

AUTOMATICS AND ROBOTICS (2020-21)

Código: D037	Fecha de aprobación: 24/02/2012	Precio: 39,27 1st registration credits
Créditos: 60	Título: Master (ECTS)	

RAMA

Engineering and Architecture

PLAN

UNIVERSITY MASTER'S DEGREE IN AUTOMATICS AND ROBOTICS

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 AUTOMATICS AND ROBOTICS

COMPULSORY SUBJECTS

42 créditos

Curso	Título	Créditos	Subject
1	END OF MASTER WORK	12	37819 - MASTER'S DEGREE FINAL PROJECT
1	COMPULSORY	6	37800 - ADVANCED AUTOMATION
1	COMPULSORY	6	37801 - ROBOTICS
1	COMPULSORY	6	37802 - AUTOMATIC CONTROL SYSTEMS
1	COMPULSORY	6	37803 - SENSING SYSTEMS
1	COMPULSORY	6	37804 - ELECTROMECHANICS
1	COMPULSORY	6	37816 - ROBOT DESIGN AND SIMULATION

OPTIONAL SUBJECTS

18 créditos

Curso	Título	Créditos	Subject
1	OPTIONAL	3	37805 - 3D VISION
1	OPTIONAL	3	37806 - INDUSTRIAL COMPUTING
1	OPTIONAL	3	37807 - ROBOT CONTROL AND PROGRAMMING
1	OPTIONAL	3	37808 - NEW TRENDS IN ROBOTICS
1	OPTIONAL	3	37809 - HUMAN-MACHINE INTERACTION SYSTEMS
1	OPTIONAL	3	37810 - AUTOMATED MANUFACTURE AND PRODUCTION SYSTEMS
1	OPTIONAL	3	37811 - INDUSTRIAL NETWORKS AND COMMUNICATION
1	OPTIONAL	3	37812 - AUTOMATION FOR THE RESIDENTIAL, COMMERCIAL AND SERVICE SECTORS
1	OPTIONAL	3	37813 - OPTICAL IMAGE ACQUISITION AND PROCESSING
1	OPTIONAL	6	37815 - TRAINEESHIP
1	OPTIONAL	3	37817 - ADVANCED ARTIFICIAL VISION
1	OPTIONAL	3	37818 - AUTOMATIC LEARNING

Superado este bloque se obtiene

UNIVERSITY MASTER'S DEGREE IN AUTOMATICS AND ROBOTICS

AIMS

The overall objective of the proposed programme is to teach courses leading to the Master's degree in Automation and Robotics, complementary to the research required to obtain a Doctorate at the University of Alicante. The programme also aims to train professionals to the highest level in research and development in these disciplines, in order to meet a demand that will grow progressively in the next 30 or 40 years.

The programme's specific objectives are as follows:

- To provide a solid training in advanced areas of automation, which will add to knowledge acquired during the degree course, preparing students for scientific research or work in highly specialist companies.
- To provide students with a primarily practical background, with frequent laboratory sessions and numerous seminars given by expert professionals. To help students gain work experience, in which students will have the opportunity to apply all the theoretical knowledge that they have acquired.
- Students will acquire knowledge and theoretical and practical skills in designing systems and for automating processes including various aspects of analysis, design and control to increase performance, production, competitiveness and quality, and to optimise energy and human resources in a wide range of sectors, including industry, natural and energy resources, farming, services, etc.
- Graduates of this Master's degree course will have broad knowledge of all the various technologies involved in automation and robotics. The teaching method used, incorporating a significant laboratory and design component and applying innovative teaching and learning methods (use of ICTs, heavy promotion of independent projects and student group work, etc.), will give graduates the skills they need to tackle real problems in design and the use of commercial systems effectively. The above is additional and complementary to the programme's main objective, which is to train researchers in automation and robotics.
- To equip post-graduates with skills in all areas involved in these subjects, such as instrumentation, automation (PLC, machinery, etc.), robotics, inspection, process monitoring, real-time computing, system integration, etc.
- To train professionals in the fields of Automation and Robotics to the highest level for the purposes of research and for assuming roles of responsibility in corporate R&D departments.
- To train experts capable of planning and managing installations of all kinds in the field of automation, able to provide services in any research department or company.
- To become a leading centre for development in automation and robotics, in terms of the excellent education received by graduates and the quality of teaching and research.

