Université Saint-Joseph
Faculté d'Ingénierie
École supérieure d'ingénieurs de Beyrouth (ESIB)

« Master Oil and Gas : Exploration, Production and Management »
« Master Pétrole et Gaz : Exploration, Production et Management»
الماستر في استكشاف وانتاج وادارة البترول والغاز
Upstream and Downstream : Engineering and Management
(M P O G)

With the participation of « Institut Français du Pétrole (**IFP School**) »	In partnership with **TOTAL**

and with the support of

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For more informations :

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GENERAL INFORMATIONS

Based on the preliminary investigations on offshore oil and gas in Lebanon, as well as the expertise of international experts and exploratory mission reports,
Based on the Lebanese new law on oil and gas,
Based on the impact of this industry on the Lebanese economy,
Based on the absence of similar or equivalent program in Oil and Gas in Lebanon
Based on the consequences of such program on creating new jobs and boosting of several local productive sectors,
Based on the urgent need for engineers and specialists in Oil and Gas in Lebanon.

The « École supérieure d'ingénieurs de Beyrouth (ESIB) » took the initiative to contact their partners, in particular the « Institut Français du Pétrole (IFP School) » and TOTAL, as well as European and Arab institutions to implement a pioneering program in Lebanon on "Oil and Gas" in its two components: Technical and Economical, or Upstream and Downstream.

SCIENTIFIC AND EDUCATIONAL PURPOSE

The dual objective of this program is to train:

1 - Experts in Reservoir Engineering (Upstream) :

This program trains professionals in petroleum engineering with a focus on reservoir engineering.

As reservoir engineers, they are able to describe the reservoir and to understand its behavior through data acquisition, interpretation and integration considering: rock characterization, fluids characterization and fluid flow in porous media.

Consequently, they contribute, in collaboration with geoscientists, to evaluate volumes of hydrocarbons in place and they state on the natural production mechanisms.

Starting from the understanding of the reservoir, they propose an economically optimized development strategy of hydrocarbon fields and they evaluate the associated reserves and production profile. To do so, they are able to use tools such as dynamic reservoir simulation.

They highlight uncertainties and their impacts on the evaluation of field performances.

They are able to describe drilling activities, well performances and surface facilities for processing and transportation of oil and gas.

Security and environmental issues are also of their concern. They identify the main risks associated to operations and the risk mitigation options.

2- Experts in Petroleum Economics and Management (Downstream):

This program trains also experts to study the market structure and price mechanism: Changes in market structure, strategy of exporting countries and its impact on prices, global demand and the rise of emerging countries (Brazil, Russia, China, India, etc..), speculation and its impact on the price of oil in short term, the outlook for the coming years, economic recovery and rising of oil prices, the risk, competitive environment and arrival of new entrants and new aggressive strategies, behaviors of petroleum countries, competitors and different business practices, security of supply, regional and international legal aspects, the economic growth, transportation costs, etc. ....

GENERAL ORGANIZATION OF THE MASTER

The "Master Oil and Gas" comprises 120 credits, spread over four semesters of 30 credits each.

This program includes:

- Theoretical and practical courses
- Projects and/or internships leading to the preparation of a training report.

Since the Master, is intended primarily for engineers (Bac +5), or 5th year students of engineering ESIB (Bac +4) or graduates of Master of science (Bac +5), candidates eligible to enroll, based on their academic record, could be exempted from a part of the courses.

ORGANIZATION OF PROJETS AND INTERNSHIPS

Projects and internships (training) and other applied work will be held either in Lebanon or abroad, in an oil company or an oil or gas fields. Their purpose is to apply knowledge and skills to study the implementation and feasibility of an oil or gas field (for the projects), and to apply knowledge and skills in the real onshore or offshore field or in a petroleum company (for training).

The scientific responsibility of projects and training is provided by the Master faculty (Teachers).

This work aims to help students to develop and improve the required skills:

- in the Technical field of Oil & Gas reservoirs (Upstream)
- in the Oil and Gas Economy and Markets (Downstream).

They are the subject of a written report and a public presentation. The rating reflects three elements:

- student global behavior during the training,
- content and quality of written report
- oral presentation and defense.

