

**DEMOCRATIC AND POPULAR REPUBLIC OF ALGERIA  
MINISTRY OF HIGHER EDUCATION  
AND SCIENTIFIC RESEARCH**

**COMPLIANCE CANVAS L.M.D**

**TRAINING OFFER**

**L.M.D.**

**PROFESSIONAL MASTER**

**2023-2024**

| <b>Establishment</b> | <b>Faculty/Institute</b>  | <b>Department</b> |
|----------------------|---|-------------------|
| University of Biskra | Faculty of<br>Economics,<br>commerce and<br>Management Sciences | Economics         |

| <b>Domain</b>                                      | <b>Branch</b> | <b>Major</b>     |
|--|---------------|------------------|
| Economic, Management<br>and<br>Commercial Sciences | Economics     | Energy Economics |

**REPUBLIQUE ALGERIENNE DEMOCRATIQUE ET POPULAIRE**  
**MINISTERE DE L'ENSEIGNEMENT SUPERIEUR**  
**ET DE LA RECHERCHE SCIENTIFIQUE**

**CANEVAS DE MISE EN CONFORMITÉ**  
**OFFRE DE FORMATION**  
**L.M.D.**  
**MASTER PROFESSIONNALISANT**  
**2023-2024**

| <b>Etablissement</b> | <b>Faculté / Institut</b>   | <b>Département</b>   |
|----------------------|---|----------------------|
| Université de Biskra | Faculté des sciences économiques, commerciales et des sciences de gestion | sciences économiques |

| <b>Domaine</b>                                   | <b>Filière</b>       | <b>Spécialité</b>     |
|--|----------------------|-----------------------|
| Sciences Economiques, de Gestion et Commerciales | Sciences économiques | Economie de L'énergie |

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## I - Master's identification card

## **1- Location of the training :**

Establishement : University of Mohamed Khider, Biskra

Faculty: Faculty of Economics, Commerce and Management Sciences

Department: Economics

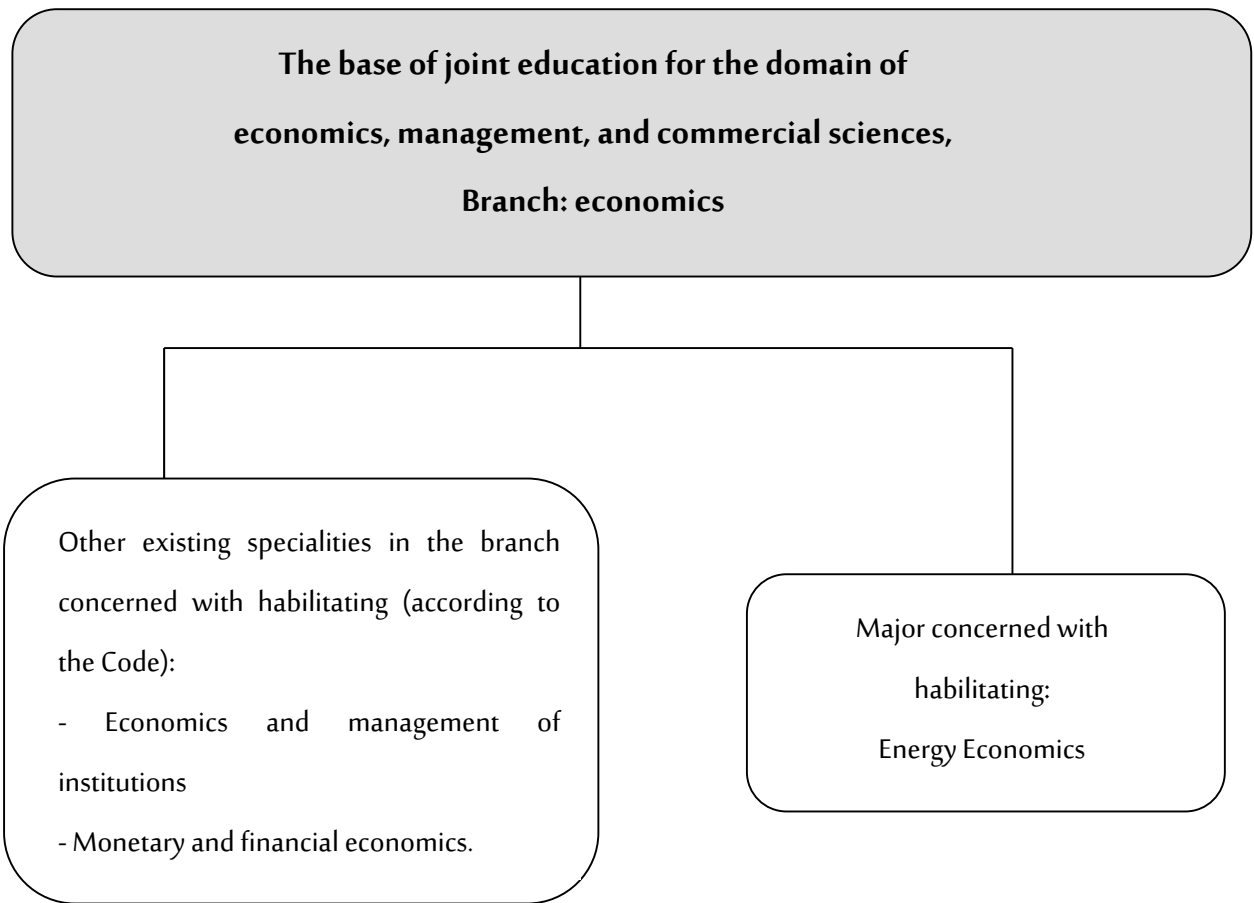
## **2- Training partners: (Required field)**

In addition to professors, experts in the field and professionals from the world of work can participate in this training, due to the nature of the major, to connect university with the economic and social environment.

- Other university institutions: Ouargla University, El Oued University.
- Other socio-economic institutions and partners: institutions active in the energy sector, whether public or private (Sonatrach, Naftal, etc.). In addition to the Energy Directorate and the Environment Directorate.
- Foreign international partners: There are no foreign partners.

### 3 - Context and objectives of the training:

#### A - The general organization of the training: the status of the project



**B - Training objectives: (Required field)** *(Targeted competencies, knowledge acquired at the end of training - 20 lines at most)*

This training, through its program, which includes many modules, some of which are theoretical and some of which are practical, allows us to provide a theoretical base and a deeper understanding of the foundations and concepts associated with this field - energy economics- through the basic units, in addition to that, there are methodological units that provide more economic analysis tools such as econometrics, micro and macro analysis tools, financing methods, etc. On the other hand, we find exploratory and horizontal units that support the theoretical knowledge acquired and the analysis tools used by addressing Laws applied to energy in Algeria, or petroleum collection, energy collection, etc.

In general, the desired objectives of this training can be summarized in a few points as follows:

- Enabling researchers to address the fundamental issues related to the national economy, as the starting point will be from reality and current problems.
- Using quantitative methods to analyze energy-related issues in Algeria.
- Highlighting the role of the university and higher education programs in confronting the energy crisis in Algeria by supplying the labor market with the efficient and specialized workforce necessary to meet the challenges facing the energy sector.
- Contributing to the development of an energy policy for Algeria by trying to reach the optimal energy mix in preparation for what after oil.

**C - Targeted qualifications and competencies: (required field)** (20 lines at most)

- This major allows students to integrate into the energy sector, by teaching and providing a qualified group in the energy field capable of analyzing the local and international market and studying the behavior of producers and consumers in the sector, as well as working to rationalize energy consumption.
- Providing qualified frameworks to work in public and private economic institutions.

- Providing the labor market with a qualified group capable of managing the sector and the activities arranged within it, which contributes to the advancement of the wheel of development in the country, especially since Algeria is rich in energy resources.
- Providing the country with a group of researchers through research in the field of economic diversification and finding the appropriate energy mix for Algeria according to the current economic and environmental conditions to get rid of oil dependency.

#### **D - Regional and national employability potential:** (required field)

Studying this major opens several career prospects for the student:

- Continuing doctoral studies (third cycle) and working in the field of scientific research.
- Working in energy research centers, such as the Center for the Development of Renewable Energies, by applying the knowledge acquired theoretically in practical reality.
- Working in specialized energy institutions, whether national or foreign, operating in Algeria or abroad.
- Working in other economic institutions, whether public or private.

#### **E - Gateways to other majors** (required field)

This major in energy economics is accepted by students who hold a bachelor's degree in economics, classical system or LMD system, in all majors belonging to the economics branch. Through this major, it is also possible to continue studying for an academic or professional doctorate in economics branch, which includes all majors belonging to the branch.