- [Structure of the Master's Degree: credits and subjects](#)
- [Distribution of subjects by year/semester](#)
- [General course programme](#)

MASTER'S DEGREE COURSE - CREDITS AND SUBJECTS

Type of subject	Credits
Compulsory (OB)	30
Optional (specialisation) (OP)	18
Final project (OB)	12
TOTAL CREDITS	60

DISTRIBUTION OF SUBJECTS BY YEAR/SEMESTER

FIRST SEMESTER 30 ECTS			SECOND SEMESTER 30 ECTS		
SUBJECT	TYPE	ECTS	SUBJECT	TYPE	ECTS
ADVANCED AUTOMATION	OB	6	3D VISION	OP	3
			INDUSTRIAL COMPUTING	OP	3
ROBOTICS	OB	6	ROBOT CONTROL AND PROGRAMMING	OP	3
AUTOMATED MONITORING SYSTEMS	OB	6	MAN-MACHINE INTERFACE SYSTEMS	OP	3
			AUTOMATED MANUFACTURE AND PRODUCTION SYSTEMS	OP	3
PERCEPTION SYSTEMS	OB	6	AUTOMATION FOR THE RESIDENTIAL, COMMERCIAL AND SERVICES SECTOR	OP	3
			IMAGE CAPTURE AND OPTICAL TREATMENT	OP	3
ELECTROMECHANICS	OB	6	WORK EXPERIENCE	OP	6
			FINAL PROJECT	OB	12

For part-time students, shall be sent 18 credits of compulsory courses in the first semester of the first course and 12 credits of compulsory courses in the first semester of the second course (in the following table lists the subjects to be taught in each semester). As for the optional credits are allocated as follows: 12 credits will be given in the second semester of the first year and 6 in the second semester of the second course. Each elective course may take a quarter or another student's choice. If you wish to pursue internships will be developed in the second semester of second year and will have the equivalent to 6 elective credits. Finally, the Final Master shall be made during the second semester of the second course.

Part-time students

Materials (type)	1º		2º	
	CT1	CT2	CT3	CT4
Advanced Automation (ob)	6			
Robotics (ob)	6			
Automatic control systems (ob)			6	
Sensing systems (ob)	6			
Electromechanical (ob)			6	
3D Vision (opt)		3*		3*
Industrial Computing (opt)		3*		3*

Control and programming of robots (opt)		3*		3*
Systems of human-computer interaction (opt)		3*		3*
Manufacturing and production systems, automatic (opt)		3*		3*
Automation for residential, commercial and services (opt)		3*		3*
Acquisition and processing optical images (opt)		3*		3*
Work experience (opt)				6
Master Thesis Work				12

Note: (ob) compulsory; (opt) optional.

* These courses may be taken at CT2 or CT4 to student choice.

GENERAL COURSE PROGRAMME

The 60 ECTS credits that form the course programme are divided between the first semester, with 30 ECTS credits in compulsory core subjects, and a second semester offering specialisation with 18 ECTS credits in optional subjects.

There are five compulsory subjects, each worth 6 ECTS credits, and these form the fundamental basis of the course. Students choose their optional courses from a total of ten subjects each worth 3 ECTS credits, plus 6 optional Work Experience credits. Students can therefore shape their own curriculum.

To complete the course programme, students must take the 12 ECTS credits corresponding to the compulsory Final Master's Project, which enables a global assessment to be made of the skills acquired on the course.

Theoretical and practical teaching in all subjects will be in Spanish, although seminars may occasionally be given in English by foreign visiting lecturers; attendance at these is optional.

- Entry requirements
- [Admission and assessment criteria](#)
- [Pre-enrolment and enrolment](#)
- [Number of Places](#)

ENTRY REQUIREMENTS

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

Article 16 of Royal Decree 1393/2007 establishes that holders of university degrees (that is, holders of current university degrees and graduates of degree courses which have been adapted to conform with the European Space for Higher Education(ESHE) are eligible for admittance to Master's Degrees. Due to the limited number of places offered, preference criteria will assess applicant profiles in order to identify those students seeking to develop a research career in robotics and automation. Consequently, preference criteria will include the prerequisite that applicants already possess certain specific skills.

Accordingly, suitable applicants will hold a 4 or 5-year degree in Computer Engineering, Industrial Engineering, Telecommunications Engineering or related areas, preferably including specific training in the field of robotics, automation and control theory, and will be seeking to extend or complement their training, or to undertake doctoral studies.

