

# Petroleum and Petrochemical Engineering

# Coordinators

## Petroleum Engineering

- Prof. Dr. M. Khairy



- Dr. Abdul Aziz



## Chemical Engineering

- Prof. Dr. Hanan El Sersy

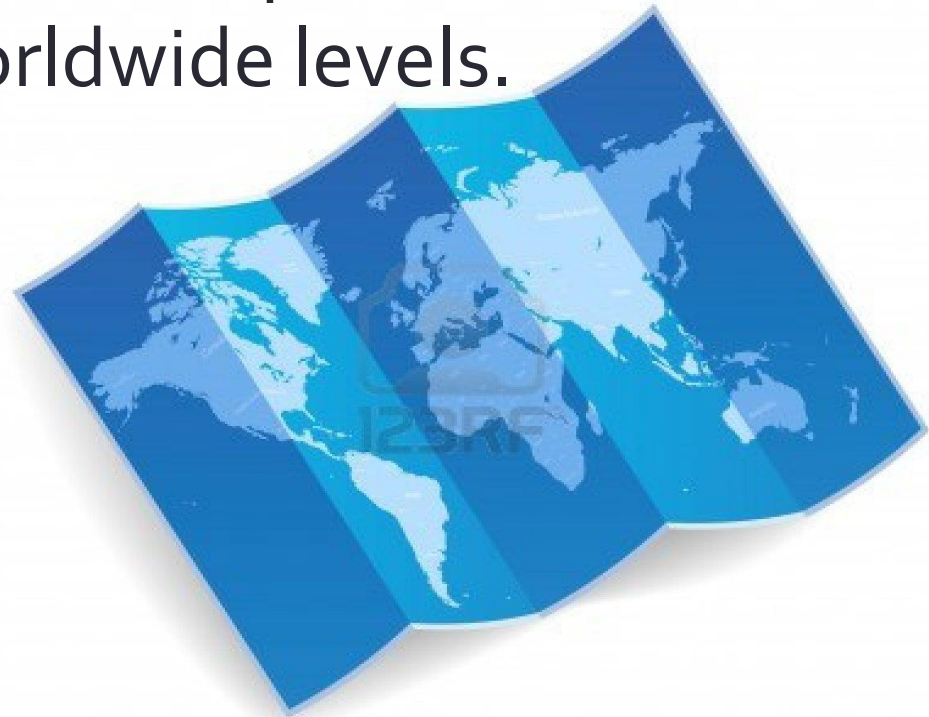


- Dr. Ayat Ossama



# Introduction

- The oil and gas industry has been flourishing in the Middle East in the last decade.
- Faculty of Eng. Cairo University has contributed in the supply of the manpower requirements on the local, Arab region, and worldwide levels.

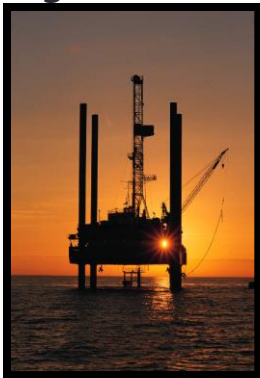


# Upstream and Downstream Sectors

The oil and gas sector is divided into two main components

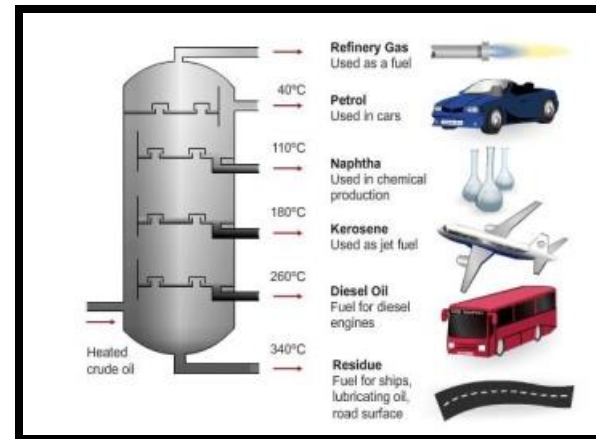
## Upstream Sector

Includes the searching for potential underground or underwater oil and gas fields, drilling of exploratory wells, and subsequently operating the wells that recover and bring the crude oil and/or raw natural gas to the surface

