

[GCI301] ENVIRONMENTAL SCIENCE AND TECHNOLOGY

GENERAL INFORMATION

Studies	DEGREE IN ENGINEERING IN ECO-TECHNOLOGY IN INDUSTRIAL PROCESS		Subject	?
Semester	1	Course	3	Mention / Field of specialisation
Character	COMPULSORY		Language	ENGLISH
Plan	2022	Modality	Face-to-face	Total hours [!] 83 class hours + 174 non-class hours = 257 total hours
Credits	6	Hours/week	4.61	

PROFESSORS

AROSTEGUI OCHOA, ASIER

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
(No specific previous subjects required)	(No previous knowledge required)

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GCR308 - Determines the most appropriate treatment techniques for the management and reduction of contaminants considering their nature		x		5,08
G-RTR1 - To develop interdisciplinary projects specific to their specialty and of gradual complexity, - becoming aware of respect for human rights and fundamental rights, and analyzing and assessing the impact of the proposed solutions on the SDGs - to acquire and/or apply basic, advanced and /or avant-garde, demonstrating the ability to work in multidisciplinary teams and/or undertake further studies with a high degree of autonomy		x		0,44
G-RTR2 - To express information, ideas and the arguments that support them in an orderly, clear and coherent manner, orally and in writing, based on quality information, self-made or obtained from different sources, using inclusive and non-discriminatory language		x		0,48

Total: 6

KC: Knowledge or Content / SK: Skills / AB: Abilities

SECONDARY LEARNING RESULTS

RGC390 [!] *Definir y gestionar los objetivos y la planificación de un proyecto que le permita adquirir y/o reforzar los conocimientos de tecnologías específicas de su especialidad,- que en ocasiones llegan a la vanguardia del conocimiento- y definir una estrate*

LEARNING ACTIVITIES

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

CH

NCH

TH

4 h.

4 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

Comments: Assessment of the acquired transversal skills:

Followed methodology to solve the project: team work, decision making methods, conflict management... Project management:

definition of objectives, planning,... Written and oral communication

CH - Class hours: 0 h.

NCH - Non-class hours: 4 h.

TH - Total hours: 4 h.

RGC391 [!] *Coordinar el equipo de trabajo, estimulando la cohesión y buen clima para lograr la integración de todas las personas y su contribución para alcanzar un rendimiento apropiado, tanto a nivel individual como grupal, para el desarrollo del proyecto en*

LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

4 h.

4 h.

EVALUATION SYSTEM

W

Self-assessment

50%

Co-assessment

50%

Comments: Assessment of the acquired transversal skills:

Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

CH - Class hours: 0 h.

NCH - Non-class hours: 4 h.

TH - Total hours: 4 h.

RGC392 [!] *Identificar y argumentar de forma precisa los ODS en los que incide el proyecto realizado, aportando posibles acciones para la mejora.*

LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

3 h.

3 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

Comments: Assessment of the acquired transversal skills:

Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

CH - Class hours: 0 h.

NCH - Non-class hours: 3 h.

TH - Total hours: 3 h.

RGC393 [!] *Elabora la memoria del proyecto, aportando argumentos elaborados y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.*

LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

6 h.

6 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

100%

Comments: Assessment of the acquired transversal skills:

Followed methodology to solve the project: team work, decision making methods, conflict management... Project management: definition of objectives, planning,... Written and oral communication

MAKE-UP MECHANISMS

(No mechanisms)

Comments: Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

CH - Class hours: 0 h.

NCH - Non-class hours: 6 h.

TH - Total hours: 6 h.

RGC394 [!] Realiza una presentación oral del proyecto, justificando las soluciones propuestas con argumentos elaborados y precisos, y haciendo un uso correcto, inclusivo y no discriminatorio del lenguaje.

LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

6 h.

6 h.

EVALUATION SYSTEM

W

MAKE-UP MECHANISMS

Presentation and defence of exercises, case studies, computer practical work, simulation practical work, laboratory practical work, term projects, end of degree project, master's thesis, challenges and problems

100%

(No mechanisms)

Comments: Assessment of the acquired transversal skills:

Followed methodology to solve the project: team work, decision making methods, conflict management... Project management:

definition of objectives, planning,... Written and oral communication

Comments: Continuous assessment. The project is managed through the tutoring meetings and the meetings held with the experts, errors are corrected and the precise guidelines are given to overcome the project.

CH - Class hours: 0 h.

NCH - Non-class hours: 6 h.

TH - Total hours: 6 h.

RGC322 Understanding of the nature of impurities in waters and wastewaters, the basic principles of conventional treatment processes, and select and applicate the appropriate processes depending on the nature of the impurities to be removed

LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

5 h.

8 h.

13 h.

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

2 h.

15 h.

17 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

17 h.

17 h.

EVALUATION SYSTEM

W

MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

25%

Individual written and/or oral tests or individual coding/programming tests

Individual written and/or oral tests or individual coding/programming tests

75%

Comments: The final mark is obtained as follows: 25 % written exam + 75 % retake

Comments: - In order to calculate the average, a minimum mark of 3.0 is necessary in the written exam - In each topic they have to fill in the gaps in a scheme using Mudle, the student who filled in correctly and presented to the class can lead to +1 in the learning outcome - When the number of questionnaires is greater than 3, the lowest mark could be discarded in the calculation of the average

CH - Class hours: 24 h.

NCH - Non-class hours: 23 h.

TH - Total hours: 47 h.