MANAGEMENT AND SCIENTIFIC AND EDUCATIONAL COOPERATION

This program is based on the principle of scientific cooperation between several academic and professional institutions (ESIB, IFP School, TOTAL, Attock Oil International DMCC, Kappa, LOGS, etc.). Courses are provided at ESIB School of engineering, Mar Roukos.

The bodies of the Master Oil and Gas are:

- The Chairman;
- The Coordinator;
- The Monitoring Committee ESIB and IFP School (CS).
- As well as TOTAL ; other collaborations or partnerships are also considered.

The Chairman

The Director of ESIB School provides the management and the responsibility for the proper conduct of the Master. He is in charge of:

- The implementation of administrative, academic and financial issues of the program.
- Setting the lists of enrolled students and graduates;
- Signing the diplomas.
- Assigning the jury for projects and internships.
- Proposing relationships with international university partners and the industrial and professional sector;
- Defining policies and scientific guidance of the "Oil and Gas" sector and propose priorities of the Master program.

The coordinator

The coordinator of the Master (teacher from ESIB) is appointed by the Director of ESIB for one academic year, renewable. He is responsible of:

- The coordination of the academic program;
- Developing and ensuring the application of the rules for the Master and conducting the program;
- Ensuring the needed contacts for the trainees, evaluation of training programs, and allocation of supervisors and trainees;

The Monitoring Committee: ESIB and IFP School (CS).

The Monitoring Committee (CS) consists of the Directors of the two institutions (ESIB and IFP School) or their representatives; CS may involve members of the public or private sector in the Master to assist him.

The CS will meet at least once a year, in Lebanon or in France.

The CS is especially in charge of:

• Approving the missions of IFP School professors and the budget granted by the ESIB for these missions, and the modes of payment;
• Giving an advisory opinion on the composition of the teaching staff and courses repartition;

RECRUITEMENT

Are allowed to present their files:

- Graduate engineers in Electrical Engineering, Mechanical, Civil, Chemical, Oil, or other equivalent or compatible with previous disciplines.
- Holders of a Master degree in Mathematics, Physics, Chemistry, Mechanical, Electrical and Power or other disciplines equivalent or compatible with previous ones,
- Students in the fifth year of ESIB.

The selection of candidates is made by a jury of admission and depends of the maximum number of available places. The admission committee will determine for each student validated courses based on his previous curriculum and define the courses to attend in the Master program, including sometime additional prerequisite courses.

THE DEGREE

The Master degree MPOG will be issued by **ESIB** under the seal of the **Université Saint-Joseph de Beyrouth**.

It validates a program, which ESIB, with the academic involvement of IFP School (France), provide, through collaboration, their educational and scientific means.

It receives financial and educational assistance of several local and international organizations, including the Embassy of France in Lebanon, TOTAL and Attock Oil International DMCC.

The Degree "**Master Oil and Gas:** Exploration, Production and Management" is awarded to candidates who passed all courses exams as well as projects and training, as defined by the rules of the Degree.

RULES OF THE DEGREE

1. Teaching languages.
Due to the regional and international outlook and the requirements of the oil market, the program will be given mainly in English but also in French and Arabic.

2. Test of knowledge
The "**Master Oil and Gas**: Exploration, Production and Management" is awarded to candidates who have passed the courses exams on their theoretical and practical issues and show a sufficient level in the defense of projects and training report.

3. Attendance
Attendance in all educational activities is required in accordance with rules of ESIB.

4. Validation conditions
To each course, project or internship is assigned a note over 20.

A general average is calculated from the notes of courses and project, weighted by the number of credits.

The courses are validated if:

a. The general average is greater than or equal to 12/20, and
b. Notes of all the courses are higher than 08/20.

Projects and internships are validated if each note is greater than or equal to 12/20.

A 2nd session of exams is applied to all non-validated credits according to the rules of ESIB

Priority in the choice of internships is based on the average before the 2nd session.

