

<b>Module:</b>	<b>Elective Advanced Lectures: Theoretical Physics</b>
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Module No.: physics70c

<b>Course:</b>	 <b>Critical Phenomena (T)</b>
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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.Tsvetik; Bosonisation and strongly correlated systems (Cambridge University Press, 1998)