

Teaching

Tom de Geus

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Statistical Physics 2

- Bachelor.
- Teaching assistant, EPFL, 2019–2020.
Responsibilities: exercise sessions and grading.

Introduction to the theory of phase transitions. The course covers the following topics:

1. Phase transitions.
 - Classification
 - Liquid-gas transition
 - Ferromagnetism
 - Symmetry breaking
2. New techniques.
3. Renormalisation Group (RG).

Continuum Mechanics

- Bachelor.
- Teaching assistant, EPFL, 2016–2017.
Responsibilities: exercise sessions and grading.

Continuum mechanics introduces the concepts of stress and strain, conservation laws, equilibrium equations and constitutive laws. The course covers the following topics:

- Continuum approximations and conservation laws.
- Tensors.
- Stress and strain.
- Elasticity.
- Work and energy.

Finite Element Method

- Bachelor.
- Teaching assistant, TU/e, 2010–2011.
Responsibilities: exercise sessions and grading.
- Co-developer of a tensor toolbox in Matlab for education purposes, TU/e, 2009–2010.

The finite element method is a numerical technique for finding (approximate) solutions to boundary value problems for partial differential equations. The course covers the following topics:

- Discretization and interpolation.
- Variational formulation.
- Numerical integration.
- Linear and non-linear problems.
- Implementation in Matlab.

Programming project

- Bachelor.
- Lecturer, TU/e, 2011–2015.
Responsibilities: course development, independent teaching, and grading.

- Gaining skills in anticipation, analysis and interpretation.
- Gaining skills in scientific presentation of experimental and numerical results and uncertainties.
- Gaining practical skills in the field of numerical modelling of solid-state mechanics.
- Gaining practical programming skills, including pointers and data-structures.

Design Based Learning

- Bachelor.
- Supervisor, TU/e, 2008–2009.
Responsibilities: project supervision and grading.

In Design Based Learning, students apply knowledge from previous (theoretical) courses and learn to collaborate in multidisciplinary teams. By doing so, students will not only develop (new) disciplinary knowledge and technical skills, but also improve on their professional and personal skills. Bi-weekly team meetings are supervised by staff members that guide both the process and the content of the project.

High-school Physics and Mathematics

- High-school.
- Tutor, 2004–2008.

At the gymnasium, students start the transition from physics as facts and mathematics as tools, to an abstract modelling of the world. This transition is often helped by providing different perspectives, and therefore is often helped by interaction with a tutor who has an academic background.