbulent flow measurements. Compressor, turbine and wing blades and profiles. Jets, wakes, waves and vortices. Hydraulic and pneumatic circuits. Fluid power control systems.

Gs 205: Applied Geophysics   3 Units

Introduction to exploration methods – role of applied geophysics in field of oil and gas exploration. Principle of seismic, gravity, magnetic, electric methods, principles of geophysics calculations, geophysics data processing. Fieldwork, results and interpretation of seismic, seismology, resistivity, radioactive, and geothermal. Application of geophysical methods for hydrocarbon exploration.

Gs 305: Fluid flow in porous media   3 Units

Introduction, static pressure energy in wells, the fundamental equation of fluid flow in porous media (Darcy's Law) and it is application. Classification of fluid flow system: Linear, Radial, Spherical, Steady state linear flow, incompressible fluids, gases linear flow in beds in series and in parallel. Poiseuille's law for capillary flow. Flow through fractures, incompressible fluids, gravity effect, average pressure in circular flow, productivity coefficient, constant flow of multi fluids, liquids flow equations and gas equations. Permeability variation in radial flow. Diffusivity equation, exponential integral solution and it is applications, radial flow in bounded drainage areas, water influx. General material balance equation, simultaneous calculation of initial oil in place and water influx from material balance equation.

Gs 206: Petroleum Engineering Economic   2 Units

Introduction, fundamentals commonly used in economic study of engineering problems in design, operation, replacement and process control are included. Interest, annuity, depreciation, accounting and financing of engineering enterprises are covered together with taxation and market evaluation. Estimation of the total production costs. Cash flow projection, financial measurements, investments evaluation criteria.

Pte 101: Introduction to Petroleum Engineering   2 Units

Abroad study to the various activities in the petroleum industry starting from the origin of petroleum, its formation, methods of search and exploration, drilling, development, production, storage, transport and delivery to refineries, this course informs the junior student about the future subjects, their aims and relationships.

Pte 105: Drilling Engineering I   3 Units

Principles of oil well drilling, well planning, drilling cost evaluation, the drilling rig types and components of rotary drilling rig. Factors affecting rate of penetration. Technology of drilling to producing formation. Drilling fluids and materials, their function and calculation.

Pte 201: Drilling Engineering II   3 Units

Casing design and cementing technology of drilling, directional wells, offshore drilling (methods, equipments).

Pte 202: Drilling Engineering Lab   2 Units

Laboratory work is concerned with the methods of preparation and testing of drilling fluids and cement, study of the change in their properties by using the different chemicals additives.

Pte 203: Petroleum Machineries   3 Units

Recognition of machineries and equipments used in oil industry either drilling or production from wells to the oil shipment (well head, flow lines, manifold, separators, storage tanks). The study of function and various methods of operation and design are also involved, well testing equipments, crude oil treating, type of treating, compressors pumps, their types and design, types of valves.

Pte 103: Well Logging   3 Units

Principle of well logging, objectives of use, electric logging such as spontaneous induction and radioactive logging (Gamma –ray, neutron, sonic, penetration logging) sampling and productivity. Interpretation of logs for solving many engineering and geological enigma in wells such as identifying rock state and their physical characteristic and evaluating oil and water bearing aquifers. Programming and selecting logs of efficient and economic values. The practical side of course include studding the main characteristic of the applied instruments and tools and logs quality with qualitative and quantities interpretation of them as a major tool for subsurface structures evaluation.

Pte 204: Applied Reservoir Engineering   3 Units

Hydrocarbon reservoir classification, reservoir fluid system. Hydrocarbon in place evaluation by volumetric methods: oil, gas and gas condensates. HC reserve evaluation by other methods. Material balance equations and HC reserve evaluation by this method. Mechanisms and drives of reservoir production. Future performance. Fluid properties. Water influx, aquifers evaluation. Historical performance, depletion performance, performance prediction. Libya reservoirs, applicability of MB.

