SHAKE THE FUTURE.





2ND AND 3RD YEAR SPECIALISATION

PROPULSION AND TRANSPORT

The blend of skills acquired will allow students to get to grips with propulsion systems in their entirety, using an energybased approach (modelling, experimentation and simulation), and covering the technical, economic and environmental challenges. The originality of this specialisation lies in its multi-disciplinary nature (thermodynamics, gas dynamics, combustion, optimisation).







COURSE CONTENT

- > Combustion and pollutant emissions
- Turbomachinery
- > Applied thermodynamics
- > Internal combustion engines
- > Gas dynamics
- > Energy management in automotive applications
- > Aeronautical propulsion

- > Automotive propulsion
- > Marine propulsion
- > Space propulsion
- > Railway engineering
- > Practical work in propulsion
- > Projects

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INDUSTRY SECTORS

- > Energy-related propulsion
- > Automotive
- > Aeronautics
- > Aerospace
- > Naval
- > Railway
- > Design office

CAREER PROSPECTS

This specialisation gives access to numerous professions in the automotive, aeronautical, space, maritime and railway sectors:

- > Design engineer
- > Modelling and optimisation engineer
- > Test engineer
- > Technical marketing engineer, etc.

TEACHING STAFF

HEAD OF SPECIALISATION:

David Chalet

CENTRALE NANTES LECTURERS:

Vincent Berthomé, David Chalet, Pascal Chessé, Jean-François Hétet, Thierry Jaszay, Alain Maiboom, Laurent Perret, Xavier Tauzia

EXTERNAL SPEAKERS:

Academic: Centrale Paris, University of Nantes, etc. Industry: Renault, PSA, MANN+HUMMEL, Honeywell, IFPEN, MAN, Snecma, Turbomeca, Alstom, etc.

EXAMPLES OF PREVIOUS PROJECTS

- > Influence of the geometry of an intake line on the performance of an internal combustion engine
- > 0D modelling of a thermo-fluid system and experimental validation
- > Improvement in the experimental setup of a turbojet bench
- > Energy optimisation on-board ship

EXAMPLES OF PREVIOUS INTERNSHIPS

- > Arianespace: OD / 1D fluid modelling of a cryogenic upper stage (ESCA) for Ariane 5
- > Mann+Hummel: Improvement in thermal simulation of an internal combustion engine through nodal modelling of the cylinder block and head
- > Snecma: Kinematic study of the control system with variable valve high pressure compressor
- > Manitou: Study and modelling of an engine / transmission / hydraulic control solution for a telescopic forklift truck in order to optimize the vehicle's energy resources
- > AVL: Engineering on engine test bench
- > CMT: Analytical and experimental study of automotive turbocharged engines
- > Renault Formula 1: Study and development of water, oil and air regulations in order to simulate F1 engine behaviour during a lap
- > PSA: Combustion modelling for spark-ignition engines
- > STX/ Reduction of the pollutant emissions for a ship
- > Semitan: Determination of the natural gas consumption of buses

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Centrale Nantes is a French engineering school and member of the Ecoles **Centrale Group**. Its graduate, master and PhD programmes are based on the latest scientific and technological developments and the best management practices. Founded in 1919, Centrale Nantes' 40-acre campus welcomes 2320 students, including 1550 graduate students, 150 Executive Education and degree apprenticeship students, 240 PhD students and 380 Master and Advanced Master students.