Due to Covid-19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Courses

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### Course offerings and teaching methods in academic year 2019-2020

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**Lecturers in academic year 2019-2020**

- **Abdel Wahab, Magd**
  - TW08
  - lecturer-in-charge

**Offered in the following programmes in 2019-2020**

- Bridging Programme Master of Science in Electromechanical Engineering (main subject Mechanical Construction)
- Master of Science in Electromechanical Engineering (main subject Mechanical Construction)

**Credits**

- 6.0

**Contact hrs**

- 60.0 h

**Study time**

- 180 h

**Teaching languages**

- English

**Keywords**

- shells, plates, pressure vessels, curved beams, finite elements

**Position of the course**

- The course aims at applying the theoretical concepts of mechanics of materials and structures to parts of mechanical structures. Common structural elements are treated generally. Next to this, students are familiarized with the finite element method for elastic calculations. The possibilities and limitations of finite element programs are discussed.

**Contents**

- Applied mechanics of constructions: Curved beams, Concentration of stress, Shells, Plates, Pressure vessels.

**Initial competences**

- Mechanics of materials and structures, variational principles

**Final competences**

1. To be familiar with the basic notions of the Finite Element Method.
2. To be familiar with the basic notions of the analytical solution of curved beams, shells, plates and pressure vessels.
3. To be able to use a commercial finite element package (ANSYS & ABAQUS).

**Conditions for credit contract**

- Access to this course unit via a credit contract is determined after successful competences assessment

**Conditions for exam contract**

- This course unit cannot be taken via an exam contract

**Teaching methods**

- On campus lecture, on campus seminar: coached exercises

(Approved)
Learning materials and price
sylabus
VTK-cursusdienst: Magd Abdel Wahab, Mechanics of Electromechanical Constructions and Finite Elements. (Price €10.5 (member VTK) / €15 (non-member VTK))

References
• Timoshenko S: Strength of Materials Part II Advanced Theory and Problems, Krieger Pub Co; 3 edition, June 1, 1983
• Bathe KJ: Finite element procedures in engineering analysis, Prentice-Hall, 735 p., 1982

Course content-related study coaching

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Written examination, open book examination

Examination methods in case of periodic evaluation during the second examination period
Written examination, open book examination

Examination methods in case of permanent evaluation
Open book examination, oral examination, assignment

Possibilities of retake in case of permanent evaluation
examination during the second examination period is not possible

Extra information on the examination methods
• During examination period: written open-book exam (only module syllabus is allowed in the exam). During semester: ANSYS (& ABAQUS) task.

Calculation of the examination mark
First examination period: course work 30% and final exam 70%. Second examination period: only final exam 70%.

(Approved)