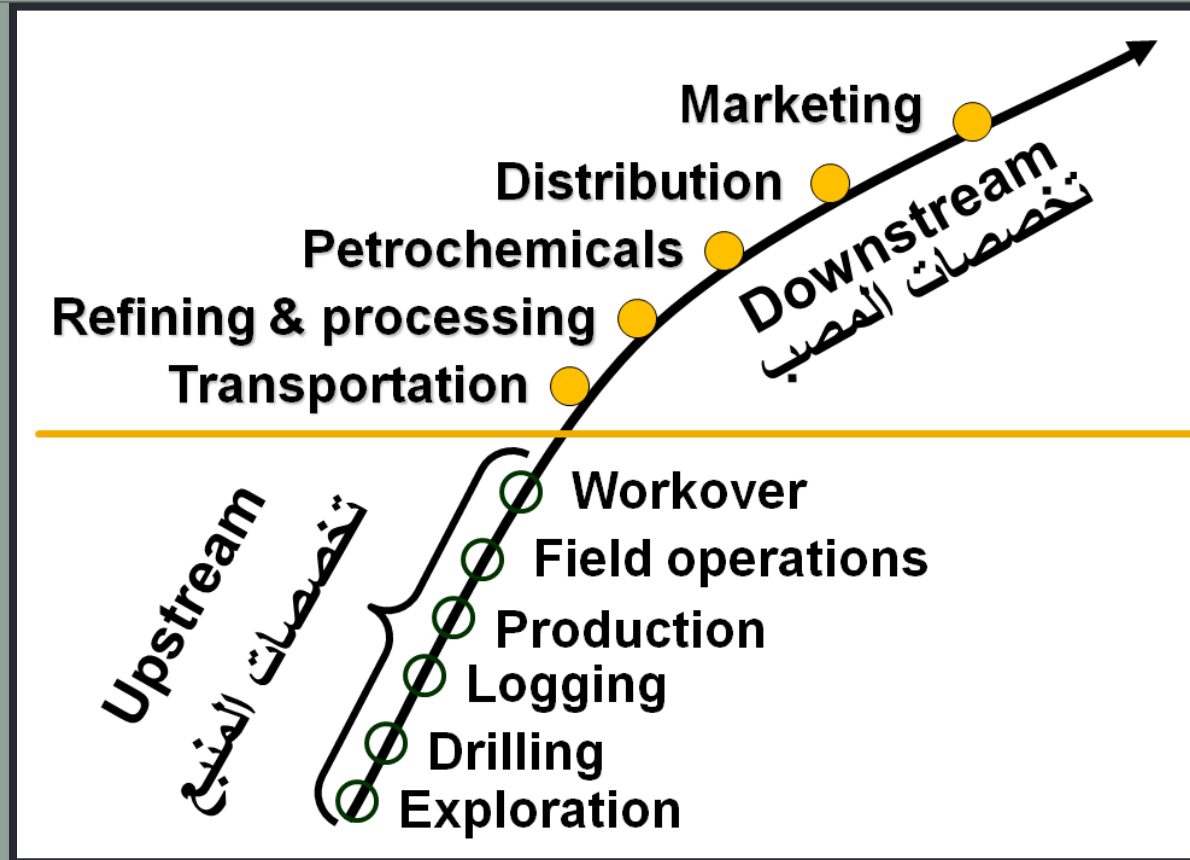


## Downstream Sector

Includes refining of petroleum crude oil, processing of natural gas and the use of petroleum and its derivatives as raw materials to produce useful chemicals..



# Petroleum Related Operations



# Companies Related to Upstream

- Exploration and Production (E&P) Joint venture (eg. Khalda, Gupco, Petrobel,.....)
- Drilling Contractor (EDC, ECDC, Senotharwa, Weatherford, .....)
- Service Companies (Schlumberger, Baker, .....)

