

# FIRST YEAR

Code	Subject		Week/Hour						Units
			First term			Second Term			
			Th.	Tut.	Lab.	Th.	Tut.	Lab.	
PE100	General Geology	جيولوجيا عامة	3	-	2	3	-	2	8
GE102	Mathematics	الرياضيات	3	1	-	3	1	-	6
GE104	Computer Programming	برمجة الحاسوب	2	-	2	2	-	2	6
GE106	Engineering Drawing and Descriptive Geometry	الرسم الهندسي والهندسة الوصفية	1	-	3	1	-	3	4
GE108	Static's and Dynamics	الميكانيك	2	1	-	2	1	-	4
GE110	English LanguageI	اللغة الانكليزية	2	-	-	2	-	-	4
GE112	Human Rights	حقوق الانسان	1	1	-	1	1	-	2
GE114	Physics	الفيزياء	2	-	-	2	-	-	4
GE101	Analytical Chemistry	الكيمياء التحليلية	2	-	2	-	-	-	3
GE103	Electrical Technology	كهرباء	-	-	-	2	-	2	3

## **Department of Petroleum Engineering**

### **The Syllabus**

**The following is the syllabus of the subjects in the department Curriculum.**

### **FIRST YEAR**

#### **Computer Programming**

Using Excel (Introduction, Navigating the Interface, Entering Data, Setting Cell Data Types, Selecting More Than a Single Cell, Entering Formulas, Exploring the R1C1 Cell Reference Style, Referring to More Than a Single Cell, Understanding Operator Precedence, Using Exponents in Formulas, Formatting Your Spreadsheets, Leveraging Copy, Cut, Paste, and Paste Special, Using Cell Names, Validating Data, Taking Advantage of Macros, Adding Comments and Equation Notes), Charting (Creating Simple Charts, Exploring Chart Styles, Formatting Charts, Customizing Chart Axes, Setting Log or Semilog Scales, Using Multiple Axes, Changing the Type of an Existing Chart, Combining Chart Types, Building 3D Surface Plots, Preparing Contour Plots,

Annotating Charts, Saving Custom Chart Types, Copying Charts to Word), Getting Acquainted with Visual Basic for Applications (Navigating the VBA Editor, Writing Functions and Subroutines, Working with Data Types, Defining Variables, Defining Variables, Using Arrays, Commenting Code, Spanning Long Statements over Multiple Lines, Using Conditional Statements, Using Loops, Debugging VBA Code, VBA's Built-in Functions, Exploring Excel Objects, Creating Your Own Objects in VBA).

Mathematical Functions (Using Summation Functions, Delving into Division, Mastering Multiplication, Exploring Exponential and Logarithmic Functions, Using Trigonometry

Functions, Seeing Signs, Getting to the Root of Things, Rounding and Truncating Numbers, Converting Between Number Systems, Manipulating Matrices, Building Support for Vectors, Using Spreadsheet Functions in VBA Code) Curve Fitting and Regression (Performing Linear Curve Fitting Using Excel Charts, Least Squares Method, Generating Nonlinear Curve Fits Using Excel Charts, Fitting Nonlinear Curves Using Solver ) Solving Equations (Finding Roots Graphically, Solving Nonlinear Equations Iteratively, Automating Tedious Problems with VBA, Solving Linear Systems) Numerical Integration and Differentiation (Integrating a Definite Integral, Implementing the Trapezoidal Rule in VBA).

## **General Geology**

Earth in space; shape and surface relief of the earth; matter and minerals; igneous, sedimentary and metamorphic rocks; weathering and soils; processes of erosion, transportation and deposition; ground water; crustal deformation (structural features) and mountain building movements; earthquakes and the earth's interior; keys to the past; time in geology; historical geology; plate tectonics and continental drift.

## **Engineering Drawing and Descriptive Geometry**

Engineering Drawing: Introduction, instruments & their use; applied geometry; dimensions & lettering; orthographic drawing & sketching; pictorial drawing & sketching auxiliary view; section; convection& assembly; projection in general.

Descriptive Geometry: Representation of points, lines, and planes; types of planes; application of lines and planes; development of surfaces; determination of true lengths of straight lines by revolution and auxiliary planes; traces of planes; finding line of intersection of planes by traces and projections.

## **Mathematics**

Types of functions (trigonometric; inverse trigonometric functions, logarithmic functions, exponential functions, transcendental functions, other types of functions, graph of functions);

Differentiation (explicit and implicit; application of derivatives in graphing); Integrals (integrals as a summation of areas; definite integrals, applications of definite integrals, areas and volumes; techniques of integration); determinants and matrices, conical section; Introduction to polar coordinates.

### **Mathematics: Static's & Dynamics**

Static & dynamic principles; resultant of forces; friction; center of gravity; moment of inertia; rectilinear motion; curvilinear motion; rotation; energy & work; mechanical vibration.

### **Physics**

Energy and its Conservation: energy, work, power, gravitational potential energy, kinetic energy, conservation of energy. Simple Harmonic Motion: periodic motion, simple harmonic motion, the potential energy of a spring, conservation of energy and the vibrating spring. Wave Motion: mathematical representation of a wave, speed of a transverse wave on a string, reflection of a wave at a boundary, sound waves, the transmission of energy in a wave and the intensity of a wave.

Fluids: density, pressure, Pascal's principle, Archimedes' principle, equation of continuity, Bernoulli's theorem, viscosity, stress and strain. Surface tension: interfacial tension, contact angle, wetting phenomena, capillary pressure. Heat transfer: convection, conduction, and radiation. Coulomb's law and the electric field, flux, Gauss's law, electric potential.

### **Analytical Chemistry**

Theory: Review of basic concepts; stoichiometry; chemical reaction and heat; organic chemistry; fuels; various batteries and electronic cells; principles of corrosion; water for domestic uses; industrial water; atmospheric pollution.