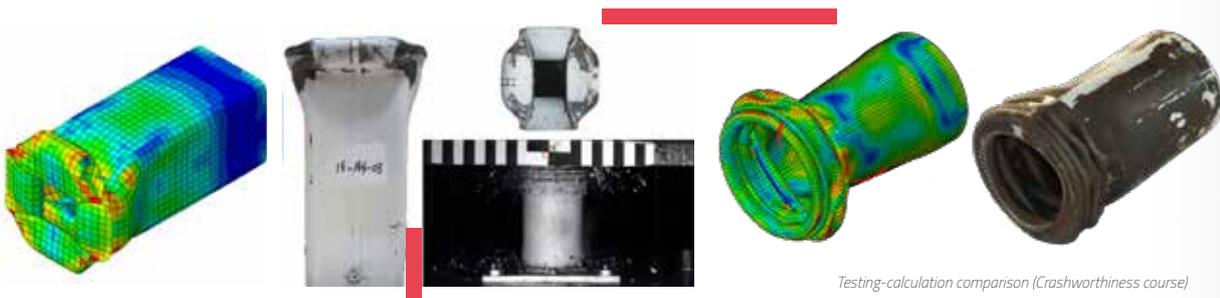


2ND AND 3RD YEAR SPECIALISATION

ADVANCED MODELLING & ANALYSIS OF STRUCTURES

To train engineers with strong skills in both modelling and numerical simulation in mechanics, and with an opening towards new experimental field measurement techniques. This analytical approach combining simulation and image-based experimental methods for solid mechanics is likely to play a major role in the solutions that science and technology can provide to the challenges of tomorrow (factory of the future, sustainable development, health, energy and mobility). More than preparing the student for a specific profession, the purpose of this specialisation is to instruct the engineer in this dual approach to analysis, which can then be applied to numerous industrial fields (automotive, aeronautics, space, energy, railway, naval, environment).



Testing-calculation comparison (Crashworthiness course)

COURSE CONTENT

- > Composite structures
 - > Finite element method
 - > Structural mechanics
 - > Solid dynamics and modal analysis
 - > Plasticity of structures
 - > Finite element modelling and methodology
 - > Numerical methods for non-linear mechanics
- > Fracture and damage mechanics
 - > Project (Part 1)
 - > Crashworthiness and transportation safety
 - > Numerical methods for experimental analysis
 - > Multiphysic couplings
 - > Scientific conferences
 - > Project (Part 2)



INDUSTRY SECTORS

- > Transport (rail, automotive, aeronautics, space, naval)
- > Energies (nuclear, fossil fuels, renewables)
- > R&D
- > Biomedical sector

CAREER PROSPECTS

- > R&D Engineer
- > Structural Engineer
- > Engineering Consultant
- > Expert or managerial position
- > Computing project manager

TEACHING STAFF

HEAD OF SPECIALISATION:

Thomas Heuzé

CENTRALE NANTES LECTURERS:

Patrice Cartraud, Nicolas Chevaugéon, Pascal Cosson, Laurent Gornet, Thomas Heuzé, Grégory Legrain, Nicolas Moës, Hervé Oudin, Guillaume Racineux, Julien Réthoré, Patrick Rozycki, Rian Seghir, Laurent Stainier

+ faculty from the University of Nantes and external speakers from industry

CONTACT :

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EXAMPLES OF PREVIOUS PROJECTS

- > Modelling of a fluid flow around a flexible structure
- > Design and simulation of a crash system
- > Simulation of magnetic pulse crimping
- > Simulation composite material ruin
- > Calculation from 2D / 3D images.
- > Modelling of electric cables for floating wind turbines.
- > Welding modelling.
- > Simulation of acoustic environments.
- > Study of large excavation stability

EXAMPLES OF PREVIOUS INTERSHIPS

- > Simulation of blade loss in a reactor (Snecma)
- > Identification of acoustic leakage (Renault)
- > Mechanical modelling of fuel assemblies (Areva)
- > Dynamics of space launchers (EADS)
- > Deployment of space structures (Thalès)
- > Simulation in watch-making (Swatch)
- > Simulation of the individual movements of a foetus
- > Simulation of moving structures (Michelin)
- > Reliability and sizing optimisation of a hydro-turbine (HydroOcean).

