

# PGE 543: Advanced Petroleum Economics

## **Course Instructor:**

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## **Course Learning Objectives:**

By the end of the course, students are able to:

1. Evaluate Projects using Economics Decision Yardsticks Including: Profit-to-Investment Ratio (P/I), Discounted and Undiscounted Payout Time (POT), Net Present Value (NPV), and Rate of Return (ROR)
2. Classify Energy Sources
3. Define Oil Resources and Reserves
4. Classify Unconventional Oil and Gas Resources
5. Recall and Describe the World's Giant Oil and Gas Fields
6. Understand Uncertainty and Risk Analysis in Petroleum Exploration and Production
7. Utilize Oil Pricing Criteria
8. Identify Factors Affecting Oil Prices
9. Discuss the Role of Strategic Oil Reserves on Supply and Demand
10. Understand Oil and Gas Production Business Operations
11. Discuss Hubbert Model for Oil Peak Forecasting
12. Forecast Oil and Gas Future Demand
13. Write and Present a Term Paper on any Topic Related to this Course

## **Assessment Criteria:**

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|--------------------|-----------|
| 1. Mid-term Exam 1 | 20 Points |
| 2. Mid-term Exam 2 | 20 Points |
| 3. Term Paper:     | 20 Points |
| 4. Final Exam:     | 40 Points |

## **Course Contents:**

Projects Evaluation and screening using Economics Decision Yardsticks Including: Profit to Investment Ratio (P/I), Discounted and Undiscounted Payout Time (POT), Net Present Value (NPV), and Rate of Return (ROR). Classification of Energy Sources. Definition (Types) of Oil and Gas Reserves. Unconventional Oil and Gas Resources. The World's Giant Oil and Gas Fields. Uncertainty and Risk Analysis in Petroleum Exploration and Production. Oil Pricing Criteria and Factors Affecting Oil Prices. The Role of Strategic Oil Reserves. Oil and Gas Production Business Operations. Hubbert Model for Oil Peak Forecasting, Oil and Gas Future Demand Forecasting.

## **Example References:**

1. OnePetro Database in Addition to Worldwide Available Economic Data.
2. Richard D. Seba: "Economics of Worldwide Petroleum Production.", OGCI, Inc. and PetroSkills, LLC. Publications, Tulsa, Oklahoma, Second Edition, July, 2003, ISBN 0-930972-21-X.
3. Matthew R. Simmons: "The Worlds Giant Oil Fields.", Simmons & Company International, January 9<sup>th</sup> 2002: <http://energyskeptic.com/wp-content/uploads/2011/07/Simmons-Giant-Oil-Fields.pdf>.
4. Hubbert Peak Theory, Wikipedia [Online]: [http://en.wikipedia.org/wiki/Hubbert\\_peak\\_theory](http://en.wikipedia.org/wiki/Hubbert_peak_theory)
5. PGE 543: "Advanced Petroleum Economics" Notes and Handouts by Professor Musaed AlAwad, King Saud University, College of Engineering, Petroleum and Natural Gas Engineering Department, Riyadh, Saudi Arabia.