Selected Topics in Modern Condensed Matter Theory (T) - physics7503

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

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

Course	**Selected Topics in Modern Condensed Matter Theory (T)**
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Category	**Type**	**Language**	**Teaching hours**	**CP**	**Semester**
Elective	Lecture with exercises	English	3+2	7	WT

Requirements for Participation:

Preparation:

- Introductory Condensed Matter Theory
- Quantum Mechanics
- Statistical Physics

Form of Testing and Examination: oral or written examination

Length of Course: 1 semester

Aims of the Course:

Knowledge of topics of contemporary condensed matter research

Knowledge of theoretical methods of condensed matter physics

Contents of the Course:

Covers topics and methods of contemporary research, such as

- Feynman diagram technique
- Phase transitions and critical phenomena
- Topological aspects of phenomena in condensed matter physic

Recommended Literature:

R. D. Mattuck, A Guide to Feynman Diagrams in the Many-Body Problem

N. Goldenfeld, Lectures on Phase Transitions and the Renormalization Group

B. A. Bernevig, Topological Insulators and Topological Superconductors