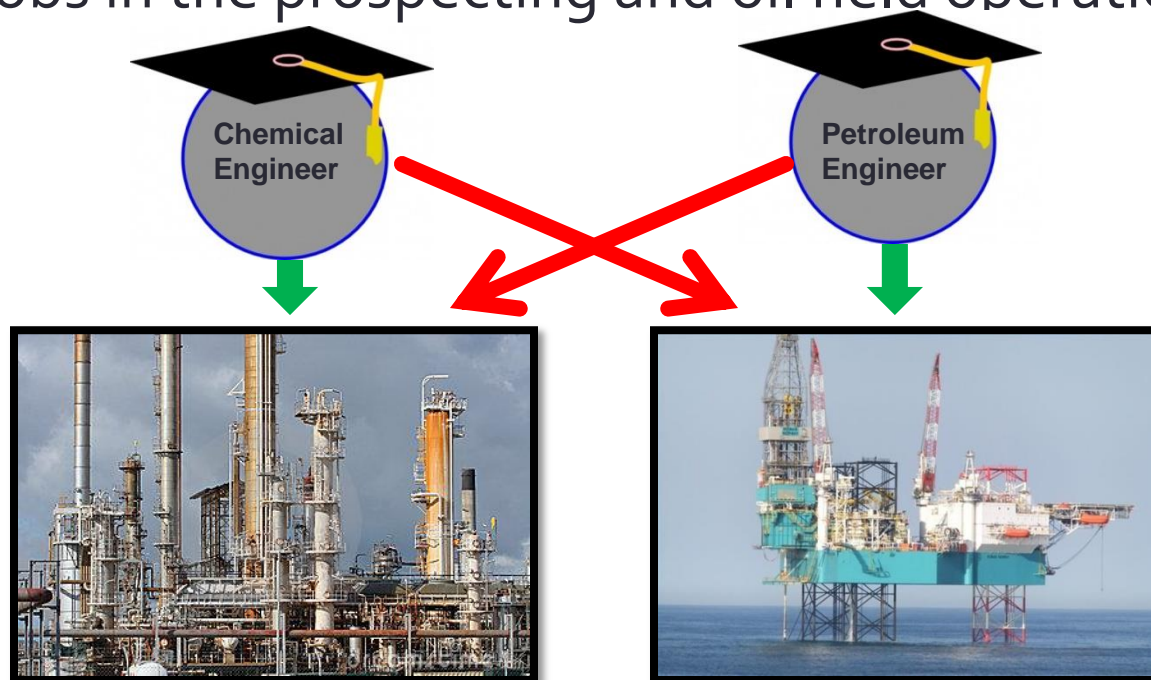


# Companies Related to Downstream

- Refineries: eg. Cairo Mostorod Refinery, Alexandria Ameriya Refinery, Alexandria Midor Refinery,.....
- Natural Gas Processing: e.g. RASGAS, GASCO, SEGAS,.....
- Petrochemicals: Styrenics, Methanex,....
- Distributors: EgyptGas, .....
- Design: ENPPI,....



- Usually Chemical Engineering graduates work in the downstream sector while Petroleum Engineering graduates work in the upstream sector.
- In many cases, graduates from the petroleum engineering department had to assume responsibilities in refining and petrochemical plants while many chemical engineers have been assigned jobs in the prospecting and oil field operations.