RGC323 Understanding of the scientific principles that characterize the physical and chemical behaviour of atmospheric pollutants and the chemical engineering air

LEARNING ACTIVITIES

CH

NCH

TH

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

1 h.

9 h.

10 h.

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in

40 h.

40 h.

interdisciplinary contexts, real and/or simulated, individually and/or in teams

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

10 h.

10 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

67%

Individual written and/or oral tests or individual coding/programming tests

33%

Comments: - In order to calculate the average, a minimum mark of 3.0 is necessary in the written exam - In each topic they have to fill in the gaps in a scheme using Mudle, the student who filled in correctly and presented to the class can lead to +1 in the learning outcome - When the number of questionnaires is greater than 3, the lowest mark could be discarded in the calculation of the average - If the average mark of the questionnaires is higher than 8.5, it may be the case that it is not necessary to take the exam, the exam mark being the average of the questionnaires.

MAKE-UP MECHANISMS

Individual written and/or oral tests or individual coding/programming tests

Comments: The final mark is obtained as follows: 25 % written exam + 75 % retake

CH - Class hours: 11 h.

NCH - Non-class hours: 49 h.

TH - Total hours: 60 h.

RGC322 [!] *Conoce la naturaleza de las impurezas en aguas residuales y los principios básicos de los procesos de tratamientos convencionales, y selecciona y aplica los procesos apropiados en función de la naturaleza del residuo a remover*

LEARNING ACTIVITIES

CH

NCH

TH

Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams

5 h.

8 h.

13 h.

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

2 h.

15 h.

17 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects

17 h.

17 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

25%

Individual written and/or oral tests or individual coding/programming tests

75%

Comments: - In order to calculate the average, a minimum mark of 3.0 is necessary in the written exam - In each topic they have to fill in the gaps in a scheme using Mudle, the student who filled in correctly and presented to the class can lead to +1 in the learning outcome - When the number of questionnaires is greater than 3, the lowest mark could be discarded in the calculation of the average

MAKE-UP MECHANISMS

Individual written and/or oral tests or individual coding/programming tests

Comments: The final mark is obtained as follows: 25 % written exam + 75 % retake

CH - Class hours: 24 h.

NCH - Non-class hours: 23 h.

TH - Total hours: 47 h.

RGC323 [!] *Conoce los principios científicos que caracteriza el comportamiento físico y químico de los contaminantes atmosféricos y las tecnologías disponibles para el control de las emisiones.*

LEARNING ACTIVITIES

CH

NCH

TH

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints

1 h.

9 h.

10 h.

Carrying out/resolving projects/challenges/cases, etc. to provide solutions to problems in interdisciplinary contexts, real and/or simulated, individually and/or in teams

40 h.

40 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects 10 h. 10 h.

EVALUATION SYSTEM

W

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

67%

Individual written and/or oral tests or individual coding/programming tests

33%

Comments: - In order to calculate the average, a minimum mark of 3.0 is necessary in the written exam - In each topic they have to fill in the gaps in a scheme using Mudle, the student who filled in correctly and presented to the class can lead to +1 in the learning outcome - When the number of questionnaires is greater than 3, the lowest mark could be discarded in the calculation of the average - If the average mark of the questionnaires is higher than 8.5, it may be the case that it is not necessary to take the exam, the exam mark being the average of the questionnaires.

MAKE-UP MECHANISMS

Individual written and/or oral tests or individual coding/programming tests

Comments: The final mark is obtained as follows: 25 % written exam + 75 % retake

CH - Class hours: 11 h.

NCH - Non-class hours: 49 h.

TH - Total hours: 60 h.

RGC329 [!] *Conoce las técnicas de tratamientos de residuos sólidos según su naturaleza*

LEARNING ACTIVITIES

CH

NCH

TH

Conducting tests, giving presentations, presenting defences, taking examinations and/or doing checkpoints 1 h. 7 h. 8 h.

Presentation by the teacher in the classroom, in participatory classes, of concepts and procedures associated with the subjects 12 h. 12 h.

EVALUATION SYSTEM

W

Individual written and/or oral tests or individual coding/programming tests

100%

Comments: - In order to calculate the average, a minimum mark of 3.0 is necessary in the written exam - In each topic they have to fill in the gaps in a scheme using Mudle, the student who filled in correctly and presented to the class can lead to +1 in the learning outcome - When the number of questionnaires is greater than 3, the lowest mark could be discarded in the calculation of the average

MAKE-UP MECHANISMS

Individual written and/or oral tests or individual coding/programming tests

Comments: The final mark is obtained as follows: 25 % written exam + 75 % retake

CH - Class hours: 13 h.

NCH - Non-class hours: 7 h.

TH - Total hours: 20 h.

CONTENTS

1. Solid waste: definition and classification.
2. Solid urban waste treatment.
3. Treatment of specific solid waste.
4. Constituents in wastewater
5. Primary wastewater treatment
6. Secondary wastewater treatment
7. Tertiary wastewater treatment
8. Industrial wastewaters management
9. Air pollution

10. Treatment of particles and dust

11. Gas cleaning systems

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources

Moodle Platform
Video projections
Slides of the subject
Topic related web quires

Bibliography

[http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in
k.pl?grupo=EKOTEKNOLOGIA31&ejecuta=5](http://katalogoa.mondragon.edu/janium-bin/janium_login_opac_re_in
k.pl?grupo=EKOTEKNOLOGIA31&ejecuta=5)