UNIVERSITÀ GIUSTINO FORTUNATO

D.M. 13 aprile 2006 - G.U. n° 104 del 6/05/2006 - **TELEMATICA**

INTERNATIONAL UNIVERSITY MASTER'S DEGREE COURSE IN

Digital Health:
Engineering and managing high-quality medical software and systems

The course aims to train experts in the design, management and certification of complex systems for Healthcare.

AIMS AND OBJECTIVES OF THE MASTER'S COURSE

The Master's programme is aimed at graduates who wish to acquire advanced knowledge in the design, engineering and management of advanced health systems, including those based on Artificial Intelligence technologies. The training course aims to develop skills, also from a managerial perspective, of the analysis, design and control functions of complex health systems.

The focus will be on:

- system certification issues according to current regulations;
- quality requirements and objectives;
- sector standards;
- verification and validation tools;
- development, management and control processes;
- and the most advanced founding technologies (i.e., Machine Learning, IoT, etc.).

ADDRESSES

The Master's Degree Course is aimed at postgraduate students in computer science, information technology, electrical engineering, electronics, telecommunications, mathematics, physics, or similar, as well as clinical engineering, medicine and surgery, or related.

LANGUAGE

The Master is taught in English.

DURATION OF THE COURSE

The International University Master lasts one year. Training activities are carried out in a mixed presence/online mode. They are also provided in presence workshops and internships at prestigious companies in the sector.

ADMISSION AND REGISTRATION PROCEDURES

Admission to the Master's Degree Course requires completion of the admission/enrolment form, which can be downloaded online and is attached to this notice. For each question there is a contribution of pre-registration of 30.00 euros, including stamp duty.

COURSE PROGRAMME

The Master's Degree Course is divided into modules (60 CFU in total) including specific topics, functional to the disciplines object of study, according to the following schedule:

MODULE I - Quality Management, Project Management and Risk Management	The module focuses on the main aspects of product and process quality. In particular, it introduces the processes of project management, risk management and incident management, industry standards (ISO 13485, ISO 14971, IEC 64234, etc.) and the issues of certification of Medical Devices and Software as a Medical Device in the European context.
MODULE II - IoT & Embedded Systems for Healthcare	The module presents an introduction to embedded systems, IoT and embedded IoT systems. Then several applications for the healthcare sector are introduced, including tele-monitoring and tele-medicine services.
MODULE III - Biomedical equipment	The module introduces the main classes of biomedical equipment and biomedical equipment software. Biomedical equipment with special reference to diagnostic imaging will be analysed by describing their connection in the hospital network and the remote management of stateof-the-art equipment. Predictive approaches with AI software for machine maintenance and repair will be described.
MODULE IV - AI for medicine	The module presents an overview of artificial intelligence and machine learning methods and algorithms, discussing their properties and showing examples of their use in different application scenarios related to the health domain. The module will complement the theoretical study with an experimental part in which it will show how artificial intelligence and machine learning methods and techniques can be used to solve problems in the health domain. That is, starting from a correct formulation of the problem of interest, with the choice of the most appropriate approach or algorithm, and providing indications and examples on how to organise and conduct an experimental validation of the results obtained.
MODULE V - Software engineering	The module presents healthcare software development processes and frameworks (including V-model and Scrum), object and component-based SW design techniques, design patterns, design controls and software testing techniques and tools.
MODULE VI - Electronic Health Records and related Standards	The module presents the architectural models, the main enabling technologies and health informatics standards (such as DICOM, HL7 CDA2, HL7 FHIR, IHE profiles) necessary to realise syntactically and semantically interoperable health information systems. Particular emphasis will be placed on IT systems supporting e-health applications, such as electronic health records and the electronic health record.
MODULE VII - Data Analytics for Healthcare	The module focuses on technologies and standards for managing and exploiting Big Data. Tools and methodologies for Big Data management, Business Intelligence and Visual Analytics will be presented.
MODULE VIII - Improving Technical English	The module aims to provide the terminology of English for Specific Purposes (ESP), with a focus on technical English, while consolidating the basic grammatical structures of standard English. Technical English refers to a common core language used in numerous professional fields: science, technology, medicine, IT etc. The acquisition of technical-specialist terminology not only facilitates written and oral communication between native and non-native speakers, but also reduces the risk of errors. Originally limited to the aviation industry, today it serves as a common basis for a variety of occupations and plays an important role for many professional profiles including engineers, doctors, technologists and computer scientists.
COMPANY INTERNSHIP AND FINAL TEST	The company internship is designed to enable students to develop a project of industrial interest with the guidance of company managers. The final consists of a discussion of the paper developed at the end of the placement.

ENROLMENT FEE AND MANAGEMENT OF THE MASTER'S DEGREE COURSE

The registration fee is Euro 5,000.00. Payment may be made in a single instalment upon enrolment, or in three instalments.

INTERNSHIP AND FINAL TEST

The training includes a company internship for 600 hours. At the end of the Master's Degree Course, those enrolled who have fulfilled their attendance obligations and submitted a final dissertation will be awarded the International University Master's Degree Level I in 'Digital Health: Engineering and managing high-quality medical software and systems', equivalent to 60 C.F.U., which can be used in accordance with current legal provisions.

WE DON'T LEAVE YOU ALONE!

Each student will be guided by a Tutor who will support him in the training course and who will support him in improving both technical skills and soft skills.