

Course Specifications

From the academic year 2015-2016 up to and including the

Plasma Technology and Fusion Technology (E027320)

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

Credits 6.0 Study time 180 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 2)	English	lecture	30.0 h
		project	30.0 h

Lecturers in academic year 2018-2019

Morent, Rino	TW17	lecturer-in-charge
Biel, Wolfgang	TW17	co-lecturer

Offered in the following programmes in 2018-2019

	crdts	offering
Master of Science in Physics and Astronomy	6	A
European Master of Science in Nuclear Fusion and Engineering Physics	6	A
European Master of Science in Nuclear Fusion and Engineering Physics	6	A
Master of Science in Engineering Physics	6	A
Exchange Programme in Physics and Astronomy (Master's Level)	6	A

Teaching languages

English

Keywords

plasma technology, surface engineering, gas cleaning, nuclear fusion

Position of the course

To acquire a thorough level of understanding of plasma applications in materials technology (e.g. surface engineering), environmental technology (e.g. gas cleaning) and energy production (nuclear fusion).

Contents

- Part A: Plasma technology: Plasma sources, Plasma-chemical reactions, Applications in materials technology, Applications in environmental technology, Lasers and light sources, Aeronautic and space applications
- Part B: Fusion technology: Basics of nuclear fusion, Physics of fusion reactors, Plasma confinement and heating, Plasma transport processes, Fusion machines, Plasma-wall interactions, Fusion reactor technology, Progress in fusion research, Nuclear fusion as a future energy source, Socio-economical context

Initial competences

Physics courses from bachelor curriculum

Final competences

- 1 Understanding of the working principles of industrial plasma sources.
- 2 Insight in applications of plasmas in materials technology and environmental technology.
- 3 Knowledge of the physical basis and technological aspects of nuclear fusion.

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

Lecture, project

Learning materials and price

Handouts lectures

References

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

Oral examination

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

Oral examination

Examination methods in case of permanent evaluation

Oral examination, report

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: oral closed-book exam.

During semester: graded project reports; graded oral presentation. Frequency: 1 case study + 1 oral presentation.

Calculation of the examination mark

Special conditions: The weight of the non-permanent evaluation is in principle 50%. However, when a mark of less than 10/20 is obtained for the permanent or non-permanent evaluation, the weight of the lowest score is increased to 90%. The results of the first examination period for the permanent evaluation will be transferred to the second examination period.