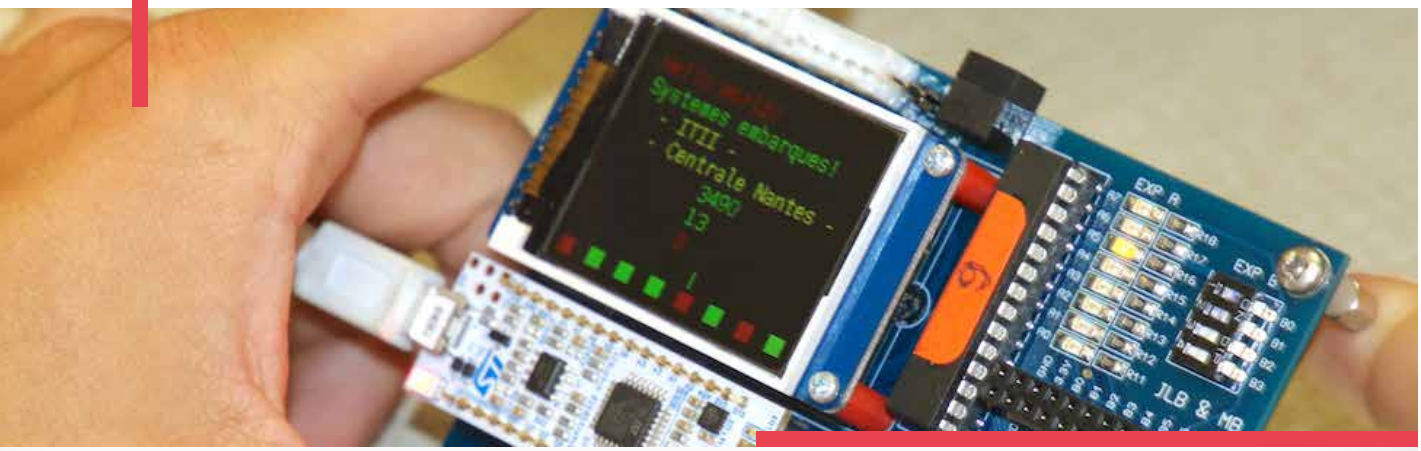
SHAKE THE FUTURE.

CENTRALE NANTES



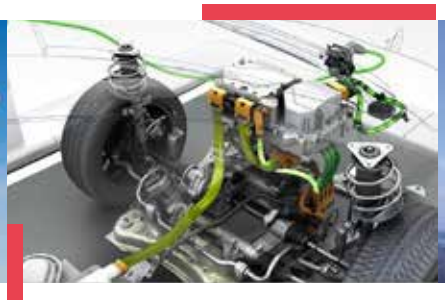
Ingénieur grande école | graduate programme

2ND AND 3RD YEAR SPECIALISATION

EMBEDDED CONTROL AND POWER GRIDS

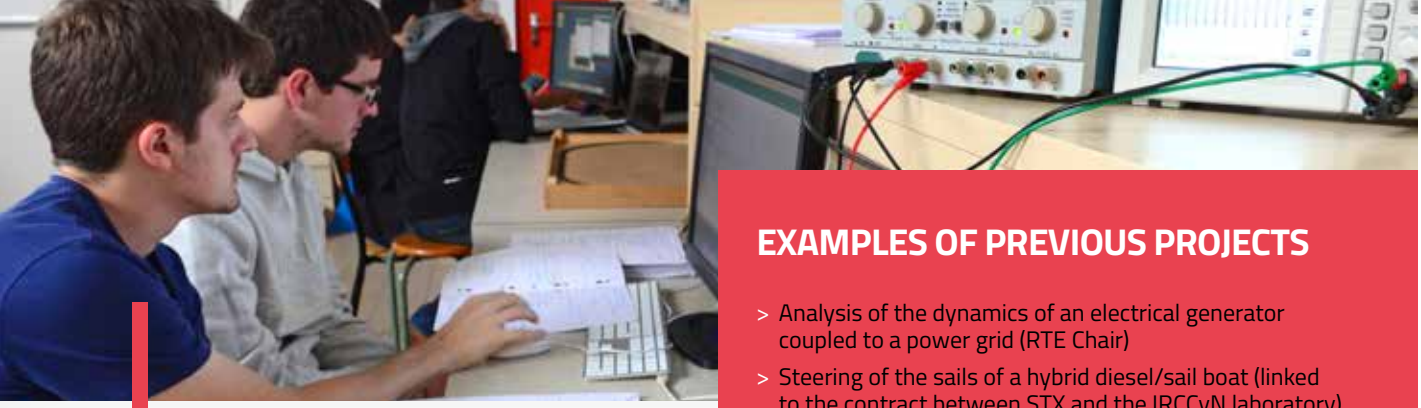
"From system specification to embedded software"