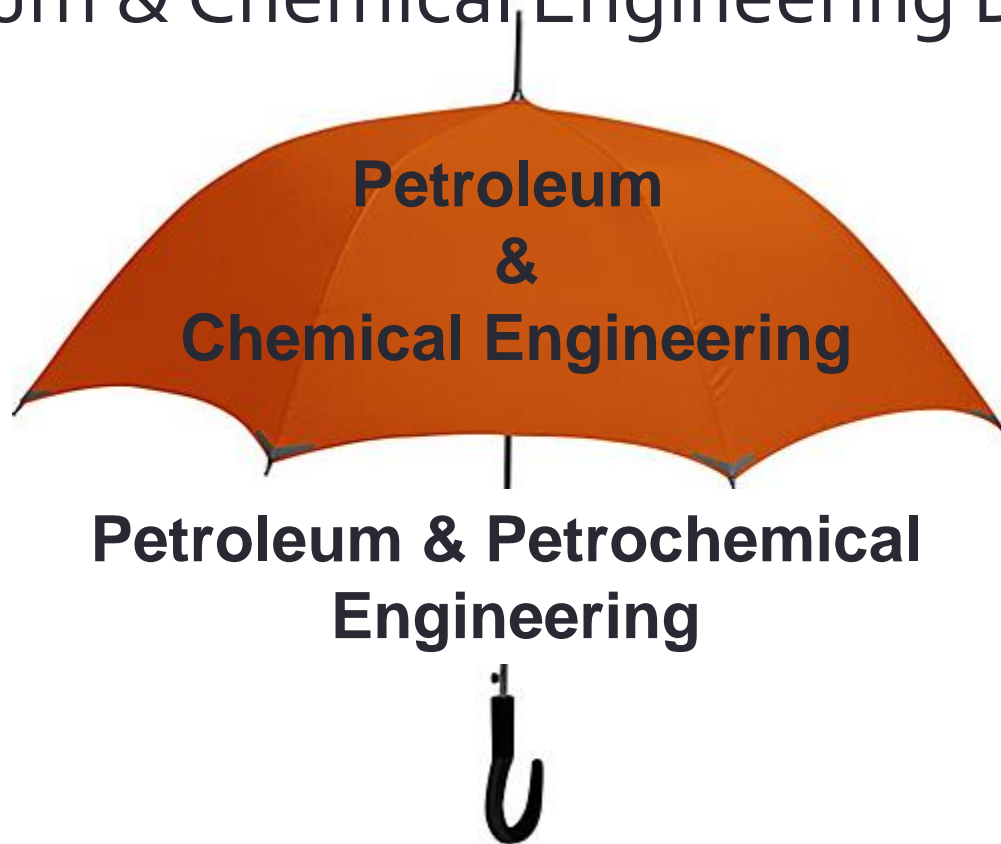


- This situation called for the formation of a hybrid engineer combining the qualifications of both disciplines.



# PETROLEUM AND PETROCHEMICAL PPC ENGINEERING

- The Petroleum and Petrochemical Program is a credit hour system under the umbrella of both Petroleum & Chemical Engineering Departments



# Petroleum and Petrochemical Engineering

The Petroleum and Petrochemical Engineering is a discipline that integrates knowledge and skills required for both upstream and downstream industries of oil and gas. Graduates will major in either of the following:

- Petroleum Engineering (PPC-P), Upstream.
- Petrochemical Engineering (PPC-C), Downstream.



