Critical Phenomena (T) - physics756

Degree - M.Sc. in Physics (PO von 2014)

Module	**Elective Advanced Lectures: Theoretical Physics**
Module No.	physics70c

Course	**Critical Phenomena (T)**
Course No.	physics756

Category	**Type**	**Language**	**Teaching hours**	**CP**	**Semester**
Elective	Lecture with exercises	English	3+2	7	ST

Requirements for Participation:

Preparation:

Advanced quantum theory (physics606)

Theoretical condensed matter physics (physics617)

Form of Testing and Examination: Requirements for the examination (written): successful work with the exercises

Length of Course: 1 semester

Aims of the Course: Acquisition of important methods to treat critical phenomena

Contents of the Course:

Mean Field Approximation and its Improvements

Critical Behaviour at Surfaces

Statistics of Polymers

Concept of a Tomonaga-Luttinger Fluid

Random Systems

Phase Transitions, Critical Exponents

Scale Behaviour, Conformal Field Theory

Special Topics of Nanoscopic Physics

Recommended Literature:

J. Cardy, Scaling and Renormalization in Statistical Physics (Cambridge University Press, 1996)

A. O. Gogolin, A. A. Nersesyan, A.N.Tsvelik; Bosonisation and strongly correlated systems (Cambridge University Press, 1998)