**F - Training monitoring indicators:** (required field) (permanence criteria, success rate, employability, follow-up of graduates, acquired competencies....)

- The major in energy economics coincided with the trends of the Algerian economy towards the transition to the era of renewable energies.
- The university provides material and human capabilities (framing structures).
- Competition in the labor market.



- Creating a qualified framework capable of contributing to the analysis of energy markets and the behavior of institutions working in this field then develop the national economy.
- The energy crisis that the world in general and Algeria in particular is witnessing, represented by the depletion of oil reserves, the growing demand for energy, as well as the problem of global climate change, not to mention the fluctuation of oil prices on the international market and the correlation of the national economy with this resource.

#### 4 - Available human resources:

##### B1- Internal framing:

##### A- Supervision capabilities:

##### B- Internal framing harnessed for training in the major

| signature | Nature of the intervention *        | Rank            | Postgraduate certificate + major                  | Graduation certificate + major                        | Name and Surname |
|-----------|-------------------------------------|-----------------|---|---|------------------|
|           | Lecture, directed work, supervision | Full professor  | State doctorate, Quantitative Economics           | Bachelor's degree, Planning                           | Moussa Rahmani   |
|           | Lecture, directed work, supervision | Full professor  | Doctorate, Economics and Environmental Management | Bachelor's degree, Money, Finance and Banking         | Amal Rahmane     |
|           | Lecture, directed work, supervision | Full professor  | Doctorate, Applied Economics                      | Bachelor's degree, Money, Finance and Banking         | Benbrika Zohra   |
|           | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                      | Bachelor's degree, Money, Finance and Banking         | Achour Fella     |
|           | Lecture, directed work, supervision | Full professor  | Doctorate, Economics and Business Administration  | Bachelor's degree, Management Sciences, Finance       | Khiredin Djema   |
|           | Lecture, directed work, supervision | Full professor  | Doctorate, Economics and Business Administration  | Bachelor's degree, Business Administration            | Souleh Samah     |
|           | Lecture, directed work, supervision | Full professor  | Doctorate, Economics and Business Administration  | Bachelor's degree, Management Sciences                | Nadjwa Habba     |
|           | Lecture, directed work, supervision | Senior lecturer | Doctorate of Science, Money and Finance           | Bachelor's degree, economics and corporate management | Asma Haddana     |
|           | Lecture, directed work, supervision | Full professor  | State doctorate, Money and Finance                | Bachelor's degree, Financial Sciences                 | Saleh Meftah     |
|           | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                      | Bachelor's degree, Money, Finance and Banking         | Bensmina Aziza   |
|           | Lecture, directed work, supervision | Full professor  | State doctorate, Management                       | Bachelor's degree, Planning                           | Khenhour Djamel  |

|  |                                     |                 |   |   |                       |
|--|-------------------------------------|-----------------|---|---|-----------------------|
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, management                         | Morgad Lakhdar        |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, management                         | Ben Sama'in Hayat     |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, Money, Finance and Banking         | Bensmina Dalal        |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, Money, Finance and Banking         | Ali Bouabdallah       |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance                  | Bachelor's degree, Money, Finance and Banking         | Guessouri Insaf       |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, Money, Finance and Banking         | Lahcen Dardouri       |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, Money, Finance and Banking         | Farid ben Abid        |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance                  | Bachelor's degree, Money, Finance and Banking         | Adissa Chahra         |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, Money, Finance and Banking         | Mohamad Adnan ben Dif |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                  | Bachelor's degree, Financial Sciences                 | Abdallah Ghalem       |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Economic Measurement               | Statistical engineer                                  | Abderezak Benzaoui    |
|  | Lecture, directed work, supervision | Senior lecturer | Doctor, Industrial Economics                  | Bachelor's degree, Business Administration            | Adel Mayah            |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Economics and Corporate Management | Bachelor's degree, Economics and Corporate Management | Borni Latifa          |
|  | Lecture, directed work, supervision | Junior lecturer | Doctorate, Business Administration            | Bachelor's degree, Financial Sciences                 | Menasriya Ismail      |
|  | Lecture, directed                   | Senior          | Doctorate, Money and                          | Bachelor's degree,                                    | Laila Joudi           |

|  |                                     |                 |  |   |                       |
|--|-------------------------------------|-----------------|--|---|-----------------------|
|  | work, supervision                   | lecturer        | Finance  | Money, Finance and Banking                    |                       |
|  | Lecture, directed work, supervision | Junior lecturer | Doctor, Development Economics                                    | Bachelor's degree, Financial Sciences         | Abba Farid            |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Economics and Business Administration                 | National School of Administration             | Abdelmounim benfarhat |
|  | Lecture, directed work, supervision | Full professor  | Doctorate, Money and Finance                                     | Bachelor's degree, Money, Finance and Banking | Sebti wassila         |
|  | Lecture, directed work, supervision | Senior lecturer | LMD doctorate, Economics of Money, Banking and Financial Markets | Bachelor's degree, Money and Finance          | Anfal Necib           |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Industrial Economics                                  | Bachelor's degree, Finance, Banking and Money | Ben Turki Walid       |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance                                     | Bachelor's degree, Finance, Banking and Money | Ghokal Ilyes          |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, economic analysis                                     | Bachelor's degree, Finance, Banking and Money | Hamrit Rachid         |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance                                     | Bachelor's degree, Finance, Banking and Money | Bentabbi Dalal        |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance                                     | Bachelor's degree, Finance, Banking and Money | Chaouch Ikhwan Sihem  |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance                                     | Bachelor's degree, Finance, Banking and Money | Saad Ibtissem         |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Industrial Economics                                  | Bachelor's degree, Finance, Banking and Money | Namoune Iman          |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance                                     | Bachelor's degree, Finance, Banking and Money | Belabidi Ayda Abir    |

|  |                                     |                 |                                |   |                 |
|--|-------------------------------------|-----------------|--------------------------------|---|-----------------|
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Finance and Banking | Bachelor's degree, Finance, Banking and Money | Naoui Fatima    |
|  | Lecture, directed work, supervision | Senior lecturer | Doctorate, Money and Finance   | Bachelor's degree, Finance, Banking and Money | Msemeche Nadjat |

**Visa of the department head**

**Visa of the faculty dean**

**B2- External framing:**

**- Professors from the faculty of science and technology:**

| Name and Surname | Graduation certificate + major         | Postgraduate certificate + major  | Rank            | Nature of the intervention          | Signature |
|------------------|--|-----------------------------------|-----------------|-------------------------------------|-----------|
| Naimi Djemai     | State engineer, electrical engineering | Doctorate, electrical engineering | Full professor  | Lecture, directed work, supervision |           |
| Bahri Mebarek    | State engineer, Physics                | Doctorate, electrical engineering | Full professor  | Lecture, directed work, supervision |           |
| Salhi Ahmed      | State engineer, electrical engineering | Doctorate, electrical engineering | Senior lecturer | Lecture, directed work, supervision |           |

\* Lecture, applied work, directed work, internship supervision, dissertations supervision, others (explains)

Visa of the department head

Visa of the faculty dean

#### D - The total sum of human resources devoted to training:

| Rank                  | Internal number | External number | The total |
|-----------------------|-----------------|-----------------|-----------|
| Full professor        | 20              | 2               | 20        |
| Senior lecturer       | 19              | 1               | 19        |
| Junior lecturer       | 02              | /               | 02        |
| Assistant professor A | 00              | /               | 00        |
| Assistant professor B | 00              | /               | 00        |
| Other                 | 00              | /               | 00        |
| The total             | 41              | 03              | 44        |

#### 5 - Specific material resources available:

**A - Pedagogical Laboratories and Equipments:** *(Submit a card about the pedagogical equipment available for the applied work of the proposed training. (One card for each laboratory))*

**Laboratory title: Economics and Management Sciences Laboratory**

| Number | Equipment name | The number      | Notes |
|--------|----------------|-----------------|-------|
| 01     | Computer       | 6               | Good  |
| 02     | Printer        | 6               | Good  |
| 03     | Copy machine   | 4               | Good  |
| 04     | Data show      | 2               | Good  |
| 05     | Computer table | 20              | Good  |
| 06     | Chairs         | 30              | Good  |
| 07     | Reading room   | (30 students) 1 | Good  |
| 08     | Library        | (500 books) 1   | Good  |
| 09     | Internet       | WIFI            | Good  |

