SECOND YEAR			Hours/Week						
			First term			Second Term			Unit
Code	Subject		Th.	Tut.	Lab.	Th.	Tut.	Lab.	
PE200	Structural and Petroleum Geology	الجيلوجيا التركيبية	2	-	2	2	-	2	6
GE202	Mathematics	الرياضيات	3	1	-	3	1	-	6
GE204	Computer Programming	برمجة الحاسوب	1	-	2	1	-	2	4
GE206	Fundamentals of Petroleum Engineering	اسس هندسة النفط	2	1	-	2	1	-	4
GE208	Fluid Mechanics	ميكانيك الموائع	2	2	-	2	2	2	5
GE210	English Language II	اللغة الانكليزية	2	-	-	2	-	-	4
GE212	Democracy	ديمقراطية	1	1	-	1	1	-	2
PE201	Petroleum Properties	خواص نفط	1	-	3	-	-	-	2
GE203	Eng. Thermodynamics	ديناميك الحرارة	3	1	-	-	-	-	3
GE205	Strength of Materials	مقاومة المواد	-	-	-	2	1	2	3

Department of Petroleum Engineering

The Syllabus

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

SECOND YEAR

PE 200 Structural and Petroleum Geology

Mechanics of structural deformation; folds, faults, and joints ؛unconformities; sedimentary environments; origin of oil: generation ،migration and accumulation of petroleum; source rocks; reservoir rocks ،cap rocks, traps (types and discovering techniques); reservoir mechanics)pressure, temperature, reservoir energy); subsurface mapping; oil field, waters, Iraq and Middle East oilfields .

GE 202 Mathematics II

Polar coordinates (graphs in polar coordinates; arc length and areasin polar coordinates); Vectors in two and three space (Cross products ؛Vector valued functions; Motion along curves; differentiation andintegration of vector valued functions); Infinite series (divergence andconvergence of series, Taylor and Maclaurian series); Functions of morethan one variable (Partial differentiation ; Extreme values, gradients ؛Lagrange multiplier); Multiple integrals, change of order; Change from

Cartesian to polar coordinates; first order differential equations ؛Introduction to second order differential equations .

GE 204 Computer Programming

FORTRAN 90, Mathlab .

PE 206 Fundamentals of Petroleum Engineering

Elements of petroleum engineering; origin of petroleum; reservoirrock properties and fluid distribution; volumetric calculations of oil inplace; natural forces in oil and gas reservoirs; oil exploration; rotarydrilling; rig components; casing, cementing and well completion; welllogging; surface equipment; Iraqi oil fields .

GE 208 Fluid Mechanics

Dimensions & units, process variables; physical state; overall massbalance; overall energy balance; overall momentum balance, concept offluid behavior; Newtonian and non-Newtonian fluids, flowmeasurements; Pitot tube; Venturi meter, orifice meter; Rota meter; somedesign equations for the flow of incompressible fluids; friction losses inpipes and fittings; two-phase flow; fluid machinery .

GE 210 English Language II

Punctuations; Phonetics and spelling; Regular and irregular verbs ؛Words and phrases that require special attention; Idioms with commonverbs; Writing (composition, letters, essays). .of Petroleum Engineering

GE 212 Democracy

PE 201 Petroleum Properties

Crude Oils (chemical composition, classification, properties ؛(density, specific gravity and coefficient of expansion; viscosity ،molecular weight; vapor pressure, specific heat; lateen heat; heat ofcombustion; boiling range, flash point; pour point, sulfur content; anilinepoint; penetration umber; softening point; crude oil evaluation; fractional

distillation and TBP curve; analysis of fraction; dehydration of crude oil ؛natural gas properties; oilfield water properties .

GE 203 Engineering Thermodynamics

Temperature and heat: temperature, heat, specific heat, calorimetry ،change of phase, thermal equilibrium. Thermal expansion: linear, areal ،and volume expansion of solids,

volume expansion of liquid and gases ،Charles's law, Boyle's law, the ideal gas law, kinetic theory of gases, realgases, equations of state. Application of the concept of work to a

Thermodynamic system, heat added and removed, first law ofthermodynamics, some special cases of the first law (the gasoline engine ،the ideal heat engine, the Carnot cycle). The second law ofthermodynamics: heat engine and the second law, refrigeration and thesecond law, reversibility, entropy, statistical interpretation of entropy .Binary system, multi-component system, bubble point, dew point, phase

envelop, critical pressure-critical temperature .

GE 205 Strength of Materials

Stress; simple stress, shearing stress, bearing stress, thin wallcylinders, strain, stress diagram, Hook law, Poisson's ratio, thermalstress; torsion; torsion formula, flanged bolt; coupling helical springs ؛shear and bending moments diagrams; analytical and graphicaldeflection; buckling; special topics.