

Advanced Postgraduate Program in Oil and Gas Management (APGP-OGM)

An Autonomous Full-Time Residential Postgraduate Program (24 months)

Oil and Gas exploration and production would undoubtedly be the highest value creating business, facilitating formidable growth and enabling energy security in India.

-Mukesh Ambani, CMD Reliance Industries.

Global energy demand (met primarily through oil, natural gas and coal) will increase by 60% from 2000 to 2030. Growing populations, especially in developing countries, will require more energy to attain higher standards of living, to address social pressures and to achieve greater security. The Indian Oil & Gas industry is estimated to be a US\$ 90 billion industry. India is the 6th largest consumer of Petroleum products in the world and expected to be the 4th largest by year 2010. India is one of the most emerging Gas markets in the Asia-Pacific region. To realistically achieve and sustain this growth, techno managerial initiatives in the Oil & Gas sector is a must. For the Oil & Gas industry, techno managerial progress is an incremental process involving consistent investment and the application of engineering and managerial expertise over sustained periods of time. And in the end, this evolutionary process can have revolutionary results that dramatically improve our energy future. Present requirement of skilled management professionals for the Oil & Gas sector in India itself is around 1500+ Petro-Managers.

Program

This autonomous, four semester, 24-months, 78 Credits, full-time Advanced Postgraduate Program in Oil and Gas Management is developed to churn out petro managers who will accept responsibilities & challenges in the following areas:

- ▲ Oil & Gas Operation & Asset Management
- ▲ Full Hydrocarbon Value Chain Management
- ▲ Petroleum Retailing & Marketing
- ▲ ERP Application in Petroleum Industry
- ▲ Oil & Gas Finance Management
- ▲ Environment, Health & Safety Management
- ▲ Global Oil & Gas Trading

Program Structure

- ▲ Successful completion requires 78 Credits.
- ▲ The program is distributed over four semesters.
- ▲ The entire curriculum is distributed over four levels to aim at transcending the students' level of understanding for corporate readiness. The levels are respectively, Foundation, Core, Advanced, and Internship/Project.
- ▲ Students have to carry out four months Internship / Project in third semester to consolidate the knowledge acquired during the study.

Program Pedagogy

All courses are designed to address the key issues like theoretical foundation, practical relevance and the real world problem solving approach. To achieve this, courses will be delivered using collaborative learning

process through class room lectures, laboratory sessions, assignments, student seminars, directed reading, lectures by industry experts, case studies, relevant industry visits and project.

Distinctive Features

- ▲ USP of this program is its unique offering to the oil & gas sector in the Pan-Asia region in general and India in specific
- ▲ Program is designed & developed by petroleum engineers and practicing managers to synergies engineering and commercial elements of oil & gas business
- ▲ Greater emphasis on effective communication & presentation skills
- ▲ Four months project in petroleum and allied industries
- ▲ Hands-on experience on e-business simulators like SAP
- ▲ Elaborate quality case studies & seminars delivered by experts from the industry & academics
- ▲ This program will serve as the interface between a conventional engineering / science graduate degree and a management degree
- ▲ Developing analytical skills and the spirit of team work
- ▲ Provide across-the-board professional education and training to the graduates to keep them abreast of innovations and developments in this fast moving industry and the global competitive environment.
- ▲ Broaden the maturity of graduates in oil & gas domain areas to enable them to better communicate with different discipline areas and enable them to take on major responsibility and challenges early in their careers.
- ▲ Improve the employability of graduates and professionals from other sectors

entering the oil and gas sector

Eligibility

- ▲ Graduates / Postgraduates with Degree in Engineering / Technology / Science / Geoscience from any recognized University (with minimum 50% marks or equivalent grades)
- ▲ See insert on 'Selection and Admission Procedure' for more details

Program Commencement

The program commences in August.

Evaluation and Certification

- ▲ Continuous evaluation and performance improvement program
- ▲ Course-wise Credits
- ▲ Balanced assessment based on internals, mid-term test, laboratory and final theory examinations and project
- ▲ Detailed transcripts along with certificate

Placement Commencement

- ▲ Career guidance at the institute
- ▲ Pre-placement facilitation/development and Campus Interview by leading Industries
- ▲ Active interface with Industry

Basic Courses

COM001: LIFE SKILLS DEVELOPMENT

This basic course prepares students for the rigors of the postgraduate level program and professional careers that will follow. The course is divided into 9 sections that will be conducted throughout the program. The course stresses on: communication and presentation, leadership development,

working in teams, time management, negotiation skills, stress management through yoga, multicultural and diversity management and offsite experiential learning. The ultimate objective of this course is to develop individuals with high Intelligence, Emotional and Spiritual Quotients (IQ, EQ and SQ).

COM002: FOREIGN LANGUAGE (OPTIONAL)

In order to equip students to take up global careers, a choice of foreign languages as a major subject is offered. Medium of instruction is English.

Foundation Courses

BM501: FINANCIAL STATEMENT ANALYSIS (3 Credits)

This course focuses on the service activity designed to gather and communicate financial information about business entities to make informed decisions as to how best to use available resources. Students will be introduced to basic accounting principles and conventions, accounting standards, costing and budgeting, financial reporting and recent developments in accounting. This course will also emphasize the understanding, interpretation and use of important accounting statements such as the Profit and Loss, Balance Sheet, Sources and Application of Funds and Cash Flow Statements.

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The course focuses on the principles of business information processing and the role of information systems in contemporary organizations. After a review of the C, C++, and JAVA languages, the emphasis will be on the MIS processes in organizations and the role of support system tools like OLTP, OLAP, DSS, GDSS, ES and EIS

BM531: PRINCIPLES OF MANAGEMENT AND THE BUSINESS ENTERPRISE (3 Credits)

An introduction to the principles and practices of management so as to understand the tasks and functions of management in a global environment. Topics include Evolution of management,

Functional areas of business, the modern team concept, MBO, Organization Structure, PERT, JIT, TQM, Quality Circles, Motivation, Business Ethics and policy making.

BM541: ORGANIZATIONAL BEHAVIOR (3 Credits)

An introduction to how individuals, groups and structure affect the behavior within organizations and how such knowledge can be used to improve the organization's effectiveness. Topics include values, attitudes, personality, perception, motivation, leadership, communication, ethics, power and politics and foundations of group behavior.

OGM501: INTRODUCTION TO OIL & GAS INDUSTRY (1 Credit)

The basic overview of the oil and gas industry is presented in this course. Students will learn all about oil & gas from underground to petrol/gas pumps including the history and origin of oil & gas, oil & gas reservoir, exploration and production, refining, natural gas processing, storage, logistics, transmission and distribution, marketing, industry structure and development, oil & gas markets and role of technology in oil & gas business.

OGM502: BASICS OF OIL & GAS EXPLORATION & PRODUCTION (2 Credits)

This course will enable students to understand the fundamentals of geology and geophysics and their application in hydrocarbon exploration and includes petroleum formation, migration and entrapment; properties of reservoir rocks & petroleum fluids; important exploration methods & drilling techniques; methods used to predict the volume of hydrocarbons in place. Students will also get exposure to principles of development and operation of gas production systems.

OGE503: PETROLEUM REFINING PROCESSES (2 Credits)

This course focuses on overview of petroleum products, crude oil characteristics, and refining process technology, engineering economics and major trends of the petroleum refining industry. The course contains information on the latest technologies and practices affecting the industry. The chemistry and

process flow sheets of refining processes are discussed. The integration of these processes to achieve different refining objectives is addressed, together with means of reducing operation costs by refinery optimization

OGM504: OIL & GAS HANDLING, STORAGE & TRANSPORTATION (2 Credits)

This course will provide students the exposure to surface equipments in oil & gas extraction, oil & gas processing for dehydration and impurities removal, the storage system including underground storage, the pipeline transmission system. Students will also get exposure to corrosion control, flow metering, regulation and recompression stations, automation & control systems required for optimized flow and storage of oil and natural gas.

Core Courses

BM611: ENTERPRISE RESOURCE PLANNING – I (3 Credits)

The course would enable the students to understand the concept of Enterprise Resource Planning or ERP; its functional modules and their inter-relationship. The managerial and technical issues in planning, designing, implementing, and extending enterprise systems and technologies will be an integral part of the course. Further, the course will include orientation to the use of software for modeling and mapping business processes.

BM621: CORPORATE FINANCIAL MANAGEMENT (3 Credits)

An introduction to the fundamental valuation techniques used in finance. Topics include the wealth maximization perspective, time value of money, capital budgeting and project evaluation, introduction to capital markets, risk, security valuation, corporate capital structure and the 'no arbitrage' argument.