5. Master Degree.
When candidate validate all his credits, his studies are sanctioned by delivering the Master Degree:

« Master Oil and Gas: Exploration, Production and Management »

الماستر في استكشاف وانتاج وادارة البترول والغاز

The following grades are given:

- 12/20 to 13.99 / 20 : Good Enough
- 14/20 to 15.99 / 20 : Good
- From 16/20 : Very Good

CONDITIONS OF ENTRY

Admissions are based on file study and evaluation. The file must include:

- A photo with the name of the candidate on the reverse.
- Individual extract of family status
- Curriculum Vitae of the candidate
- Certified copies of previous degrees including Baccalaureate
- Certified copies of records obtained in previous University studies.
- Copies of certificates of previous professional work experience of the candidate.
- Letter certifying the mastering of the English language.

(1) - The candidate is required to submit the original documents the day of registration.

Entries will be controlled by the coordinator of MPOG, and presented to the Director of ESIB who establishes a list of admitted candidates to the program. Applicants may be subject to an interview before final admission.

PROGRAM FEES

As a guideline , for the academic year 2013-2014, the cost of credit was equivalent to $ 175. The amount of the tuition is paid in many payments. No refund will be made in case of dropout. TOTAL or USJ Scholarships could be given to the most motivated candidates with very good files presented.

DISTRIBUTION OF COURSES

As a guideline, the following distribution is proposed for the semesters MR2, MR3 and MR4. It should be noted that semester MR1 (4-5 months) represents technical or economical courses taken and validated previously:

Distribution of courses	**Proposed period**
6 months Exploration and Production (Upstream)	September 2015 to July 2016
5 months Economics and Management (Downstream)	
5-6 months of project and/or training and report	August to January 2016
	15-16 months

The duration of the program is 15 to 16 months

DISTRIBUTION OF COURSES

By theme, courses are grouped according to the tables below.

1- Petroleum Exploration and Production (Upstream) (60 ECTS)

Code	Course	Vol	*TPC*	ECTS
020MAOGM1	**Mathematics for engineers** (M. Salim SALEM – ESIB)	40	*20*	6
020BPOGM1	**Basics of probability and statistics** (M. Rafic FADDOUL – ESIB)	18	*12*	3
020THOGM1	**Thermodynamics** (M. Marwan BROUCHE et M. Sami YOUSSEF – ESIB)	24	*16*	4
020GEOGM1	**Geology** (M. Muhsin RAHHAL – ESIB)	18	*12*	3
020AMOGM1	**Advanced mechanics** (M. Fouad KADDAH et M. Fadi GEARA – ESIB)	40	*20*	6
020FMOGM1	**Fluid mechanics** (M. Wajdi NAJEM et M. Sélim CATAFAGO – ESIB)	40	*20*	6
020LPOGM2	**Linear programming for planning and optimization** (M. Rafic FADDOUL - ESIB)	18	*12*	3
020ASOGM2	**Applied Statistics and Probability** (M. Rafic FADDOUL - ESIB)	18	*12*	3
020PGOGM2	**Petroleum geology and Geophysics – Exploration and seismic methods** (M. Muhsin RAHHAL - ESIB)	32	*18*	4
020FROGM2	**Fundamentals of reservoir engineering** (M. Alain AURIAULT - IFP)	24	*6*	3
020DWOGM3	**Drilling/Well Completion/Well performance** (Mme Isabelle REY-FABRET - IFP)	36	*6*	4
020WLOGM3	**Well logging/Well testing – Interpretation** (M. Vladimir Alejandro Choque FLORES - IFP)	30	*6*	3
020PMOGM3	**Production mechanisms – Field development, methodology** (M. Alain AURIAULT - IFP)	24	*6*	2
020RSOGM3	**Reservoir simulation – Field development project** (Mme Maria AGUILERA - IFP)	48	*12*	4
020SFOGM3	**Surface facilities** (M. Julien GUILLET-LHERMITE- IFP)	24	*6*	2
020GFOGM3	**Gas field** (M. Etienne MOREAU - IFP)	24	*6*	2
	T O T A L (648 hours)	458	*190*	**58**

2- Petroleum Economics and Management (Downstream) (30 ECTS)

