SHAKE THE FUTURE.

CENTRALE NANTES



Master
Control and Robotics

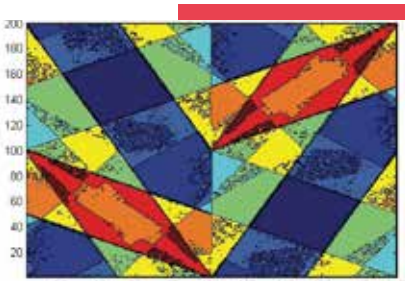
CONTROL SYSTEMS

OBJECTIVES

The objective is to provide theoretical and methodological tools in order to analyse the structure and properties of dynamic systems, and to design control and observation solutions.

This program introduces recent results in modern control theory of linear and nonlinear systems, including structural analysis, modelling, control and observation structures design (robust, optimal, ...), and application of optimization methods in control system design. An important topic of the track is the use of real applications among different fields (energy, grids, transportation, ...) in order to illustrate the different concepts of modelling, control and observation.







SKILLS

Specialism-specific

- Learn and understand the frame of modern theory for analysis and modelling of dynamic systems
- Learn how to apply adapted methods of control, estimation and diagnostic (linear, nonlinear, robust, optimal, ...) to dynamic systems
- Be able to apply these methods to real systems

General

- Identify models, perform simulation and analyse results
- Communicate comprehensive results in a meaningful way
- Undertake bibliographic surveys from international research and professional literature
- Manage or be part of a project

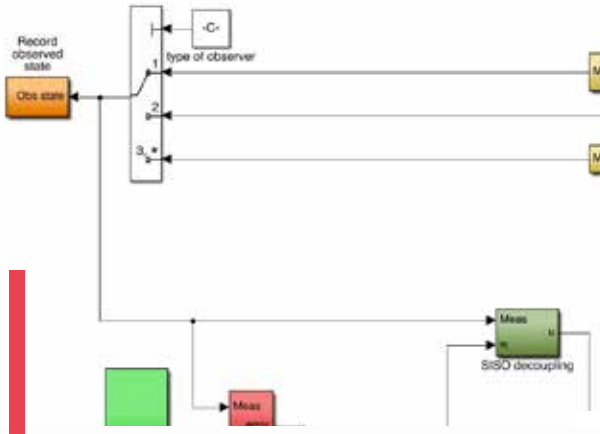
JOB PROSPECTS & FURTHER PHD STUDIES

SECTOR: Aeronautics, Automotive, Transportation, Energy, Consulting, banking, petroleum, ...

FIELDS: Control Engineering, Advanced Processes, Manufacturing, Research and Innovation,

JOB POSITIONS: Control Engineer, Process Engineer, Design Engineer, Research and Innovation Engineer (completed with a PhD).

Graduate programme | **Master** in Sciences, Technologies and Health



Location
Nantes, France -2 hours from Paris

International campus life

87 nationalities

43% international students



Master in Sciences, Technologies and Health

EXAMPLES OF FINAL YEAR PROJECTS

5 to 6 month internship in Industry

- Modelling and control design of floating wind turbines
- Estimation algorithms of thermal parameters in a house
- Modelling of distributed renewable energy in a transmission power grid

5 to 6 month thesis in Research Labs

- Impact investigation and control of increasing electric vehicle loads on distribution power grids
- Robust nonlinear control of a 3DOF helicopter
- Optimal Control of Power Electronic Elements Inserted into Modern Power Transmission Grids

FACULTY, INDUSTRIAL PARTNERS AND RESEARCH LABS

This Master relies on the Centrale Nantes' faculty, staff and research facilities of the LS2N Institute. Centrale Nantes has several industrial partnerships: in particular mose involved in Control activities as Renault, RTE (Leading French company managing the national power grid).

OTHER PROGRAMME INFORMATION

- Length of Studies: 2 years
- Language of instruction: English
- 3 semesters of courses and 1 semester of Master's thesis

Tuition & Fees - Scholarships - Application process - Deadlines

MORE INFORMATION AND FULL PROGRAMME:
www.ec-nantes.fr/masters

CONTACT: Ms Sarah Alami
master.admission@ec-nantes.fr

CONTENT AND COURSES

(A Master Degree requires the validation of 120 ECTS credits)

M1 - AUTUMN SEMESTER	ECTS
Signal Processing	5
Classical Linear Control	5
Artificial Intelligence	4
Modelling of Manipulators	4
Systems Identification and Signal Filtering	4
Embedded Computing	4
Modern Languages	4
M1 - SPRING SEMESTER	**ECTS**
Group Project	6
Optimization Techniques	4
Mobile Robots	4
Programming Real Time Systems	4
Dynamic Model Based Control	4
Non Linear Control Theory	4
Modern Languages	4
M2 - AUTUMN SEMESTER	**ECTS**
Mathematical modelling	4
Optimization	4
Robust and optimal control	5
Observation and diagnostic	4
Complex systems	4
Generalized and time-varying systems	3
Project	2
Modern Languages	4
Conferences	-
M2 - SPRING SEMESTER	**ECTS**
Master Thesis or Industrial Internship	30

NB Course content may be subject to minor changes

Ecole Centrale de Nantes. Direction de la communication. July 2019

This Master's programme is accredited by French Ministry of Higher Education.

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