# When do students choose their major ?

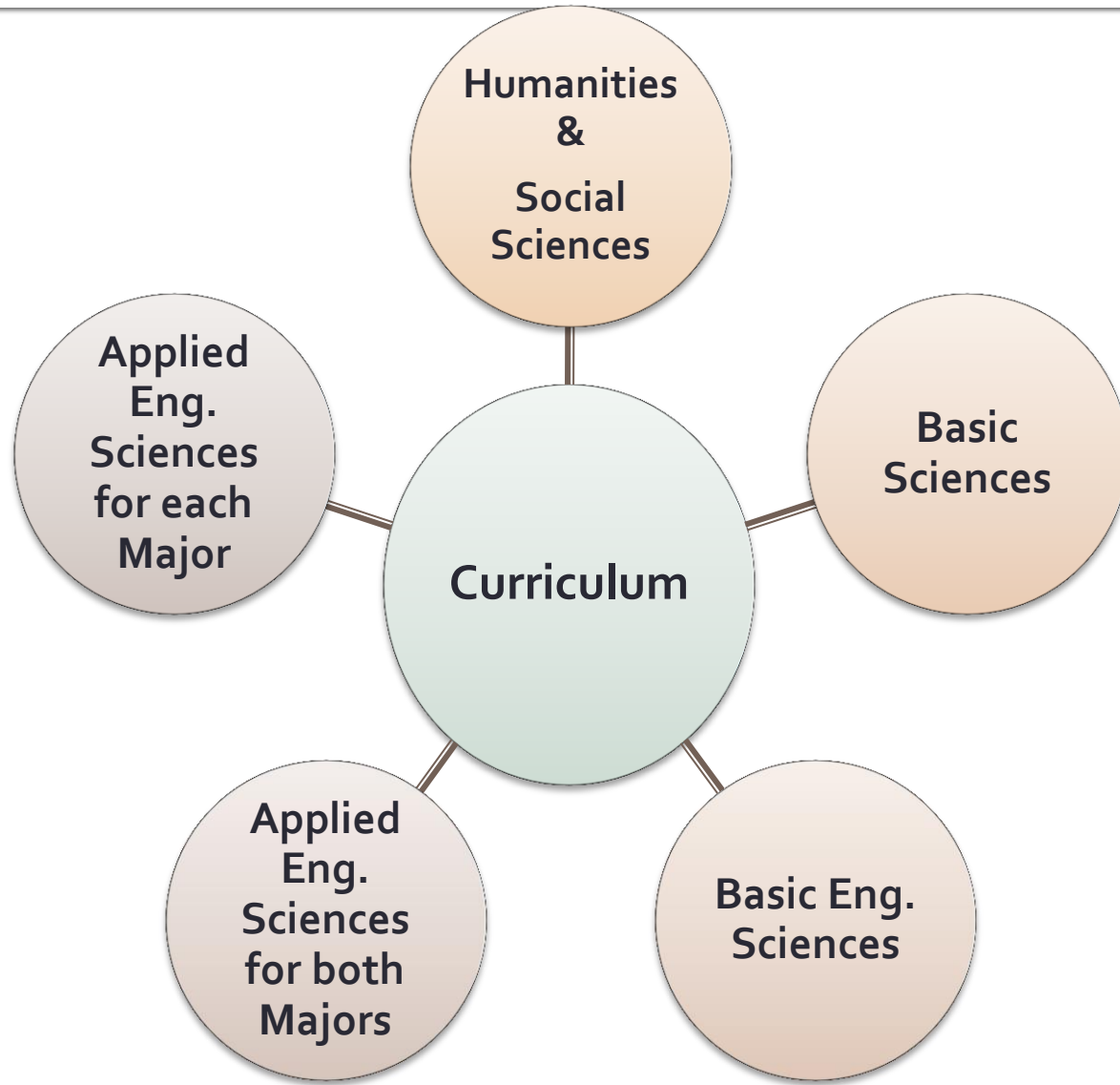


- Students majoring in either upstream or downstream study the same courses during the Sophomore and Junior levels.
- **Elective courses** are available for Senior 1 students.
- Graduating Senior students will have to give the final decision; either Petroleum or Petrochemicals.



Thus graduates majoring in either upstream or downstream industries of oil and gas will in the same time acquire the background of the other and thus improving fieldwork flexibilities in career development.

# Curriculum



# SOPHOMORE

Computer  
App. for  
Petrochem.  
Eng.

Chem. Eng.  
Fund.

Physical  
Chemistry  
1

Organic  
Chemistry  
1

Material  
Science

General  
Geology

Thermodyn  
&  
Combustion

Physical  
Chemistry  
2

Intro to  
Petroleum  
Industry

Civil  
Engineering

# JUNIOR

Stress  
Analysis &  
Mech  
Design

Fluid  
Mechanics

Organic  
Chemistry  
2

Drilling  
Engineering  
1

Reservoir  
Rock &  
Fluid Prop

Electrical  
Engineering

Cryogenic  
Process

Natural gas  
Engineering  
1

Drilling  
Engineering  
2

# SENIOR 1

Mass  
Transfer &  
Sep.  
Process 1

Instr. &  
Process  
Control.

Unit  
Operations

Reservoir  
Engineering  
1

**ELECTIVE**

Process &  
Plant  
Design

Mass  
Transfer  
& Sep.  
Process 2

Heat  
Transfer  
& Appl.

Petr. Field  
Operation

Petroleum  
Prod. 1

Petr.  
Geology

**ELECTIVE**

**ELECTIVES**

Petroleum  
Exploration

Industrial  
Meas. &  
Control  
Appl.

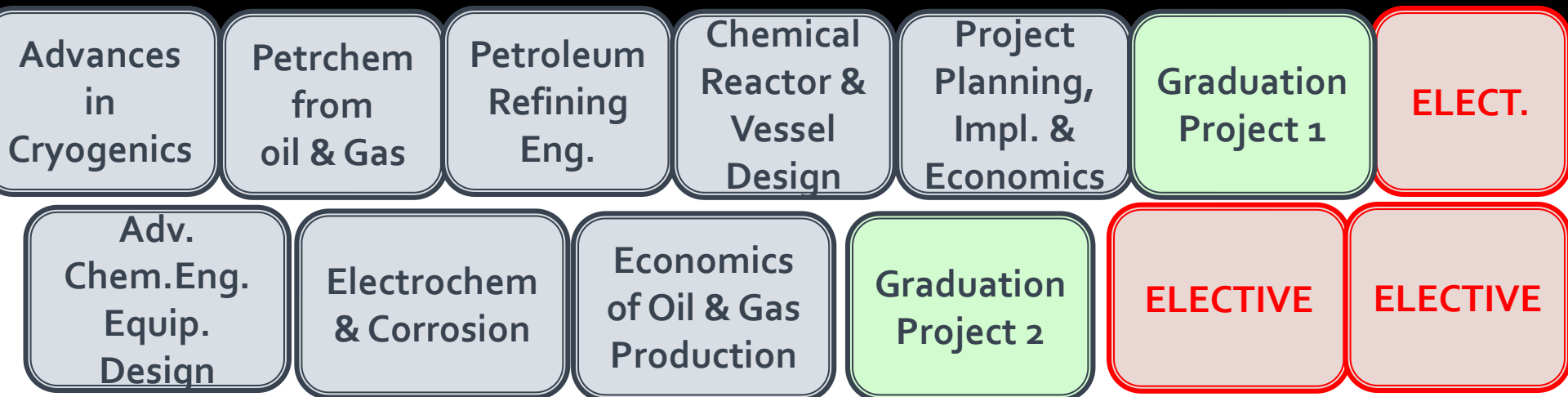
Water  
Treat. for  
Oil & Gas  
Operations