BM641: HUMAN RESOURCE MANAGEMENT (3 Credits)

An introduction to the HRM (also known as Personnel Management) function in organizations. Topics include job and content analysis, selection, recruitment, compensation, orientation, training and development of the work force,

performance management, workplace and occupational health and safety, industrial relations and their legal framework.

BM651: MARKETING MANAGEMENT (3 Credits)

An introduction to the Marketing function in organizations. This course provides exposure to the basic concepts and terminology in Marketing Management – the 4 P's of Marketing, consumer behavior, segmentation, channels, product life cycle, pricing and marketing strategy. It will serve as a base for other courses in Marketing, which are primarily application oriented in nature.

BM661: PRODUCTION AND OPERATIONS MANAGEMENT – (3 credits)

An introduction to the management of the operations function in organizations. Topics include capsule history of the development of operations management, demand management, planning, scheduling, layout, control over quality and quantity of output. Problems of production of both goods and services will be considered. This course will include an introduction to the use of quantitative techniques as an aid to organizational decision making.

TCM601: MANAGERIAL ECONOMICS (2 Credits)

The course is designed to equip the students with knowledge and skills necessary to tackle the complex strategic decisions related to economics. It covers the fundamentals of managerial economics, scope of macro-and microeconomics, demand and supply, costs of production and the organization of the firm, market structure and output decisions, pricing strategies.

OGM601: VALUE CHAIN IN PETROLEUM INDUSTRY (2 Credits)

Here students will develop essential understanding of supply chain management and logistics; study the integration of information systems with suppliers and flows of inputs to create cost-effective sourcing networks that enable firms to remain innovative and on the competitive edge across the global marketplace. Students will also explore trends in quantum product flow such as intercompany operational partnerships and channel

restructuring. Students will develop knowledge of logistics system design and management, including interfunctional coordination and change management.

OGE602: ENVIRONMENT, HEALTH & SAFETY ISSUES (2 Credits)

This module will cover aspects of decommissioning of offshore structures including: environmental impact; legal and legislative, health and safety issues. A major part of the course will focus on the existing environmental implications of the offshore oil and gas industry and environmental protection management. Including the effect of green house gases and CDM. This course will track the changes in offshore safety engineering perspective, approaches like early pipeline defect identification and remediation

OGM603: PETROLEUM LAWS, REGULATIONS AND POLICY (2 Credits)

This module aims at developing the students knowledge of: the key players in the international oil and gas industry who are involved in petroleum policy making, the licensing and contractual arrangements including the principles of public law applicable to such arrangements, the key legal contractual risk management issues, the international dispute resolution framework, the legal ownership and valuation of hydrocarbon reserves and investment appraisals for exploration and production, the balancing of the commercial interests of governments, national and international oil companies in exploration and production licences and sharing agreements, the key drivers for and legal mechanics of oil and gas industry mergers and acquisitions and, the international impact of environmental protection laws, law relating to petroleum investment and legislation will also be discussed.

OGE604: PROJECT ENGINEERING MANAGEMENT (2 Credits)

This course covers the principles and application of project management to the oil and gas activities and provides an overview of the theory and practice of managing any project in any organization. The fundamental building blocks of project management are addressed, including project planning, organizing, team building, and effective control mechanisms. Students gain a solid

understanding and foundation to successfully manage each phase of the project cycle, work within organizational and cost constraints, set goals linked directly to stakeholder needs, and utilize proven project management tools to complete the project on time and within budget. This course will also stress the need to carry out risk analysis of oil & gas project. Students will identify, characterize and quantify the risks associated with exploration and production operation. The deterministic module will be extended into the probabilistic model in order to incorporate subsurface risk and uncertainty analysis of oil and gas fields in decision-making.

OGM605: OIL & GAS TRADING AND BUSINESS ALLIANCES (2 Credits)

The theory and conduct of international trade by transnational enterprises are explored. The effects of various multilateral trade agreements and their effects on international business are analyzed like the Bretton Woods system, GATT and WTO. National systems of trade laws are discussed, in addition to forms of trade and their documentation. Students will learn how to anticipate, formulate and implement new strategies in the face of a dynamic and global marketplace. This course offers in-depth treatment of the more complex business strategies and transactions for conducting and expanding transnational business operations. Case-intensive analysis is employed to gain insight into formulating strategy, negotiating, selecting partners, and structuring and managing business transactions over a range, including outsourcing, distributorship, acquisitions, technology transfer and licensing, franchising, joint ventures, and various types of strategic alliances between companies based in different countries

ADVANCED COURSES

BM722: FINANCIAL MARKETS AND INSTITUTIONS (3 Credits)

An understanding of financial markets and their role in financial intermediation is essential for any manager. This course will introduce students to the functioning of Indian money and capital markets - the equities market, the fixed income securities market; term structure of interest rates,

duration and convexity; financial institutions – banks, insurance, investment companies, and asset liability management. Part of the course will be devoted to hands-on exposure to stock market operations.

BM732: BUSINESS ETHICS AND CORPORATE SOCIAL RESPONSIBILITY (3 credits)

Business organizations are part of society and have responsibility towards society as a whole. This course is designed to make students aware of the ethical issues involved in any organization, and especially a business organization. It will expose students to the fundamental aspects of ethics, and the notions of normative, positive and relative ethics. It will further examine the importance of ethical principles and ethical conduct in the organization, legal compliance and compliance beyond the law. It will address the broader concept of social responsibility – human rights, environmental protection, sustainable development, adherence to global standards of corporate governance and compliance with international treaties and good corporate citizenship.

BM752: RETAIL MARKETING AND MANAGEMENT (3 Credits)

This course is specifically designed towards retailing as a subset of marketing. It is organized around a model of strategic decision-making in the retail industry. It deals with back-end operations and store management which includes supply chain, merchandising, customer service, the retail consumer behavior, store location, store management and shopping experience

ITM702: e-BUSINESS (2 Credits)

This course focuses on the important techniques and issues in designing, building and modeling E-business systems. Relevant technologies to equip students on issues like authentication, encryption, digital payments, and digital money. Methods of maintaining security and money transaction over Internet and different type of e-Commerce like B2B, B2C etc

OGM701: TEROTECHNOLOGY OF OIL & GAS RESOURCES & ASSETS (2 Credits)

This unit applies the concepts of terotechnology to the full life cycle of oil and gas assets and resources. Terotechnology

is summed up as a combination of management, financial, engineering, and other practices applied to physical assets in pursuit of economic life-cycle costs (LCC). Focus will be on design specification, costs, commissioning, performance in terms of reliability and maintainability of upstream, flow lines & down stream assets including floating platform, their modification & replacement needs. Course also covers economic, physical, analytical, and statistical evaluation of hydrocarbon-producing assets, production forecasts and reserve estimation emphasizing relative worth of investments based on engineering judgment, time value of money; engineering analysis and prediction of cash flows of oil and gas resources

OGM702: OIL & GAS CONTRACTS AND PROCUREMENT MANAGEMENT (2 Credits)

This course will review different contractual arrangements used to explore, develop and produce oil and gas. The evolving contractual granting process will be analyzed by studying petroleum investment agreements (joint venture, management contracts) and production sharing contracts, rights and duties of sellers and buyers under a contract, buyer rights upon receipt of nonconforming product, ability to terminate a sales contract, formation of government contracts. A study of techniques for planning, conducting, and managing negotiated procurement with focus on price and cost analysis will be discussed.

OGM703: RESOURCE APPRAISAL, FEASIBILITY STUDIES AND PROJECT FINANCING (2 Credits)

This course will look into practical approaches for assessing project viability, carrying out appraisal of technical aspects of project evaluation, with emphasis on how technical data are translated into the numerous assumptions that constitute the economic model of the project; impact of price changes, elements of primary concern to banks, and development of a particular cash flow profile; typical methods of performing feasibility studies, debt capacity tests, and project studies; risk analysis, cash flow projections, and project finance and capital requirements. Case studies on project financing will be discussed.

OGM704: INTERNATIONAL SHIPPING & CHARTERING (2 Credits)

This course will introduce shipping and chartering business including its interface with clean petroleum product sector; operational risk; uniform inspection protocol; types of chartering including time charters and spot options. With the knowledge of exploration & production technology, students learn to amplify its effectiveness with applied project management techniques.