**Laboratory title: Finance, banking and business administration laboratory**

| Number | Equipment name | The number      | Notes |
|--------|----------------|-----------------|-------|
| 01     | Computer       | 4               | Good  |
| 02     | Printer        | 4               | Good  |
| 03     | Copy machine   | 2               | Good  |
| 04     | Data show      | 2               | Good  |
| 05     | Computer table | 4               | Good  |
| 06     | Chairs         | 30              | Good  |
| 07     | Reading room   | (30 students) 1 | Good  |
| 08     | Library        | 1               | Good  |
| 09     | Internet       | WIFI            | Good  |

**B- Fields of training and training in institutions:**

| Internship place | Number of students | Internship duration |
|------------------|--------------------|---------------------|
| Sonatrach        | 20                 | One month           |
| Sonlgaz          | 20                 | One month           |
| Naftal           | 20                 | One month           |
| Petrobaraka      | 20                 | One month           |

**C- Research laboratories to support the proposed training:**

|   |
|---|
| <b>Economics and Management Sciences Laboratory</b>                         |
| <b>Laboratory director : Koraichi Mohamed</b>                               |
| <b>Laboratory accreditation number 235 dated May 28, 2002</b>               |
| Date :<br><br><br><br><br><br><br><br><br><br>Laboratory director opinion : |

|   |
|---|
| <b>Finance, banking and business administration laboratory</b>              |
| <b>Laboratory director : Ghalem Abdellah</b>                                |
| <b>Laboratory accreditation number 222 dated July 13, 2009</b>              |
| Date :<br><br><br><br><br><br><br><br><br><br>Laboratory director opinion : |

**D- Research projects supporting the proposed training:**

| Title of the research project  | Project code         | The starting date | The ending date |
|--|----------------------|-------------------|-----------------|
| The role of fiscal policy in treating the general budget in Algeria: an econometric analytical study for the period 1992-2023.               | F02N01UN070120210002 | 2021/01/01        | 2024/12/31      |
| The contribution of accounting for the social and environmental responsibility of economic institutions to achieving sustainable development | F03N01UN070120220001 | 2022/01/01        | 2025/12/31      |
| The impact of oil price fluctuations on financial stability  | F02N01UN070120220004 | 2022/01/01        | 2025/12/31      |



|  |                      |            |            |
|--|----------------------|------------|------------|
| in Algeria during 1992-2026  |                      |            |            |
| Efficient use of resources as a strategic option under sustainable development controls.   | F02N01UN070120220006 | 2022/01/01 | 2025/12/31 |
| The effectiveness of the strategies used in Algeria to develop exports outside the hydrocarbon sector in light of current international developments                       | F02N01UN070120220008 | 2022/01/01 | 2025/12/31 |
| The digital economy and the challenges of investment in the stock exchange - the case of Algeria, reality and prospects-   | F02N01UN070120220003 | 2022/01/01 | 2025/12/31 |
| The impact of modern Internet applications on the services sector  | F01L02UN070120220001 | 2022/01/01 | 2025/12/31 |
| The role of digital financial services in achieving economic recovery in Algeria in light of the Corona crisis   | F02N01UN070120220007 | 2022/01/01 | 2025/12/31 |
| Business re-engineering methodology in Algerian economic institutions  | F01L02UN070120230007 | 2023/01/01 | 2026/12/31 |
| Industrial policies and their contribution to accompanying and supporting innovative emerging companies In Algeria - reality and prospects-                                | F01N01UN070120190003 | 2023/01/01 | 2026/12/31 |
| The economic impact of renewable energy technologies on global energy efficiency -Algeria case study-  | F02N01UN070120230011 | 2023/01/01 | 2026/12/31 |
| Artificial intelligence and its role in supporting economic diversification in light of adopting the concept of the digital economy in Algeria - prospects and challenges- | F02N01UN070120230011 | 2023/01/01 | 2026/12/31 |
| The contribution of green financing through Islamic banks to encouraging emerging green enterprises in Algeria   | F02N01UN070120230009 | 2023/01/01 | 2026/12/31 |
| The role of applying governance principles in improving the financial performance of Algerian banking institutions - a study of a sample of banks                          | F02N01UN070120230006 | 2023/01/01 | 2026/12/31 |

### E- Available documentation (its relationship to the proposed training offer)

The central library and the faculty library contain many and varied references related to the field of energy economics, including books, magazines, various periodicals, and graduation dissertations at the bachelor's, master's, and doctoral levels. The faculty library also contains summaries, CDs, or books for study days, symposiums, and forums.

**F- Personal work spaces and ICT:** To enable the student to complete his research, applications, and personal work, the University of Biskra provides:

- The faculty library contains more than 50,000 references in all majors.
- 03 high-media halls equipped with modern means of automated media.
- WIFI internet service covers the library and reading rooms.
- Many reading rooms in the faculty library and the central library, in addition to the halls located at the laboratory level.

### G- The pillars of education:

Select electronic platforms to publish lessons.

| Platform type<br>*(Moodle...) | Establishement                       | Platform link   |
|-------------------------------|--------------------------------------|---|
| Moodle                        | University of Mohamed khider, Biskra | <a href="http://elearning.univ-biskra.dz/moodle/">http://elearning.univ-biskra.dz/moodle/</a> |
| Professional email            | University of Mohamed khider, Biskra | <a href="https://univ-biskra.dz">https://univ-biskra.dz</a>                                   |

\* Mention other platforms used.

## **II - Semester organization card**

## 1- First semester:

| Evaluation method |                       | Mode of education |           | Other*    | Hourly volume of the semester (15 weeks) | Hourly volume of the week |                |          | Coefficient | Credit    | Module titles                    | Teaching units  |
|-------------------|-----------------------|-------------------|-----------|-----------|--|---------------------------|----------------|----------|-------------|-----------|----------------------------------|---|
| Exam              | Continuous evaluation | Online            | in person |           |  | Applied works             | Directed works | Lectures |             |           |                                  |   |
| 60%               | 40%                   |                   | X         | 00 سا 65  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 5         | Introduction to Energy Economics | <b>Basic teaching unit</b><br><b>Code: BTU 1.1</b><br><b>Credits: 18</b><br><b>Coefficient: 8</b>         |
| 60%               | 40%                   |                   | X         | 00 سا 65  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 5         | Energy Markets                   |   |
| 60%               | 40%                   |                   | X         | 00 سا 55  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 4         | Economics of natural resources   |   |
| 60%               | 40%                   |                   |           | 00 سا 55  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 4         | In-depth microeconomics          |   |
| 60%               | 40%                   |                   | X         | 00 سا 65  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 5         | Energy Sources Analysis          | <b>Methodological teaching unit</b><br><b>Code: MTU 1.1</b><br><b>Credits: 9</b><br><b>Coefficient: 4</b> |
| 60%               | 40%                   |                   | X         | 00 سا 55  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 4         | Network Industry                 |   |
| 60%               | 40%                   |                   | X         | 00 سا 5   | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 2         | Energy Law                       | <b>Exploratory teaching unit</b><br><b>Code: ETU 1.1</b><br><b>Credits: 2</b><br><b>Coefficient: 2</b>    |
| -                 | 100%                  | X                 | X         | 00 سا 2   | 30 سا 22                                 |                           | 30 سا 1        |          | 1           | 1         | English 1                        | <b>Horizontal teaching unit</b><br><b>Code: HTU 1.1</b><br><b>Credits: 1</b><br><b>Coefficient: 1</b>     |
|                   |                       |                   |           | 30 سا 367 | 30 سا 337                                |                           | 00 سا 12       | 30 سا 10 | <b>15</b>   | <b>30</b> | Sum of the first semester        |   |

•Additional work and personal work determined from the pedagogical team of the module.

