

Máster online 100%

Master in Petroleum, Natural Gas and Petrochemistry + 60 ECTS Credits

Structuralia



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Master in Petroleum, Natural Gas and Petrochemistry + 60 ECTS Credits

Modality
Online

Languages
Español

Duration
1500 hours (60 ECTS)

No Limit
AI Assistant

Does it include practices?
NO

Educational Institutions

Structuralia Engineering eLearning

UNIVERSIDAD NEBRIJA

Summary

The Master in Petroleum, Natural Gas and Petrochemistry is a specialization program designed for professionals in the Oil & Gas sector who seek to update and deepen the global functioning of the industry. This postgraduate degree enables you to master the essence and comprehensive operations of the oil and gas sector, exploring everything from the global situation and value chains to specific activities and ship charter logistics. You will analyze in depth the oil industry, crude oil and complex refining processes, as well as derivative product schemes. You will address the growing relevance of biofuels and alternative fuels, projecting the energy scenario until 2050. You will understand the strategic role of natural gas and liquefied natural gas (LNG) in the evolution of the energy landscape. You will analyze the most innovative trends, the research and development (R&D) that shape the future of the sector, and development estimates for the coming decades. You will equip yourself with the knowledge necessary to understand the mechanisms for obtaining raw materials and the transformation processes into products of high commercial value. You will delve into the management of industrial projects, their critical phases, and the engineering and design

inherent to the plants. This comprehensive approach will provide you with a strategic vision for decision-making in a sector that is constantly evolving and transforming.

Agenda

MODULE 1. OIL & GAS SECTOR

1. DIDACTIC UNIT 1. GLOBAL SITUATION OF O&G

1. Historical evolution of the oil industry
2. Historical evolution of the gas industry
3. O&G reserves, production and consumption
4. Geopolitics and global factors
5. International companies and references

2. DIDACTIC UNIT 2. O&G VALUE CHAINS

1. Concept of "commodities"
2. Value chain
3. Oil value chain
4. Gas value chain
5. Vertical integration and transfer pricing

3. DIDACTIC UNIT 3. O&G ACTIVITIES

1. Upstream
2. Exploration, drilling and production techniques
3. midstream
4. Downstream
5. Safety, risks and environment

4. DIDACTIC UNIT 4. VESSEL CHARTERING

1. O&G traffic
2. Chartering modalities
3. Charter policies
4. Other charter alternatives
5. Documentation

MODULE 2. OIL INDUSTRY, BIOFUELS AND 2050 SCENARIO

1. DIDACTIC UNIT 1. CRUDE OIL AND REFINING PROCESSES

1. Raw (I)
2. Raw (II)
3. Raw (III)
4. Refining processes (I)
5. Refining processes (II)

2. DIDACTIC UNIT 2. REFINING SCHEMES AND PRODUCTS

1. Refining schemes (I)
2. Refining schemes (II)
3. Refined products (I)

4. Refining products (II)
5. Margin and profitability

3. DIDACTIC UNIT 3. ALTERNATIVE FUELS TO PETROLEUM. BIOFUELS

1. Bioenergy
2. Biofuels
3. Bioethanol & biodiesel
4. SAF & biogas
5. Bio-refineries

4. DIDACTIC UNIT 4. CURRENT AND FUTURE OF THE OIL INDUSTRY

1. HSE & CO2 emissions
2. Oil industry. Short and medium term scenario
3. Crude oil markets
4. Refined product markets
5. Biofuel markets

MODULE 3. NATURAL GAS AND LIQUID NATURAL GAS INDUSTRY. KEY ROLE IN THE ENERGY TRANSITION

1. DIDACTIC UNIT 1. BASICS NATURAL GAS AND LIQUEFIED NATURAL GAS

1. Composition and properties
2. Exploration and production techniques
3. Types of deposits and characterization
4. Extraction techniques
5. Fracking

2. DIDACTIC UNIT 2. NATURAL GAS AND LIQUEFIED NATURAL GAS VALUE CHAIN (I)

1. Natural gas value chain
2. gas processing
3. Liquefaction
4. Transportation of liquefied natural gas
5. Regasification