Code	Course	Vol	*TPC*	ECTS
020MIOGM1	**Microeconomics** (M. Joseph GEMAYEL et Mme Racquel ANTOUN NAKHLE - FSE)	12	*8*	2
020DSOGM2	**Decision sciences** (M. Rafic FADDOUL - ESIB)	18	*12*	3
020BAOGM2	**Business accounting** (M. Jamil ARIDA - FGM)	18	*12*	3
020MEOGM2	**Managerial Economics** (M. Alfred RIASHY)	12	*8*	2
020CAOGM2	**Credit analysis and credit risk management** (M. Nizar ATRISSI - FGM)	18	*12*	3
020POOGM2	**Petroleum Economics and Geopolitics** (M. Naji ABI AAD - ESIB)	18	*12*	3

020FMOGM2	**Financial markets – Options – Swap – Hedgings – Strategies – Derivatives** (Mme Alice TABET - FSE)	18	*12*	3
020LFOGM3	**Legal and fiscal aspects (Upstream and Downstream)** (Mme Lara BOUSTANY - FDSP- Arabe)	18	*12*	3
020SMOGM3	**Strategic management** (M. Camille ASSAF – FGM)	12	*8*	2
020UMOGM3	**Upstream management** (M. Gilles DARMOIS - IFP)	24	*6*	3
020PGOGM3	**Overview of Crude Markets – Pricing game** (Jihad EL HOKAYEM)	18	*6*	2
020TSOGM3	**Trade, shipping & Project finance; banking type and instruments** (M. Salem MOUNZER – ESIB)	18	*12*	3
	T O T A L (324 hours)	204	*120*	**32**

3- Training and report (30 ECTS)

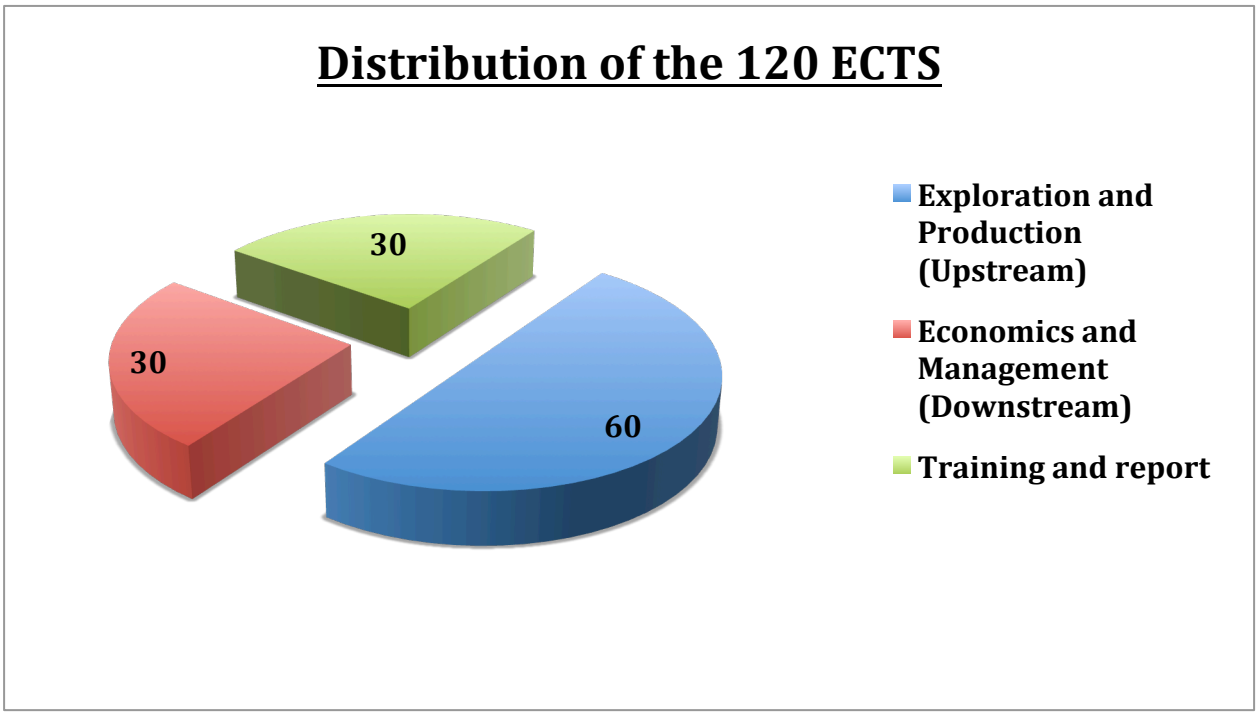
Code	Course	Vol	TPC	ECTS
020TROGM4	**Training and/or project and report** (4-6 months - M. Nasser HOTEIT et M. Fadi GEARA - ESIB)	0	750	30
	T O T A L (750 hours)	**0**	**750**	**30**