INTERNSHIP / PROJECT

OGM901: INTERNSHIP / PROJECT (12 Credits)

Students can take up an industry-sponsored project or a research based in-house project leading to postgraduate level competency. For industry-sponsored projects, the Career Management Cell facilitates interaction between students and the industry. Students are encouraged to work on projects that will enhance their understanding in certain technology domains in real-life scenario. The research project includes researching on the given/chosen topic that will generally be state-of-the-art in the field. The student will have to undertake a project under the guidance of tenure track/visiting faculty/and industry experts. The project has to be submitted in the form of a dissertation that will be examined by experts nominated by the institute. The project is the culmination of the student's learning in the institute and is expected to be of high standards as demanded by the industry from time to time.

TOTAL COURSE CREDITS: 78

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Course Structure

	Code	Course Name	Credits*
FOUNDATION	BM501	Financial Statement Analysis	3
	BM511	Management Information Systems	3
	BM531	Principles of Management and the Business Enterprise	3
	BM541	Organizational Behavior	3
	OGM501	Introduction to Oil & Gas Industry	1
	OGM502	Basics of Oil & Gas Exploration & Production	2
	OGM503	Petroleum Refining Processes	2
	OGM504	Oil & Gas Handling, Storage & Transportation	2
CORE	BM611	Enterprise Resource Planning-I	3
	BM621	Corporate Financial Management	3
	BM641	Human Resource Management	3
	BM651	Marketing Management	3
	BM661	Production and Operations Management	3
	TCM601	Managerial Economics	2
	OGM601	Value Chain in Petroleum Industry	2
	OGM602	Environment, Health & Safety Issues	2
	OGM603	Petroleum Laws, Regulations and Policy	2
	OGM604	Project Engineering Management	2
	OGM605	Oil & Gas Trading and Business Alliances	2
	ADVANCED	BM722	Financial Markets and Institutions
BM732		Business Ethics and Corporate Social Responsibility	3
BM752		Retail Marketing & Management	3
ITM702		e-Business	2
OGM701		Terotechnology of Oil & Gas Assets	2
OGM702		Oil & Gas Contracts and Procurement Management	2
OGM703		Resource Appraisal, Feasibility Studies and Project Financing	2
OGM704		International Shipping & Chartering	2
INTERNSHIP / PROJECT	OGM901	Internship / Project	12

* 1 Credit Hr = 16 Class Hrs / 32 Lab Hrs in a semester.

MBA IN OIL AND GAS MANAGEMENT (MBA-OGM)

2 years, full-time and residential offered in academic articulation with UPES, Dehardun (www.upesindia.org)



FOCUS AREAS

- ▶ Energy Policy
- ▶ Environment Health, Safety in an Organizational Context
- ▶ Project Engineering Management
- ▶ Oil and Gas Contract Law
- ▶ Operations
- ▶ Management

“Oil is a very important component of economic growth.” - Maria Bartiromo

Oil & Gas is the wheel that drives any economy in modern times. The Indian Oil & Gas Industry is currently estimated to be \$90 billion and constitutes 16% of the country's national income. With this size, it is the sixth largest consumer of Petroleum products in the world. Oil companies in India comprise some of the largest corporate entities in the country. The future is expected to be equally bright. The 8% plus growth of the Indian economy is predicated on the fast growth of the oil sector over the coming decades. The country currently has a refining capacity of 184 million metric tonnes per annum and this is expected to increase to 240 million metric tonnes per annum.

The industry is expected to witness a sea change in practically all aspects. Overwhelmingly government regulated currently, the industry is expected to move towards privatization and deregulation in the years to come. This will unleash the inherent potential of the Oil and Gas Industry significantly. The industry is also expected to become more global. Already, some of our large oil companies are competing on the global front successfully, even acquiring global entities.

These are exciting times for the industry, which makes it ideal for building a career. The industry is expected to generate a huge demand for qualified people in – exploration, production and refining and distribution, logistics, consultancy and advisory, insurance, banking etc. The greatest demand will be for people with techno managerial skills – those who have expert knowledge of the Industry and at the same time possess the managerial skills to handle huge investments and manage a large number of people.

MBA in Oil & Gas Management has been designed keeping in mind the future needs of the industry. It teaches the right blend of management and technical skills and has a global perspective that will always keep our graduates in constant demand by the industry.

ELIGIBILITY

Minimum 50 percent marks at Higher & Senior Secondary level (10th and 12th). Engineering Degree with relevant industry Experience / B.Sc (PCM) with minimum 50% marks from a recognized university.

ADMISSION CRITERIA

UPES Management Entrance Test (UPES-MET), Group discussion and Interview. Students having minimum CAT score of 80 percentile / MAT score of 90 percentile will be exempted from UPES management entrance test. However, such students will have to appear for group discussion and personal interview.

MBA IN OIL AND GAS MANAGEMENT (MBA-OGM)

COURSE STRUCTURE

SEMESTER	CODE	COURSE NAME	CREDITS
SEMESTER-I	SOGM501	Economics & Management Decisions	3
	OGM502	Quantitative Techniques	3
	OGM503	Business Comm. & Negotiation Skills	3
	OGM504	Organizational Behavior	3
	OGM505	Fundamentals of Oil & Gas Business	4
	OGM506	Fundamentals of Petroleum Exploration	4
	OGM507	IT Applications in Petroleum Sector	4
	OGM508	Petroleum Industry Accounting	4
SEMESTER-II	OGM601	Operations & Materials Management	3
	OGM602	Marketing Management	3
	OGM603	Research Methodology and App. Statistics	3
	OGM604	Human Resource Management	3
	OGM605	Understanding of Natural Gas Business	4
	OGM606	Petro Economics	4
	OGM607	Fundamentals of Refining	4
	OGM608	Industrial Visit	1
	OGM609	Petroleum Financial Management	4
SEMESTER-III	OGM701	Project Mgmt. & Contract Administration	3
	OGM702	International Business Management	3
	OGM703	Business Policy & Strategy	3
	OGM704	Econometrics	3
	OGM705	POL: Retailing	4
	OGM706	Understanding Petro Chemical Business	4
	OGM707	Summer Internship	2
	OGM708	Dissertation I	2
	OGM709	Supply Chain & Logistics for Petroleum Industry	4
	OGM710	Financing Petroleum Sector Projects	4
SEMESTER-IV	OGM801	E- Enterprise Management	3
	OGM802	Petroleum Law & Policy	4
	OGM804	Dissertation II	6
	OGM803	Health, Safety & Environment for Petroleum	4
		Life Skills Management (Compulsory subject)	
Total Credits			106

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process flow sheets of refining processes are discussed. The integration of these processes to achieve different refining objectives is addressed, together with means of reducing operation costs by refinery optimization

OGM504: OIL & GAS HANDLING, STORAGE & TRANSPORTATION (2 Credits)

This course will provide students the exposure to surface equipments in oil & gas extraction, oil & gas processing for dehydration and impurities removal, the storage system including underground storage, the pipeline transmission system. Students will also get exposure to corrosion control, flow metering, regulation and recompression stations, automation & control systems required for optimized flow and storage of oil and natural gas.

Core Courses

BM611: ENTERPRISE RESOURCE PLANNING – I (3 Credits)

The course would enable the students to understand the concept of Enterprise Resource Planning or ERP; its functional modules and their inter-relationship. The managerial and technical issues in planning, designing, implementing, and extending enterprise systems and technologies will be an integral part of the course. Further, the course will include orientation to the use of software for modeling and mapping business processes.

BM621: CORPORATE FINANCIAL MANAGEMENT (3 Credits)

An introduction to the fundamental valuation techniques used in finance. Topics include the wealth maximization perspective, time value of money, capital budgeting and project evaluation, introduction to capital markets, risk, security valuation, corporate capital structure and the 'no arbitrage' argument.

BM641: HUMAN RESOURCE MANAGEMENT (3 Credits)

An introduction to the HRM (also known as Personnel Management) function in organizations. Topics include job and content analysis, selection, recruitment, compensation, orientation, training and development of the work force,

performance management, workplace and occupational health and safety, industrial relations and their legal framework.

BM651: MARKETING MANAGEMENT (3 Credits)

An introduction to the Marketing function in organizations. This course provides exposure to the basic concepts and terminology in Marketing Management – the 4 P's of Marketing, consumer behavior, segmentation, channels, product life cycle, pricing and marketing strategy. It will serve as a base for other courses in Marketing, which are primarily application oriented in nature.

BM661: PRODUCTION AND OPERATIONS MANAGEMENT – (3 credits)

An introduction to the management of the operations function in organizations. Topics include capsule history of the development of operations management, demand management, planning, scheduling, layout, control over quality and quantity of output. Problems of production of both goods and services will be considered. This course will include an introduction to the use of quantitative techniques as an aid to organizational decision making.