Reservoir  
Engineering  
2

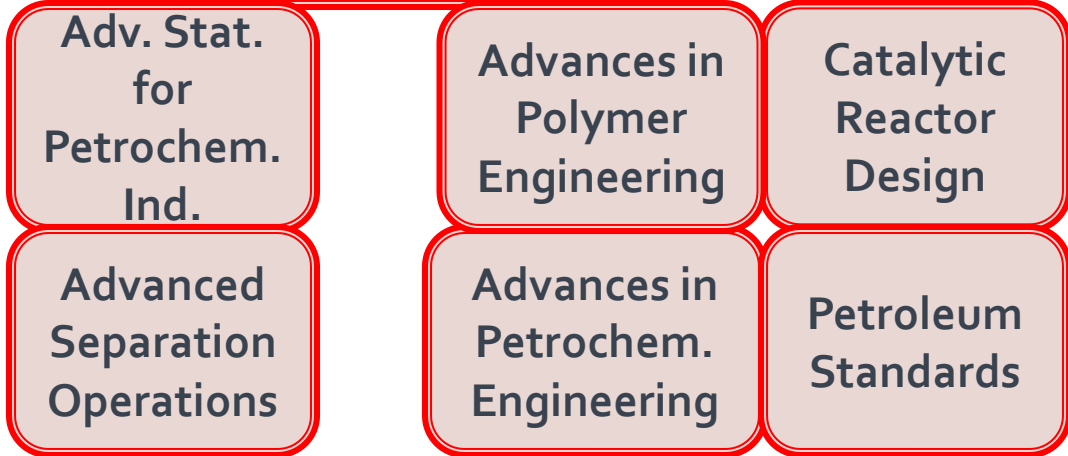
Polymer  
Science &  
Technology



# SENIOR 2 PPC-C



## ELECTIVES



# SENIOR 2 PPC-P

Oil Well  
Drilling 3

Petr.  
Prod.  
Eng. 2

Natural  
Gas Eng.  
2

Petr.  
Legisl. &  
Econom.

Well  
Logging

Graduation  
Project 1

**ELECT.**

Water  
Flooding

Well  
Completion  
& Work over

Enhanced  
Oil  
Recovery

Graduation  
Project 2

**ELECTIVE**

**ELECTIVE**

**ELECTIVES**

Advanced  
Topics in  
Petroleum  
Engineering

Deep  
Water  
Technology

Natural Gas  
Liquefac.  
and GTL

Gas  
Pipeline &  
Domestic  
Networks

Simulation  
& Modeling  
for Pet.  
Engineers

Formation  
Evaluation  
& Reservoir  
Charact.