In brief

A total of 1,600 hours and 120 ECTS for all disciplines (courses, TD, TP, TPC, Project, Training), distributed as follows:

1 - Technical skills: Exploration and Production (Upstream) : 58 ECTS
2 - Financial skills : Economics, Management, Commodities, Markets (Downstream) : 32 ECTS
3 - Training and report : 30 ECTS

TOTAL **120 ECTS**



Detailed content of the Master

PETROLEUM EXPLORATION AND PRODUCTION (UPSTREAM)

Code	Course	Vol	ECTS
	Petroleum Exploration and Production (Upstream) (58 ECTS)		
020MAOGM1	**Mathematics for engineers**: (M. Salim SALEM) Special functions: gamma, beta, integral cosine, integral sine, error function, Bessel function - orthogonal polynomials - Integral Transforms (Laplace and Fourier) - Complex Functions: continuity, derivatives - Lebesgue integral: Introduction to the Theory of Measurement , the Lebesgue integral (difference with Riemann integral) - Theory of distribution: Definition, general properties, derivatives, Dirac distribution, convolution, Laplace and Fourier integral transforms, applications - the Hilbert transform (transformation Z). arbitrary interval - functions with several variables. PDEs. Applications On Matlab	60	6
020BPOGM1	**Basics of probability and statistics**: (M. Rafic FADDOUL) Modeling - equiprobability - Combinatorial Analysis - Bertrand Paradox - Conditional Probability - Independence - Random variables - distribution function - Hope - Moments - Variance - standard discrete Laws - Function generator - Act probability of a random couple - marginal Laws - Random Variables actual density - characteristic function - Change of variables - Law real-usual Inequalities - Convergences - central limit theorem - Vector	30	3

	Gaussian-Simulation-sampling - Estimation - Tests of Hypotheses.		
020THOGM1	**Thermodynamics:** (M. Marwan BROUCHE et M. Sami YOUSSEF) Thermodynamics: Fundamentals of thermodynamic - microscopic approach of the ideal gas – real gas - condensed phase - Elements of fluid statics - first principle of thermodynamics, energy balances of gas systems - Second principle of Thermodynamics, Phase transitions of pure body - thermal machines. Heat transfer - conduction and thermal conviction - thermal radiation.	40	4
020GEOGM1	**Géologie** : (M. Muhsin RAHHAL) Chapter 1: The Globe Chapter 2: Minerals and Rocks Chapter 3: External Geodynamics, internal Geodynamics Chapter 4: Historical Geology Chapter 5: Structural Geology Chapter 6: Mapping and geological interpretation Chapter 7: Applied Geophysics Chapter 8: Oil Prospecting	30	3
020AMOGM1	**Advanced mechanics:** (M. Fouad KADDAH et M. Fadi GEARA) Chapter 1: Overview of the mechanics of deformable bodies Chapter 2: Kinematics of deformable bodies Chapter 3: Dynamics of deformable bodies Chapter 4: Thermodynamics of deformable bodies and behavior laws Chapter 5: Methods for calculating in linear elastic and isotropic Chapter 6: Variational principles in solid mechanics Chapter 7: Finite Element Method	60	6
020FMOGM1	**Fluid mechanics:** (M. Wajdi NAJEM et M. Sélim CATAFAGO) Velocity field in a fluid - local mass conservation equation consequences – the perfect fluid dynamics - applications of Bernoulli's theorem – Continuum environment - Fluid characteristics - Kinematics - balance equations - Study of viscous fluids - dimensional analysis and similarity - flows - laminar flows and turbulent flows in pipes	60	6
020LPOGM2	**Linear programming for planning and optimization** (M. Rafic FADDOUL) Introduction to linear programming; definition of the problem, graphic resolution. General formulation of a linear program, basis, canonical form. Resolution by the tableau method / by the simplex method. Duality, relationship between primal and dual. Formulation of a minimization problem, finding an initial basis. Economic interpretation of results: marginal costs, marginal rates of substitution, etc. Specific cases: degeneracy, equality constraints, bounded variables. Resolution algorithms: revised simplex method, interior point methods.	30	3
020ASOGM2	**Applied Statistics and Probability** (:M. Rafic FADDOUL): 1-Probability basics 2-Random variables 3-Discrete probability distribution (Binomial distribution) 4-Continous probability distribution (Standard Normal distribution)	30	3

