

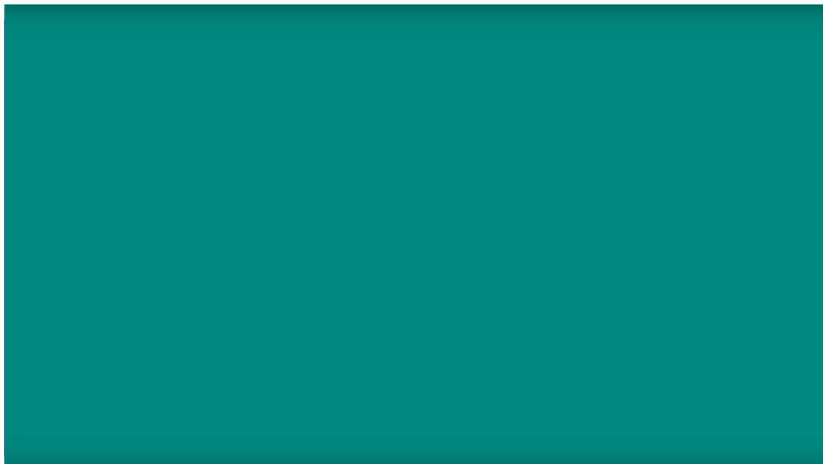
Sound and Vibration Engineering

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Challenges

Sound Pollution



Acoustician



DEVIENS EXPERT
EN ACOUSTIQUE

What about vibrations?

Tacoma Bridge



Bad vibrations...



Key challenges :

- ▶ Noise pollution
- ▶ Acoustic and vibration comfort
- ▶ Compliance with regulations
- ▶ Sustainable engineering
- ▶ Audio equipment integration
- ▶ Real-time monitoring of machine health
- ▶ Stealthiness and discretion

Fields of application :

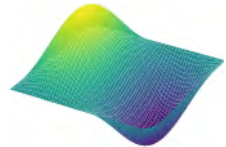
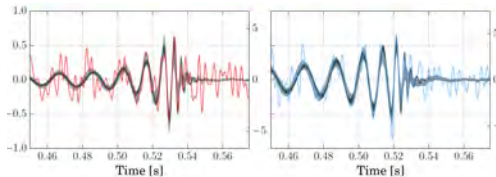
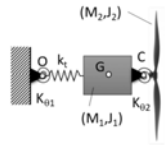
- ▶ Transportation
- ▶ Room acoustics
- ▶ Environment
- ▶ Industry
- ▶ Energy
- ▶ Defence

Sound and Vibration Curriculum

Sound and Vibration Curriculum

Basics for all mechanical engineers

- ▶ Acoustics engineering (PS09)
- ▶ Vibrational mechanics (MQ03 and MQ09)
- ▶ Signal processing (SY06)



Bonus courses

- ▶ Sound design and acoustic perception (DS01)



2024 Radio-France Sound Design Trophy

Sound and Vibration courses

One week intensive courses between the 2 semesters

- ▶ Diagnosis of rotating machine faults and rotordynamics

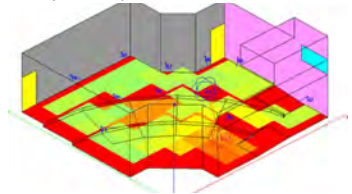
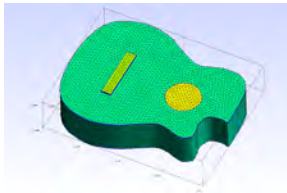
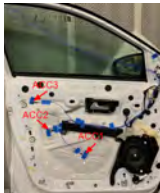


- ▶ Design of acoustic loudspeakers



Sound and Vibration specialization :

- ▶ Structural dynamics (MQ19)
- ▶ Physical acoustics (PS05)
- ▶ Room acoustics and absorbing materials (PS12)
- ▶ Numerical vibro-acoustics (PS13)
- ▶ Group projects (MS03 / TX)



Internships in Sound and Vibration

Examples of internships :

- ▶ Scientific and Technical Centre for Building 2023
- ▶ EMOTORS (NIDEC / PSA) 2022
- ▶ CEA Cadarache 2018
- ▶ Naval Group 2022
- ▶ CNES 2019
- ▶ University of Sherbrooke - Canada 2022
- ▶ Marshall-Day - Australia 2023

International Exchanges

International Exchanges

- ▶ Chalmers University of Technology (Gothenburg, Sweden)
- ▶ Polytechnic University of Milan (Italy)
- ▶ Polytechnic University of Turin (Italy)
- ▶ University of Coimbra (Portugal)
- ▶ University of Sherbrooke (Canada)
- ▶ Cranfield University (England)

Career opportunities

- ▶ **Engineering Office** (Slam Acoustique, Gantha, Venathec, ...)
- ▶ **R & D** (Saint-Gobain, Treves, Emotors, ...)
- ▶ **Consulting** (CETIM, CSTB, Vibratec, Metravib...)
- ▶ **Engineering office** (ArianeGroup, Naval Group, Alstom...)

Continuing education after UTC

Further Studies

- ▶ Master's in Musical Acoustics & Computer Science
- ▶ Master's in Electroacoustics
- ▶ Master's in Bioacoustics
- ▶ Academic or Industrial PhD thesis

Incoming exchange students

French language training

- ▶ one-month intensive French
- ▶ in August and February
- ▶ free of charge for exchange students
- ▶ including cultural visits

Fall Semester (**English-language support in bold**) :

- ▶ **Signal Processing**
- ▶ **Numerical Methods in Vibroacoustic**
- ▶ **Building Acoustics**
- ▶ **Acoustics and Vibration Project Workshop**

Between the 2 Semesters (**English-language support in bold**) :

- ▶ **Design of acoustic loudspeakers**
- ▶ **Diagnosis of rotating machine faults and rotordynamics**

Spring Semester (**English-language support in bold**) :

- ▶ Signal Processing
- ▶ Physical Acoustics
- ▶ Structural Dynamics
- ▶ **Introduction to the Practice of Acoustics**
- ▶ **Discrete Systems Vibration**
- ▶ **Continuous Systems Vibration**
- ▶ **Acoustics and Vibration Project Workshop**

Conclusion

The advantages of the Sound and Vibration program :

- ▶ real challenges
- ▶ internship and job opportunities
- ▶ theoretical, numerical and experimental training
- ▶ connection to the industrial world
- ▶ group workshops

Conclusion

Join the UTC Sound and Vibration adventure,
and set off towards new horizons !



Conclusion

Any Questions ?

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