Computational Methods in Condensed Matter Theory (T) - physics767

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

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

Course	**Computational Methods in Condensed Matter Theory (T)**
Course No.	physics767

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

Requirements for Participation:

Preparation:

Quantum Field Theory (physics755)

Advanced Theoretical Physics (physics607) / Advanced Quantum Field Theory (physics7501)

Advanced Theoretical Condensed Matter Physics (physics638)

Form of Testing and Examination: Active participation in exercises, written examination

Length of Course: 1 semester

Aims of the Course: Detailed discussion of computational tools in modern condensed matter theory

Contents of the Course:

Exact Diagonalization (ED)

Quantum Monte Carlo (QMC)

(Stochastic) Series expansion (SSE)

Density Matrix Renormalization (DMRG)

Dynamical Mean Field theory (DMFT)

Recommended Literature: will be given in the lecture