

PE1

PETROLEUM ECONOMICS I

PROFESSIONAL LEVEL

SYLLABUS & EXAMS GUIDE



PROFESSIONAL LEVEL

PE1 – PETROLEUM ECONOMICS I

SYLLABUS & EXAMS GUIDE



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OVERVIEW



The oil and gas industry has invested billions of dollars in finding, discovering, developing, producing, transporting, and refining hydrocarbons for more than a century and has long been an enormous source of wealth creation.

Oil and gas companies compete for resources and reserves around the globe. In recent years, new technologies have changed the global picture in the oil and gas industry and the frontiers of exploration are continuously driven to harsher and/or more environmentally sensitive areas.

Technology and economics are two areas that have the capacity to transform our world. Petroleum technology and engineering along with economic analysis is focus of this paper. Technology is the great enabler that has made exploration for oil more effective, drilling more efficient, and production more prolific, safer, and less intrusive to the environment than ever.

Beside - or better because of - these technical challenges it is crucially important to keep project and company economics under control. What good is the best technological improvement, if the costs to apply these technologies cannot be recovered?

It is noted that estimates of proven reserves change from year to year, and high oil prices stimulate searching for oil and gas, which tends to increase the amount of proven reserves around the world. Regarding oil supply and demand, the United States is still the main oil producer and consumer in the world. It also leads the world in refining capacity.

Oil demand is predicted to continue to increase despite the high price of oil. There are many sources of demand for oil. As countries develop and industrialize, their oil consumption grows with their economy.

Today, China, and India are the big players when it comes to growing economies. The world has never seen economic growth like it has with these two countries, and the impact on oil demand has already begun.



Developed countries are also yet to seriously change their oil habits but will likely adapt at a faster pace if oil prices continue to rise.

Petroleum Economics makes the case to oil companies to spend money on something because to do so should make them better off; and, possibly even more important, it also makes the case to them not to spend money because to do so should make them worse off. Of course, cases are also made at the same time to do one or the other by other parts of the company, which may relate to political issues, or the company's own strategy, or tactical manoeuvring to thwart a competitor; and decision makers have to consider all these things too in coming to their decision

There's just one more thing to be clear about here, which is where in the oil industry petroleum economics applies.

The oil industry can really be divided into at least two subindustries: the upstream part and the downstream part.

The upstream part relates to oil companies' activities in exploring for, and producing oil from, oil fields, and ***the downstream*** part relates to their activities in refining what the oil fields produce and selling products such as petrol.

This paper discusses international petroleum cooperation based on the world oil resources and world market. This course covers petroleum science, economics and management science which can be used to analyze oil resource, oil markets, oil companies, governments and organizations, as well as international petroleum cooperation.



LEARNING OBJECTIVES



At the end of the paper, learners are expected to be able to:

- ○ Get an understanding of the petroleum economics in all its aspects: reserves, investments, players, costs, benchmarking and etc.
- ○ Make simplified forecast of oil production
- ○ Get an understanding of Oil and Gas Market as well as International Trading - using cash flow techniques in economic analysis and evaluations
- ○ Build a simplified economic model of upstream project
- ○ get an understanding of different kind of international agreements and especially Production Sharing Agreements.
- ○ Master the basic knowledge of oil, oil resource, oil products, oil industry history, oil age, peak oil, oil market, oil trade, oil corporations, oil cooperation, and so on;
- ○ Master the ways of analyzing the life times of oil resources and the ways of forecasting and analyzing the oil reserves and oil price.



RECOMMENDED TEXTS



- **An Introduction to Petroleum Technology, Economics, and Politics**, by James G. Speight, Published by Wiley 2011.
- **Petroleum Economics and Engineering, Third Edition** by Hussein, Third Edition, K. Abdel-Aal, Mohammed A. Alsahlawi, Published by CRC Press 2013
- **Principles of Petroleum Economics**, By Khudhair Abbas Al-Nadawi, Published by LAP LAMBERT Academic Publishing, 2013



READING TOPICS



History and Terminology of Crude Oil

- Historical Perspectives
- Modern Perspectives
- Oil Companies
- Definitions and Terminology

Introduction to the Oil and Gas Industry

- Structure of the Oil and Gas Industry
- World Oil and Gas Supply and Demand
- Characteristics of Crude Oils and Properties of Petroleum Products

Origin & Occurrence of Oil

- The Formation of Oil
- Reservoirs
- Reservoir Classification
- Reservoir Evaluation
- Estimation of Reserves in Place
- Reserves

Exploration, Recovery, and Transportation

- Exploration
- Drilling
- Recovery
- Bitumen Recovery
- Transportation
- Products and Product Quality