3. DIDACTIC UNIT 3. NATURAL GAS AND LIQUEFIED NATURAL GAS VALUE CHAIN (II)

1. Storage of liquefied natural gas
2. Offshore installations
3. Gas system and distribution
4. Marketing, regulation and markets
5. HSE and natural gas and liquefied natural gas applications

4. DIDACTIC UNIT 4. ENERGY TRANSITION AND 2050 SCENARIO

1. Energy transition and global position
2. European Green Deal & LATAM Green
3. Net zero emissions by 2050
4. Natural gas essential in the energy transition

5. Circular economy. Natural gas and hydrogen

MODULE 4. PETROCHEMICAL INDUSTRY AND PETROCHEMICAL PRODUCTS

1. DIDACTIC UNIT 1. PETROCHEMICAL INDUSTRY FUNDAMENTALS

1. Introduction. Petrochemical industry fundamentals
2. Main petrochemical chains
3. Plastics
4. Global petrochemical scenario
5. Petrochemical companies

2. DIDACTIC UNIT 2. METHANE AND ETHYLENE CHAINS

1. Methane chain (I). Methanol
2. Methane chain (II). Ammonia
3. Ethylene (I) chain
4. Ethylene (II) chain
5. Petrochemical market. Methane and ethylene chains

3. DIDACTIC UNIT 3. CHAINS OF PROPYLENE AND C4 AND C5 FRACTIONS

1. Propylene chain (I)
2. Propylene chain (II)
3. Chains of fractions C4 and C5 (I)
4. Chains of fractions C4 and C5 (II)
5. Petrochemical market. Chains of propylene and C4 and C5 fractions

4. DIDACTIC UNIT 4. AROMATIC CHAINS

1. aromatic chains
2. benzene chain
3. toluene chain
4. xylene chain
5. Aromatics chain market

MODULE 5. BUSINESS AND INTERNATIONAL TRADING

1. DIDACTIC UNIT 1. INTERNATIONAL TRADE OF CRUDE OILS, PRODUCTS AND GAS

1. Participants and their position in the market
2. Energy markets
3. The market in times of the COVID-19 pandemic
4. Pricing
5. Pricing formulas

2. DIDACTIC UNIT 2. ECONOMIC ASPECTS OF THE ACTIVITY

1. The oil refining business
2. Current situation and expectations of the industry
3. Supply plan for a refining system
4. Oil sales contracts
5. Gas purchase and sale contracts

3. DIDACTIC UNIT 3. PRICE RISK COVERAGE. FUTURES MARKETS

1. Derivative instruments
2. Futures markets
3. Options contract
4. Swaps
5. Price coverage

4. DIDACTIC UNIT 4. TRADING ACTIVITY

1. Organization of a Trading Department
2. Evolution of trading practices
3. Risk Management
4. Price forecasting techniques
5. Fundamental concepts of chart and technical analysis

MODULE 6. ENGINEERING AND DESIGN OF OIL & GAS INDUSTRIAL PLANTS I

1. DIDACTIC UNIT 1. BASICS OF A PROJECT

1. What is a project?
2. Project definition and scope
3. Engineering phases of a project
4. Basic diagrams in a project
5. Construction and commissioning

2. DIDACTIC UNIT 2. ENGINEERING, CONSTRUCTION AND COMMISSIONING

1. Layout. Generalities and equipment
2. Distribution of equipment in the plant. On Site layout
3. Environment and safety in the design of a chemical plant
4. Fluid properties: density and viscosity
5. Mechanical properties and tests of materials

3. DIDACTIC UNIT 3. SELECTION OF MATERIALS

1. Types of materials. Structure of materials
2. Iron base metals
3. Ceramic and polymer materials
4. Non-ferrous alloys
5. Composite materials

4. DIDACTIC UNIT 4. PIPING SYSTEMS

1. How to specify a pipe
2. Valves
3. Pipe joints
4. Pipe supports. Insulation and monitoring of pipes
5. Basic piping design

MODULE 7. ENGINEERING AND DESIGN OF OIL & GAS INDUSTRIAL PLANTS II

1. DIDACTIC UNIT 1. DESIGN OF STATIC EQUIPMENT

1. Basic design of regulating tanks
2. Basic design of separator tanks
3. Storage tanks
4. Reactors
5. Distillation columns