Pte 205: Well Testing   3 Units

This course covers estimation of field properties by pressure test analysis. Drill stems testing steps and its analysis. Pressure builds up and draws down tests and their usage for calculating reservoir characteristics. Average reservoir pressure. Gas well testing.

Pte 205: Reservoir rock and fluids properties   3 Units

Part one: Fundamental properties of reservoir rocks, namely porosity, compressibility, permeability, electric conductivity, fluid saturation, surface forces and capillary pressure, effective and relative permeability, and their applications in volumetric and flow calculations in petroleum reservoirs. Part two: Fundamental properties of reservoir fluids, namely oil, natural gas, and formation water. Hydrocarbon phase behavior, equations of state, formation volume factors, gas solubility, types of vaporization, K values, gas separation, and reservoir engineering

Pte 306: Applied Reservoir Engineering Lab   2 Units

Determination of organic oil in the reservoir, using thickness, porosity, and saturation maps. Measurements tools for: porosity, permeability, saturation percentage, capillary pressure, oil density and viscosity, specific gravity of rocks and oil, PVT properties and interpretation of PVT reports for reservoir fluid samples– producing sandstones analysis.

Pte 104: Seismic survey   3 Units

Introduction, stress, strain relationship, seismic waves, propagation of seismic waves in rocks, travel time – distance curves, seismic exploration, equipments of seismic survey, reflection seismic methods, refraction seismic methods, velocities of seismic energies in rocks, velocity analysis, interpretations of seismic data survey for engineering geology and enquiring geophysics and detection of subsurface geological structures for purposes of Ores and hydrocarbon exploration.

Pte 207: Production Engineering I   3 Units

<u>Petroleum Production System:</u> Reservoir drive mechanism, oil and gas wells, separator systems, gas compressor, safety control system. <u>Reservoir Deliverability:</u> Flow regimes, inflow performance relationship, construction of IPR curves using test points, composite IPR of stratified reservoirs, future IPR. <u>Well bore Performance:</u> Single-phase liquid flow, multiphase flow in oil wells, single-phase gas flow, and mist flow in gas wells. <u>Choke Performance:</u> Single-phase liquid flow, multiphase flow in oil wells, Single-phase gas flow, and mist flow in gas wells. <u>Well Deliverability:</u> Nodal analysis, deliverability of multilateral well. <u>Forecast of Well Production:</u> Oil production during transient flow period, oil production during pseudo–steady flow period, gas production during transient flow period, gas production during pseudo–steady-state flow period. <u>Production Decline Analysis:</u> Exponential decline, harmonic decline, hyperbolic decline, model identification, determination of model parameters. <u>Well Tubing:</u> Strength of tubing, tubing design. <u>Separation Systems:</u> Introduction, separation system, dehydration system. <u>Transportation Systems:</u> Introduction, pumps, compressors, pipelines.

Pte 302: Production Engineering II   Units 3

Artificial lift methods. Sucker rod pumping, pumping system, polished rod motion, load to the pumping unit, pump deliverability and power requirements, procedure for pumping unit selection, principles of pump performance analysis. <u>Gas lift:</u> gas lift system, evaluation of gas lift potential, gas lift gas compression requirements, selection of gas lift valves, special issue in intermittent flow, design of gas lift installations, factors to consider in the design of continuous gas lift, determination of the gas injection point. <u>Electrical submersible pumping:</u> components of the submersible pumping system, types of electrical pumping installation, planning for and comparison of different artificial lift methods. Surface production facilities: Separators, heater treaters and oil skimmers.

Pte 301: Automatic Control   3 Units

Introduction to control systems, mathematical models of linear systems. Feedback control systems: characteristics and performance. Stability of linear feedback systems. Frequency response methods. Design and compensation of feedback control systems.

Pte 303: Reservoir simulation   3 Units

This course covers fundamental concepts of reservoir simulation to model single and multiphase flow in petroleum reservoirs. Topics include reservoir engineering concepts, mathematical concepts, derivation of reservoir flow equations, finite difference approximations, and their solutions, and applications to predict reservoir performance. Simulator classification, application of reservoir models in field development.