## 2- Second semester :

| Evaluation method |                       | Mode of education |           | Other*    | Hourly volume of the semester (15 weeks) | Hourly volume of the week |                |          | Coefficient | Credit | Module titles                   | Teaching units   |
|-------------------|-----------------------|-------------------|-----------|-----------|--|---------------------------|----------------|----------|-------------|--------|---------------------------------|--|
| Exam              | Continuous evaluation | Online            | In person |           |  | Applied works             | Directed works | Lectures |             |        |                                 |  |
| 60%               | 40%                   |                   | X         | 00 سا 65  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 5      | Energy Geopolitics              | <b>Basic teaching unit</b><br><b>Code: BTU 1.1</b><br><b>Credits: 18</b><br><b>Coefficient: 8</b><br><b>Methodological teaching unit</b><br><b>Code: MTU 1.1</b><br><b>Credits: 9</b><br><b>Coefficient: 4</b> |
| 60%               | 40%                   |                   | X         | 00 سا 65  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 5      | Environmental economics         |  |
| 60%               | 40%                   |                   | X         | 00 سا 55  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 4      | Renewable Energy Sources        |  |
| 60%               | 40%                   |                   |           | 00 سا 55  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 4      | The Economics of Climate Change |  |
| 60%               | 40%                   |                   | X         | 00 سا 65  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 5      | Econometrics                    | <b>Exploratory teaching unit</b><br><b>Code: ETU 1.1</b><br><b>Credits: 2</b><br><b>Coefficient: 2</b>   |
| 60%               | 40%                   |                   | X         | 00 سا 55  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 4      | Energy Companies Strategy       |  |
| 60%               | 40%                   |                   | X         | 00 سا 5   | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 2      | Innovation Workshops            | <b>Horizontal teaching unit</b><br><b>Code: HTU 1.1</b><br><b>Credits: 1</b><br><b>Coefficient: 1</b>  |
| -                 | 100%                  | X                 | X         | 00 سا 2   | 30 سا 22                                 |                           | 30 سا 1        |          | 1           | 1      | English 2                       | <b>Basic teaching unit</b><br><b>Code: BTU 1.1</b><br><b>Credits: 18</b><br><b>Coefficient: 8</b>  |
|                   |                       |                   |           | 30 سا 367 | 30 سا 337                                |                           | 00 سا 12       | 30 سا 10 | 15          | 30     | Sum of the second semester      |  |

- Additional work and personal work determined from the pedagogical team of the module.

### 3- Third semester :

| Evaluation method |                       | Mode of education |           | Other*    | Hourly volume of the semester (15 weeks) | Hourly volume of the week |                |          | Coefficient | Credit    | Module titles                              | Teaching units  |
|-------------------|-----------------------|-------------------|-----------|-----------|--|---------------------------|----------------|----------|-------------|-----------|--|---|
| Exam              | Continuous evaluation | Online            | In person |           |  | Applied works             | Directed works | Lectures |             |           |  |   |
| 60%               | 40%                   |                   | X         | 00 سا 105 | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 3           | 6         | Energy Investment Management               | <b>Basic teaching unit</b><br><b>Code: BTU 1.1</b><br><b>Credits: 18</b><br><b>Coefficient: 8</b>         |
| 60%               | 40%                   |                   | X         | 00 سا 105 | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 3           | 6         | Energy Industrial Economy                  |   |
| 60%               | 40%                   |                   |           | 00 سا 105 | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 3           | 6         | Basics of Electrical Power                 |   |
| 60%               | 40%                   |                   | X         | 00 سا 65  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 5         | Energy transition and foresight approaches | <b>Methodological teaching unit</b><br><b>Code: MTU 1.1</b><br><b>Credits: 9</b><br><b>Coefficient: 4</b> |
| 60%               | 40%                   |                   | X         | 00 سا 55  | 00 سا 45                                 |                           | 30 سا 1        | 30 سا 1  | 2           | 4         | Scientific Research Methodology            |   |
| 60%               | 40%                   |                   | X         | 00 سا 5   | 00 سا 45                                 | 30 سا 1                   |                | 30 سا 1  | 2           | 2         | Energy Management and Energy Audit         | <b>Exploratory teaching unit</b><br><b>Code: ETU 1.1</b><br><b>Credits: 2</b><br><b>Coefficient: 2</b>    |
| -                 | 100%                  | X                 | X         | 30 سا 2   | 30 سا 22                                 | 30 سا 1                   |                |          | 1           | 1         | Development economics                      | <b>Horizontal teaching unit</b><br><b>Code: HTU 1.1</b><br><b>Credits: 1</b><br><b>Coefficient: 1</b>     |
|                   |                       |                   |           | 30 سا 367 | 30 سا 337                                | 00 سا 03                  | 30 سا 07       | 00 سا 09 | <b>16</b>   | <b>30</b> | Sum of the third semester                  |   |

- Additional work and personal work determined from the pedagogical team of the module.

**4- Fourth semester :**

Domain : Economics, Management And Commercial Sciences

Branch: Economics

Major : Energy Economics

**A field study represented in a master’s dissertation for discussion**

| <b>Credits</b> | <b>Coefficient</b> | <b>Hourly volume of the week</b> |   |
|----------------|--------------------|----------------------------------|---|
| <b>30</b>      | <b>04</b>          | 30 hours/ week                   | <b>Personal work</b>  |
| /              | /                  | 03 hours/ week                   | <b>A field study</b>  |
| /              | /                  | 02 hours/ week                   | <b>Forums (certificate of attending a forum, training course in the second year Master)</b> |
| /              | /                  | 05 hours/ week                   | <b>Additional work (determined from the pedagogical team of the major)</b>                  |
| <b>30</b>      | <b>4</b>           | <b>600</b>                       | <b>Sum of the fourth semester (15 weeks)</b>  |

5- Overall summary of the training: (Please indicate the total hourly volume, distributed between lectures and applications, for the four semesters for the various teaching units, according to the following table)

| The total  | Horizontal | Exploratory | methodological | Basic    |                                   |
|------------|------------|-------------|----------------|----------|-----------------------------------|
| 00 س 459   | 00 س 00    | 30 س 76     | 00 س 135       | 30 س 247 | Lectures                          |
| 30 س 442   | س 15       | س 45        | 00 س 135       | 30 س 247 | Directed works                    |
| 30 س 23    | 30 س 22    | 30 س 01     | 00 س 00        | 00 س 00  | Applied works                     |
| 00 س 450   | 00 س 00    | 00 س 00     | 00 س 00        | 00 س 450 | Personal work                     |
| 30 س 1275  | 30 س 102   | س 15        | 00 س 360       | 00 س 795 | Other work (specified)            |
| 30 س 2226  | 140        | 30 س 166    | س 630          | س 1290   | The total                         |
| <b>120</b> | 03         | 06          | 27             | 84       | Credits                           |
| %100       | %10        |             | %30            | %60      | Credits for each teaching units % |



### **III - Detailed program by module**

**Semester:** The First.

**Teaching unit:** Basic

**Module:** Introduction to Energy Economics.

**Credits:** 5

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

This lecture aims to clarify the basic concepts related to the energy economy by analysing production sectors, consumption patterns and price issues. It also clarifies the energy balance (supply and demand) analyses the effectiveness and efficiency of using different energy sources.

**Required Prior Knowledge:**

It is not required to master the knowledge of any prior educational Module

**Module Content:**

- Introduction to energy economics;
- energy resources;
- energy supply and demand analysis;
- energy accounting;
- energy balance;
- energy effectiveness and efficiency and their measurement indicators and
- energy markets.

**Evaluation Method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Ahmed Nasser Al-Rajhi, Muhammad Hamid Abdullah, **Energy Economics** , King Saud University Publishing House, Kingdom of Saudi Arabia, 2015. **(In Arabic)**
2. Juma Rajab Tantish, Muhammad Azhar Saeed Al-Sammak, **Studies in the Geography of Energy Resources** , ELGA Publications , Malta , 1999. **(In Arabic)**
3. Subhes C. Bhattacharyya, **Energy Economics** , Springer, London, 2011.

**Semester:** The First.

**Teaching unit:** Basic.

**Module:** Energy Markets.

**Credits:** 5

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

The aim of this lecture is to introduce students to the mechanisms of how energy markets work, and to regulate each of these markets. It also introduces them to the interaction between energy markets and as risk management as well as the new trends of these markets in light of the current transformations, especially the emergence of new producers of unconventional hydrocarbons. It also includes environmental challenges and other related topics.

**Required Prior Knowledge:**

**Module Content:**

- Basics of energy markets;
- The financial instruments used in energy markets;
- Risk management and prudential strategies;
- energy portfolio;
- Oil and its derivatives markets;
- natural gas markets;
- coal markets;
- Renewable energy markets;
- Electricity markets
- carbon markets;
- Trends in global energy markets in light of current changes;

**Evaluation Method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Jean-Pierre FAVENNEC, Gilles DARMOIS, **Energy markets**, Edition Technip, Paris, France, 2013. **(In French)**
2. Davis Edwards, **Energy Trading and Investing** , USA, 2010.
3. Iris Marie Mack, **Energy Trading and Risk Management: A Practical Approach to Hedging, Trading and Portfolio Diversification** , John Wiley and sons, Singapore, 2014 .
4. Tom James, **Energy Markets: Price Risk Management and Trading** , John Wiley and sons, Singapore, 2008.

