COURSE DATA

Data Subject	
Code	44718
Name	Assessment of environmental quality
Cycle	Master's degree
ECTS Credits	4.5
Academic year	2020 - 2021

Study (s)

Degree	Center	Acad. year	Period
2227 - M.U. en Ingeniería Ambiental	School of Engineering	1	First term

Subject-matter

Degree	Subject-matter	Character
2227 - M.U. en Ingeniería Ambiental	1 - Fundamentals of environmental engineering	Obligatory

Coordination

Name	Department
SECO TORRECILLAS, AURORA	245 - Chemical Engineering

SUMMARY

Professor UPV: María Pachés Giner

The Assessment of environmental quality is taught in the first semester of the Environment Engineering Master with 4.5 compulsory credits.

To achieve the objectives proposed students undertake theoretical lessons to develop their knowledge about the impacts of environmental pollution in water, air and soils and the monitoring environmental systems.

Laboratory studies are also programmed to provide practical experience in measures of water, air and soil pollution.

The success of the subject enables the students to establish the criteria for the assessment of environmental impacts on water, air and soil and management.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

No previous knowledge needed

OUTCOMES

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- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Students should communicate conclusions and underlying knowledge clearly and unambiguously to both specialized and non-specialized audiences.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Identify and apply technologies, tools and techniques in the field of environmental engineering.
- Assume with responsibility and ethics the Environmental Engineer role in a professional context.
- Adapt to changes, being able to apply the principles of Environmental Engineering to unknown cases and use new and advanced technologies and other relevant developments, with initiative and entrepreneurial spirit.
- Identify, declare and entirely analyze environmental problems.
- Evaluate the environmental quality of air, water and soil from a global point of view, especially when there is a risk to public health.
- Apply standard methodologies for the analysis and evaluation of environmental risks.
- Apply different tools and environmental management systems.
- Evaluate the environmental quality of water from a global point of view, especially when there is a risk to public health.
- Evaluate the environmental quality of soils from a global point of view, especially when there is a risk to public health..

- Be able to characterize the emissions to air, coming from the anthropogenic activity.
- Be able to characterize the emissions to water, coming from the anthropogenic activity.
- Be able to characterize the emissions to soils, coming from the anthropogenic activity.

LEARNING OUTCOMES

1 Know the origins of environmental pollution in water, air and soil.
2 Know the effects of pollution in water, air and soil.
3 Establish the criteria for the evaluation of water, air and soil quality.
4 Know the procedures and techniques for measuring environmental contaminants.
5 Be able to manage and interpret specifications, regulations and environmental quality standards.
6 Know the operation of the environmental monitoring systems and be able to interpret the information obtained.
7 Acquire experience at the laboratory level for the measurement of pollutants in water, air and soil.

DESCRIPTION OF CONTENTS

1. Introduction

2. Water

1. Sources and effects of water pollution
2. Measurement of water pollution
3. Environmental quality standards and water monitoring network

3. Soil

1. Sources and effects of soil pollution
2. Measurement of soil pollution
3. Environmental quality standards and soil monitoring network

4. Air

1. Sources and effects of air pollution
2. Measurement of air pollution
3. Environmental quality standards and air monitoring network

5. Laboratoy practices

1. Basic techniques in an Environmental testing laboratory
2. Water sample characterization (I)
3. Water sample characterization (I)
4. Soil sample characterization
5. Analysis of air data and quality criteria

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	28,00	100
Laboratory practices	14,00	100
Theoretical and practical classes	3,00	100
Study and independent work	30,00	0
Readings supplementary material	5,50	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	17,00	0
TOTAL	**112,50**	

TEACHING METHODOLOGY

The training activities will include:

Theoretical activities:

In the theoretical lessons the topics will be taught providing a global vision of the contemporary problems encouraging student participation

Practical activities:

Description: these activities complement the theoretical lessons with the aim of applying the concepts and develop them with the knowledge and experience that they acquire during the practical works. They include the following types:

- Environmental problem sessions
- Environmental Software-specific management practices
- Oral presentation

Individual and group tutorship Personal student work: performed out of classroom timetable based on bibliographic research, monographic works, problem resolution, etc. This task will be carried out individually and enhance the autonomous work of students.Small groups work: in 2 to 4 student’s small groups, problems, technical questions are solved. These tasks boost the individual work, and encourage the students’ integration. Assessment: performed an individual evaluation questionnaire in the classroom.

The e-learning platform (Virtual Classroom of the Universitat de València and / or PoliformaT of the Polytechnic University of Valencia) will be used as a communication support with the students. Through it students will have access to the subject material used in both theoretical and practical sessions.