	5-Descriptive statistics/Inferential statistics 6-Confidence Intervals: discrete and continuous variables 7-Hypothesis Testing: discrete and continuous variables 8-Introduction to Single/Multiple Regression 9-Introduction to Neural Networks		
020PGOGM2	**Petroleum geology and Geophysics – Exploration and seismic methods** (M. Muhsin RAHHAL): Principles of petroleum geology Exploration and Geophysical Methods: Passive (gravity, magnetic, electromagnetics), active (seismic reflection), Theory / Principles: Locate or detect the presence of subsurface structures or bodies and determine their size, shape, depth, and physical properties (density, velocity, porosity…) + fluid content Sedimentary Basins Extensional sedimentary Basins Introduction to Basins analysis Seismic Signature of Extensional sedimentary Basins	50	4
020FROGM2	**Fundamentals of reservoir engineering** (M. Alain AURIAULT - IFP): Petrophysics PVT Fluid Flow in porous media OOIP calculation	30	3
020DWOGM3	**Drilling/Well Completion/Well performance** (Mme Isabelle REY-FABRET - IFP): Drilling principles and drilling architecture Completion equipment/design, operations Perforations/Sand control, formation damage and well stimulation Fluid flows in pipes and well performance	42	4
020WLOGM3	**Well logging/Well testing – Interpretation** (M. Vladimir Alejandro Choque FLORES - IFP): Overview/purpose and design of well testing Main data acquisition and interpretation procedures Overview/purpose of well logging Tools, data acquisition and interpretations	36	3
020PMOGM3	**Production mechanisms – Field development, methodology** (M. Alain AURIAULT - IFP): Multiphase flow Natural depletion and material balance Secondary recovery EOR Reserves concepts and Field development	30	2
020RSOGM3	**Reservoir simulation – Field development project** (Mme Maria AGUILERA - IFP): Introduction and workflow Input data and production curve History matching and predictions Field development project	60	4
020SFOGM3	**Surface facilities** (M. Julien GUILLET-LHERMITE - IFP): . Description of the effluent feeding the process unit, and description of the products stored at the end of the treatments . Principles of oil, gas and water treatments, from the separation to the storage . Equipment related to these treatments (description, pro and cons)	30	2

	. Remark: The case of gas field will be more detailed.		
020GFOGM3	**Gas field** (M. Etienne MOREAU - IFP): . Specificity of gas condensate field (PVT, Pressure evolution) . Well testing methods . Field case example . Gas field development project (reservoir approach)	30	2
	TOTAL (648 hours)	**648**	**58**

PETROLEUM ECONOMY AND MANAGEMENT (Downstream)