2. DIDACTIC UNIT 2. DESIGN OF HEAT TRANSFER EQUIPMENT

1. Heat transfer. Introduction
2. Heat exchangers TOPIC (I)
3. TEMA heat exchangers (II)
4. Cooling towers
5. Process ovens

3. DIDACTIC UNIT 3. DESIGN OF DYNAMIC EQUIPMENT

1. Centrifugal pumps
2. Positive displacement pumps
3. Compressors. Introduction
4. Centrifugal compressors
5. Alternative compressors

4. DIDACTIC UNIT 4. VARIOUS EQUIPMENT

1. Ejectors
2. Pneumatic transport
3. Mixers and agitators
4. Sealing of dynamic equipment. Gaskets and mechanical seals
5. Industrial lubrication

MODULE 8. TURNKEY PROJECTS (EPC)

1. DIDACTIC UNIT 1. PROJECT BASICS

1. What is a project
2. Project types
3. EPC Projects (Engineering, Procurement, Construction)
4. EPC projects in complex sectors
5. Project life cycle

2. DIDACTIC UNIT 2. AGENTS OF A TURNKEY PROJECT (EPC) (I)

1. Project management
2. Main agents in a turnkey project
3. Organization of a project
4. The project management team: the project director (I)
5. The project management team: the project director (II)

3. DIDACTIC UNIT 3. AGENTS OF A TURNKEY PROJECT (EPC) (II)

1. The project management team: project operations manager, project manager and area manager
2. The project management team: project engineers, material manager and interface manager

3. The project management team: engineering manager and project assistants
4. Conclusions and practical example of an organization chart
5. Business management

4. DIDACTIC UNIT 4. AGENTS OF A TURNKEY PROJECT (EPC) (III)

1. Contract manager, administration manager and project control manager
2. risk manager
3. Procurement management
4. Quality control, quality assurance management and HSE
5. construction management

MODULE 9. CONTRACT ADMINISTRATION AND MANAGEMENT (EPC)

1. DIDACTIC UNIT 1. CONTRACTUAL BASIS

1. What is a contract?
2. Terminology in contracts
3. Contract management concept
4. International arbitration
5. International standard construction contracts

2. DIDACTIC UNIT 2. THE LAW AND ITS INTERPRETATION

1. What is the law?
2. The tests
3. Causes of invalidity of a contract
4. Termination of a contract in English law
5. Professional responsibility

3. DIDACTIC UNIT 3. CONSTRUCTION LAW SOCIETY (I)

1. Construction Law Society
2. Guide part A: concepts of delay, disruption and acceleration
3. Guide part B: guide to key principles (I)
4. Guide part B: guide to key principles (II)
5. Guide part B: guide to key principles (III)
6. Guide part B: guide to key principles (IV)

4. DIDACTIC UNIT 4. CONSTRUCTION LAW SOCIETY (II)

1. Instruction to Smart Contracts
2. Most common uses of Smart Contracts (I)
3. Most common uses of Smart Contracts (II)
4. The great paradox of Smart Contracts

MODULE 10. TFM. MASTER GLOBAL OIL & GAS SECTOR

Qualification

University Degree in Master of Lifelong Training in Petroleum, Natural Gas and Petrochemistry issued by the Antonio de Nebrija University with 60 ECTS University Credits. Teachings not leading to obtaining an official qualification

Objectives

- • You will have a global understanding of the value chains and activities of the hydrocarbon sector, from extraction to marketing. • You will design crude oil refining and product optimization strategies, considering the latest market innovations. • You will evaluate the impact and viability of bio-based and alternative fuels in the future energy scenario until 2050. • You will integrate the key role of natural gas and LNG in energy evolution, anticipating trends and development projections. • You will manage the mechanisms for obtaining raw materials and their transformation into products of high commercial value. • You will make strategic decisions based on the state of the art, R&D and development estimates for the coming decades in the petrochemical field. • You will lead the planning and execution of industrial initiatives, mastering their phases, engineering and design. • You will analyze the supply and marketing markets, identifying opportunities in global energy trade.

What does it prepare you for?

