SUSTAINABLE MANAGEMENT AND WATER TECHNOLOGIES (2020-21)

Código:	Fecha de aprobación:	Precio:
D054	30/07/2010	39,27 1st registration credits
Créditos:	**Título:**	
60	Master (ECTS)	

RAMA
Sciences

PLAN
UNIVERSITY MASTER'S DEGREE IN SUSTAINABLE MANAGEMENT AND WATER TECHNOLOGIES

TIPO DE ENSEÑANZA
Face-to-face

CENTROS DONDE SE IMPARTE
Polytechnic School

ESTUDIO IMPARTIDO CONJUNTAMENTE CON
Solo se imparte en esta universidad

FECHAS DE EXAMEN
Acceda al listado de fechas de examen para esta titulación.

PLAN DE ESTUDIOS OFERTADO EN EL CURSO 2020-21

Leyenda: No ofertada | Sin docencia

UNIVERSITY MASTER'S DEGREE IN SUSTAINABLE MANAGEMENT AND WATER TECHNOLOGIES

COMPULSORY SUBJECTS — 60 créditos

Curso	Título	Créditos	Subject
1	END OF MASTER WORK	10	37624 - MASTER'S DEGREE FINAL PROJECT
1	COMPULSORY	6	37600 - THE WATER CYCLE. SUBTERRANEAN AND SURFACE RESOURCES
1	COMPULSORY	12	37604 - WATER QUALITY
1	COMPULSORY	9	37610 - TREATMENT TECHNOLOGIES
1	COMPULSORY	7	37611 - TREATMENT PLANTS
1	COMPULSORY	2	37614 - REGULATIONS
1	COMPULSORY	7	37615 - UNCONVENTIONAL RESOURCES
1	COMPULSORY	3	37618 - ASSESSMENT OF NEEDS AND RESOURCES
1	COMPULSORY	4	37620 - ECONOMIC MANAGEMENT

Superado este bloque se obtiene
UNIVERSITY MASTER'S DEGREE IN SUSTAINABLE MANAGEMENT AND WATER TECHNOLOGIES

OBJECTIVES

The objective of the Master's Degree in Sustainable Water Management and Technology is to train researchers and complement professional training with essential elements from various disciplines, so that students are capable of interpreting the body of knowledge, technologies and instruments used for the sustainable management of water.

All students will acquire the conceptual training necessary as regards components of the water-use cycle: catchment, unconventional resources, control and transport, user supply, treatment, reuse and discharge into the environment, and optimal management of resources (legislation, quality control standards, supply systems and cost recovery), in terms of quality, rational and efficient use of natural resources and environmental protection, within the context of the Water Framework Directive.

MASTER'S DEGREE: CREDITS AND SUBJECTS

Subject type	Credits
Compulsory (OB)	50
Master's Final Project (OB)	10
TOTAL CREDITS	**60**

DISTRIBUTION OF SUBJECTS BY YEAR/SEMESTER

SEMESTERS 1 AND 2

SUBJECT	TYPE	ECTS
THE WATER CYCLE. SUBTERRANEAN AND SURFACE RESOURCES	OB	6
WATER QUALITY	OB	12
WATER TREATMENT TECHNOLOGIES	OB	9
WATER TREATMENT PLANTS	OB	7
LEGISLATION	OB	2
UNCONVENTIONAL WATER RESOURCES	OB	7
ASSESSMENT OF WATER NEEDS AND RESOURCES	OB	3
ECONOMIC MANAGEMENT	OB	4
MASTER'S FINAL PROJECT	OB	10

GENERAL COURSE PROGRAMME

The Master's Degree in Sustainable Water Management and Technology benefits from a course programme where the subject areas are well integrated and include the most relevent aspects of integrated water management.These contents are presented sequentially and in logical order as regards the water-use cycle and its sustainable management.

Subject areas are multidisciplinary in nature and are taught by subject specialists. Each subject area will enable students to acquire the specific skills corresponding to this Master's degree, and will contribute to the attainment of general, basic skills.

A summary of the contents of each subject area, together with the corresponding learning outcomes is provided below:

1. The water cycle. Resources. The first subject area taught on the course, analyses basic concepts regarding hydrogeology and control of surface water, and introduces the student to an understanding of all the elements involved in the water cycle, including:

1. Catchment, storage, transport, distribution, quality and use, pollution, treatment, reuse and discharge.
2. An explanation of water balance methodology.
3. Possible causes of climate change and the effects it can produce on the natural water cycle.