Code	Course	Vol	ECTS
	Petroleum Economy and Management (Downstream) **(32 ECTS)**		
020MIOGM1	**Microeconomics** (M. Joseph GEMAYEL et Mme Racquel ANTOUN NAKHLE): Section 1: Preferences, Utilities and Demands Chapter 1: Consumers and their preferences Chapter 2: Utilities- Indifference Curves Chapter 3: Demand and Behavior in Markets Section 2: Production and Cost Chapter 4: Production and its Technology Chapter 5: Cost and Choice Chapter 6: Cost Curves Section 3: Markets and Market Structures Chapter 7: Perfectly Competitive Markets Chapter 8: Monopoly Chapter 9: Natural Monopoly and the Economics of Regulation Chapter 10: Oligopoly	20	2
020DSOGM2	**Decision sciences** (M. Rafic FADDOUL - ESIB): Risk management, Decision making under uncertainty, Statistics and forecasting, Operations research, Negotiation and auction analysis, and Behavioral decision theory	30	3
020BAOGM2	**Business accounting** (M. Jamil ARIDA): Balance sheet, Income Statement and Notes The generally accepted accounting principles (GAAP); case of oil and gas companies, I.F.R.S. and FASB Consolidated Accounts Financial Analysis: financial equilibrium and profitability, working capital, operating working capital, cash position Statement of Cash Flows Stock Exchange, Market Value, Price Earning Ratio Financing Plan Cash Flow Planning Introduction to cost accounting and management control.	30	3
020MEOGM2	**Managerial economics** (M. Alfred RIASHY):	20	2
020CAOGM2	**Credit analysis and credit risk management** (M. Nizar ATRISSI):	30	3

	Defining and measuring credit risk parameters Credit analysis and credit rating Credit portfolio models and limitations Risk analysis and management Credit derivatives and structured finance		
020POOGM2	**Petroleum Economics and Geopolitics** (M. Naji ABI AAD): **Economics**: This course shall cover advanced topics in both oil (crude and petroleum products) and natural gas economics with a clear distinction between these two energy sources. It is to offer in-depth analyses of topics such as supply and demand, formation and forecast of prices, investment in oil and gas fields and infrastructure, the economics of transporting oil and that of natural gas (as piped or liquefied gas-LNG), as well as that related to the end-use of crude oil, petroleum products, and natural gas in all its assortment. The course is also to focus on international oil and gas policy issues, with special emphasis on the role of regional and international energy institutions such as the Organization of the Petroleum Exporting Countries (OPEC) and that of the Forum of Gas Exporting Countries (FGEC). **Geopolitics:** This course is to provide an in-depth and updated grasp of key regional and international geopolitical issues that affect in a way or another the global oil and gas industry, including, among others, the rise of resource nationalism in many producing countries, the various sources of instability that are actually shaking or eventually putting in danger several exporting nations, the dependence of oil and gas consumers on unstable and unsteady sources of supply, the numerous factors of interstate conflicts that put at risk different producing states, and emerging geopolitical realities resulted from the strong coming on stream of new, unconventional oil and gas production (shale gas, tight gas, oil shale, oil sands, etc.) around the world.	30	3
020FMOGM2	**Financial markets – Options – Swap – Hedging – Derivatives** (Mme Alice TABET): Overview of Financial Markets and Derivatives Futures contracts and Forward contracts in Oil and Gas Markets Speculation Hedging Strategies Forward Prices Options: Characteristics, Strategies, Pricing, Risk Management European Options American Options Asian Options and other Exotic Options Energy Swaps: Characteristics, Hedging Strategies, Valuation Commodity Caps/Floors, Collar Swing contracts in Gas Market	30	3
020LFOGM3	**Legal and fiscal aspects (Upstream and Downstream)** (Mme Lara BOUSTANY - Arabe): Lebanese petroleum law Law and fiscality	30	3
020SMOGM3	**Strategic management** (M. Camille ASSAF): 1 What is Strategy? 2 Analyzing the problem 3 Models of Strategy	20	2

