Course Specifications

Valid as from the academic year 2015-2016

Physics 2: Vibration, Waves and Thermodynamics (O000085)

Course size *(nominal values; actual values may depend on programme)*

Credits 5.0 **Study time 150 h** **Contact hrs** 60.0 h

Course offerings and teaching methods in academic year 2015-2016

A (semester 2)	lecture	20.0 h
	lecture: plenary exercises	10.0 h
	guided self-study	10.0 h
	seminar: coached exercises	20.0 h

Lecturers in academic year 2015-2016

Stathopoulos, Costas	LA07	lecturer-in-charge
Chockchaisawasdee, Suwimol	CA10	co-lecturer

Offered in the following programmes in 2015-2016	**crdts**	**offering**
Bachelor of Science in Food Technology	5	A
Joint Section Bachelor of Science in Environmental Technology, Food Technology and Molecular Biotechnology	5	A
Bachelor of Science in Environmental Technology	5	A
Bachelor of Science in Molecular Biotechnology	5	A

Teaching languages

English

Keywords

Solids, liquids, gases; Waves; Laws of thermodynamics

Position of the course

The aim of the course is to establish an understanding of the various states of matter and to gain a working understanding of both physical and chemical thermodynamics. With respect to physical aspects the student learns how to calculate the energy transfer of processes. With respect to chemical aspects, the student learns how to calculate equilibria. The theoretical background is illustrated by means of calculation examples.

Contents

1. Static equilibrium; Elasticity and fracture
2. Fluids
3. Oscillations
4. Wave motion
5. Sound
6. Temperature, thermal expansion and the ideal gas law
7. Kinetic theory of gases
8. Heat and the first law of thermodynamics
9. Second law of thermodynamics; third law of thermodynamics

Initial competences

Knowledge of general chemistry, physics and mathematics. Successful completion of Physics 1.

Final competences

The student will be able to i) understand the behaviours of various states of matter under different conditions and ii) calculate energy transfer in physical and chemical systems.

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

Guided self-study, lecture, lecture: plenary exercises, seminar: coached exercises

Learning materials and price

D. C. Giancoli (2009), Physics for scientists & engineers with modern physics, Chapters 12-20, Pearson-Prentice Hall.

References

D. C. Giancoli (2009), Physics for scientists & engineers with modern physics, Chapters 12-20, Pearson-Prentice Hall.

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 with open questions, written examination with multiple choice questions

Examination methods in case of periodic evaluation during the second examination period

Examination methods in case of permanent evaluation

Participation

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

Calculation of the examination mark

Final written exam with open questions and with multiple choice questions: 80%
Seminar Participation: 20%