Students can participate in field study trips to observe and understand elements such as subterranean catchment systems, surface water storage systems and distribution systems.

Having completed this subject area, students will be capable of assessing the activities involved in the water-use cycle according to the origin and destination of the water, and will be able to evaluate various alternatives.

2. Water quality. The following areas will be covered :

1. Description of all components present in water.
2. An explanation of the theoretical aspects of balance and natural or artificially-induced phenomena, including pollution.
3. Defining the quality parameters used to assess contamination, including priority and emerging pollutants.Students will participate in laboratory practicals in order to determine various parameters.
4. Quality management systems and the implementation of integrated management systems.

Having completed this subject area, students will be able to characterise the quality of natural water resources and wastewater, identify and articulate

environmental problems associated with hydraulics and manage analytical and monitoring facilities effectively.

3. Water treatment technologies. Students will learn fundamental aspects concerning the concepts and design of the most common physical, chemical and biological technologies employed in water treatment. Advanced technologies and emerging membrane-based technologies will also be studied. The course will include numerical exercises and laboratory practicals for some of these operations.

Having completed this subject area, students will be able to design and calculate solutions for water preparation, purification and recycling, and discharge into the environment.

4. Water treatment plants. Students will learn about water and sludge treatments for various types of sewage and water treatment plants (drinking water, urban and industrial waste water), the main variables which should be considered in order to achieve effective operation, maintenance and use of plants, together with the main control parameters. Students will also study sludge composting and the importance of reusing biosolids to improve soil, in addition to the potential hazards associated with work in treatment plants and the application of health and safety programmes. Students will complete their study of this subject area with process simulation exercises and the specific analysis of actual waste treatment plants

Having completed this subject area, students will be able to operate, maintain and manage treatment facilities for drinking water and urban and industrial waste water.

5. Legislation. Students will learn the specific legislation and recommendations governing the provision and application of water for different uses, according to the different indicator parameters. Special importance will be given to the implementation of the Water Framework Directive, which will determine the future of water management, basing such implementation on the criteria of environmental sustainability and cost recovery.

Having completed this subject area, students will be able to identify the legislation applicable to different water use and management contexts.

6. Unconventional water resources. Students will learn how unconventional water resources derived from reuse of waste water and desalination are increasingly being incorporated into water planning. As regards reuse, students will be provided with information regarding specific legislation, quality, and the possible uses of recycled water. Costs associated with the treatment and infrastructure necessary will be analysed. As regards desalination, the various technologies, present situation and future possibilities will be described. Paying special attention to reverse osmosis technology, students will learn about basic conceptual aspects and design, using software as a calculation tool. Visits will be made to several facilities.

Having completed this subject area, students will be able to assess the different alternatives for provision of unconventional resources, including the economic aspects.

7. Assessment of water needs and resources. Students will learn the procedures for predicting different levels of water needs and resources with regard to the sources of water available for different uses, together with their specific associated problems, with special reference to southeast Spain. Students will study innovative alternatives to scarcity, such as the water market, and the options to consider for effective drought management

Having completed this subject area, students will be able to assess local and regional water needs, and evaluate the possibilities for satisfying such demand.

8. Economic management. Students will study the different models for managing public, private and mixed water supplies. Taking an economic approach, students will learn about activities related to the water supply cycle, from catchment to discharge, assessing the associated costs and how these can be recovered from the user through rates, charges and taxes. As regards practical applications, students will study several important municipalities within the region, and the possibilities for integrated management of resources on a local scale.

Having completed this subject area, students will be able to assess the various water management and cost recovery models.

In conclusion, the Master's Degree course programme places great importance on the Master's Final Project, where under the guidance and supervision of a tutor, students will be expected to select a case study and solve a specific problem,which will be related to the subject areas studied throughout the course programme. The Master's Final Project will include planning, implementation and a problem solving proposal , and will involve a practical component, which may be carried out at the University Institute of Water and Evironmental Sciences (IUACA) laboratories or in the departments involved in teaching the course programme. This will serve to introduce students to the world of science and link it, where appropriate to the professional world. To this end, the IUACA has excellent collaborative arangements with the following water management companies in the local area:

- Aquagest Levante and Aquagest Murcia,
- Several part state-owned companies in the most important municipalities of the region.
- Valoriza Agua, Acciona Agua or Red Control, the leading engineering companies in the local area
- Public organisations, such as Proaguas Costablanca.

