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ENVIEU, THE FIRST JEAN MONNET TEACHING MODULE ABOUT THE ENVIRONMENTAL FRAMEWORK IN EUROPE

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Abstract.

The Jean Monnet programme co-funded by the Erasmus+ Programme aims to stimulate teaching, research and reflection in the field of European integration studies at the level of higher education institutions. The European integration is the analysis of the origins and evolution of the European Communities and the European Union (EU) in the internal and

external dimensions, including the EU's role in the dialogue between peoples and cultures and the EU's role and perception in the world.

The objective of this Jean Monnet module named environmental framework for a sustainable Europe (enviEU) is to make the EU environmental policy known by means of introduction of innovative teaching methodologies based on information and technology tools, raising of critical knowledge leading to analyse how the existing EU policies and regulations in the environmental protection affect technologies design, development and implementation.

The targets of this initiative are students that although they have competences to solve technical problems, they are unconscious about the importance of EU regulatory framework in their works.

EnviEU is based on six topics: i) environmental impact; ii) water; iii) energy; iv) air quality; v) environmental noise and; vi) waste. Each topic has a person in charge, who is an expert in the topic with wide teaching and researching experience in this field.

Throughout the course, each topic will be developed during a complete day. In the morning two teaching activities with a total duration of 2 hours will be carried out by the person in charge and, during the afternoon the project coordination will organize a public event for the audience. To increase the student's knowledge of some of the selected 6 topics, a summer course with 14 hours of duration will be carried out every summer. At least two events have been planned for each summer course.

1 INTRODUCTION

Jean Monnet Programme, launched in 1989, is the part of Erasmus+ dedicated to promoting excellence in European Union (EU) studies in higher education around the world [1]. These actions tries to create links between academics, researchers and EU policymakers. According to the Programme Guide, there is an emphasis on the study of and research on EU integration and in understanding Europe's place in a globalised world. Specifically, the Jean Monnet programme aims to stimulate teaching, research and reflection in the field of European integration studies at the level of higher education institutions.

European Commission [1] defines European integration as the analysis of the origins and evolution of the European Communities and the EU in all its aspects covering both the internal and external dimension of European integration, including the EU's role in the dialogue between peoples and cultures and the EU's role and perception in the world.

The EU has some of the world's highest environmental standards and probably one of the most restrictive environmental regulations in the world, according to the reports published by the European Environment Agency [2]. The EU environmental policy contributes to make the economy more ecological, protect the nature and safeguard the health and life quality of the inhabitants of the EU. The implementation of this environmental policy in the EU members and more specifically in Spain has become an impulse for the constant update of the existing environmental regulatory models towards an eco-friendly society and further integration of policies that promote a sustainable environmental framework.

In 2016, according to the conducted surveys among the students of Civil Engineering, Chemical Engineering and Environmental Sciences at the University of Granada (UGR), the lack of fundamental specific knowledge about the EU relevant legislations and regulations necessary for the curricula was identified (more than 90% of students demonstrated a considerable knowledge gap in the existing EU Environmental and Chemical legislations). This produces an effect on the appropriateness and quality of the engineering curricula and future performance of young professionals.

In addition, a deeper knowledge about the EU environmental legal framework permits to raise awareness with regard to the objectives of the EU and EU environment policy (especially, the 7th Environment Action Programme). Likewise, the awareness in this topic of different agents of the society (citizens, professionals and politics) facilitates their involvement in decision making according to EU environmental objectives. In this proposal, the fields to be analysed have been organized in six topics: environmental impact assessment, water, energy, air quality, environmental noise and waste. The objective of the proposal is to make the EU environmental policy known by means of introduction of innovative teaching methodologies based on information and technology tools (ICT), raising of critical knowledge leading to analyse how the existing EU policies and regulations in the sphere of environmental protection affect the technologies design, development and implementation.

2 OBJECTIVES OF THE ACTIVITY

The main objective of the enviEU is to provide a tailor-made courses on the EU environmental policy for graduates of the UGR to be useful for their professional life, fostering the introduction of a European Union angle into mainly non-EU related studies. Consequently, the objective is to make the European environmental policy known by means of introduction of innovative teaching methodologies based on ICT, raising of critical knowledge leading to analyse how the existing EU policies and regulations in the sphere of environmental protection affect the technologies design, development and implementation. In this regard, the project actively contributes to the promotion of European Union studies in non-EU related fields, producing a great impact on the Chemical Engineering, Civil Engineering and Environmental sciences at an international level.

