# NATIONAL UNIVERSITY OF ENGINEERING

## COLLEGE OF PETROLEUM AND PETROCHEMICAL ENGINEERING

## PETROLEUM ENGINEERING PROGRAM

# PP521 – EVALUATION OF PETROLEUM PROJECTS

## I. GENERAL INFORMATION

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| **CODE** | **:** | PP521 Evaluation of Petroleum Projects |
| **SEMESTER** | **:** | 10 |
| **CREDITS** | **:** | 4 |
| **HOURS PER WEEK** | **:** | 5 (Theory – Practice) |
| **PREREQUISITES** | **:** | PP513 Enhanced Recovery of Oil Wells |
| **CONDITION** | **:** | Compulsory |

## II. COURSE OUTCOMES

At the end of the course, students:

1. Understand the importance of natural resources in human economic activities.
2. Analyze the economic, social and environment factor affecting the petroleum industry.
3. Understand the process transforming petroleum resources into an economic good tradable in international markets and with price fixed by the supply and demand law.
4. Estimate and analyze the fixed and variable costs of petroleum projects and their relationship to determine the equilibrium point, and the strategic value of the marginal contribution.
5. Analyze and estimate the required investment of petroleum exploitation projects, including financial schemes and their costs.
6. Apply economic evaluation methods for determining the economic and financial feasibility of petroleum projects.
7. Understand and analyze the risks inherent to the petroleum industry

## III. LEARNING UNITS

### 1. INTRODUCTION

Investment projects / Project life cycle / Project steps / Project types / Project structure according to its financial scheme / Project economics / Project profile / Project feasibility.

### 2. MARKET RESEARCH

Supply analysis / Supply characteristics and scope / Present and past supply / Variables affecting future supply / Projected future supply / Demand analysis / Demand and elasticity / Process flow of market research.

### 3. TECHNICAL FEASIBILITY ANALYSIS

Reserves and contingent resources / Present Value methods / Plant location / Antecedent analysis / Production processes / Production stages.

### 4. LEGAL ANALYSIS

National legislation / Hydrocarbon legislation / Labor legislation / Environment legislation / Business organization flowchart / Business and company creation.

**5. ECONOMIC-FINANCIAL ANALYSIS**

Production projection / Projection of operating expenses OPEX / Projection of financial statements: statement of income / Economic and financial cash flow / Economic feasibility indexes: Net Present Value, Internal Return Rate, RIR, Cost-Profit / Equilibrium point / Financial appeceament.

**6. RISK ANALYSIS**

Risks in investment projects / Risk measurement / Social risk, environmental risk, political risk / Technical risk / Economic risk / CAPM model / Monte Carlo simulation model.

## IV. METHODOLOGY

Motivation, explanation, reflection and exemplification, as well as debates, dialogs and analysis about cases in the petroleum industry. Problem-type exercises will be performed to reinforce teaching. At the end of the course, students submit a defend a report on the technical and economic feasibility of a petroleum investment project.

## V. EVALUATION FORMULA

The average grade PF is calculated as follows:

**PF = (EP + EF + PP) / 3**

EP: Mid-Term Exam EF: Final Exam
PP: Quizzes and practical work

## VI. BIBLIOGRAPHY


**1. SAPAG CHAIN**
Preparation and Evaluation of Investment Projects, Pearson Prentice Hall, 2010.
**2. PROJECT MANAGEMENT INSTITUTE**
PMBOK Guide, 2013
**3. ROBERT CLEWS**
Project Finance for the International Petroleum Industry, 2016