EVALUATION

he evaluation of the subject consists of four parts:
-Part 1: Written open answer test on the theory part (40%). It will be necessary to obtain a grade equal to or higher than 4 out of 10 in this part so that the rest of the parts count in the global evaluation.
-Part 2: Objective test in which the knowledge acquired in the practice sessions will be valued (30%). It will be necessary to obtain a grade equal to or higher than 4 out of 10 in this part so that the rest of the parts count in the global evaluation.
- Part 3: Academic work (20%)
-Part 4: Continuous evaluation of each student, based on the observation, participation and degree of involvement of the student in the teaching-learning process (10%)
Attendance at the internship sessions is mandatory in order to successfully pass the subject.
Name: Open-ended written test - Description: Timed test, performed under control, in which the student constructs his answer. You may or may not be granted the right to consult supporting material. - Quantity: 1 - Weight: 40
Name: Objective tests (test type) - Description: Structured written exam with various questions or items in which the student does not prepare the answer; you just have to point it out or complete it with very precise elements. - Quantity: 1 - Weight: 30
Name: Academic work - Description: Development of a project that can go from short and simple works to extensive and complex works of last courses and doctoral theses. - Quantity: 1 - Weight: 20
Name: Observation - Description: Strategy based on the systematic collection of data in the learning context itself: execution of tasks, practices .... - Quantity: 1 - Weight: 10
Activity: Classroom Theory - Maximum Absence: 20% - Observations:

REFERENCES

Basic

- Ingeniería ambiental : fundamentos, entornos, tecnologías y sistemas de gestión(Kiely, Gerard)
- Ingeniería ambiental : ecología, prevención y control de la contaminación del aire, agua y suelo, tendencias de la
ingeniería ambiental(Martínez-Prado, María Adriana)
- Manual de prácticas de laboratorio. Evaluación de la calidad ambiental(Pachés Giner, María Aguas Vivas | Martínez
Guijarro, María Remedios | Aguado García, Daniel)
- Standard methods for the examination of water and wastewater - 1995(*)

- Soil Pollution : Origin, Monitoring and Remediation(Mirsal, Ibrahim A)
- Contaminación del aire : origen y control(Wark, Kenneth | Warner, Cecil F)
- Environmental engineering: fundamentals, sustainability, design(Mihelcic, James R - Zimmerman, Julie Beth - Auer, Martin T)
- De residuo a recurso : el camino hacia la sostenibilidad. III.4, Recursos orgánicos : aspectos agronómicos y medioambientales. Residuos orgánicos en la restauración-rehabilitación de suelos degradados y contaminados(Cabrera Capitán, Francisco - Hernández Fernández, Teresa - García Izquierdo, Carlos - Ingelmo Sánchez, Florencio - Bernal Calderón, M. Pilar - Clemente Carrillo, Rafael - Madejón Rodríguez, Engracia - Cabrera Mesa, Alegría - Cox Meana, Lucía)
- Economía circular : conversión de residuos en recursos. [Volumen] 1, La economía circular, noción de residuo cero, residuos, problema u oportunidad(Elías Castells, Xavier - Bordas Alsina, Santiago)
- Soil and water contamination(Perk, Marcel van der)

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

Contents
1.-The contents initially collected in the teaching guide are maintained.

Volume of work and temporary planning of teaching

Regarding the workload:
1.-The different activities described in the Teaching Guide are maintained with the planned dedication.

Regarding the temporary planning of teaching
1.- The material for the follow-up of the theory classes / classroom practices allows to continue with the temporary teaching planning both in days and hours (synchronous teaching).

Teaching methodology
In the theory and classroom practices classes will tend to the maximum possible attendance, always respecting the sanitary restrictions. Depending on the capacity of the classroom and the number of students enrolled, it may be necessary to distribute the students into two groups. In this case, the subject will be taught in classrooms with streaming teaching capacity, and there may be students attending online and in-class students.
A rotation system will be established once the actual enrollment data is known, guaranteeing, in any case, that the attendance percentage of all the students enrolled in the subject is the same.

With respect to laboratory practices, attendance at sessions scheduled in the schedule will be totally face-to-face. (If the subject does not have L teaching, remove this paragraph).
Once the actual enrollment data is available and the availability of spaces is known, the Academic Committee of the Degree will approve the Teaching Model of the Degree and its adaptation to each subject, establishing in said model the specific conditions in which it will be developed teaching the subject.
If there is a closure of the facilities for sanitary reasons that totally or partially affects the classes of the subject, these will be replaced by non-face-to-face sessions following the schedules established by synchronous video conferencing, or, if not possible, asynchronous.

Evaluation
The evaluation system described in the Teaching Guide of the subject in which the different evaluable activities have been specified as well as their contribution to the final grade of the subject is maintained.

If there is a closure of the facilities for health reasons that affect the development of any face-to-face evaluable activity of the subject, it will be replaced by a test of a similar nature that will be carried out in virtual mode using the computer tools licensed by the Universitat Politècnica de València. The contribution of each evaluable activity to the final grade for the course will remain unchanged, as established in this guide.

Bibliography
2.- The bibliography recommended in the Teaching Guide is kept as it is accessible and is complemented with notes, slides and problems uploaded to PoliformaT as subject material.