



Module	<i>Diagnostics for plasma physics and application to nuclear fusion research</i>
Code	new
Instruction language	English
ECTS credits	3
Credit hours	2
Duration	1 semester
Cycle	Summer semester
Coordinator	Dean of Physics Studies
Lecturer	Dr. Tim Happel (Max-Planck-Institute für Plasmaphysik, Garching)
Allocation to study programmes	Physics M.Sc., elective module, 1 st or 2 nd semester Wirtschaftsphysik M.Sc., elective module, 1 st – 3 rd semester
Formal prerequisites	
Recommended prerequisites	Experimental Physics and electrodynamics advantageous; Plasma I not necessary but beneficial.
Learning objectives	Students who successfully passed this module <ul style="list-style-type: none">• have a basic understanding of key physics topics of today's nuclear fusion science.• understanding on how to diagnose important quantities of a fusion plasma along with their interpretation, also in regard of ITER and beyond.
Syllabus	Each seminar will consist of a pair of two related presentations (not compulsory). One of them introduces the key physics topic or quantity, while the other covers a more applied view on how to diagnose, analyse and interpret the topic under consideration. In the first meeting, the topics will be presented and assigned and the criteria for evaluation will be explained. Topics: <ul style="list-style-type: none">• Plasma current profile in tokamaks / Motional Stark Effect• Turbulence in fusion plasmas / Reflectometry• The edge pedestal of fusion plasmas / Thomson Scattering & ECE• Radiation in fusion plasmas / Bolometry• Power exhaust (ex. ITER) / Infrared Thermography• Impurities, Helium transport / Charge Exchange Recombination Spectroscopy
Literature	Will be discussed on first meeting and provided to the seminar presenters.
Teaching and learning methods	Seminar (2 hours per week)
Workload	Total: 90 hours
Assessment	The credit points will be awarded once the colloquium (presentation and discussion) has been passed. No prerequisites are necessary for exam registration.



Examination	...
Grading procedure	The module grade is the examination grade.
Basis for	Research in the field of plasma physics