In addition, it should be noted that although work experience is not a compulsory component of this course programme, it is nevertheless a possibility, organised through the General Foundation of the University of Alicante.

Preparation of the Master's Final Project will teach students the mechanisms for conducting research applied to the fields of management or treatment and conservation of water resources.

- Structure of the Master's Degree: credits and subjects
- Distribution of subjects by year/semester
- General course programme
- Number of places

ENTRY REQUIREMENTS AND SELECTION CRITERIA

According to the Regulations of the University of Alicante, the following requirements must be complied to have access to official taught Master's degrees:

1. To be in possession of a SPANISH OFFICIAL GRADUATE DEGREE CERTIFICATE or other issued by an institution of higher education within the EHEA (European Higher Education) that enables the holder to have access to Master's degrees in the issuing.
2. To be in possession of an officially approved FOREIGN HIGHER EDUCATION DEGREE CERTIFICATE that had been recognised as equal to the degree that allows access to the requested studies.
3. To be in possession of a UNIVERSITY DEGREE CERTIFICATE obtained in a University or Higher Education Institution of COUNTRIES OUTSIDE THE EHEA, without the prior approval of their studies. In this case, the following should be considered:
    - Non- recognised degree certificates shall require a technical report showing an equivalence statement issued by the University of Alicante (ContinUA – Continuing Education Centre), for which the corresponding fee should be paid.
    - Access through this way does under no circumstances imply prior official approval of the holder's degree certificate, nor its recognition for purposes other than studying a master's degree.

ADMISSION AND ASSESSMENT CRITERIA

1. Admission Profile

Given the degree programme of the Master's Degree in Sustainable Water Management and Technology, and in order to ensure the adequate prior training which will enable students to acquire the skills taught on the course, only graduates with the following degrees will be considered for admission to the course:

- Applicants holding Higher or Intermediate qualifications equivalent to a Degree worth 240 ECTS credits, in any branch of the Pure Sciences, Physics or Natural Sciences, Engineering or Architecture, and who wish to prepare a Doctoral Thesis or specialise in R&D in topics related to water.
- Applicants holding Higher or Intermediate qualifications equivalent to a Degree worth 240 ECTS credits, in any branch of the Pure Sciences, Physics or Natural Sciences, Engineering or Architecture, and who wish to acquire a specialised training in aspects related to water treatment and management.

For applicants holding other qualifications, the Master's Coordinating Committee will decide whether admission to the course is appropriate in each case, and will indicate the complementary training considered necessary in view of the applicant's academic record.

2. Assessment criteria

Where the number of applicants considered suitable for admission to the course exceeds the number of places available, admission criteria will be applied, based on an assessment of the academic record and other achievements presented by applicants. Assessment of the academic record will be based on the grades obtained for each of the subject areas of the officially recognised degree qualifying for admission onto the Master's Degree in Sustainable Water Management and Technology, obtaining a maximum of 10 points through application of the following formula:

$$E = 10\ (\Sigma C_i N_i / N_{max} \Sigma C_i)$$

where E is the academic record grade, C_i is the number of credits the subject is worth $_i$, N_i is the grade corresponding to the subject $_i$, N_{max} is the maximum grade possible for the subjects, and n is the number of subjects taught on the degree.

Other achievements will be assessed by the Master's Coordinating Committee. A maximum of 5 points will be awarded for the following:

- Other officially recognised qualifications (academic record and degree subject: maximum 2 points),
- Other, not officially recognised, courses (length of course and degree to which these are related to the Master's Degree: maximum 1 point),
- Work experience or scholarship experience (length of time involved and degree to which the experience is related to the Master's Degree: maximum 1 point),
- Knowledge of English (depending on level: maximum 1 point).

The academic record score will be added to the score obtained for other achievements. Overall scores will then be ranked from highest to lowest, and applicants will be selected accordingly.