**Semester:** The First.

**Teaching unit:** Basic

**Module:** In-depth microeconomics

**Credits:** 4

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

Enabling the student to delve deeply into microeconomics by forming a body of knowledge about monopolistic markets, about production and its function and about the theory of competition.

**Required Prior Knowledge:**

The student needs to study microeconomics.

**Module Content:**

- The first theme: a review of consumer behaviour
- The second theme: consumption in the case of several periods
- The third theme: production
- The fourth theme: forms of production functions
- The fifth theme: production in the short term
- The sixth theme: revenues and profits
- The seventh theme: competition theory
- The eighth theme: market deficiencies
- The ninth theme: general balance and welfare economics

**Evaluation Method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Jawadi Ali (2020), **Microeconomics, Theoretical and Applied Analysis**, Part One, New Publishing House, Algeria. **(In Arabic)**
2. Ammar Amari, (2015), **Microeconomics -Summary of Lessons and Solved Applications-**, Dar Al-Jazairia, Algeria. **(In Arabic)**
3. Omar Sakhri, ( 2019), **Economics**, Dar Bahaa El-Din for Publishing and Distribution, first edition, Constantine, Algeria. **(In Arabic)**
4. Frederick Talon , (2008), **Introduction to Microeconomics**, translated by Wardiya and Ashed , University Foundation for Studies, Publishing and Distribution, first edition, Beirut, Lebanon. **(In Arabic)**
5. Kassab Ali , (2013), **Economic Theory, Micro Analysis**, Fourth Edition, Office of University Publications, Algeria. **(In Arabic)**

6. Moaz Al-Sharafawi Al-Jazairi, (2020), **Microeconomics**, Syrian Virtual University Publications, Syria. **(In Arabic)**
7. Bien, F., & Méritet, S. (2016). **Microeconomics: Agent Behaviours and Perfect Competition** (No. hal-01474495). **(In French)**
8. Buisson-Fenet, E., & Navarro, M. (2018). **The microeconomics in practice**-3rd edition. Armand Colin.
9. Cowell, F. (2018). **Microeconomics: principles and analysis**. Oxford University Press.
10. Frank, R., & Cartwright, E. (2016). **Microeconomics and Behavior** (2. utgave). London.
11. Gravelle, H., & Rees, R. (2004). **Microeconomics**. Pearson education.
12. Kolmar, M., & Hoffmann, M. (2018). **Workbook for Principles of Microeconomics**. Springer International Publishing.
13. Ragan, C. T., & Lipsey, R. G. (2013). **Microeconomics**. Pearson Education.
14. Varian, H. R. (2006). **Introduction to the microeconomic** 6th edition. Brussels: De Boeck. **(In French)**
15. Varian, H. R. (2015). **Introduction to modern microeconomics**. De Boeck Superior. **(In French)**

**Semester:** The First.

**Teaching unit:** Basic

**Module:** Economics of natural resources.

**Credits:** 4

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

This lecture aims to present the general economic concept of natural resources and the economic theories related to them. It also aims to ensure that students understand how to explain the emergence of an economic analysis specific to the natural resources sector through the characteristics of natural resources (renewable and non-renewable ). I also leads to understanding and solving problems related to the performance of the main natural resource markets (forests, energy, etc.) according to the economic theories that have been developed.

**Required Prior Knowledge:**

**Module Content:**

- Economy, natural resources and the environment
  - The economic concept of natural resources
  - Depleted resources
  - Renewable resources
- Exploiting depletable resources
  - Stock, extraction rate and remaining stock
  - Hotelling model
  - Theoretical extensions of the Hotelling model
  - Monopoly - application to oil shock analysis - taking into account uncertainty
  - Measuring the scarcity of depletable resources
- Exploiting renewable resources
  - Stock of renewable resources and growth rate
  - The optimal rate of exploitation of a renewable resource
  - The basic rule for exploiting renewable resources - the culture of renewable resources
  - How to avoid overexploitation of renewable resources
- Renewable resources in practice
  - Fisheries
  - Forests

- Climate (Kyoto Protocol, Mechanisms for confronting global climate change) CO2 capture and storage, and energy taxes, pausing on the most important international climate change agreements (from Rio to Bonn)
- Water (searching for ways to optimally exploit water resources)
- sustainable development
  - Poor sustainability
  - Allocation over time of depletable resources - taking into account intergenerational equity
  - Strong sustainability
  - Critical capital and sustainable development indicators
  - Weak versus strong sustainability: a preliminary assessment
- What should be preserved in the long term For an abstract definition of sustainable development

**Evaluation Method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Hamad bin Muhammad Al-Sheikh, **Economics of Natural Resources and the Environment** , Obeikan Library, Kingdom of Saudi Arabia, 2007. **(In Arabic)**
2. Gilles Rotillon, **Economy of natural resources**, 3rd <sup>edition</sup> , The Discovery Edition, France, 2019. **(In French)**

**Semester:** The First.

**Teaching Unit:** Methodological.

**Module:** Energy Sources Analysis

**Credits:** 5

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

This lecture aims to provide a technical, economic and environmental analysis of various energy sources and technologies (exhaustible and renewable) in various production, conversion, transport, consumption and project development processes, as well as production forecasts and network integration.

**Required Prior Knowledge:**

**Module Content:**

- Techno-economic analysis of exhaustible energy sources;
  - Stages of the oil chain
  - Stages of the gas chain
  - Stages of coal industry
- Techno-economic analysis of renewable energy sources;
  - Solar energy sector
  - Wind energy sector
  - Hydropower sector
  - Biomass energy sector
- Energy industry costs
- Technical developments and innovations related to the energy transition.
  - Energy storage
  - Carbon dioxide capture and storage
- Hydrogen sector and its applications

**Evaluation Method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Richard Heinberg, David Fridley (2019). **A Renewable Future: Charting the Contours of the Energy Transition, Ecosociety, (In French)**
2. Samuele FURFARI, **Energy policy and geopolitics**, Edition Technip, Paris, France, 2012. **(In French)**



**Semester:** The First.

**Teaching Unit:** Methodological

**Module:** Network Industry

**Credits:** 4

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

The goal of this lecture is to enable the understanding of the different ways in which gas, electricity, and carbon dioxide prices are determined in international and local markets, as well as the developments occurring in these markets in light of the integration of renewable energies and the liberalization of markets.

**Required Prior Knowledge:**

**Module Content:**

- What is the networking industry?
- Economic characteristics of network activities;
- Liberalization of electricity and gas markets;
- Principles of shaping electricity and gas prices in markets (individual consumers and companies);
- CO2 price formation;
- Effects of liberalization of electricity and gas markets;
- Improving energy systems;
- Grid and renewable energy industry.

**Evaluation Method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Jean Pierre-Hansen, Jacques Percebois, Alain Janssens (2019), **Energy: economics and politics**, Deboeck superior, Paris, France. **(In French)**
2. Peter Zweifel, Aaron Praktiknjo, Georg Erdmann, **Energy Economics, Theory and Applications**, Springer International Publishing AG, Germany, 2017.
3. Deqiang Gan, Donghan Feng, Jun Xie, (2014), **Electricity Markets and Power System Economics**, Taylor & Francis Group.
4. Jacques Percebois, **Energy and Economic Theory: Unsurpassed**, Economic Policy Review, 2001/6 Vol. 111, DOI 10.3917/redp.116.0815. **(In French)**
5. Belghith Bashir, **Liberalization of Electricity Markets: The European Experience**, PhD thesis, Economic Sciences, University of Algiers, 2007/2008. **(In Arabic)**

**Semester:** The First.

**Teaching Unit:** Exploratory.

**Module:** Energy Law.

**Credits:** 2

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

The purpose of this lecture is to enable the student to understand the new energy situation in all its complexity. This requires an analysis of the new economic, legal and legislative mechanisms that emerge as a result of the constraints imposed by the current energy situation (technical, market, environmental, etc.). Hence, this lecture allows the understanding of energy law in all its aspects (international and local, public and private), which covers all energy sectors (electricity, gas, nuclear energy, fossil fuels and renewable energies). This leads to an understanding of energy policy, its development, challenges and the behaviour of actors in the energy sector. The focus will also be on energy laws in Algeria.