TCM601: MANAGERIAL ECONOMICS (2 Credits)

The course is designed to equip the students with knowledge and skills necessary to tackle the complex strategic decisions related to economics. It covers the fundamentals of managerial economics, scope of macro-and microeconomics, demand and supply, costs of production and the organization of the firm, market structure and output decisions, pricing strategies.

OGM601: VALUE CHAIN IN PETROLEUM INDUSTRY (2 Credits)

Here students will develop essential understanding of supply chain management and logistics; study the integration of information systems with suppliers and flows of inputs to create cost-effective sourcing networks that enable firms to remain innovative and on the competitive edge across the global marketplace. Students will also explore trends in quantum product flow such as intercompany operational partnerships and channel

restructuring. Students will develop knowledge of logistics system design and management, including interfunctional coordination and change management.

OGE602: ENVIRONMENT, HEALTH & SAFETY ISSUES (2 Credits)

This module will cover aspects of decommissioning of offshore structures including: environmental impact; legal and legislative, health and safety issues. A major part of the course will focus on the existing environmental implications of the offshore oil and gas industry and environmental protection management. Including the effect of green house gases and CDM. This course will track the changes in offshore safety engineering perspective, approaches like early pipeline defect identification and remediation

OGM603: PETROLEUM LAWS, REGULATIONS AND POLICY (2 Credits)

This module aims at developing the students knowledge of: the key players in the international oil and gas industry who are involved in petroleum policy making, the licensing and contractual arrangements including the principles of public law applicable to such arrangements, the key legal contractual risk management issues, the international dispute resolution framework, the legal ownership and valuation of hydrocarbon reserves and investment appraisals for exploration and production, the balancing of the commercial interests of governments, national and international oil companies in exploration and production licences and sharing agreements, the key drivers for and legal mechanics of oil and gas industry mergers and acquisitions and, the international impact of environmental protection laws, law relating to petroleum investment and legislation will also be discussed.

OGE604: PROJECT ENGINEERING MANAGEMENT (2 Credits)

This course covers the principles and application of project management to the oil and gas activities and provides an overview of the theory and practice of managing any project in any organization. The fundamental building blocks of project management are addressed, including project planning, organizing, team building, and effective control mechanisms. Students gain a solid

understanding and foundation to successfully manage each phase of the project cycle, work within organizational and cost constraints, set goals linked directly to stakeholder needs, and utilize proven project management tools to complete the project on time and within budget. This course will also stress the need to carry out risk analysis of oil & gas project. Students will identify, characterize and quantify the risks associated with exploration and production operation. The deterministic module will be extended into the probabilistic model in order to incorporate subsurface risk and uncertainty analysis of oil and gas fields in decision-making.

OGM605: OIL & GAS TRADING AND BUSINESS ALLIANCES (2 Credits)

The theory and conduct of international trade by transnational enterprises are explored. The effects of various multilateral trade agreements and their effects on international business are analyzed like the Bretton Woods system, GATT and WTO. National systems of trade laws are discussed, in addition to forms of trade and their documentation. Students will learn how to anticipate, formulate and implement new strategies in the face of a dynamic and global marketplace. This course offers in-depth treatment of the more complex business strategies and transactions for conducting and expanding transnational business operations. Case-intensive analysis is employed to gain insight into formulating strategy, negotiating, selecting partners, and structuring and managing business transactions over a range, including outsourcing, distributorship, acquisitions, technology transfer and licensing, franchising, joint ventures, and various types of strategic alliances between companies based in different countries

ADVANCED COURSES

BM722: FINANCIAL MARKETS AND INSTITUTIONS (3 Credits)

An understanding of financial markets and their role in financial intermediation is essential for any manager. This course will introduce students to the functioning of Indian money and capital markets - the equities market, the fixed income securities market; term structure of interest rates,

duration and convexity; financial institutions – banks, insurance, investment companies, and asset liability management. Part of the course will be devoted to hands-on exposure to stock market operations.

BM732: BUSINESS ETHICS AND CORPORATE SOCIAL RESPONSIBILITY (3 credits)

Business organizations are part of society and have responsibility towards society as a whole. This course is designed to make students aware of the ethical issues involved in any organization, and especially a business organization. It will expose students to the fundamental aspects of ethics, and the notions of normative, positive and relative ethics. It will further examine the importance of ethical principles and ethical conduct in the organization, legal compliance and compliance beyond the law. It will address the broader concept of social responsibility – human rights, environmental protection, sustainable development, adherence to global standards of corporate governance and compliance with international treaties and good corporate citizenship.

BM752: RETAIL MARKETING AND MANAGEMENT (3 Credits)

This course is specifically designed towards retailing as a subset of marketing. It is organized around a model of strategic decision-making in the retail industry. It deals with back-end operations and store management which includes supply chain, merchandising, customer service, the retail consumer behavior, store location, store management and shopping experience

ITM702: e-BUSINESS (2 Credits)

This course focuses on the important techniques and issues in designing, building and modeling E-business systems. Relevant technologies to equip students on issues like authentication, encryption, digital payments, and digital money. Methods of maintaining security and money transaction over Internet and different type of e-Commerce like B2B, B2C etc

OGM701: TEROTECHNOLOGY OF OIL & GAS RESOURCES & ASSETS (2 Credits)

This unit applies the concepts of terotechnology to the full life cycle of oil and gas assets and resources. Terotechnology

is summed up as a combination of management, financial, engineering, and other practices applied to physical assets in pursuit of economic life-cycle costs (LCC). Focus will be on design specification, costs, commissioning, performance in terms of reliability and maintainability of upstream, flow lines & down stream assets including floating platform, their modification & replacement needs. Course also covers economic, physical, analytical, and statistical evaluation of hydrocarbon-producing assets, production forecasts and reserve estimation emphasizing relative worth of investments based on engineering judgment, time value of money; engineering analysis and prediction of cash flows of oil and gas resources

OGM702: OIL & GAS CONTRACTS AND PROCUREMENT MANAGEMENT (2 Credits)

This course will review different contractual arrangements used to explore, develop and produce oil and gas. The evolving contractual granting process will be analyzed by studying petroleum investment agreements (joint venture, management contracts) and production sharing contracts, rights and duties of sellers and buyers under a contract, buyer rights upon receipt of nonconforming product, ability to terminate a sales contract, formation of government contracts. A study of techniques for planning, conducting, and managing negotiated procurement with focus on price and cost analysis will be discussed.

OGM703: RESOURCE APPRAISAL, FEASIBILITY STUDIES AND PROJECT FINANCING (2 Credits)

This course will look into practical approaches for assessing project viability, carrying out appraisal of technical aspects of project evaluation, with emphasis on how technical data are translated into the numerous assumptions that constitute the economic model of the project; impact of price changes, elements of primary concern to banks, and development of a particular cash flow profile; typical methods of performing feasibility studies, debt capacity tests, and project studies; risk analysis, cash flow projections, and project finance and capital requirements. Case studies on project financing will be discussed.

OGM704: INTERNATIONAL SHIPPING & CHARTERING (2 Credits)

This course will introduce shipping and chartering business including its interface with clean petroleum product sector; operational risk; uniform inspection protocol; types of chartering including time charters and spot options. With the knowledge of exploration & production technology, students learn to amplify its effectiveness with applied project management techniques.

INTERNSHIP / PROJECT

OGM901: INTERNSHIP / PROJECT (12 Credits)

Students can take up an industry-sponsored project or a research based in-house project leading to postgraduate level competency. For industry-sponsored projects, the Career Management Cell facilitates interaction between students and the industry. Students are encouraged to work on projects that will enhance their understanding in certain technology domains in real-life scenario. The research project includes researching on the given/chosen topic that will generally be state-of-the-art in the field. The student will have to undertake a project under the guidance of tenure track/visiting faculty/and industry experts. The project has to be submitted in the form of a dissertation that will be examined by experts nominated by the institute. The project is the culmination of the student's learning in the institute and is expected to be of high standards as demanded by the industry from time to time.