Crude Oil Classification and Benchmarks

- Crude Oil Classification
- Classification of Reserves

The Petroleum Culture

- The Petroleum Culture
- Oil in Perspective
- The Seven Sisters
- Reserve Estimates





EXAMINATION GUIDE



EXAMS GUIDE



- You are required to comply in all respects with any instructions issued by the exam proctor before and during an exam.
- You are required to comply with the exam supervisor's ruling. Supervisors are obliged to report any cases of irregularity or improper conduct to the ICCE® Examinations Board. The supervisor is empowered to discontinue your exam if you are suspected of misconduct and to exclude you from the exam hall.
- You may not attempt to deceive the exam supervisor by giving false or misleading information.
- You are not allowed to take to your exam desk, possess, use or intend to use while at that desk, any books, notes or other materials except those authorized by the exam supervisor. If you are found to have taken to your desk, or possessed while at that desk, unauthorized materials which are relevant to the syllabus being examined, it will be assumed that you intended to use them to gain an unfair advantage in the exam. In any subsequent disciplinary proceedings, it shall be for you to prove that you did not intend to use the materials to gain an unfair advantage in the exam.
- You may not assist, attempt to assist, obtain or attempt to obtain assistance by improper means from any other person during your exams.
- You are required to adhere at all times to the Instructions to Candidates.
- You may not engage in any other unprofessional conduct designed to assist you in your exam attempt.
- Once the exam has started, you are not allowed to leave the exam testing hall until the end of the session and then only when given approval by the proctor.



MISCONDUCT IN AN EXAMINATION

- A registered learner found guilty of contravening an examination regulation may be disqualified from any examinations for which the results have not yet been issued, barred from sitting examinations for a specified period, removed from the candidate register, and/or be liable to such other penalty as the Disciplinary Committee may determine.
- The Proctor is empowered to discontinue the examination of a registered candidate suspected of misconduct and require him or her to leave the examination room.

EXAM DAY IDENTIFICATION

- Learners are required to submit for verification, the following at the CBT exam center before allowed to write the exam.
 - Any national ID that has candidate's photo
- Learner will not be allowed to sit for exam if he/she fails to bring the stated verification document.
- Learners writing exams via the Proctor system are also required to show proof of identity to Proctor before writing the exam.

EXAM STRUCTURE

- The **Professional Level exams** consists of **140 multiple choice questions** which are all compulsory
- The duration for the exam is **3 hours & 15 minutes**



EXAM RESULTS

- Learners receive instant results after each exam.
- Results are available and accessible via MyICCE.



ADDITIONAL READING PLATFORMS



NEWS PORTALS

- ☐ The Economy360
- ☐ FI Sense
- ☐ The Economist
- ☐ Bloomberg Business week
- ☐ Harvard Business Review
- ☐ Sloan Management Review

JOURNALS

- ☐ The Economic Journal
- ☐ Quarterly Journal of Economics
- ☐ Journal of Financial Economics
- ☐ Journal of International Economics
- ☐ American Economic Review
- ☐ The Review of Economic Studies
- ☐ The Journal of Finance
- ☐ Journal of Political Economy
- ☐ Journal of Accounting and Economics
- ☐ The Review of Economics and Statistics
- ☐ The Review of Financial Studies
- ☐ Quantitative Economics
- ☐ Journal of Management Studies
- ☐ Journal of Econometrics
- ☐ Journal of Banking and Finance

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PE2

PETROLEUM ECONOMICS II

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PROFESSIONAL LEVEL

PE2 – PETROLEUM ECONOMICS II

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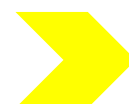
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READING TOPICS



Oil Prices

- Oil Price History
- Pricing Strategies
- Oil Price and Analysis
- The Anatomy of Crude Oil Prices
- Effect of Refining Capacity

The Crude Oil Market

- The Crude Oil Market
- Global Oil Consumption
- Refining and The Markets
- Profitability

Oil Supply

- Physical Factors
- Technological Factors
- Economic Factors
- Geopolitical Factors
- Peak Oil
- The Impact of Heavy Oil and Tar Sand Bitumen

The Future

- Undiscovered Oil
- Coal
- Oil Shale
- Liquids from Biomass
- Energy Independence
- Energy Security

Depreciation and Depletion in Oil Projects

- Introduction and Basic Definitions
- Valuation of Assets Using Depreciation and Depletion: General Outlook
- Methods for Determining Depreciation
- Methods for Determining Depletion

Risk, Uncertainty, and Decision Analysis

- Decision Analysis
- Decision Making under Certainty
- Decision under Risk
- Decision Making under Uncertainty
- Sequential Decisions





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