Seismic  
Stratigraphy

Data  
Mining

Subsurface  
Mapping

Well  
Simulation

Directional  
Horizontal  
& Multilat.  
Drilling

Horizontal  
Well  
Technology

# GENN Courses

Technical Writing

Communication & Presentation Skills

Fundamentals of Management

Risk Management & Environment

Economics

Accounting

Advanced Risk Management

Business Communication

Selection of Life-long Skills

Technical Writing in Arabic

Foreign Language

Ethics & Legislation

Service Management

Marketing

# Seminar Courses

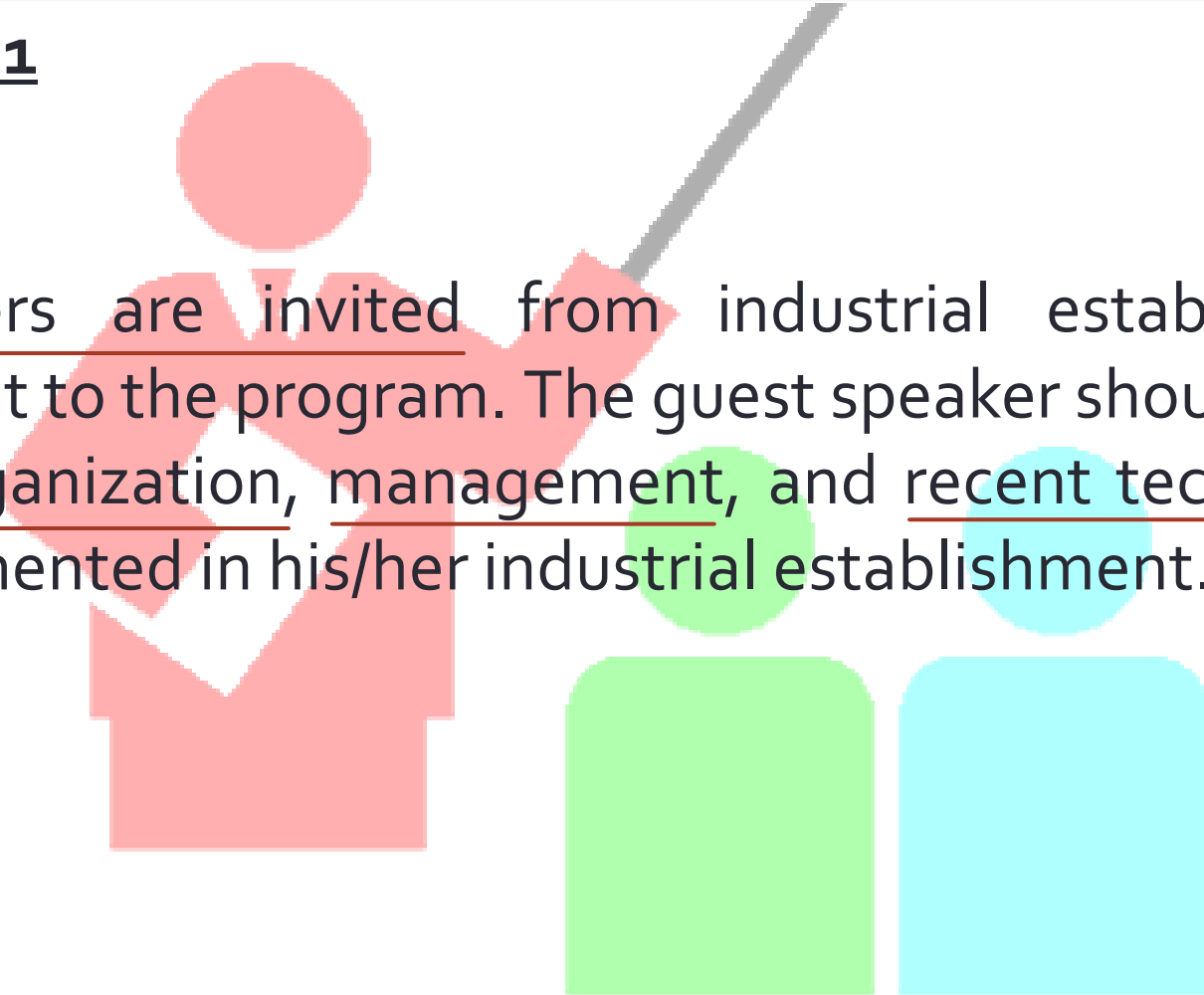
Seminar 1

Seminar 2

# Seminar Courses

## Seminar-1

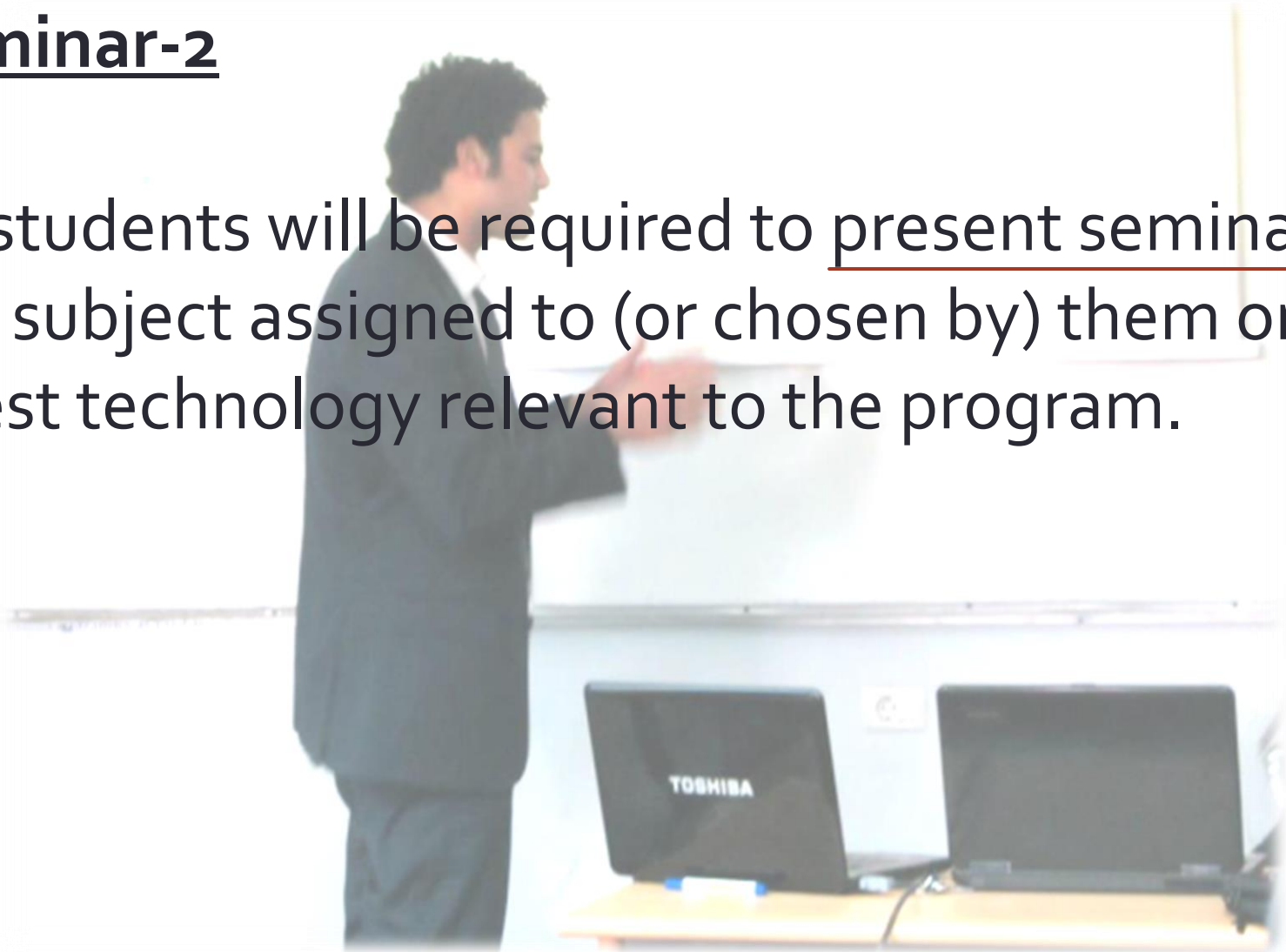
- Speakers are invited from industrial establishments relevant to the program. The guest speaker should discuss the organization, management, and recent technologies implemented in his/her industrial establishment.



# Seminar Courses

- Seminar-2

- All students will be required to present seminars in a subject assigned to (or chosen by) them on latest technology relevant to the program.