TOTAL COURSE CREDITS: 78

Advanced Postgraduate Program in Oil and Gas Management (APGP-OGM)

Course Structure

	Code	Course Name	Credits*
FOUNDATION	BM501	Financial Statement Analysis	3
	BM511	Management Information Systems	3
	BM531	Principles of Management and the Business Enterprise	3
	BM541	Organizational Behavior	3
	OGM501	Introduction to Oil & Gas Industry	1
	OGM502	Basics of Oil & Gas Exploration & Production	2
	OGM503	Petroleum Refining Processes	2
	OGM504	Oil & Gas Handling, Storage & Transportation	2
CORE	BM611	Enterprise Resource Planning-I	3
	BM621	Corporate Financial Management	3
	BM641	Human Resource Management	3
	BM651	Marketing Management	3
	BM661	Production and Operations Management	3
	TCM601	Managerial Economics	2
	OGM601	Value Chain in Petroleum Industry	2
	OGM602	Environment, Health & Safety Issues	2
	OGM603	Petroleum Laws, Regulations and Policy	2
	OGM604	Project Engineering Management	2
	OGM605	Oil & Gas Trading and Business Alliances	2
	ADVANCED	BM722	Financial Markets and Institutions
BM732		Business Ethics and Corporate Social Responsibility	3
BM752		Retail Marketing & Management	3
ITM702		e-Business	2
OGM701		Terotechnology of Oil & Gas Assets	2
OGM702		Oil & Gas Contracts and Procurement Management	2
OGM703		Resource Appraisal, Feasibility Studies and Project Financing	2
OGM704		International Shipping & Chartering	2
INTERNSHIP / PROJECT	OGM901	Internship / Project	12

* 1 Credit Hr = 16 Class Hrs / 32 Lab Hrs in a semester.

MBA Program in Oil & Gas Management

“ Oil and Gas exploration and production would undoubtedly be the highest value creating business, facilitating formidable growth and enabling energy security in India.”

- Mukesh Ambani
CMD, Reliance Industries

Global energy demand (met primarily through oil, natural gas & coal) will increase by 60% from 2000 to 2030. Growing populations, especially in developing countries, will require more energy to attain higher standards of living, to address social pressures and to achieve greater security. The Indian Oil & Gas industry is estimated to be a US\$ 90 billion industry (16% of GNP), India is the 6th largest consumer of Petroleum products in the world and expected to be the 4th largest by year 2010. India is one of the most emerging Gas markets in the Asia-Pacific region. To realistically achieve and sustain this growth, techno managerial innovation in the Oil & Gas sector is a must. For the Oil & Gas industry, techno managerial progress is an incremental process involving consistent investment (estimated investments in just the marketing sector of Oil & Gas business will be up to US\$ 29 billion by 2025) and the application of scientific, engineering and managerial expertise over sustained periods of time. And in the end, this evolutionary process can have revolutionary results that dramatically improve our energy future. Requirement of skilled professionals for the Oil & Gas sector in India itself from 2007 onwards is 1500+ Petro-Managers and 2500+ Petro-Engineers.

Program

This autonomous, 4-semester, 24-months, 78 credits, full time MBA Program in Oil and Gas Management (OGM) is developed to churn out petro managers who will accept responsibilities & challenges in the following areas:

- ▾ Oil & Gas Operation & Asset Management
- ▾ Technology driven Oil & Gas Management
- ▾ Energy Auditing & Resource Planning Management
- ▾ Full Hydrocarbon Value Chain Management
- ▾ Petroleum Retailing & Marketing
- ▾ ERP Application in Petroleum Industry
- ▾ Oil & Gas Finance Management
- ▾ Environment, Health & Safety Management in Offshore Development
- ▾ Global Oil & Gas Trading

Program Structure

Successful completion of the program requires earning 78 credits in 4 semesters and 24 months. The program and course curriculum is distributed over four semesters and four levels aimed at gradually increasing the student's understanding from core and conceptual management courses to oil & gas domain specific subjects so that he or she at the end of the program is ready to be accepted by the corporate world. The levels of courses offered are Foundation, Core, Advanced and Electives in that order. Students will also undertake summer internship/mini project at the end of 2nd semester.

Students will also be required to take one of the following three sets of electives in the 4th semester.

- ▾ Energy Management
- ▾ Operation and Asset Management
- ▾ Technology Management

Program Pedagogy

All courses are designed to address the key issues like theoretical foundation, practical relevance and the real world problem solving approach. To achieve this, courses will be delivered using collaborative learning process through class room lectures, laboratory sessions, assignments, student seminars, directed reading, lectures by industry experts, case studies, relevant industry visits and project.

Distinctive Features

- ▾ USP of this program is it's unique offering to the oil & gas sector in the Pan-Asia region in general and India in specific
- ▾ Program is designed & developed by petroleum engineers, IT professionals and practicing managers to synergies engineering, IT and commercial elements of oil & gas business
- ▾ Greater emphasis on effective communication & presentation skills
- ▾ 2 months summer internship / mini project in petroleum and allied industries
- ▾ Hands-on experience on e-business simulators like SAP
- ▾ This course offers electives in energy management, operation & asset management and technology management
- ▾ Elaborate quality case studies & seminars

delivered by experts from the industry & academics

- ▾ This program will serve as the interface between a conventional Engineering / Science graduate Degree and a Management Degree
- ▾ Developing analytical skills and the spirit of team work
- ▾ Provide across-the-board professional education and training to the graduates to keep them abreast of innovations and developments in this fast moving industry and the global competitive environment
- ▾ Integrate domain knowledge and managerial skills with state-of-the art advanced IT tools to give a complete and innovative solutions to challenges in Oil & Gas sector
- ▾ Broaden the maturity of graduates in oil & gas domain areas to enable them to better communicate with different discipline areas and enable them to take on major responsibility and challenges early in their careers
- ▾ Improve the employability of graduates and professionals from other sectors entering the oil and gas sector

Eligibility

Science or Engineering / Technology graduates and postgraduates from any recognized University (with minimum 50% marks or equivalent grade)

Program Commencement

The program commences in July / October.

Selection Process

The selection of an applicant for the program is based on the following:

- ▾ Application forms shall be scrutinized for academic profile in line with the eligibility criteria
- ▾ Scores received at the Graduation level like BE / B Tech / MCA / M.Sc. etc
- ▾ Scores received at the "Accepted Qualifying Examinations" like GMAT / CAT / XAT / CET
- ▾ Entrance Examination
- ▾ Performance in Group Discussion
- ▾ Personal Interview

Evaluation And Certification

- ▾ Continuous evaluation and performance improvement program
- ▾ Course-wise Credits
- ▾ Balanced assessment based on assignments, theory examinations and project
- ▾ Detailed transcripts along with certificate

Placement Assistance

- ▾ Career guidance at the institute
- ▾ Pre-placement facilitation/development and Campus Interview by leading Industries
- ▾ Active interface with Oil & Gas and allied companies

Basic Courses

COM 001: LIFE SKILLS DEVELOPMENT

This basic course prepares students for the rigors of the master's level program and professional careers that will follow. The course is divided into 9 sections that will be conducted throughout the program. The course stresses on: communication and presentation, leadership development, working in teams, time management, negotiation skills, stress management through yoga, multicultural and diversity management and offsite experiential learning. The ultimate objective of this course is to develop individuals with high Intelligence, Emotional and Spiritual Quotients (IQ, EQ and SQ).

COM 002: FOREIGN LANGUAGE (Level 1)

In order to equip students to take up global careers, a choice of foreign languages as a major subject is offered. Medium of

instruction is English.

Foundation Courses

These are all required courses. They prepare the students for all the other courses in the MBA program. Typically, they do not have any other pre-requisites except admission to the MBA program. They are all normally taken in the first semester and have to be successfully completed before the student can progress further

OGM501:INTRODUCTION TO OIL & GAS AND ENERGY INDUSTRY (1 Credit)

The basic overview of the oil and gas industry is presented in this course. Students will learn all about oil & gas from underground to petrol/gas pumps including the history and origin of oil & gas, oil & gas reservoir, exploration and production, refining, natural gas processing, storage, logistics, transmission and distribution, marketing, industry structure and development, oil & gas markets and role of technology in oil & gas business.