**Required Prior Knowledge:**

Previous knowledge about energy law

**Module Content:**

I. What is the energy law?

1. Sources of energy law

1.1 International sources

- Internationalization of energy law
- Elements of international law in the field of energy
  - International economic law and security of supply
  - International environmental law and sustainable energy
  - Energy and international human rights law
  - International nuclear law

1.2 National sources (Algeria)

- Constitutional sources
- Legal and regulatory sources
- Additional resources

2. Objectives and models of energy law

2.1 Energy policy objectives

- The origin of energy policy objectives
- Content of energy policy objectives
  - General goals
  - Energy policy axes and quantitative goals
  - Tools in the service of energy policy

## 2.1 Contemporary models of energy law: from sustainable development to energy transition

### 3. Actors in the energy law in Algeria

#### 3.1 Institutional bodies

- National public authorities
- Local authorities

#### 3.2 Social and economic actors

##### II. Sectoral regulations (with focus on the case of Algeria)

#### 1. The process of liberalization and privatization of network industries

- Reasons for the process of deregulation, demergerization and privatization.
- Introducing incentives for efficiency through competition. Third party access to the network.
- The role of regulatory committees in industries open to competition.
- The future of public service tasks.
- Alliance strategies of major energy groups in a deregulated world (the case of electricity and gas).

#### 2. Energy pricing and taxes (electricity pricing, gas pricing, petroleum product pricing)

- Pricing the marginal cost of electricity.
- Gas pricing.
- Taxes on petroleum products.
- Pricing methods for third party access to the network.
- Relative energy prices and their impact on energy substitutions.
- Energy tariffs and international comparisons of energy tariffs and energy taxes.

#### 3. Competition law and contract law (public and private law)

- Community law and its impact on competition in the energy sector.
- International Contract Law (Oil and Gas).
- Public Service Privileges Act.
- Selling concessions by public auction.
- Insurance law and energy risk management.
- Environmental law and waste management.

#### 4. Environmental challenges of energy choices

- Weighing environmental constraints in energy choices.
- The effect of global warming and international agreements starting with Kyoto.

- External effects related to different forms of energy.
- Main methods for evaluating external impacts.
- Ways to internalize these externalities: standards, taxes on environmental damage, markets for pollution rights.

**Evaluation Method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Rabah Mahiout, **The Algerian Oil**, ENAP Edition, Algeria, 1974. **(In French)**
2. Jean Pierre-Hansen, Jacques Percebois, Alain Janssens, **Energy: Economics and Politics** , Deboeck superior, Paris, France, 2019. **(In French)**
3. Marie LAMOUREUX, **The Right to Energy** , Paris, France, 2020. **(In French)**
4. Siraj Hussein Abu Zeid, **Arbitration in Petroleum Contracts**, Dar Al Nahda Al Arabiya, Cairo, Egypt, 2010. **(In Arabic)**
5. Aliyoush Qarbou Kamal, **International Commercial Arbitration in Algeria**, Office of University Publications, Algeria, 2005. **(In Arabic)**
6. Official Gazette of the People's Democratic Republic of Algeria, [www.joradp.dz](http://www.joradp.dz) **(In Arabic)**

**Semester:** The First.

**Teaching Unit:** Horizontal.

**Module:** English 1.

**Credits:** 1

**Coefficient:** 1

**Mode of Education:** In person + online

**Objectives of Education:**

Enriching the student's linguistic balance through terminology and linguistic rules in particular.

**Required Prior Knowledge:**

Mastery of the basics of the English language

**Module Content:**

1. An overview of energy economics ;
  - The different sources of energy;
    - Fossil energy
    - Renewable energy
    - Nuclear:
  - Energy balance;
  - Energy efficiency;
  - Energy markets;
2. - Grammar;
  - Tenses (Past, present, future)
  - Sentence structure
  - Practice
3. Written expression;
  - Rules for writing paragraphs, abstracts

**Evaluation Method: continuous evaluation**

**References:**

1. Raymond Murphy, **English grammar in use**, 4th<sup>edition</sup>, Cambridge University Press, 2012.
2. Patricia Ellman, **English grammar for economics and business**, 2nd<sup>edition</sup>, 2014.
3. Subhes C. Bhattacharyya, **Energy Economics**, Springer, London, 2011.

**Semester:** The Second.

**Teaching Unit:** Basic

**Module:** Energy Geopolitics.

**Credits:** 6

**Coefficient:** 3

**Mode of Education:** In person

**Objectives of Education:**

This lecture aims to enable students to obtain the appropriate analytical tools to understand the interactions between different products and actors in the energy sector. It also leads to knowing the various energy policies and the geographical distribution of energy sources and their markets. Thereby, this lecture is necessary to understand everything related to the geographical, economic and political map of the energy sector.

**Required Prior Knowledge:**

**Module Content:**

- Various energy sources;
- Geography of energy sources;
- Structure of the energy industry;
- Energy security and energy policies;
- Energy at the global level.

**Evaluation Method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

40 % continuous assessment + 60 % written examination in person.

**References:**

1. Samuele Furfari, **Politics and Geopolitics of Energy**, Technip Edition, Paris, France, 2012. **(In French)**
2. FAVENNEC Jean-Pierre, **Geopolitics of Energy: Needs, Resources, Changes in Developments**, Technip Edition, Paris, France, 2009. **(In French)**
3. Barré BERTRAND, Bernadette MERENNE, SCHOUMAKER, **Atlas of World Energies**, published autrement, Paris, France, 2011 . **(In French)**
4. Albert Legault, **Atlas Petroleum Gas and Other World Energy Sources**, technical publication, Paris, France, 2007. **(In French)**
5. Juma Rajab Tantish, Muhammad Azhar Saeed Al-Sammak, **Studies in the Geography of Energy Resources** , ELGA Publications , Malta, 1999 . **(In Arabic)**
6. Salem Abdul Hassan Rasan, **Oil Economics**, 1st edition, Open University, Tripoli, Libya, 1999. **(In Arabic)**

**Semester:** The Second.

**Teaching Unit:** Basic

**Module:** Environmental economics.

**Credits:** 5

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

This lecture aims to transfer basic knowledge in economics that can be used to address issues related to the management of the environment, natural resources and energy resources in order to optimally exploit the latter in light of the scarcity of energy resources and limited ecological capacity.

**Required Prior Knowledge:**

**Module Content:**

- The relationship between the economy and the environment;
- External effects;
- Theoretical foundations of environmental economics;
- Ecological footprint;
- environmental assessment;
- Environmental audit, environmental impact study, risk study;
- Environmental management;
- Economic and legal tools for environmental protection;
- Environmental policy.

**Evaluation Method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Beat Burgenmeier, **Economic policy for Sustainable Development**, Boek University Edition, Bruxelles, 2008. **(In French)**
2. Order of Chartered Accountants, **Environmental Management**, DUNOD, Paris, France, 2008. **(In French)**
3. Pierre MERLIN , **Energy and the Environment**, French Documentation, Paris France, 2008. **(In French)**

**Semester:** The Second.

**Teaching Unit:** Basic

**Module:** Renewable Energy Sources.

**Credits:** 4

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

This lecture aims to introduce the student to the different sources of renewable energy and their various technologies in order to delve deeply into the technical aspects of producing this energy from its various sources.

**Module Content:**

- Definitions and types of renewable sources;
- Solar photovoltaic energy;
- solar thermal energy;
- wind Energy;
- geothermal energy;
- biomass energy;
- hydropower;
- hydrogen;
- renewable energy potential in Algeria.

**Evaluation Method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Kanoğlu, M., Çengel, Y.A., & Cimbala, J.M., **Fundamentals and Applications of Renewable Energy**, McGraw-Hill Education, 2020.
2. Beksultanova, AI, PM Dzhankhotova, and SK Shardan, **Renewable and Alternative Energy sources** , Green energy, In IOP Conference Series: Earth and Environmental Science, vol. 1045, no. 1, p. 012134. IOP Publishing, 2022.
3. Mbungu, NT, Naidoo, RM, Bansal, RC, Siti, MW, & Tungadio, DH, **An Overview of Renewable Energy Resources and Grid Integration for Commercial Building Applications** , Journal of Energy Storage, 29, 101385, 2020.
4. Nick Jelly, translated by: Alan Rodney, **Renewable Energy**, Edp sciences, France, 2022. **(In French)**
5. Jacques Vernier, **Renewable Energy**, Editor: Presses University Presses of France, 2017. **(In French)**





**Semester:** The Second.

**Teaching Unit:** Basic

**Module:** The Economics of Climate Change.

**Credits:** 4

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

The aim of this lecture is to enable students to delve deeper into the concepts and methods necessary for economic analysis of the impacts, costs, and benefits of controlling and adapting to climate change. This lecture is of great importance to the field of energy economics, as climate change is primarily caused by the combustion of fossil fuels; thus, ways must be found to address this phenomenon.

