

## UNIVERSIDADE DE AVEIRO

Created in 1973, the University of Aveiro has quickly become one of the most dynamic and innovative universities in Portugal. As a public foundation operating under private law, it develops its mission to provide undergraduate and postgraduate education, to generate research and to promote cooperation with society. UA has achieved a significant position amongst higher education institutions in Portugal, being one of the top universities regarding the quality of its infrastructures, the strength of its research and the excellence of its staff. It is attended by some 15,000 students.

### Location

Aveiro is located in the central coastal region of Portugal, about two hours driving distance north of Lisbon. Aveiro is surrounded by a distinctive delta called the Vouga Delta, better known as Ria de Aveiro. Aveiro is served by excellent rail and road connections to Lisbon and to the inland towns as well as to the close by cities of Oporto and Coimbra. Sá Carneiro international airport, which is less than 1 hour away, provides convenient connections throughout Europe.

### Accommodation

Exchange students receive help from the International Office to find accommodation in one of the University Halls of Residence. For students who do not live at the Univer-

sity Halls there are other options. With the help of the Erasmus Student Network (ESN), many students look for flats close to the campus or in the nearby city centre. Typical prices for student accommodation range from €180 to €250 per month.

### Living costs

As an estimate, a student in Aveiro will need somewhere between €550 and €600 per month for accommodation, eating, transport, study material and other basic expenses.

### Visas

Non-EU students should check whether they need a visa and a residence permit. Students make their visa request in their home country, at the Portuguese consulate, before travelling to Portugal.

### Student Life

Students at UA have a lot of support from the University and from each other. The Students Union and the University Social Services provide shops, advice centres, medical care, sports facilities and entertainment. The University departments and central services organise hundreds of events each year, providing students with opportunities to pursue their personal interests, whether it be in science, technology, business or the arts. Counselling and career services are also available to our students and alumni.

### Applications

[www.ua.pt/grl/applications](http://www.ua.pt/grl/applications)

SEMESTER EXCHANGE IN AVEIRO

study for one semester  
at portugal's leading  
university

Computer  
Science and  
Networks



universidade de aveiro  
theoria poiesis praxis

Semester exchange packages are English taught programmes at bachelor or masters level and correspond to a full semester of academic work that can be recognised at your University. We will partner with your University to ensure you gain all the benefits from your exchange at UA.

#### MAIN BENEFITS

- English taught course units
- Non-overlapping course timetable
- Support for accommodation and Visa

#### PROGRAMME FACTS

**Semester:** 1st (September-January)

**Programme workload:** 30 ECTS credits

**Language requirement:** English, B1 level

**Academic level:** master

**Prerequisites:** Bachelor degree in Electronics and Telecommunications or in a closely related area awarded on completion of a 1st cycle programme organised in accordance with Bologna principles.

**Fees:** EUR 555,29 (2014/2015 academic year)

#### COURSE UNITS

- **42566 Advanced Network Architecture (6,0 ECTS)**

The course is centred on the study of public telecommunications architectures, and on concepts associated with those environments. As such, students will address: i) access and core network architectures (fibre, cable, MPLS, ATM, GPS/GPRS and UMTS); external routing protocols (BGP); large scale distributed systems, including CDNs and P2P; multimedia communications, from transport (RTP) to signalling (SIP, H.323); IP-oriented mobility protocols (MIP); and the challenges of large scale management, with PBNM, CMIP and the TMN.

- **47232 Security (6,0 ECTS)**

The goal of this course is to present the main concepts of security in computer systems. Since security requirements are omnipresent in such systems, it is fundamental to observe security policies and understand the existing mechanisms to implement security policies targeting the globalized computing environment. Hence, this course addresses security issues in several areas (operating systems, virtual machines, networks, databases, etc.) as well as some basic mechanisms, such as encryption, for implementing security policies in multiple areas.

- **47092 Data and Knowledge Engineering (6,0 ECTS)**

The aim of the course is to represent, sort, organize, search, and retrieve information using data structures that are not organised in relational databases. Students are introduced to the basics of how to represent, validate and transform information using the XML format and related standards (Schema, XQuery, XPath and XSLT); how to use standard representation formats (Microformats, RSS, RDF and OWL) and how to use the SPARQL language to search and infer information.

- **42578 Service Engineering (6,0 ECTS)**

The course provides students with a broad overview of Telecommunications Services from 3GPP IMS to the most recent Web Technologies for communications such as WebRTC. It covers the fundamentals of Service Orientation and Service Integration and presents advanced software and service architectures for advanced networks. During the course students must develop a medium size project using the addressed technologies.

#### OPTION

(choose one of the two following course units)

- **43312 Virtual and Augmented Reality (6,0 ECTS)**

This course aims to introduce basic concepts, methods, and tools allowing the development of virtual and augmented reality applications. The availability of low cost equipment enables affordable desktop or mobile applications; yet, they are technically challenging. This course addresses modelling virtual environments, frameworks, input and output devices, 3D user interfaces, and human factors in virtual and augmented reality. Students develop practical assignments involving the design, implementation and evaluation of simple applications.

- **42596 Information Recovery (6,0 ECTS)**

The aim of this course is to provide knowledge and skills on techniques and algorithms related to information retrieval (IR) and information extraction (IE). After the course, students should be able to understand the fundamentals of search engines and to develop computational solutions for: 1) Web crawling and document parsing; 2) storage and indexing; 3) information retrieval; and 4) information extraction.