

Modules:

physics700 **Elective Advanced Lectures**
 physics730 **Theoretical Physics**

Course:**Critical Phenomena (T)**

Course No.: physics756

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

Requirements:**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. Nersisyan, A.N.Tsvetlik; Bosonisation and strongly correlated systems (Cambridge University Press, 1998)