Master a range of design and implementation tools for control laws and embedded software solutions; and acquire a global perspective of the development chain for a control system.



COURSE CONTENT

- Analysis and control of power systems
- Embedded systems software
- Control methodology of linear systems
- Simulation of dynamical systems - rapid prototyping
- Advanced control of non-linear systems
- Advanced control of linear systems
- Systems identification and signal filtering
- Modelling and verification of embedded systems
- Project 1
- Digital design on FPGA
- Real-time operating kernel
- Discrete time implementation of control laws
- Interconnected systems
- Project 2
- Internship



INDUSTRY SECTORS

- Automobile
- Aeronautics
- Energy
- Electricity Transport
- Offshore sector
- Space Industry
- Biomechanics
- Health

CAREER PROSPECTS

- R&D engineer (studies, development, design, methodology...)
- Platform architect and embedded applications
- Embedded software developer
- Operations and maintenance engineer (power grids, power generation etc)
- Testing / validation / integration
- Project manager
- Management

TEACHING STAFF

HEAD OF SPECIALISATION:

Mohamed Hamida

LECTURERS:

Mikaël Briday, Pierre Molinaro, Olivier-Henri Roux, Franck Plestan, Jean-Luc Béchennec, Guy Lebret, Bogdan Marinescu, Saïd Moussaoui, Sébastien Bourguignon, Malek Ghanes

EXTERNAL SPEAKERS:

Siemens Amesim, Airbus, National Instrument, Opal-RT

CONTACT:

mohamed.hamida@ec-nantes.fr

EXAMPLES OF PREVIOUS PROJECTS

- Analysis of the dynamics of an electrical generator coupled to a power grid (RTE Chair)
- Steering of the sails of a hybrid diesel/sail boat (linked to the contract between STX and the IRCCyN laboratory)
- Control of a pico brewery with an Arduino microcontroller and a smartphone
- Construction of a mini Segway vehicle controlled by an Arduino microcontroller
- Production of a ROV (Remote Operated Vehicle).
- Production of a connected greenhouse
- Control methodology for Saildrone
- Study of a WIFI module
- Managing electric vehicle charging (in collaboration with Renault)
- Aerial video tracking system (in collaboration with Thales)

EXAMPLES OF PREVIOUS INTERNSHIPS

- Study on embedded Ethernet switches on telecommunications microprocessors for avionics software (Airbus)
- Hybrid powertrain simulation (PSA)
- Development of a 2D/3D HMI plugin for Matlab/ Simulink (MBDA)
- Determination of the flight altitude of an aircraft (MBDA)
- Study on electric vehicle charging (Renault Technocentre)
- Avionics Architecture Optimisation (ATR)
- Robust control law for the transmission of mobile articulated machines (Secom Engineering)
- Extension of Cyber Security surveillance probes to embedded systems (Thales Air Systems)
- Integration of renewable energies on the network with the Linky meter (EDF R&D)

École Centrale de Nantes. Direction de la communication. juin 2021