PRE-ENROLMENT AND ENROLMENT

PRE-ENROLMENT +info

Students who intend to study for an officially recognised Master's Degree at the UA should complete pre-enrolment in accordance with the guidelines and deadlines specified annually.

ENROLMENT +info

Following publication of the final list of those admitted to the course, an email containing a user password will be sent to successful applicants, enabling them to enrol via the Campus Virtual in accordance with the guidelines and deadlines specified annually.

In the registration process, the **documents issued abroad** must be official, duly notorised and translated. Further information:

- http://sga.ua.es/en/academic-regulations/legalizacion/legalization-of-documents.html

NUMBER OF PLACES

COURSE	NUMBER OF PLACES
2012-13	20
2013-14	20
2014-15	20
2015-16	20
2016-17	20

Focus

Research and complementary professional or academic training.

Areas of Research:

- Pollution Engineering
- Water Regeneration
- Waste Disposal
- Waste Water Technology
- Control of Water Pollution
- Subterranean Water
- Hydraulic Engineering
- Sewer Systems and Water Purification
- Water Supply
- Animal Ecology
- Governmental regulation of the Private Sector
- Public Companies
- Public Service Companies
- Economics Research and Experimental Development

Degree course specialisation profile

Introduction to research and complementary training on topics related to integrated water management.

Professional Profile

In the professional context, the Master's Degree is of interest to both the public and private sectors, in activities such as:

- Project and design consultancy and engineering in the field of catchment and supply infrastructures.
- Project and design consultancy and engineering in the field of drinking water, waste water and desalination treatment plants.
- Treatment plant construction companies.
- Water cycle, water-use cycle and facility maintenance management companies.
- Water and environmental consultancy.
- Treatment plant management.
- Quality control.
- Water supply management.
- River basin management.
- Water policy advisors at Local, autonomous region or national government level
- Public health.

TIMESCALE FOR IMPLEMENTATION

1. Timescale for implementation of the new Master's Degree Course

The Degree presented for approval is an adaptation of a Degree that has been taught for the past 5 years , maintaining the same name, the programme will be implemented, if approved, in 2010-2011,

2. Equivalence Recognition Procedures, where appropriate, between the current and the new course programme.

The new course programme includes all the modules taught on the previous Master's Degree course, some of which have been summarised and restructured in new subject areas. Given the high graduation rates and effectiveness of the present Degree, it is unlikely that current students will need to convert to the new course progamme in order to conclude their studies. Should this need arise, however, the Master's Degree Coordinating Committee will determine the subject area or areas which students will be required to take in order to graduate.

3. Studies that will be discontinued and replaced by the proposed Degree course:

Not applicable.

- Verified Report
- Resolution from the Universities Council: Positive verification
- Resolution from the Universities Council: Accreditation renewal
- Authorization from the Valencian Government

Internal Quality Assurance System (SGIC) of the Title

- Structure of the Centre for Quality
  - Comission of Internal Quality Guarantee
  - Other Commissions
- Handbook SGIC
- Procedures
  - Strategic (PE)
  - Key (PC)
  - Support (PA)
  - Measurement (PM)
- Management of the SGIC (Access to ASTUA)

Follow-up of the Title

- Self-reports UA
- External reports AVAP
- Other reports
- Improvement Plans
- Progress and Learning Outcomes

Information about the Centre	General information for students
• **Polytechnic University College** Campus de San Vicente del Raspeig Ctra. de Alicante s/n 03690 San Vicente del Raspeig (Alicante) Telephone:+ 34 96 590 3648 Fax:+ 34 96 590 3644 eps@ua.es http://www.eps.ua.es • **Life Long Learning Centre (ContinUA)** **Only for pre-enrolment formalities** Germán Bernácer Building. Ground Floor Telephone: + 34 96 590 9422 Fax: + 34 96 590 9442 continua@ua.es https://web.ua.es/en/continua/	• Grants and assistance • Accommodation • Student refectories and cafeterias • Transport • Emergency medical care • Insurance • Services for students with special needs • Student representation and participation • University student identity card (TIU) • Frequently asked questions
UA: General Regulations	**+ Information about qualifications**
• Academic regulations and procedures of the University of Alicante	• Official State Gazette (BOE) on publication of course programmes • Own Web • Information pamphlet • Video presentation of the degree • Details title on the RUCT