

ME-412

Experimental methods in engineering mechanics

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| Cursus | Sem. | Type |
|------------------------|-------------|-------------|
| Mechanical engineering | MA1, MA3 | Opt. |

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|----------------------------|---------------------|
| Language of teaching | English |
| Credits | 4 |
| Withdrawal Session | Unauthorized Winter |
| Semester | Fall |
| Exam | During the semester |
| Workload | 120h |
| Weeks | 14 |
| Hours | 4 weekly |
| Courses | 1 weekly |
| TP | 3 weekly |
| Number of positions | 30 |

It is not allowed to withdraw from this subject after the registration deadline.

Summary

The Experimental Methods in Engineering Mechanics course is intended to give an advanced view of experimental methods used to study mechanics problems by way of example. Students will construct significant components of experimental apparatus and collect & interpret the resulting data.

Content

Typically three experimental modules will be used that draw techniques from analog electronics and image processing in order to probe the mechanics of several different problems, including contact mechanics and elasticity.

Keywords

Contact mechanics
Image processing
Analog electronics

Learning Prerequisites**Required courses**

ME 331, ME 201, ME 232

Recommended courses

EE 280

Learning Outcomes

By the end of the course, the student must be able to:

- Construct Experimental apparatus
- Analyze Data
- Elaborate Underlying evidence for conclusions
- Defend Conclusions based on analysis of data
- Carry out Experiments

Transversal skills

- Take responsibility for health and safety of self and others in a working context.
- Assess one's own level of skill acquisition, and plan their on-going learning goals.
- Continue to work through difficulties or initial failure to find optimal solutions.
- Manage priorities.
- Collect data.

Teaching methods

Students will be involved in each experimental module from the construction of the experiment through the writing of the report on the data. Students could be involved in assessing the reports of others in a 'peer-review' process.

Expected student activities

Participation in collecting, analyzing and compiling experimental data; involvement in writing the reports.

Assessment methods

During the semester, reports will be a key component of student assessment. Quality of writing, thoroughness of data collection and analysis, and clarity of presentation are key parameters.

Supervision

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| Office hours | Yes |
| Assistants | Yes |
| Forum | No |

Resources

Virtual desktop infrastructure (VDI)

No

Bibliography

Horowitz & Hill: the art of electronics
Lecture notes in the class
Related documentation provided with each module

Ressources en bibliothèque

- [The art of electronics / Horowitz](#)