	4 Strategic Assessment 5 Developing Strategies 6 Implementing Changes in Structure 7 Strategy & Leadership		
020UMOGM3	**Upstream management** (M. Gilles DARMOIS - IFP): Upstream Economics: Key figures in upstream, the main challenges, players: IOC, NOC, Independents, Contractors Oil Reserves Investments and Costs. Accounting and Performance Measures: investments and costs, finding & development costs, booked reserves, etc. Legal and Fiscal aspects: concession - royalty system / production sharing contracts / service contracts with many exercises and spreadsheets. Capital Budgeting: Introduction: cash flow schedule / discount rate. Criteria: net present value (NPV) / internal rate of return (IRR) / pay out time. Fiscal impact: depreciation rate and profitability / after tax NPV, IRR. Taking inflation into account: current money/constant money. Investment and financing mix: overall and equity return and capital rationing. Shallow interest method. Strategies/ Portfolio Management: Upstream strategies, future trends: "frontiers", technology, gas specificity. Project evaluation and decision-making. Risk assessment. Case history. Summary of petroleum systems and risk qualifiers. Use of log normality in dealing with natural parameters. Field size distributions. Prospect and play analysis. Reserve estimation. Portfolio inventories. Tools of choice for ranking and selection. Performances versus predictions. Performance improvement	30	3
020PGOGM3	**Overview of crude markets – Pricing game** (M. Jihad EL HOKAYEM):	24	2
020TSOGM3	**Trade, shipping & Project finance; banking type and instruments** (M. Salem MOUNZER and Attock team): Oil Trader: Applied and practical aspects of oil trading. Logistics And Transportation: Oil products transportation by pipelines / by rail / by trucks / by ships. Storage of oil products – Optimization. Shipping operations.	30	3
	TOTAL (324 hours)	**324**	**32**

TRAINING AND REPORT

PROGRAMME du MR4

Code	Course	Vol	ECTS
	Training and/or project and report (30 ECTS)		
020TROGM4	**Training and/or project and report** (5-6 months - M. Nasser HOTEIT et M. Fadi GEARA - ESIB): 5-6 months of training and/or project with a final report in an Oil and Gas Company or in an Oil or Gas field (Onshore or Offshore)	750	30
	T O T A L (750 hours)	**750**	**30**

« Oil and Gas : Exploration, Production and Management »
(MPOG)

Course	Professor	Degree
1- Petroleum Exploration and Production (Upstream) (58 ECTS)		
Mathematics for engineers	M. Salim SALEM	PhD
Basics of probability and statistics	M. Rafic FADDOUL	PhD
Thermodynamics	M. Marwan BROUCHE M. Sami YOUSSEF	PhD PhD
Geology	M. Muhsin RAHHAL	PhD
Advanced mechanics	M. Fouad KADDAH M. Fadi GEARA	PhD PhD
Fluid mechanics	M. Wajdi NAJEM M. Sélim CATAFAGO	PhD PhD
Linear programming for planning and optimization	M. Rafic FADDOUL	PhD
Applied Statistics and Probability	M. Rafic FADDOUL	PhD
Petroleum geology and Geophysics – Exploration and seismic methods	M. Muhsin RAHHAL	PhD
Fundamentals of reservoir engineering	M. Alain AURIAULT	IFP School
Drilling/Well Completion/Well performance	Mme Isabelle REY-FABRET	IFP School
Well logging/Well testing – Interpretation	M. Vladimir Alejandro Choque FLORES	IFP School
Production mechanisms – Field development, methodology	M. Alain AURIAULT	IFP School
Reservoir simulation – Field development project	Mme Maria AGUILERA	IFP School
Surface facilities	M. Julien GUILLET-LHERMITE	IFP School
Gas field	M. Etienne MOREAU	IFP School
2- Petroleum Economy and Management (Downstream) (32 ECTS)		
Microeconomics	M. Joseph GEMAYEL Mme Racquel ANTOUN NAKHLE	PhD PhD
Decision sciences	M. Rafic FADDOUL	PhD
Business accounting	M. Jamil ARIDA	PhD
Managerial Economics	M. Alfred RIASHY	PhD
Credit analysis and credit risk management	M. Nizar ATRISSI	PhD
Petroleum economics and geopolitics	M. Naji ABI AAD	PhD
Financial markets – Options – Swap – Hedging – Derivatives	Mme Alice TABET	Master-Eng
Legal and fiscal aspects	Mme Lara BOUSTANY	PhD

Strategic management	M. Camille ASSAF	PhD
Upstream management	M. Gilles DARMOIS	IFP School
Overview of crude markets – Pricing game	M. Jihad EL HOKAYEM	Master
Trade, shipping & Project finance; banking type and instruments	M. Salem MOUNZER	Electrical Engineer ESIB Petroleum Economics IFP – Master Economy Attock Oil Int. DMCC

For more informations:

Dean M. Fadi GEARA

Faculté d'Ingénierie - ESIB, Université Saint Joseph (USJ)
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