SCIENCES, TECHNOLOGIES, SANTÉ, INGÉNIERIE

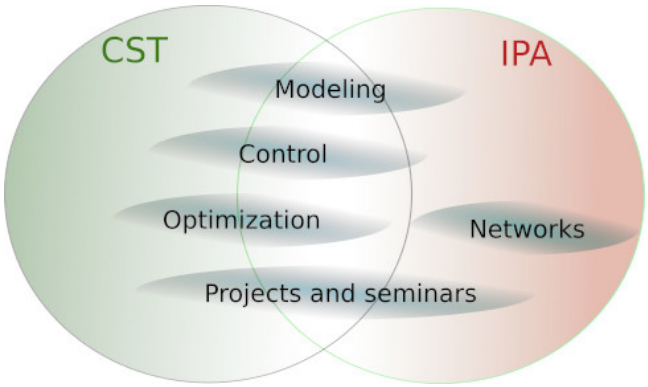
Parcours Electrical Engineering and Control Systems / MISCIT 2è année

Master Electronique, énergie électrique, automatique

Composante
UFR PhITEM (physique, ingénierie, terre, environnement, mécanique)

Présentation

Control and information technology components are increasingly used in complex engineering systems. The pervasive infiltration of computer systems (embedded systems and networks) in engineered products and in society requires new insights and ideas in engineering research, education and entrepreneurship. Model-based system integration methodology combined with an overall emphasis on compositional design methodology then appears as a crucial issue in modern process automation and research in automatic control. The proposed curriculum consequently includes advanced topics in control-oriented modeling, systems theory, supervision communication networks and real-time operation, along with the more classical multi-objective and discrete-events control issues. Our aim is to provide high level knowledge and skills for research and developments (R&D) in process automation, from the latest theories to their applications.



Compétences

As this master is the last year of the academic curriculum and finalizes the students' education before their professional insertion in industry, the employers expectations are of first importance. Five competencies were consequently defined as top priorities: their inclusion in the curriculum is achieved as follows.

Team working: the principles of dialectical interaction are first addressed in the labs, in teams of two or three. Natural affinities determine the groups' composition for the introductory labs, when the students get confidence in the topic. The students are then suggested to change the teams' composition for each lab, in order to develop their adaptability.

In a small project the students are divided into two student-organized competitive teams with similar objectives. A longer project differs in the size of the teams (3-4 students) and their composition, set according to complementary backgrounds and affinity for the proposed topic.

Problem solving: this competence is first addressed with homework, graduated from guided application of the theoretical material to process design. Industrial seminars, where the importance of finding applicable solutions with tight time constraints and thanks to the available software and engineering tools, emphasize the necessity for pragmatism and control architecture design.

Concern for quality: an important transition has to be achieved at the Master level between the students habits to deliver personal works aimed at knowledge and understanding checking from their teachers, and the ability to produce technical notes or engineering tools that can be used directly at the industrial level. This aspect of the education is considered with labs and projects reports. For example, the deliverable required at the end of the long term project includes a report and a code library that ought to be used by the next generation of students (multi-years project).

Capacity for applying knowledge in practice: this capacity is developed with software-oriented and experimental laboratories. The homework also contributes with topics that imply the use of multiple theoretical concepts in practice. The projects are oriented to integrate as much theoretical knowledge as possible, thanks to the supervision by teachers with different backgrounds.

Capacity to learn: at the master level, the fundamental of individual learning is supposed to be acquired. This capacity is then more oriented toward dynamic learning, through the interactions between students and the use of available information resources to complement the traditional learning process. The project thus includes a guided bibliographical search and takes advantage of the students various backgrounds (electrical, mechanical, computer, civil or instrumental engineering) to develop multidisciplinary approaches.

At the crossing of the previous skills, we can mention the importance of developing the students' confidence in their capability to adapt in an industrial environment, away from the well-known scholar system. The ability to work in an international and intercultural environment appears as an important issue, strongly supported by the European Union through mobility programs. The interest for entrepreneurial skills is also crucial and such skills are of first importance for innovation.

The previous competences and their application obviously only reflect some specific aspects of the pedagogy and each professor in the program would complement it with her/his own experience. The fact that they can only be acquired through practice render their teaching particularly difficult and one would be over-optimistic to pretend that the generic competences can be taught successfully to all the students. Nevertheless, they set some interesting guidelines for curriculum designers and may be presented to the students as complementary issues to the technical education.