Pte 402: Special Topic in Petroleum Engineering   3 Units

This course may cover any area of petroleum engineering that is not covered by other courses of the program. A topic is selected for an in-depth study in the form of a semester course.

Pte 404: Project Management   3 Units

Concepts, development of industrial management. Objectives. Planning, organization, follow up, supervision, control, evaluation. National planning, national plan preparation. <u>Stages of industrial project:</u> studies, evaluation, and execution of the projects. Optional analysis. Field analysis and studies, market studies, economical studies, input, output, technical studies. Indicator for the choices of technology, technology updating. Feasibility, profitability analysis of the projects. Progress, targets, achievements, time schedule. Feedback, flow of data, information, presentation, preparation of technical report.

Pte 304: Well Completion   3 Units

Concepts, purpose of completion. Secondary cementing squeezes liner and plug back cementing. Completion designs and factors effecting it, choice, methods and types. Completion fluids. Equipments: down hole and surface, tubular, strings. Perforation, sand control, fluid displacement, well bringing in, swabbing, stimulation, acidizing, fracturing, work over: cause, problems, remedies. Work over planning.

Pte 305: Transportation and Storage of Pet. Eng   2 Units

Pipe line transportation of oil and gas principles, flow calculations, pressure loss in pips, sizing and specifying pipe, selection of route, protection against corrosion, types of pipe laying, pipe line design, metering of petroleum & petroleum product. Rules and regulation while transport and storage of oil and gas. Storage of oil and gas. Types of storage tanks. Under ground storage of natural gas.

Pte 401: Computer Application in Pet Eng   3 Units

Applications of computing procedures for the petroleum industry, particularly in drilling, production, reservoir engineering and formation evaluation. Emphasis is given to mathematical simulation models of different reservoirs and drawing production policy.

Pte 400: Safety and Environmental impact of Pet. Eng.   2 Units

This course introduces students to safety and environmental issues in petroleum operations. Topics include sources of pollutants and hazards, management of safety and loss prevention, safety programs and safety rules, and environmental protection, rules and regulations.

Pte 208: Natural Gas Engineering   3 Units

Properties of natural gas and gas condensate systems, their PVT relation. Evaluation of original gas in place by volumetric methods. Gas materials balance method and its application. Flow of gas in pours medium and well. Gas well deliverability tests. Gas separation, treatment, dehydration, gathering, transportation, and measurements. Storage: underground storage, liquefied natural gas. Gas fields development and their feasibility. Libyan gas fields.

Pte 405: Enhanced Oil Recovery   3 Units

Outline of EOR methods and common factors affecting them. Fluid distribution and the theory of frontal displacement. Buckley Leverett theory. Injection well location. Water injection: Water injection performance calculations for homogenous and stratified formations. Gas injection: gas injection performance calculations. Miscible drive: high pressure dry gas injection. Enriched gas injection. Liquefied petroleum gases. Alcohol slug injection. Carbon dioxide injection. Chemical flooding: surfactant injection, polymer flooding, caustic flooding, the use of micro emulsions. Thermal recovery methods: Hot water injection, steam injection, cyclic steam injection, in-situ combustion (forward and reverse combustion).

Pte 403: Project methods and proposal   2 Units

Oil field methods, data gathering, sampling methods, data preparation and classification, data presentation, spread sheets calculation and analysis of data, project proposal methods, referecing methods, software's practices, project methods, project report structure, project writting formats, project proposal preparation and presentation

Pte 406: Graduation Project   4 Units

The students of fourth year are divided into groups supervised by one or more of staff members; each group has to prepare and present a complete study on one of the oil subjects suggested and approved by the department research counsol. The study should be either a laboratory study, field study, or theoretical study using the available data and means from Libyan fields or any others. The project aims to enable the student to depend on himself in doing investigation and tackling problems, through data surveying, searching, gathering, analysis, drawing conclusion. Finally the student has to present this report and discuss it in front of committee composed from department teaching staff member.