**Required Prior Knowledge:**

**Module Content:**

- A look at the problem of climate change and its causes.
  - Introducing the phenomenon of climate change;
  - Causes of climate change;
  - CO2 emissions trends and forecasts;
  - Climate change trends and forecasts;
- Economic analysis of climate change;
  - Cost-benefit approaches applied to climate change mitigation and adaptation policies;
  - The social cost of carbon;
- Key economic tools to combat climate change;
  - environmental (bigovian) taxes;
  - subsidies;
  - emissions trading;
- Abatement costs (emissions reduction);
- Optimal emission reduction characteristics (based on their cost and environmental efficiency);
- Technical challenges of climate change;
- International, regional and national actions to confront and adapt to climate change.

**Evaluation Method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Jonathan M. Harris, Brian Roach, Anne-Marie Codur, **Economic Change Climate Global** , Global Development and Environment Institute, Tufts University , 2017. **(In French)**
2. Stéphane Hallegatte, Franck Lecocq, Christian de Perthuis, **Economic adaptation to climate change**, Report of the Economic Council for sustainable development, February 2010. **(In French)**

**Semester:** The Second.

**Teaching Unit:** Methodological.

**Module:** Econometrics.

**Credits:** 5

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of Education:**

This lecture aims to provide the student with a quantitative tool concerned with researching and determining the mathematical relationship between economic variables according to the economic theory. This is to reach standard models used in forecasting.

**Required Prior Knowledge:**

Basic concepts in statistics

**Module Content:**

- regression models;
- simple linear regression;
- Multiple linear regression;
- Regression problems;
- Attachment problems;
- time series models;
- Presentation of time series;
- General trend equation model;
- Moving average model;
- Simple exponential scanning;
- multi-exponential scanning;
- AR models;
- Box-Jenkins models.

**Evaluation Method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Goggart, translated by: Hind Abdel Ghaffar Odeh and others, **Econometrics** , Parts One and Two, Dar Al-Mareikh, Kingdom of Saudi Arabia, 2015. **(In Arabic)**
2. William H.Greene, **Econometric analysis** , Eighth edition, Pearson, 2018 Hexagram: Second

**Semester:** The Second.

**Teaching unit:** Methodological

**Module:** Energy Companies Strategy.

**Credits:** 4

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of education:**

This lecture aims to understand the strategic behaviours of energy sector companies in an environment characterized by the development of renewable energies and complex market mechanisms.

**Required Prior knowledge:**

**Module Content:**

- Basic concepts about strategy;
- Basic concepts about strategic diagnosis (analysis);
- internal analysis;
- External analysis;
- Strategies used in energy sector companies;
- Case studies.

**Evaluation method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Farid Al-Najjar, **Management of Petroleum Companies and Energy Alternatives, Strategic Readings** , University House in Alexandria, Egypt, 2006. (In Arabic)
2. Caroline Luu, **analysis of the energy strategy in a large enterprise: its theory and reality**, document on the Internet. **(In French)**
3. **Management of energy strategy in an enterprise in Quebec**, document on the Internet. **(In French)**
4. Others.

**Semester:** The Second.

**Teaching unit:** Exploratory.

**Module:** Innovation Workshops.

**Credits:** 2

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of education:**

The innovation workshops are based on an innovative system that allows students to engage in an entrepreneurial situation, allowing them to acquire the skills of managing agile, digital and even environmentally responsible projects that meet social and economic challenges. This is to create active and responsible actors. In practice, students, divided into multi-oriented groups, focus on the realistic challenges of the organization by producing several customized deliverables including prototypes. Using agile methods specific to business model realization, students mobilize a multitude of skills to develop their innovative and responsible projects by ensuring the viability and economic sustainability of their business models.

**Required Prior knowledge:**

**Module Content:**

- Explaining the concepts of innovation, creativity and entrepreneurship;
- Thinking and decision making;
- Problem solving methods;
- Design thinking and generating idea;
- From design thinking to design implementation;
- Preparing initial/innovative models.

**Evaluation method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Channel, **Business Models in Innovation** , Presses Universitaires de Grenoble, 2011. **(In French)**
2. Henery Chesbrough, **Open Innovation** , Harvard Business Review Press, 2006.
3. Brunet Emmanuel, **who uses Design Thinking** , Dunod, 2019. **(In French)**
4. Séverine Le Loarn, Sylvie Blanco, **Innovation Management** , Pearson editions, 2012. **(In French)**
5. Pascal Le Masson, Benoit Weil, **Innovation processes**, Lavoisier editions, 2006. **(In French)**

**Semester:** The Second.

**Teaching unit:** Horizontal.

**Module:** English 2.

**Credits:** 1

**Coefficient:** 1

**Mode of Education:** In person + online

**Objectives of education:**

This lecture aims to teach the student the most important terminology related to the major in addition to writing research papers and using references in the English language.

**Required Prior knowledge:**

Mastery of the basics of the English language

**Module Content:**

1. Research topics in energy economics:

- Sustainable development
- Climate change
- Energy transition
- Energy policies
- Energy companies
- Energy finance

2. Grammar:

- Passive and active
- Forms of speech
- Conditional
- Practice

3. Written expression:

- Quoting, Paraphrasing, Summarizing
- Translation Methods.

**Evaluation method: Continuous evaluation.**

**References:**

1. Raymond Murphy, **English grammar in use**, 4th<sup>edition</sup>, Cambridge University Press, 2012.
2. Patricia Ellman, **English grammar for economics and business**, 2nd<sup>edition</sup>, 2014.
3. Subhes C. Bhattacharyya, **Energy Economics**, Springer, London, 2011.
4. Mahmoud Altarabin, **Basics of Translation**, Cambridge Scholars Publishing, UK, 2019.

**Semester:** The Third.

**Teaching unit:** Basic

**Module:** Energy Investment Management

**Credits:** 6

**Coefficient:** 3

**Mode of Education:** In person

**Objectives of education:**

This lecture aims to enable students to have a deeper understanding of portfolio management and investment analysis in the energy sector by identifying sources of financing, evaluating projects, making investment decisions and managing risks as well as including the environmental dimension through commitment to environmental and social responsibility.

**Required Prior knowledge:**

**Module Content:**

- A reminder of the basics of financial mathematics;
- Investment management: theory and practice;
- Mutual funds, savings funds, alternative funds;
- Risk Management;
- Evaluation of energy investment projects;
- Analysis of the economic and financial profitability of renewable and exhaustible energy projects;
- Project financing mechanisms and main sources of financing;
- energy finance;
- carbon finance;
- Social and environmental responsibility and energy projects;
- Managing energy projects and financial crises.

**Evaluation method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

- 1. Peter Zweifel, Aaron Praktiknjo, Georg Erdmann, **Energy Economics, Theory and Applications**, Springer International Publishing AG, Germany, 2017.
- 2. Jacques Percebois, **Energy saving**, ECONOMICA, Paris, France, 1999. **(In French)**
- 3. Julien Touati, **Investing in the energy transition: global developments, national strategies and concrete projects**, Revue Bank, France, 2018. **(In French)**



**Semester:** The Third.

**Teaching unit:** Basic.

**Module:** Energy Industrial Economy.

**Credits:** 6

**Coefficient:** 3

**Mode of Education:** In person

**Objectives of education:**

This lecture aims to study the energy industry and all its actors from the perspective of industrial economics by identifying the influencing factors and analysing the behaviours and relationships practiced in it. This is by focusing on the industrial policies adopted to control this industry then studying the performance of the energy industry with its various components.

**Required Prior knowledge:**

No need.

**Module Content:**

- Introduction to industrial economics: structure, behaviour, performance;
- Theories related to industrial economics: agency, games, etc.;
- industrial policies;
- industrial analysis;
- Energy industry: structure, behaviour and performance;
- industrial policies for the energy industry;
- Applied models to the energy sector in Algeria.

**Evaluation method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Ahmed Saeed Bamakhrama, **Industrial Economics** , Al-Zahran Publishing and Distribution House, Kingdom of Saudi Arabia, 1994. **(In Arabic)**
2. Roger Clark, translated by: Fareed Bashir Taher, **Industrial Economics** , Al-Marikh Publishing House, Kingdom of Saudi Arabia, 1994. **(In Arabic)**

**Semester:** The Third.

**Teaching unit:** Basic

**Module:** Basics of Electrical Power

**Credits:** 6

**Coefficient:** 3

**Mode of Education:** In person

**Objectives of education:**

This lecture aims to introduce the methods of producing electrical energy and the problems facing this production from various sources after they were briefly discussed in the network industry standard.