# Industrial Training



**Bahaa Saeid**



**Ahmed Gamal**



**Amr Kamal  
(Segas)**



**Youssef  
Selim  
(Sino Tharwa)**



**Ali Hatem  
(Weatherford)**



**Noura Zidan  
(Agiba)**

# Abroad Industrial Training



UNIVERSITAT  
ROVIRA I VIRGILI



2012

2013



# Field Trips

**Midor,  
Alexandria**



**Oyoun  
Moussa**



# Conferences

## La Semaine Économique - 2012



# Conferences

## Waste Management & Renuable Development- 2013



# Workshops

## Michelangelo Workshop- Rome- 2015



# Student Activities



# Student Activities



**SPE - Croatia -  
2014**



# Student Activities



**SPE - Poland -  
2015**



# Graduate Classes

2011



**Ahmad Saher  
(PPC-P)**

# Graduate Classes

2012



**Amir Hegazy  
(PPC-C)**



# Graduate Classes

2013



**Omar Yasser  
(PPC-C)**

# Graduate Classes

2014



**Yosra Osama  
(PPC-C)**

# Our PPC Graduates



Amira Nassar, 2013  
*Procter&Gamble*

Amir Mitry, 2011

Menna Shafei, 2012  
*Procter&Gamble*



M Nabil bayad, 2011



Marwan hany', 2012



Ahmed Ali, 2013

M ElGarhi, 2014

Omar Ali, 2013





thank  
you