MBA501: FINANCIAL STATEMENT ANALYSIS (3 Credits)

This course focuses on the service activity designed to gather and communicate financial information about business entities to make informed decisions as to how best to use available resources. Students will be introduced to basic accounting principles and conventions, accounting standards, costing and budgeting, financial reporting and recent developments in accounting. This course will also emphasize the understanding, interpretation and use of important accounting statements such as the Profit & Loss, Balance Sheet, Sources and Application of Funds and Cash Flow Statements

ITM504: DATABASE TECHNOLOGY (2 Credits)

This course focuses on of the role of database systems in information management, and the theoretical and practical issues that influence the design and implementation of database management systems and languages. The entity-relationship modeling, normalization of data and SQL to create, update, modify and query a database are extensively covered

MBA504: MANAGERIAL COMMUNICATION (3 Credits)

An in-depth, intensive and practically oriented study of the effective use of Managerial Communication in an organization. Topics include writing skills, presentation skills, group discussion skills, interview skills, soft skills, interpersonal skills, communication in organizational settings, communicating in teams and meetings, group dynamics, business etiquette and cross cultural communication

MBA511: MANAGEMENT INFORMATION SYSTEMS (3 Credits)

The course focuses on the principles of business information processing and the role of information systems in contemporary organizations. After a review of the C, C++ , and JAVA languages, the emphasis will be on the MIS processes in organizations and the role of support system tools like OLTP, OLAP, DSS, GDSS, ES and EIS

MBA531: PRINCIPLES OF MANAGEMENT AND THE BUSINESS ENTERPRISE (3 Credits)

An introduction to the principles and practices of management so as to understand the tasks and functions of management in a global environment. Topics include Evolution of management, Functional areas of business, Team concept, MBO, Organization Structure, PERT, JIT, TQM, Quality Circles, Motivation, Business Ethics and policy making.

MBA541: ORGANIZATIONAL BEHAVIOR (3 Credits)

An introduction to how individuals, groups and structure affect the behavior within organizations and how such knowledge can be used to improve the organization's effectiveness. Topics include values, attitudes, personality, perception, motivation, leadership, communication, ethics, power and politics and foundations of group behavior

MBA561: BUSINESS STATISTICS (3 Credits)

This course focuses on basic statistics – theory and methods to be applied in most of the other MBA courses that follow. Topics include univariate and bivariate descriptive statistics, elementary probability theory, the Bernoulli, Poisson and Normal data generating processes, the Binomial,

Poisson and Normal probability distributions, the concepts of population and sample, elementary sampling theory and methods, population parameters and sample statistics, introduction to estimation, inference and hypothesis testing, and introductory regression analysis.

Core Courses

These courses may require some pre requisites and are taken in the 2nd semester and beyond

OGM601: BASICS OF OIL & GAS EXPLORATION & PRODUCTION (2 Credits)

This course will enable students to understand the fundamentals of geology and geophysics and their application in hydrocarbon exploration and includes petroleum formation, migration and entrapment; properties of reservoir rocks & petroleum fluids; important exploration methods & drilling techniques; methods used to predict the volume of hydrocarbons in place. Students will also get exposure to principles of development and operation of gas production systems

OGM602: OIL & GAS HANDLING, STORAGE & TRANSPORTATION (1 Credit)

This course will provide students the exposure to surface equipments in oil & gas extraction, oil & gas processing for dehydration and impurities removal, the storage system including underground storage, the pipeline transmission system. Students will also get exposure to corrosion control, flow metering, regulation and recompression stations, automation & control systems required for optimized flow and storage of oil and natural gas

OGE821: PETROLEUM REFINING PROCESSES (2 Credits)

This course focuses on overview of petroleum products, crude oil characteristics, and refining process technology, engineering economics and major trends of the petroleum refining industry. The course contains information on the latest technologies and practices affecting the industry. The chemistry and process flow sheets of refining processes are discussed. The integration of these processes to achieve different refining

objectives is addressed, together with means of reducing operation costs by refinery optimization

OGM603: VALUE CHAIN IN PETROLEUM INDUSTRY (2 Credits)

Here students will develop essential understanding of supply chain management and logistics; study the integration of information systems with suppliers and flows of inputs to create cost-effective sourcing networks that enable firms to remain innovative and on the competitive edge across the global marketplace. Students will also explore trends in quantum product flow such as intercompany operational partnerships and channel restructuring. Students will develop knowledge of logistics system design and management, including interfunctional coordination and change management.

OGM604: PETROLEUM LAWS, REGULATIONS AND POLICY (2 Credits)

This module aims at developing the students knowledge of: the key players in the international oil and gas industry who are involved in petroleum policy making, the licensing and contractual arrangements including the principles of public law applicable to such arrangements, the key legal contractual risk management issues, the international dispute resolution framework, the legal ownership and valuation of hydrocarbon reserves and investment appraisals for exploration and production, the balancing of the commercial interests of governments, national and international oil companies in exploration and production licences and sharing agreements, the key drivers for and legal mechanics of oil and gas industry mergers and acquisitions and, the international impact of environmental protection laws, law relating to petroleum investment and legislation will also be discussed.

MBA611: ENTERPRISE RESOURCE PLANNING-I (3 Credits)

This course would enable the students to understand the concept of Enterprise Resource Planning or ERP, its functional modules and their inter-relationships. The managerial and technical issues in planning, designing, implementing, and extending enterprise systems and technologies will be an integral part of the course. Further, the course will include orientation to the use of

software for modeling and mapping business processes

MBA621: CORPORATE FINANCIAL MANAGEMENT (3 Credits)

An introduction to the fundamental valuation techniques used in finance. Topics include the wealth maximization perspective, time value of money, capital budgeting and project evaluation, introduction to capital markets, risk, security valuation, corporate capital structure and the 'no arbitrage' argument

MBA641: HUMAN RESOURCE MANAGEMENT (3 Credits)

An introduction to the HRM (also known as Personnel Management) function in organizations. Topics include job and content analysis, selection, recruitment, compensation, orientation, training and development of the work force, performance management, workplace and occupational health and safety, industrial relations and their legal framework

MBA651: MARKETING MANAGEMENT (3 Credits)

An introduction to the Marketing function in organizations. This course provides exposure to the basic concepts and terminology in Marketing Management – the 4 P's of Marketing, consumer behavior, segmentation, channels, product life cycle, pricing and marketing strategy. It will serve as a base for other courses in Marketing, which are primarily application oriented in nature

TCM611: MANAGERIAL ECONOMICS (2 Credits)

The course is designed to equip the students with knowledge and skills necessary to tackle the complex strategic decisions related to economics. It covers the fundamentals of managerial economics, scope of macro-and microeconomics, demand and supply, costs of production and the organization of the firm, market structure and output decisions, pricing strategies

Advanced Courses

These courses have one or more pre-requisites. Typically, they are taken in the third semester or beyond.

OGM701: OIL & GAS CONTRACTS AND PROCUREMENT MANAGEMENT (2 Credits)

This course will review different contractual arrangements used to explore, develop and produce oil and gas. The evolving contractual granting process will be analyzed by studying petroleum investment agreements (joint venture, management contracts) and production sharing contracts, rights and duties of sellers and buyers under a contract, buyer rights upon receipt of nonconforming product, ability to terminate a sales contract, formation of government contracts. A study of techniques for planning, conducting, and managing negotiated procurement with focus on price and cost analysis will be discussed.

OGM702: RESOURCE APPRAISAL, FEASIBILITY STUDIES AND PROJECT FINANCING (2 Credits)

This course will look into practical approaches for assessing project viability, carrying out appraisal of technical aspects of project evaluation, with emphasis on how technical data are translated into the numerous assumptions that constitute the economic model of the project; impact of price changes, elements of primary concern to banks, and development of a particular cash flow profile; typical methods of performing feasibility studies, debt capacity tests, and project studies; risk analysis, cash flow projections, and project finance and capital requirements. Case studies on project financing will be discussed.

OGE832: ENVIRONMENT, HEALTH & SAFETY ISSUES IN OFFSHORE DEVELOPMENT (1 Credit)

This module will cover aspects of decommissioning of offshore structures including: environmental impact; legal and legislative, health and safety issues. A major part of the course will focus on the existing environmental implications of the offshore oil and gas industry and environmental protection management. Including the effect of green house gases and CDM. This course will track the changes in offshore safety engineering perspective, approaches like early pipeline defect identification and remediation

OGE833: RISK ANALYSIS IN OIL & GAS PROJECT MANAGEMENT (2 Credits)

This course begins with the need to carry out risk analysis of oil & gas project. Students will identify, characterize and quantify the risks associated with exploration and production operation. In this module, an overall process model relating to all the component processes will be constructed and an economic model will be generated capable of determining whether a project is economically viable. The deterministic module will be extended into the probabilistic model in order to incorporate subsurface risk and uncertainty analysis of oil and gas fields in decision-making. Students will be exposed to key concepts and applications of risk analysis as a profitable long-term business and risked valuations of petroleum assets. Emphasis will be to identify excessive risk exposure and develop ways to manage enterprise risk in the form of a case study. Finally, this module describes the roles of future and option markets for oil, natural gas and currencies as tools to bring stability to the business in the context of worldwide volatile energy prices.