This program prepares you to lead transformation and strategic decision-making in the complex energy landscape. The Master in Petroleum, Natural Gas and Petrochemicals trains professionals in the sector in the strategic management of industrial projects to optimize the energy value chain. You will develop a comprehensive understanding of the hydrocarbon sector, covering its value chains from extraction to commercialization. You will acquire the ability to analyze crude oil refining processes and the production of alternative fuels, evaluating their impact on the future energy scenario. You will design supply and trading strategies, managing the markets with an advanced perspective. It will allow you to integrate the technical, economic and regulatory aspects to optimize the management of industrial projects, from their conception to their execution. You will make informed decisions about R&D trends and development projections in the petrochemical and natural gas industries, consolidating your role as a key player in adapting to the challenges of the energy transition.

Who is it addressed to?

Aimed at professionals in the Oil & Gas sector, the petrochemical industry and those who work with biofuels who are looking for high-level specialization to enhance their development. If you are involved in the design, procurement or construction of industrial plants, or are related to contract and operations management, and are interested in updating your knowledge about the global functioning of the industry, this program is for you. It is ideal for those who want to understand R&D trends, future projections and the most innovative state of the art in energy, in order to assume greater responsibilities and lead innovation in their professional field.

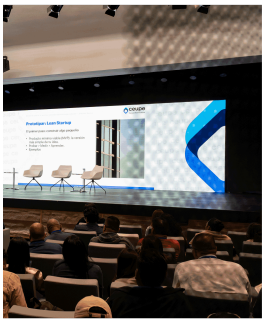
Official Character

This training is not included within the scope of official regulated training (Early Childhood Education, Primary Education, Secondary Education, Official Vocational Training FP, Baccalaureate, University Degree, Master University Officer and Doctorate). It is therefore a complementary and/or specialization training, aimed at the acquisition of certain competencies, skills or aptitudes of a professional nature, which can be assessed as merit in job boards and/or competitive examinations, always within the section of Complementary Training and/or Continuous Training. It is always essential to review the specific grading requirements of the specific public job boards to which we wish to apply.

Professional Outings

- The specialization in the Oil & Gas sector, natural gas and the refining industry that you will obtain will position you to assume roles of high responsibility and strategic management. You will be able to consolidate your career as Project Director of Industrial Plants, leading complex initiatives from conception to start-up. It will open doors to positions such as Head of Hydrocarbon Supply and Trading, managing global value chains and energy markets. You can also serve as a Senior Energy Strategy Consultant, advising on renewable energy trends and future scenarios. Other roles include Contract Manager specializing in large projects, or Senior Process Engineer, optimizing the transformation of raw materials. This training is key for those who aspire to Top Management positions, providing a comprehensive and avant-garde vision to the management of companies in the sector.







Live Madrid

Live the International Week

As an additional complement to your training, you can be part of the SIM: Week International in Madrid. A unique meeting that brings together students from all over the world. For seven days you can live an academic and cultural experience in the heart of Europe, culminating with the graduation ceremony in Madrid.

- Conferences and workshops with international experts
- Visits to companies and reference organizations
- Networking with students from different countries
- Cultural activities and discovery of Madrid
- graduation ceremony

Structural

Structuralia is a leading educational institution in postgraduate and highly specialized online training, focused on the fields of engineering, architecture, construction, energy, technology and digital transformation.

Founded in 2001 with a strong industrial DNA, the result of collaboration between large companies in the sector and the Universitat Politècnica de Catalunya (UPC), for more than 25 years we have accompanied technical professionals in their academic and professional development through practical, flexible training aligned with the reality of the labor market.

Our training proposal connects advanced technical knowledge, real employability and international projection, acting as key support in the professional evolution of those seeking to specialize, grow professionally and generate impact in their sector, with a firm commitment to the democratization of access to technical excellence.



+350.000

Students have gone through our virtual classrooms



+20 years

Experience in the training sector



5 stars

QS ranking in online education

EDUCA EDTECH
Group

Educa Edtech GROUP

When you enroll in a course or master's degree, you will get a free subscription to MyLXP while your training lasts. You will have access to more than 400 key courses (soft skills, languages, digital skills, etc.) and other surprises. Sign up and see how MyLXP improves your learning.