Next, we describe a set of skills and abilities that students should have:

- Motivation for the world of robotics and automation.
- Interest in research in fields related to automation and robotics.
- Dynamism in the search for solutions in related areas.
- Attraction of new developments in fields related to automation and robotics.
- Capabilities for analysis, synthesis, abstraction and expression of the diversity of the problems in this area of activity.

2. Assessment criteria

Preferably, students should possess the following aptitudes and abilities:

- An interest in the world of robotics and automation.
- An interest in research in fields related to automation and robotics.
- A dynamic approach to problem-solving in related contexts.
- An interest in new advances in fields related to automation and robotics.
- The capacity for analysis, synthesis, abstraction and articulation of the diverse problems arising in this field.

As regards **general admission criteria**, priority will be given to the intellectual capacity of applicants in terms of the specific knowledge they possess. The decision to admit or reject each application will be made by an admissions and student monitoring committee, convened for this specific purpose. Admission will be subject to personalised assessment and guidance. This assessment will be based on each applicant's academic achievement record, considering the applicant's curriculum vitae, training related to the Master's Degree and ability to successfully complete the different course components.

Complementary admission criteria will include a consideration of the academic record, research assistant grants, other activities undertaken in the area of specialisation, and any other achievements presented. Throughout the Master's Degree, students will be assigned a tutor who will monitor their training. The tutor will prepare a personalised study plan according to each student's educational background and training aims. In addition, the tutor will monitor each student's educational progress and will suggest the course of action to take in the case of difficulties arising regarding subject matter, access to course

materials, or other problems which may occur during the learning process.

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 notarised 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	30
2013-14	30
2014-15	30
2015-16	30
2016-17	30

FOCUS

Academic and research.

SPECIALISATION PROFILE

The degree course provides an introduction to Automation and Robotics Research, as well as other closely related fields, such as:

- Perception systems. Artificial vision.
- Robot control and programming. Advanced robotics.
- Advanced automation systems in industry.
- Automation for the residential, commercial and services sector.
- Man-machine interface systems.
- Industrial communications and networks.

PROFESSIONAL PROFILES

Although this is not a Master's degree aimed exclusively at the professional world, the training that it provides equips graduates for professional occupations with a multidisciplinary environmental component.

TIMESCALE FOR IMPLEMENTATION

- [Timescale for implementation](#)
- [Procedure](#)
- [Discontinued programmes](#)

1. Timescale for implementation of the Master's Degree course

Academic year	Implementation of the Master's Degree
2010-2011	1st year

The first and only Master's degree course in Automation and Robotics will be implemented during the 2010-2011 academic year. This course is the result of the restructured Inter-university Doctorate in Automation and Robotics, taught jointly by the University of Alicante and the Miguel Hernández University of Elche.

2. Procedure for equivalence recognition, where appropriate, between the current and the new course programme.

Table showing credit equivalence between Inter-university Doctorate subjects in Automation and Robotics and subjects on the Master's in Automation and Robotics.

Inter-university doctorate in Automation and Robotics		Master's in Automation and Robotics	
Equivalent Subjects	Credits	Equivalent Subjects	Credits
3D computer vision	3	3D vision	3
Robot programming and control	3	Robot control and programming	3
Intelligent robotic handling and applications	3	New trends in robotics	3
Protocols for transmitting information online and quality of service	3	Industrial communications and networks	3
Image processing	3	Image capture and optical treatment	3

3. Studies being phased out and replaced by the proposed degree course:

The Inter-university Doctorate in Automation and Robotics has been restructured as the University Master's Degree in Automation and Robotics, with a corresponding doctorate programme.

- [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
<ul style="list-style-type: none"> • Polytechnic University College <p>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</p> <ul style="list-style-type: none"> • Life Long Learning Centre (ContinUA) <p>Only for pre-enrolment formalities</p> <p>Germán Bernácer Building. Ground Floor Telephone:+ 34 96 590 9422 Fax: + 34 96 590 9442 continua@ua.es https://web.ua.es/en/continua/</p>	<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • Academic regulations and procedures of the University of Alicante 	<ul style="list-style-type: none"> • Official State Gazette (BOE) on publication of course programmes Modification • Own Web • Information pamphlet • Video presentation of degree • Details title on the RUCT