Moreover, enviEU will support the coordination and research activities of a young researcher, who has started his academic career and obtained his degree in the last five years. This fosters the development of existing and new teaching and debating activities, including new methodologies, tools and technologies in the academic fields traditionally unbound to the EU studies. The implementation of the programmed seminars, lectures and conferences from the innovative angle of the application of EU regulations to the design and development of technologies will enhance the academic added value of the present initiative. It will actively contribute to the promotion of EU studies at the UGR, providing major visibility to engineering-related academic disciplines at a national level.

Consequently, enviEU complies with the specific objectives of Jean Monnet programme in the following ways:

i) The course provides students and young professionals the applied knowledge about the European directives related with the environment increasing their academic and civic skills and allow the students to improve their future professional lives.

ii) The teaching activities and specifically the events proposed foster the relationship between the students, the private companies and policy-makers. This facilitates an easier dialogue among the future professionals of the environmental technologies to apply and enhance the governance of EU environmental policies.

iii) Though the main target group are the students of Civil Engineering, Chemical Engineering and Environmental Sciences degrees, the course will be open to all the students of the UGR and the general society. Moreover, the resources created by the staff members of the module will be published as open educational license. Both aspects promote the dialogue between the academic world and society.

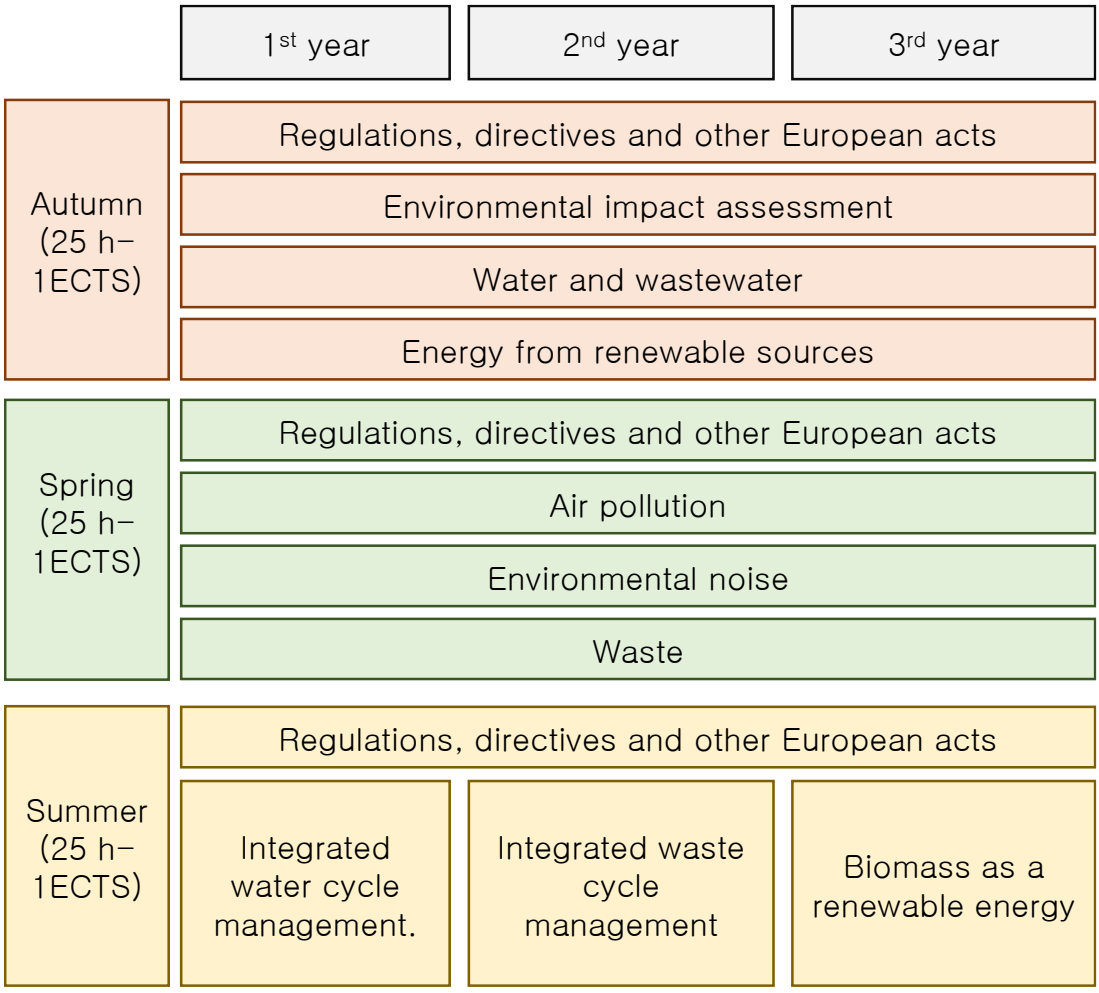

Figure 1: Content structure of the different course during the project

iv) The implementation of this proposal is a challenge for the staff members and for the

