Universidad de Valladolid

Teaching Guidelines

Course name	**CONSERVATION HYDROLOGY**
Course area	Natural Sciences – River Conservation & Restaoration
Module	International Semester on Forestry
Study Program	Degree in Forest and Natural Environment Engineering

Plan	449	**Code**	42210
Teaching Period	Second Semester	**Type**	Elective
Level/Cycle	Bachelor´s Degree	**Year**	4 (8th Term)

ECTS Credits	3 (30 hours - lecture)
Language	Official is English.
Lecturers in charge	1) Juan Francisco Fuentes-Pérez (PostDoc; PhD Forest Engineer) 2) Andrés Martínez de Azagra Paredes (CAEU; PhD Forest Engineer) 3) Juan Manuel Diez Hernández (CDOC; PhD; Forest Engineer)
Contact details	1) juanfrancisco.fuentes@uva.es 2) amap@uva.es 3) jmdiez@uva.es
Tutorial Timetable	http://www.uva.es/export/sites/uva/2.docencia/2.01.grados/2.01.02.ofertaformativagrados/detalle/Grado-en-Ingenieria-Forestal-y-del-Medio-Natural/ click on tab "Tutorías" and scroll down on a web.
Department	Agricultural and Forest Engineering (Hydraulics & Hydrology Area)

1. COURSE DESCRIPTION

1.1 Scope

This course provides theoretical bases and practical tools to design river and basin conservation and restoration measures, with an adaptive management approach. The general objetives are the following:

1) To learn useful issues related to Forest Hydrology, Ecohydrology and Ecohydraulics in Mediterranean zones (in arid and semi-arid regions).
2) To learn the basic use of software tools such as: ESCALAS (fishway design and modeling); MODIPE (water harvesting), WEPS (wind erosion), HEC-HMS (flood simulation) and IBER (2D river modeling);

1.2 Relationship with the Study Program

The course provides a valuable complement to deepening the knowledge in the areas of Ecohydrology and Ecohydraulics applied to the Conservation and Restoration of Watsheds and Rivers.

1.3 Pre-requisites

It is assumed that the student knows the theoretical bases and the practical application of the models of Surface Hydrology, River Hydraulics, and Aquatic Ecology.

2. Learning Outcomes

The overall general competences (G1 to G27) will be addressed to some extent. Specifically, those that will be more in-depth are the following:

G3 Be able to analyze and synthesize.
G5 Be able to communicate effectively, orally and in writing, with both internal audiences.
G15 To show critical reasoning.

3. Contents

Module 1. Fish migration and mitigation measures. Impacts of human's modifications of river hydrology on fish migration, solutions and assessment.

Module 2. Water and soil conservation. Water conservation hydrology, rainwater harvesting and oasification; soil erosion and soil conservation measures; badland restoration.

Module 3. Hydrological modelling of floods. Expanding knowledge in forest hydrology with the software HEC-HMS. Eco-hydraulic modelling of rivers with the tool IBER.

Module	Content	ECTS Credit
1	Fish migration and mitigation measures	1 (10h)
2	Soil conservation	1 (10h)
3	Floods modelling: hydrology & hydraulics	1 (10h)

Basic References

- All the lecture material will be available for the students: powerpoint, video-class, etc. via Moodle UVa.
- Specific updated resources for each module will be available on the Moodle platform of the course.

- M1: http://www.smartfishways.eu
- M1: https://www.fao.org/inland-fisheries/topics/detail/en/c/1142413/
- M2: http://www.oasification.com/
- M2: http://www.fao.org/3/y4454e/y4454e00.htm
- M3: https://www.hec.usace.army.mil/software/hec-hms/
- M3: https://www.iberaula.es/

4. Teaching Methods

- ◆ Theory: expository lessons supported by powerpoint.
- ◆ Practice: Labs using software, and practical cases to apply methodologies.

5. Grading

- To pass the course, the student must have a grade ≥ 5 points. The maximum score is 10 points.
- Final score = Attendance (up to 3 point) + Assignments (up to 7 points).
- For those who have not achieved 5 points in the regular evaluation, they must take a final exam.

Assignments

- During the course, several assignments will be requested. The assignments will be related to the course topics, and they will be explained in detail at the corresponding lesson.
- The assignment submission system and deadlines will be defined also during the specific modules they are related to. Course lectures cannot guarantee assessing work submitted after the specific deadlines.

Evaluation Tool	Weight in the Final Score	Content
Dossier of Assignments	100%	Module 1: Fish migration and mitigation - 33% Module 2: Water and soil conservation – 33% Module 3: Floods modelling – 33%

Exam Information

- For those who have not achieved 5 points in the regular continuous evaluation, they have to pass a final exam.
- The exam consists of a series of theoretical-practical questions about the topics mentioned above.

Regular evaluation period → Date: check out the website: http://etsiiaa.uva.es/?p=633

6. Attendance Policy

The attendance is optional. However, it will be considered in the student grade if the attendance is greater than 50%. In that case, if the student has attended to the 50% of classes, he/she will get 1 point for the final score; if the attendance is 75%, he/she will get 2 points; and if the attendance is 100%, he/she will get 3 points (that is to say, the points will be interpolated).