



# INSTITUTE OF PETROLEUM AND ENERGY STUDIES UNIVERSITY OF PORT HARCOURT

## MASTER OF SCIENCE IN PETROLEUM ENGINEERING AND PROJECT DEVELOPMENT

### ABOUT THE INSTITUTE OF PETROLEUM AND ENERGY STUDIES (IPES)

The Institute of Petroleum and Energy Studies was established in 2003 (as The Institute of Petroleum Studies, IPS) as a bold effort to remedy the skills gap between the theoretical concepts taught in the classroom and the practical needs of the oil and gas industry in Nigeria. It is a collaborative graduate school program between the IFP School in Paris, France, and the University of Port Harcourt (UNIPORT) in Nigeria. The program is sponsored by the NNPC Limited and TotalEnergies Exploration and Production Nigeria Limited joint venture, as part of its sustainable development program.

In this program, lecturers from the IFP School, UNIPORT, and the Nigerian Oil and Gas Industry facilitate courses on a weekly basis; 40% of the courses are taught by lecturers from IFP School, 40% from UNIPORT, and 20% by the industry experts.



IPES, UNIPORT  
University of Port Harcourt  
P. M. B. 2, Choba, Port Harcourt  
Rivers State, Nigeria  
e-mail: [info@ipes.uniport.edu.ng](mailto:info@ipes.uniport.edu.ng)  
[www: ipes.uniport.edu.ng](http://www.ipes.uniport.edu.ng)

IFP School  
232 Avenue Napoléon Bonaparte  
92852 Rueil-Malmaison  
Cedex France  
e-mail: [info-ifpschool@ifp.fr](mailto:info-ifpschool@ifp.fr)  
[www: ifp-school.com](http://www.ifp-school.com)

PARTNERS





## PROGRAM OBJECTIVE

The aim of the program is to provide the students with broad-based training required for onshore and offshore oil and gas field development. On completion of the Masters' Program, the graduates will among other skills, be able to:

- Understand the context of Energy Transition.
- Evaluate and manage oil and gas fields, with the necessary approaches to minimize carbon emission.
- Design and supervise the drilling of exploration and development wells and carry out drilling optimization programs.
- Design, supervise, and evaluate well completion, workover and well stimulation programs.
- Design and operate onshore and offshore oil and gas production facilities.
- Carry out production optimization and well performance enhancement programs.
- Participate effectively in multidisciplinary oil and gas field review and field development teams.

## PROGRAM SCHEDULE

The program structure comprises of five major modules – General Module, Geosciences and Reservoir Engineering Module, Drilling Engineering Module, Production Engineering Module, and Project Development Module.

**General Module:** The goal of this module is to teach the students the fundamental concepts and principles in advanced engineering mathematics, entrepreneurship and business management, data management and machine learning, presentation and communication skills, ethics, and the role of the oil and gas industry in energy transition. There are 7 courses in this module.

**Geosciences and Reservoir Engineering Module:** This module is designed such that the students know how to:

- Initiate acquisition, processing and interpretation of data used in reservoir characterization.
- Evaluate the quantities of hydrocarbon in place by means that include probabilistic methods.
- Analyze Hydrocarbon reserves and drainage mechanisms, propose improved recovery systems.
- Develop a plan to efficiently produce a reservoir with an optimum production profile, optimize the number of well, and predict production decline and secondary or tertiary recovery with associated work-over.

There are 12 courses in this module.

**Drilling Engineering Module:** In this module aims to give the students the necessary knowledge to:

- Construct a 1D Mechanical Earth Model for well planning.
- Analyze the geological section of the formation and design the architecture of a well. The designs capture all the major aspects of drilling and well completions programs, including onshore, offshore, and HPHT projects.
- Select the appropriate wellbore treatment to enhance the deliverability of a less productive well.

There are 12 courses in this module.

**Production Engineering Module:** This module prepares the students to be able to:

- Design surface oil and gas treating facilities, from the well head to the unloading terminal, on both land and marine environment.
- Know safety and pollution control measures required in the operations of the facilities.
- Describe the axes of reduction of greenhouse gas emissions from oil production and the storage of carbon dioxide in the basement.
- Know the principles of emerging Production Optimization Technologies and the constraints and problems associated with flow assurance including deep sea operations.
- Understand the practical applications of hydrodynamic behaviour of pipes and multiphase fluid flow theories to petroleum production engineering.

There are 11 courses in this module

**Project Module:** In this module, the students will be taught:

- The economic aspect of an oil field development
- Risk analysis and project management
- Cost analysis, cost control, and budget preparation.
- Corporate governance, business ethics, and corporate social responsibility.

Furthermore, the students will work in small groups to work on field development projects, using different scenarios, which may include the number of wells, horizontal or vertical wells, type of completion, type of producing facilities, economics, and carbon footprint assessment.

There are two weeks of course work and 3 three weeks for the field development project. Early in the program, the students will be assigned project supervisors, who will guide the students on working on personal projects..

## DURATION

The duration of the program is 12 calendar months. As part of the quality control for the program, accommodation will be arranged for all students near the Institute.