School of Civil Engineering of UGR because it implies to get an innovative teaching tool for their students. Even though most the content is currently given in different subjects by the members of this proposal, the focus of this proposal is radically different. Its aim is to emphasize the importance of the EU policies and how they affect the technologies in a multidisciplinary knowledge area such as the environment, fostering the introduction of environmental studies in Europe.

v) The improvement of the relationship between the academic world and other institutions such as the private companies of the environmental sector and the public institutions is the objective of the events planned.

vi) The quality of professional training of the students on environmental EU subjects improves with this course. For this reason, it would be recognised in the curricula of the students that receive the course. In relation to the assistance of the student to 3 ECTS could be recognized as free optional subject. Moreover, once the project finishes, its incorporation to the study plan will be considered.

vii) The key staff members are members of the UGR with different positions and categories that vary from assistant professor to professor, being the academic coordinator of the module Jaime Martín-Pascual, who is an assistant professor that obtained a PhD degree in 2014. This fact promotes the first teaching experience for a young research practitioner in European Union issues.

Table 1: Work plan of the enviEU autumm course

Typology	Tittle	Duration (h)
EUROPEAN REGULATIONS		
Seminar	Regulations, Directives and other European acts	1
ENVIRONMENTAL IMPACT ASSESSMENT		
Lecture	Environmental Impact Assessment. Fundamental and applications	2
Seminar	Landscape restoration	2
Study visit	Engineering techniques applied to landscape restoration	4
WATER AND WASTEWATER		
Lecture	The new EU Water Framework Directive	2
Seminar	How are European Directives changing the conventional process in water and wastewater treatment?	2
Study visit	The water and wastewater treatment in Granada.	4
ENERGY FROM RENEWABLE SOURCES		
Lecture	The European Directive on the promotion of the use of energy from renewable sources	2
Seminar	Plan of renewable energies in Spain motivated by European Directive	2
Study visit	The renewable photovoltaic and thermal energy generation in Granada	4

3 PROGRAMME ACTIVITIES

enviEU is based on six topics related to the environment: environmental impact assessment, water; energy, air quality, environmental noise and waste. Additionally, a topic 0, related with the European regulation, is included. Each topic has a person of the key staff members in charge, who is an expert in the topic with wide teaching and researching experience in this field.

To achieve adequate follow-up by the students, the different blocks have been structured in 3 annual courses of 25 hours of teaching (1 ECTS) as shown in Figure 1. Annually, during the three years of the project, a course in the first semester (autumn), another one in the second semester (spring) and an intensive course in July (summer course) will be held. The contents of the spring and autumn courses are repeated during the three years. However, the theme of the summer course changes.

Each topic is developed during two middle day (a Thursday in the afternoon and a Friday in the morning per months). In the afternoon two teaching activities of 2 hours each is carried out by the person in charge and, in the afternoon there will be an event organized for the audience (study visit or conference given by an expert from a private or public company followed by a roundtable debate). Table 1 and table 2 show the teaching activities and events of the autumn and spring course respectively.

In order to increase the student's knowledge of some of the 6 topics, a summer course with 16 hours of duration will be carried out every summer of the three years duration Jean Monnet teaching module. The first summer course will be about water, the second one about waste and the third one will deal with the use of biomass as renewable energy.

Table 2: Work plan of the enviEU spring course

Typology	Tittle	Duration (h)
EUROPEAN REGULATIONS		
Seminar	Regulations, Directives and other European acts	1
AIR POLLUTION		
Lecture	Common noise assessment methods for Europe (CNOSSOS-EU): implementation in the context of EU noise policy developments	2
Seminar	Management measures of air pollution and engineering technologies	2
Study visit	Air quality and noise control in Granada. Monitoring and control.	6
ENVIRONMENTAL NOISE		
Lecture	The Environmental Noise Directive	2
Seminar	Assessment and management of environmental noise	2
Conference	Effects of the environmental noise directive into the municipal area	3
WASTE		
Lecture	European Waste Framework	2
Seminar	European packaging waste.	2
Conference	Packaging waste management according to the Circular Economy principles	3

4 CONCLUSIONS

- The developed of this teaching module supported by Jean Monnet program will provide a tailor-made course on the EU environmental policy for graduates of the UGR.
- The competencies given in this course are useful for the professional life of the students, encouraging the introduction of an EU angle in principally outside the EU-related studies.
- Knowledge about Europe for a Civil engineering student allows for the development of the future graduate and facilitates their international labor mobility both in and outside Europe.

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