Formation internationale : Formation tournée vers l'international

Dimension internationale

Study abroad as an exchange student.

As part of this track, you have the opportunity to study for a semester or a year at a UGA partner University abroad.

The International Relations Officers of your faculty will be able to provide you with more information.

More information on : https://international.univ-grenoble-alpes.fr/partir-a-l-international/partir-etudier-a-l-etranger-dans-le-cadre-d-un-programme-d-echanges/

Admission

Conditions d'admission

This two-semester program is a specialty (second and last year, master 2nd year in the French system) of the master Electrical Engineering and Control Systems (EECS). The French master is 2 year, but if you have the appropriate background, the first year may be validated as equivalent and at the end of the one-year MiSCIT program you obtain a diploma corresponding to 2 years of studies (master EECS, MiSCIT specialty diploma). We welcome students who obtained (by the end of spring at the latest) :

- at least 180 ECTS for the students in an exchange program who wish to join MiSCIT for one semester in order to validate specific classes in their home institution
- at least 240 ECTS (typically 4 years of University studies) for students wishing to validate the master 2nd level

For students from foreign countries who completed a full Bachelor program of 4 years or more, your application will be evaluated by a specific jury (called the *Commission de Validation des Acquis*).

Requirements. In order to apply to this master program, the prospective student should:

- hold a master 1, bachelor or equivalent degree completed after **four full years of University** studies
- have followed basic classes and obtained top grades in Automatic Control and, for IPA prospective students, in Communication Systems.
- prove an English proficiency with CEFR (B2), TOEFL (IBT 87-109), IELTS (5.5-6.5), TOEIC (785-945) or equivalent. Students coming from English-speaking countries or/and who had a University curriculum in English are considered proficient enough. If you don't have the opportunity to take the test in your home University, an English test is organized during the first week of the classes, to check the level of everyone.

Public continuing education. Your application is handled by the "continuing education" office:

• if you resume your studies after 2 years of interruption of studies

• or if you followed training under the continuous training regime one of the previous 2 years

• or if you are an employee, job seeker, self-employed

Candidature

You want to apply and sign up for a master? Please be aware that the procedure differs depending on the diploma you want to take, the diploma you have already obtained and, for foreign students, your place of residence

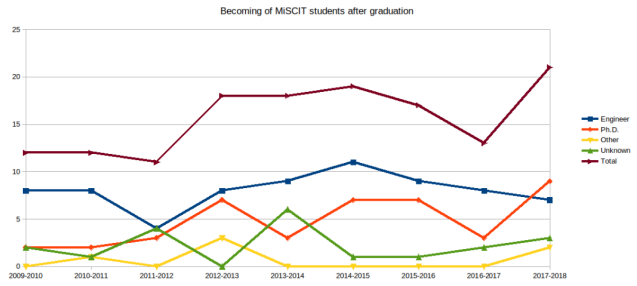
Let us be your guide – simply follow this link

Droits de scolarité

Consulter le montant des frais d'inscription

Et après

Insertion professionnelle statistiques



Métiers visés

Infos pratiques

Contacts

Responsables pédagogiques

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Responsables pédagogiques

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Responsable formation continue

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Lieu(x) ville

Grenoble

Campus

Grenoble - Polygone scientifique

Programme

Organisation

Master 2e année

Semestre 9

	Nature	CM	TD	TP	Crédits
UE Modeling and system identification	UE	24h			3 crédits
UE Design project 1	UE			23h	3 crédits
UE Robust control and state estimation	UE			34h	6 crédits
UE Modeling and control of PDE	UE	42h			6 crédits
UE Diagnosis, Reliability & Maintenance	UE			21h	6 crédits
UE Network applications	UE	31,5h		22h	6 crédits
UE Nonlinear and predictive control	UE	34h			6 crédits
UE Anglais - Master 2 - Semestre 9	UE		24h		3 crédits
UE Français Langue Etrangère (FLE)	UE				3 crédits

Semestre 10

	Nature	CM	TD	TP	Crédits
UE Project management and seminars	UE	25,5h	7h	33h	3 crédits
UE Internship	UE				24 crédits
UE Optimisation for control	UE			12h	3 crédits