EDUCA LXP Methodology

The comprehensive tailored online education experience

EDUCA LXP is more than a methodology, it is a completely educational experience personalized thanks to all the possibilities offered by artificial intelligence. Now the content adapts to you, your needs and preferences, while offering you access to updated and practical content that really makes a difference in the labor market.

Flexibility

100% online learning adapted to your schedule: study from any device wherever, whenever and however you want.

Personalization

Contents and training itineraries adapted to your needs, thanks to AI.

Innovation

Constantly evolving technological developments driven by AI through the Learning Experience Platform.

Artificial intelligence

Discover PHIA, your learning assistant that will help you every step of the way.

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Human empathy and academic guidance from a specialized teaching team.

Educational Experience

Didactic approach oriented to work by competencies, which favors practical and meaningful learning.

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When you enroll in a course or master's degree, you will get a free subscription to MyLXP while your training lasts

You will have access to more than 400 key courses (soft skills, languages, competencies digital, etc.) and other surprises. Sign up and see how MyLXP improves your learning.

Meet PHIA, your personalized learning assistant

Use all the possibilities of artificial intelligence to get the most out of it match to your training

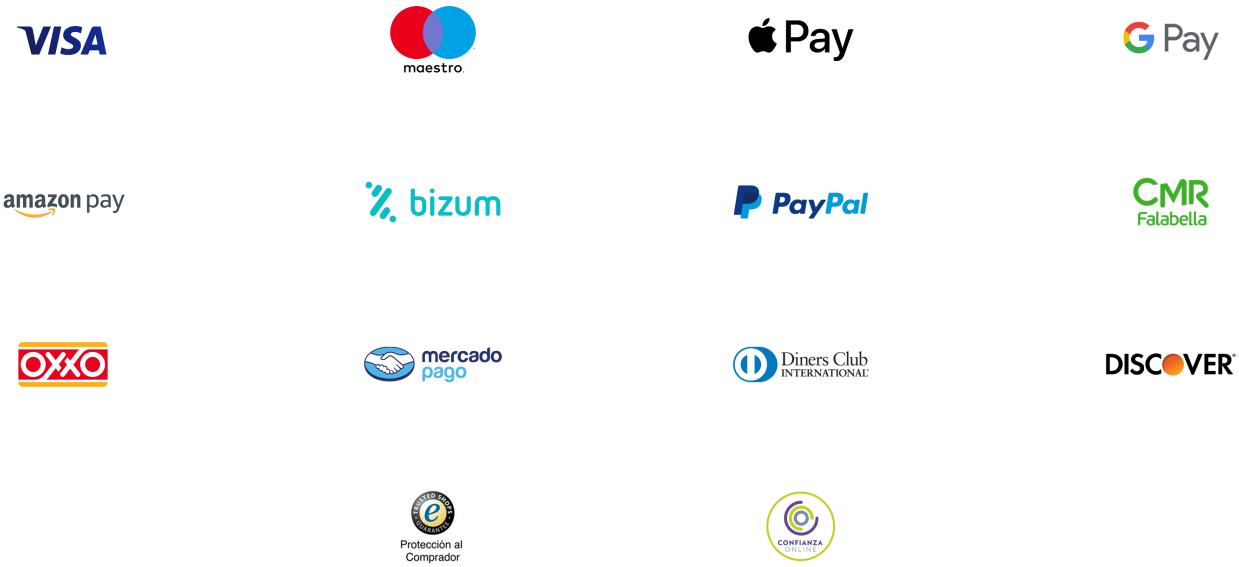
EDUCA EDTECH Group leads the digital revolution in education, promoting the continuous learning and technological transformation. The group is made up of recognized training institutions and its mission is to democratize access to education, promote the transfer of knowledge, technological development and research.

With the experience accumulated over more than 20 years, we have perfected our learning platform EDUCA LXP (Learning Experience Platform), the basis of our educational methodology, which provides students with online training practical and meaningful.



Discover all the payment facilities

We adapt to all international payment methods.



Funding and scholarships

Finance your course or master's degree and enjoy the available scholarships. Contact our expert team to know which one best suits your profile.

25%
Alumni Scholarship

15%
Scholarship recommended

20%
Functional Diversity Scholarship

20%
Unemployment scholarship

15%
GROUP Scholarship

20%
Scholarship for Professionals, Healthcare, members

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