OGM703: OIL & GAS TRADING AND BUSINESS ALLIANCES (2 Credits)

The theory and conduct of international trade by transnational enterprises are explored. The effects of various multilateral trade agreements and their effects on international business are analyzed like the Bretton Woods system, GATT and WTO. National systems of trade laws are discussed, in addition to forms of trade and their documentation. Students will learn how to anticipate, formulate and implement new strategies in the face of a dynamic and global marketplace. This course offers in-depth treatment of the more complex business strategies and transactions for conducting and expanding transnational business operations. Case-intensive analysis is employed to gain insight into formulating strategy, negotiating, selecting partners, and structuring and managing business transactions over a range, including outsourcing, distributorship, acquisitions, technology transfer and licensing, franchising, joint ventures, and various types of strategic alliances between companies based in different countries

MBA711: ENTERPRISE RESOURCE PLANNING-II (3 Credits)

This course will enable the students to have a hands-on exposure to configuring and running some of the basic and core functional processes. The objective here is to make them understand the importance of business process integration with respect to the three basic business systems, namely, Accounting, Materials Management and Sales. The students will do a set of exercises using SAP as the ERP platform. The focus will be on the procurement and the sales cycles

MBA761: QUINTATIVE METHODS IN BUSINESS (3 Credits)

An introduction to optimization and decision models in business and economics. Topics include: the generic decision model, general principles of optimization and probabilistic decision making; Linear Programming (LP) – model formulation, graphical solution, the algebra of LP models, SIMPLEX method, duality and sensitivity analysis; transportation, transshipment and assignment models; decision theory, decision tree analysis, and value of information.

MBA811: ENTERPRISE RESOURCE PLANNING-BUSINESS CASE (3 Credits)

This course will present a comprehensive business case scenario on the configuration of the functional modules of ERP using SAP. The objective here is to improve the students' level of knowledge of business process integration with respect to the more functional processes of the business. The students configure and run additional modules like controlling production and quality thereby creating a virtual firm in the ERP environment in order to enable them to test their business configuration with the basic functional cycles in accounting, inventory, sales, and controlling production and quality

MBA722: FINANCIAL MARKETS AND INSTITUTIONS (3 Credits)

An understanding of financial markets and their role in financial intermediation is essential for any manager. This course will introduce students to the functioning of Indian money and capital markets - the equities market, the fixed income securities market; term structure of interest rates, duration and convexity; financial institutions

– banks, insurance, investment companies, and asset liability management. Part of the course will be devoted to hands-on exposure to stock market operations.

MBA752: RETAIL MARKETING AND MANAGEMENT (3 Credits)

This course is specifically designed towards retailing as a subset of marketing. It is organized around a model of strategic decision-making in the retail industry. It deals with back-end operations and store management which includes supply chain, merchandising, customer service, the retail consumer behavior, store location, and shopping experience

Elective Courses

Three sets of electives are given below. A student is required to take up any one set among the three sets of electives being offered and study all the four courses within that set of elective. Electives will be studied in the 4th semester.

ENERGY MANAGEMENT

OGM811: ENERGY UTILIZATION, CONSERVATION & ALTERNATE RESOURCE MANAGEMENT (2 Credits)

An understanding of the various sources of energy, their availability, quality, environmental impacts, and potential alternatives is critical for managers involved in the energy business. This course provides a perspective of both traditional and non-traditional resources of energy, energy demand including society's dependence on fossil fuels. The evolution of new energy technologies for each fuel cycle, including their programmatic, development, and deployment stages is also examined. The syllabus will cover decision-making over time; economic analysis of issues related to natural energy resources; the role of the government; non-renewable resource use - the theory of depletion; renewable resource use - management of stocks; externalities and pollution policy in practice; storage, transmission and conservation issues. Assessment of current and potential energy systems, covering extraction, conversion and end-use, with emphasis on meeting regional and global energy needs in the 21st century in a sustainable manner will also be done.

OGM812: ENERGY SECURITY & TACTICAL PLANNING (2 Credits)

This course discusses the issue of energy security with the focus on legal framework, regulatory schemes, tactical planning and energy economics as required for modern day energy managers in decision making. This course develops an understanding of energy and environmental laws, economics from a managerial and policy perspective and includes segments on tactical planning, budgeting and performance reporting. Real world examples are used to illustrate effective strategic practices in energy planning.

OGM813: ENERGY AUDITING (2 Credits)

Students will learn the difference between audits and surveys and carry out pre-audit analysis including regression analysis and energy benchmarking. Methods of assessing organization's energy matrix, defining auditing objectives to meet organizational goals, short term and long term audits and designing auditing programs for effective compliance under each of the 12 major environmental statutes-including air, water, solid and hazard waste management laws, and pollution prevention initiatives will be discussed.

OGM814: CORPORATE SOCIAL RESPONSIBILITY OF ENERGY INDUSTRY (1 Credit)

By examining the link between society and the organization, this course addresses the challenge of integrating social values and firm values. Students will confront with issues in corporate management as they intersect with the practicing managers in being socially responsible. Students will learn to define corporate social responsibility (CSR) and differentiate it from philanthropy and volunteerism. Students will learn from "Best Practices" of companies who have attempted to implement CSR initiatives. They will then develop tool sets of guidelines and implementation strategies that can be utilized across energy sector in setting up a framework for planning and evaluating the actions and performance of an organization in the context of sustainable and socially responsible programs.

OPERATION & ASSET MANAGEMENT

OGM821: MANAGING THE DYNAMICS OF PETROLEUM EXPLORATION & PRODUCTION (2 Credits)

Students will study how to optimize upstream operations and resources to meet business goals including types of availability of petroleum facilities, factors that impact availability and availability improvement & prediction methods. The course will also focus on the six phases of petroleum exploration and production operation management (work identification, planning, prioritization, scheduling, execution and history capture). Additional topics covered will be: optimized preventive and condition-monitoring activities, emergency response work, and developing meaningful key performance indicators so that operation management systems can be improved and streamlined to gain the results of higher productivity, greater equipment/process reliability, and lower operational costs.

OGE831: TEROTECHNOLOGY OF OIL & GAS RESOURCES & ASSETS (2 Credits)

This unit applies the concepts of terotechnology to the full life cycle of oil and gas assets and resources. Terotechnology is summed up as a combination of management, financial, engineering, and other practices applied to physical assets in pursuit of economic life-cycle costs (LCC). Focus will be on design specification, costs, commissioning, performance in terms of reliability and maintainability of upstream, flow lines & down stream assets including floating platform, their modification & replacement needs. Course also covers economic, physical, analytical, and statistical evaluation of hydrocarbon-producing assets, production forecasts and reserve estimation emphasizing relative worth of investments based on engineering judgment, time value of money; engineering analysis and prediction of cash flows of oil and gas resources

OGM822: REFINERY/PETROCHEMICAL PLNT OPERATION MANAGEMENT (1 Credit)

This course is designed to provide students with a thorough understanding of the latest business techniques and refining technologies available to the oil supply and refining industries, and highlights how the

activities of these sectors may be optimized and synergised to maximize overall corporate profitability. Through a variety of case studies, students will learn the principles of refinery planning and economics, short-term operations, medium term planning using linear programming and long-term investment decisions.

OGM823: CHARTERING AND PETROLEUM PROJECT ENGINEERING & MANAGEMENT (2 Credits)

This course will introduce shipping and chartering business including its interface with clean petroleum product sector; operational risk; uniform inspection protocol; types of chartering including time charters and spot options. With the knowledge of exploration & production technology, students learn to amplify its effectiveness with applied project management techniques. This course covers the principles and application of project management to the upstream oil and gas activities and provides an overview of the theory and practice of managing any project in any organization. The fundamental building blocks of project management are addressed, including project planning, organizing, team building, and effective control mechanisms. Students gain a solid understanding and foundation to successfully manage each phase of the project cycle, work within organizational and cost constraints, set goals linked directly to stakeholder needs, and utilize proven project management tools to complete the project on time and within budget

TECHNOLOGY MANAGEMENT

OGM831: SIMULATION OF FIELD PROCESSES IN OIL & GAS MANAGEMENT (1 Credit)

Students will learn underlying concepts and principles of simulation relevant to practicing managers including Monte Carlo simulation; process flow synthesis, integration and optimization; sensitivity analysis; Students will get hands on experience in using process simulators and will simulate cases of different oil and gas field processes.