**Required Prior knowledge:**

**Module Content:**

- Electrical energy and quantities of electricity;
  - Historical development of electricity production;
  - Principles and methods of electricity production;
  - Electrical quantities: intensity, power, capacity...etc.
- Centralized and decentralized production;
  - Centralized production techniques;
  - Decentralized production techniques;
  - Types of power plants.
- Problems related to electrical energy;
  - The mission problems of polluting gases;
  - The problem of polluting radiation;
  - Electricity storage problem.
- Renewable energies for producing electricity, their types and how they work;
  - Hydropower;
  - Wind Energy;
  - solar energy;
    - Solar photovoltaic energy
    - solar thermal energy;
  - biomass energy;
  - Geothermal energy
- Obstacles to renewable energies;
- Smart grids (smart electrical grids).

**Evaluation method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Deqiang Gan, Donghan Feng, Jun Xie, **Electricity Markets and Power System Economics** , Taylor & Francis Group, 2014.
2. Gilbert Naudet, Paul Reuss, **energy, electricity and nuclear**, Edp Sciences, France, 2008. **(In French)**
3. Sun, Y., Zhao, Z., Yang, M., Jia, D., Pei, W., & Xu, B, **Overview of energy storage in renewable energy power fluctuation mitigation** , CSEE Journal of Power and Energy Systems, 6 (1), 160-173, 2019.
4. Alotaibi, I., Abido, M.A., Khalid, M., & Savkin, A.V., **A comprehensive review of recent advances in smart grids: A sustainable future with renewable energy resources** , Energies, 13(23), 6269 2020
5. Settino, J., Sant, T., Micallef, C., Farrugia, M., Staines, C.S., Licari, J., & Micallef, A, **Overview of solar technologies for electricity, heating and cooling production** , Renewable and Sustainable Energy Reviews, 90, 892-909, 2018.

**Semester:** The Third.

**Teaching unit:** Methodological

**Module:** Energy transition and foresight approaches

**Credits:** 5

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of education:**

The goal of this lecture is to enable the student to begin to understand energy transition and analyse it using a forward-looking approach with a focus on environmental issues and climate change. This is so he can later understand the basics of future modelling and forecasting approaches. This allows him to develop future scenarios for renewable energy technology, which is the basic foundation of the current energy transition. Through this lecture, some forecasting models used in the energy sector will be studied with the aim of providing forecasts of energy consumption and supply, greenhouse gas emissions and other environmental pollutants in an integrated manner.

**Required Prior knowledge:**

**Module Content:**

- What is energy transfer?
- Energy transition assessment issues;
- Energy models: evolving energy issues;
  - First developments of energy models;
  - Modeling energy and oil crises;
  - Modeling energy, climate and the emergence of environmental issues;
- Economic forecasting methods;
  - Foundations of the curricula of future studies;
  - General approaches in future studies (standard approaches , scenario techniques , brainstorming, causal progression, retrospective forecasting , etc.)
- Some forecasting models used in the energy sector;
  - top-down models;
  - bottom-up models;
  - Hybrid models;
- Some future energy scenarios;
  - Evolution of global energy demand until 2035;
  - Evolution of global energy supply to 2035;
  - Evolution of energy investments until 2035.

**Evaluation method: Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.**

**40 % continuous assessment + 60 % written examination in person.**

**References:**

- Jean Pierre-Hansen, Jacques Percebois, Alain Janssens, **Energie: economics and politics** , Deboeck superior, Paris, France, 2019. **(In French)**
  - Jacques Percebois, **Energy saving**, ECONOMICA, Paris, France, 1999. **(In French)**
  - Carlos ANDRADE, **Prospective Energy Paca: What are the future transformations of the territory to ensure an energy transition and economic circle?** , Doctorate Faculty, PSL University, Paris, France, 2021. **(In French)**
- Philippe Murer, **The energy transition** , Mill and one nuits editions, department of the Arthème Fayard Librairie, 2014. **(In French)**

**Semester:** The Third.

**Teaching unit:** Methodological

**Module:** Scientific Research Methodology

**Credits:** 4

**Coefficient:** 2

**Mode of Education:** In person + online

**Objectives of education:**

This lecture aims to introduce student researchers to the most important quantitative and qualitative research methods used in economic and financial sciences and energy economics. The focus is on how to write a stalking report, which results in applying what was discussed through the measurements completed in one of the energy companies.

**Required Prior knowledge:**

**Module Content:**

- Introduction to scientific research methodology;
- Steps of scientific research;
- Research Methodology;
- Sources and methods of data collection;
- documenting information;
- Case Study.

**Evaluation method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Mohamed Haddar , **Economist Methodology**, Editions ARCHIVES CONTEMPORAINES, Paris, France, 2010. **(In French)**
2. Eloi Laurent , **Our economic mythologies**, Editions LIENS QUI LIBÈRENT, France , 2016. **(In French)**
3. Benoit Malbranque, **introduction to economic methodology** , COPPET Institute, Paris, France, 2013. **(In French)**
4. **Muhammad Obaidat et al.**, Scientific Research Methodology, Rules, Stages, and Applications , **Wael Publishing House, Amman, Jordan, 1999. (In Arabic)**

**Semester:** The Third.

**Teaching unit:** Exploratory

**Module:** Energy Management and Energy Audit.

**Credits:** 2

**Coefficient:** 2

**Mode of Education:** In person

**Objectives of education:**

This lecture aims to introduce students to the nature of energy management and its importance in the economic institution in general and energy institutions in particular, not to mention energy auditing and measuring the energy cost of the institution in order to achieve energy efficiency and optimal exploitation of energy sources to preserve the rights of future generations.

**Required Prior knowledge:**

**Module Content:**

- Energy bill
- Energy accounting
- Energy management
  - Its definition and objectives
  - Energy management mechanisms
- Energy audit
  - Energy audit concept
  - The need for an energy audit
  - Types of energy audits
- Understand energy costs
  - Fuel costs
  - Energy costs
- Energy performance evaluation
- Maximize energy efficiency
- Replace power sources
- Tools and measurement of energy audit
- Application to various sectors

**Evaluation method:** Continuous evaluation + final exam. The course average is measured by the weight of the lecture and the directed work.

**40 % continuous assessment + 60 % written examination in person.**

**References:**

1. Bureau of energy efficiency, **General aspect of energy management and energy audit**, guide book, 4th edition, New Delhi, India, 2015.

2. Anil Kumar et al, **Energy management**, Taylor & Francis Group, 2021.
3. Stephen A. Roosa et al, **Energy management handbook**, 9th edition, Taylor & Francis Group, 2018.



**Semester:** The third.

**Teaching unit:** Horizontal.

**Module:** Development Economics.

**Credits:** 1

**Coefficient:** 1

**Mode of Education:** In person + online

**Objectives of education:**

This lecture aims to study the main economic mechanisms for analysing growth and development in countries rich in resources, especially energy resources. It explains the relationship between energy and development through the history of this relationship, measurement indicators and analysis models. Not to mention the energy policies of developed and developing countries

**Required Prior knowledge:**

**Module Content:**

- Concepts , historical development and indicators;
- Economic development theories;
- Growth models (Harrod, Domar, Solow, etc.);
- Economic development strategies;
- Analyse the relationship between economic development and energy;
- Energy policies in developed and developing countries.

**Evaluation method: Continuous evaluation**

**References:**

1. Ismail Muhammad Bin Qana, **Development Economics: Theories, Models, Strategies**, 1st edition, Dar Wael, Jordan, 2012. (In Arabic)
2. Ali Hatem Al-Quraishi, **Development Economics** , Euphrates Basin Press, 2017. (In Arabic)

## IV - Contracts/Agreements

*(required field)*

**V- A summarized CV of each person from the pedagogical team**

**concerned with training in the major**

*(Interior and exterior framing)*

*(According to the attached form)*

## VI - Opinion and visa of administrative and scientific bodies

Master's title :

|   |                                |
|---|--------------------------------|
| <b>Head of the department + head of the formation domain team</b> |                                |
| <b>Date and authentication</b>                                    | <b>Date and authentication</b> |
| <b>Dean of the faculty (or Director of the Institute)</b>         |                                |
| <b>Date and authentication</b>                                    |                                |
| <b>Rector</b>   |                                |
| <b>Date and authentication</b>                                    |                                |

## **VIII- Opinion and visa of the regional Symposium**

(The visa is only valid for the final copy of the training offer submitted to the ministry)

## **VIII- Opinion and visa of the National Pedagogical Committee for the domain**

(The visa is only valid for the final copy of the training offer submitted to the ministry)