

INSA

INSTITUT NATIONAL
DES SCIENCES
APPLIQUÉES
TOULOUSE

in partnership with



Mastère spécialisé - Advanced Master in Innovative and Secure IoT Systems



MASTERS SPECIALISE - ADVANCED MASTER IN « Innovative and Secure IoT Systems »

A MULTIDISCIPLINARY COURSE FOCUSED ON INTERNET OF THINGS DEVELOPMENT

Students are trained to innovate, design, implement, and market a « smart system » starting from devices to business applications taking into account wider societal issues.



DEVICE

COMMUNICATE

PROCESS

CASE STUDY

INNOVATIVE ORGANISATION SCHEME FOR STUDENTS FROM DIFFERENT FIELDS

- Allow them to progress in their main field while acquiring experience in related ones.
- Modules composed of courses and practical lab classes on research results related to Internet of Things used in industry or being industrialized.
- Keynotes by well-known academics and industry stakeholders in the technical field and in the field of innovation and international business.
- Participation in international events such as a Hackathon and a switchup challenge with industry leaders.
- A interdisciplinary project allowing each student to deepen their points of interest for an industrial problem or local authorities:
 - Common international projects with students in different universities around the world
 - Jointly coached by researchers and industry members on their innovative project.
- A catalogue of SPOCs funded by the University of Toulouse, allows our students to choose extra courses.

PARTNERSHIPS

The desire to bring together research and industry led us to create partnerships with our research laboratories and technical centers : LAAS-CNRS, LPCNO, AIME and with major industries from the IoT field:

- Joint mini-lab between INTEL company - INSA and LAAS-CNRS in the field of future networks for smart devices.
- The partnership with network operating companies: Orange, Objenious, Sierra Wireless to offer new uses for their networks (LoRA, GPRS, 4G) and access to specific technologies.
- Start-up contribution.
- Meetings with teams from Toulouse Metropolis - public stakeholders - to understand the needs and design solutions as part of a commitment to society.



TRAINING PROGRAM

TRAINING UNIT	CONTENTS	HOURS	ECTS
SMART DEVICES	Microcontrollers, Open-Source Hardware, Sensors	54,25	5
COMMUNICATION	Protocols, Wireless Communication, Energy and Security for connected objects	58,75	6
MIDDLEWARE AND SERVICE	Service Architecture, Middleware for IoT, Adaptability: Cloud and Autonomous Management	62	6
ANALYSIS AND DATA PROCESSING, BUSINESS APPLICATIONS	Software Engineering, Semantic Data Processing, Processing and Analysis of Data: Big Data Principle	37,5	5
INNOVATIVE PROJECT	Interdisciplinary Project and Project Management	75,75	6
INNOVATION AND HUMANITY	Innovation, Social Acceptability, Creativity Methods, Team Management	50	6
SECURITY	Threats, vulnerability attack mechanisms and solutions	50,5	5
REAL-TIME IOT : FACTORY OF THE FUTURE BUSINESS AND STARTUP	Understand and apply the steps for creation of a startup in international context Relation between Embedded systems and IoT for constrained IoT: synchronisation, real-time constraints and architecture. application to factories of the future	59,25	6
INTERNSHIP		Between 16 to 20 weeks	30



FEEDBACK FROM STUDENTS

Highly rewarding from both technical and human point of view. The teaching staff is not only genuinely involved, they are also passionate. Thus supervised, we are much more motivated. Writing a skills portfolio allows us to take a step back from our achievements and knowledge.

Anaïs (INSA)
verderi@insa-toulouse.fr

I had to explain to my classmates fundamental concepts related to my area of expertise that I thought acquired but I couldn't do it clearly. Then I did a synthesis and analysis of my skills so as to give them my knowledge. That was for me a very rewarding and challenging experience.

Claire (INSA)
meymandi@insa-toulouse.fr

The MSIoT course allows students to acquire a complete theoretical knowledge, while making a link with economic realities (business expectations, desired profiles) and adapting to markets and industries of the future, a characteristic element of the INSA Group strategy.

Matthieu (INSA, futur CEO of a start-up)
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AN INNOVATIVE EVALUATION THROUGH A PORTFOLIO:

Mastère Spécialisé - Advanced Master in « Innovative and Secure IoT Systems » has chosen to use skill-based assessment for different reasons:

- › The diversity of students makes traditional forms of evaluation impractical
- › Taking into account the maturity and motivation of students
- › The advantages of using a portfolio-based evaluation

The portfolio is, in this context, a compilation of the work done by the learner, which provides evidence of the skills and competences he/she has acquired. The student is encouraged to reflect and comment on their own work as part of a formative evaluation.

- › Rémy Tribhout's Portfolio : <http://etud.insa-toulouse.fr/~tribhout/>
- › Gabriel Mabilé's Portfolio : <http://etud.insa-toulouse.fr/~mabile/PortfeuilleCompetences>



FEES

Application fees: €95

Tuition fees: €9,000 for full-time students,
€12,000 for employer-provided education benefits

APPLICATION, ADMISSIONS PROCESS

The admission process in 2 steps:

- 1 - first a selection based on application. The study of the file makes it possible to evaluate the relevance of the candidate and this course;
- 2 - an interview with a committee of professors and company managers. The interview makes it possible to know the candidate better, their project and the consistency of their choices.

ORGANIZERS:

Contact and Registration: msiot@insa-toulouse.fr

Computer Science: Thierry Monteil | monteil@insa-toulouse.fr

Devices: Jérémie Grisolia | jeremie.grisolia@insa-toulouse.fr

Communications: Daniela Dragomirescu | dragomirescu@insa-toulouse.fr

CANDIDATES

- postgraduate degree (Master's level)
- undergraduate degree (minimum 4 year Bachelor or equivalent) with industrial experience.
- industrialist with strong scientific experience

This degree course is by nature multidisciplinary, for groups of students and employees from several specialities and different career paths.

CAREER OPPORTUNITIES

- R & D,
- Engineer in Technology,
- The design and development of IoT,
- Innovation and its management,
- Chief Data Officer (CDO, Data Director),
- Director of Information Systems (ISD),
- Industrial director...

Target companies range from start-ups to large international groups and small and medium-sized enterprises. The analysis of the professional integration of graduates from INSA Toulouse who have taken the core modules Innovative Smart System cross-curriculum shows excellent employability (80% of the internships in the IoT field and 100% of students employed on permanent contracts) and variety in terms of type of company. The analysis of internships and first jobs also highlights the very high demand, both unfilled and sustainable, of business partners.

WEBSITE:
msiot.insa-toulouse.fr
FLASH THE QR CODE



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