ITM702: E-BUSINESS (2 Credits)

This course focuses on the important

techniques and issues in designing, building and modeling E-business systems. Relevant technologies to equip students on issues like authentication, encryption, digital payments, and digital money. Methods of maintaining security and money transaction over Internet and different type of e-Commerce like B2B, B2C etc

OGM832: TECHNOLOGY INNOVATION & KNOWLEDGE MANAGEMENT (2 Credits)

Topics covered include the management of technological innovation in a variety of organizational settings, intellectual property issues, and challenges associated with commercialization of new technologies. In this course, students will be taught to identify and evaluate technology opportunities and initiate successfully a technology development from idea generation to market exploitation. This course also provides students with the formulation and selection of the most competitive knowledge management (KM) strategy and its integration with the organization's overall business strategy is explored in depth. The selection and deployment of the appropriate technological infrastructure to facilitate the KM initiative and measure progress is investigated. Furthermore, students will explore how knowledge can effectively be managed in the fast moving technologically sensitive and knowledge intensive corporate environment of the 21st century.

OGE705: PROJECT ENGINEERING MANAGEMENT (2 Credits)

With the knowledge of exploration & production technology, students learn to amplify its effectiveness with applied project management techniques. This course covers the principles and application of project management to the upstream oil and gas activities and provides an overview of the theory and practice of managing any project in any organization. The fundamental building blocks of project management are addressed, including project planning, organizing, team building, and effective control mechanisms. Students gain a solid understanding and foundation to successfully manage each phase of the project cycle, work within organizational and cost constraints, set goals linked directly to stakeholder needs, and utilize proven project management tools to complete the project on time and within

budget

Internship / Mini Project

OGM901: INTERNSHIP / MINI PROJECT (3 Credits)

Students are expected to undertake an industry-sponsored mini project/ summer internship at the end of 2nd semester for a total duration of 2 months. The internship report has to be submitted in a prescribed format and presented as a seminar to a panel of peers and faculty appointed by the institute who will examine the same. For industry-sponsored internship/ mini project, the Career Management Center of the Institute facilitates interaction between students and the industry. Students are encouraged to undertake internship that will help them integrate engineering, technology and managerial skills in a real-life scenario. Valuable first hand experience and industry knowledge gained through internship along with help from faculty counselors will help students to select one of the 3 electives being offered.

Total Program Credits: 78

NOTE: Foreign language is an independent certificate program, compulsory for all students.

MBA Program in Oil & Gas Management

Course Structure

	Code	Course Name	Credits*	
FOUNDATION	OGM501	Introduction to Oil & Gas and Energy Industry	1	
	MBA501	Financial Statement Analysis	3	
	ITM504	Database Technology	2	
	MBA504	Managerial Communication	3	
	MBA511	Management Information Systems	3	
	MBA531	Principles of Management and the Business Enterprise	3	
	MBA541	Organizational Behavior	3	
	MBA561	Business Statistics	3	
CORE	OGM601	Basics of Oil & Gas Exploration & Production	1	
	OGM602	Oil & Gas Handling, Storage & Transportation	2	
	OGE821	Petroleum Refining Processes	2	
	OGM603	Value Chain in Petroleum Industry	2	
	OGM604	Petroleum Laws, Regulations and Policy	2	
	MBA611	Enterprise Resource Planning-I	3	
	MBA621	Corporate Financial Management	3	
	MBA641	Human Resource Management	3	
	MBA651	Marketing Management	3	
	TCM611	Managerial Economics	2	
ADVANCED	OGM701	Oil & Gas Contracts and Procurement Management	2	
	OGM702	Resource Appraisal, Feasibility Studies and Project Financing	2	
	OGE832	Environment, Health & Safety Issues in offshore development	1	
	OGE833	Risk Analysis in Oil & Gas Project Management	2	
	OGM703	Oil & Gas Trading and Business Alliances	2	
	MBA711	Enterprise Resource Planning-II	3	
	MBA761	Quantitative Methods in Business	3	
	MBA811	Enterprise Resource Planning-Business Case	3	
	MBA722	Financial Markets & Institutions	3	
	MBA752	Retail Marketing & Management	3	
	ELECTIVES	Energy Management		
		OGM811	Energy Utilization, Conservation & Alternate Resource Management	2
OGM812		Energy Security & Tactical Planning	2	
OGM813		Energy Auditing	2	
OGM814		Corporate Social Responsibility of Energy Industry	1	
Operation & Asset Management				
OGM821		Managing the Dynamics of Petroleum Exploration & Production	2	
OGE831		Terotechnology of Oil & Gas Resources & Assets	2	
OGM822		Refinery/Petrochemical Plant Operation Management	1	
OGM823		Chartering and Petroleum Project Engineering & Management	2	
Technology Management				
OGM831		Simulation of Field Processes in Oil & Gas Management	1	
ITM702		e-Business	2	
OGM832		Technology Innovation & Knowledge Management	2	
OGE705		Project Engineering Management	2	
PROJECT		OGM901	Internship/ Mini Project	3

*1 Credit = 16 Class Hrs / 32 Lab Hrs in a semester

MS in Automotive Engineering

*In collaboration with & academic accreditation by
Lawrence Technological University, USA*

"The automotive industry is huge and requires a vast array of different skills in place if we are going to remain competitive. With this diversity of skills needs 'one size fits all' is definitely not an option and the industry driven Automotive Skills is the right organization to develop and deliver what the industry demands."

**- Christopher Macgowan
Chief Executive,**

The Society of Motor Manufacturers and Traders

Today, India is fast emerging as an outsourcing hub for foreign automakers and Original Equipment Manufacturers (OEM's). Consider these figures, in the last 3 years, the industry has grown at CAGR of 10%. The Auto Component Manufacturers Association (ACMA) estimates the industry to grow at 15% CAGR until 2012 and expects the contribution of exports to scale up further. The recent McKinsey report pegs the estimated value of the auto ancillary exports of India to grow up to US\$ 25 billion by 2015. The entry of global players in the Indian markets (Toyota, Ford, GM, Hyundai and Honda amongst others) has brought India into the limelight. Indian Auto industry is well connected with the global OEM's and India is also the preferred destination for undertaking R&D activities. As India draws its strengths from the large scale availability of technically skilled manpower, low rates of productivity adjustment wages, high quality and strong process orientation; it will continue to be preferred global destination for auto ancillaries. There is automatically a great need to develop resources and quality systems which are at par with global requirements.

The Auto industry requires trained engineers who have a global perspective, an international exposure and knowledge of diverse topics such as noise vibration to hybrid cars. But such specialized training is unavailable or exclusive in India. Taking the requirements of the automotive industry in mind and considering the expansion that is taking place, the MS Program in Automotive Engineering has been developed to create industry-ready engineers who have all the required qualities. It is the opportunity for Indian students to establish an international career and profit from the outsourcing wave that is benefitting all sectors of the economy.

Program	Distinctive Features	Eligibility
This 21-month full-time residential MS program, in collaboration with and accredited by Lawrence Technological University, USA, intends to create industry-ready researchers, designers and innovators for the next generation automotive technologies. The program will involve a high integration of electronics, control and software, creating highly trained and skilled professionals for the national and international automobile and auto-component manufacturing sectors	On successful completion of the course, the students will: <ul style="list-style-type: none"> ▲Be familiar with a range of subjects that will prepare them to solve a real-world problem by approaching it with a 360-degree view. ▲Be familiar with the use of simulation tools for automotive engineering design. ▲Have learnt a variety of computational techniques involving code writing as well as using packages that solve automotive engineering problems. ▲Have learnt experimental techniques and methodologies and be able to perform experiments. ▲Gain exposure to shop floor practices, lean manufacturing processes and flexible manufacturing systems, cutting-edge technologies such as minimizing noise vibrations, programming languages, IT packages, software engineering methodologies, software development techniques and training in personal skills. 	Applicants should be a B.E. / B.Tech in Automobile / Mechanical / Production / Instrumentation / Electrical / Electronics / Computer Science or its equivalent and having a minimum of 60% marks at graduation / post graduation level. All applicants must have knowledge of "C" programming, either in the form of additional certification or a short-term course. Candidates must be prepared to demonstrate proficiency in "C" language and TOFEL cleared with valid scores according to the new scheme.
The program is designed to address the key areas like theoretical foundation, practical relevance with the 'real-life' problem solving approach. The courses will be delivered using collaborative learning process through class room lectures, laboratory sessions, assignments, student seminars, lectures by industry experts, case studies, relevant industry visits and research / industry projects.		Program Commencement The Program commences in August / February.
		Selection Process The selection of an applicant for the course is based on the following: <ul style="list-style-type: none"> ▲Scrutiny of the application form ▲Scores received at the basic qualifying exams.