Computational Physics (T) - physics760

Course	Computational Physics (T)
Course No.	physics760

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises and project work	English	2+2+1	7	WT/ST

Requirements: Knowledge of a modern programming language (like C, C++)

Preparation: Theoretical courses at the Bachelor degree level

Form of Testing and Examination:

successful participation in exercises,

presentation of an independently completed project

Length of Course: 1 semester

Aims of the Course: ability to apply modern computational methods for solving physics problems

Contents of the Course:

Statistical Models, Likelihood, Bayesian and Bootstrap Methods

Random Variable Generation

Stochastic Processes

Monte-Carlo methods

Markov-Chain Monte-Carlo

Recommended Literature:

W.H. Press et al.: Numerical Recipes in C (Cambridge University Press)

http://library.lanl.gov/numerical/index.html

C.P. Robert and G. Casella: Monte Carlo Statistical Methods (Springer 2004)

Tao Pang: An Introduction to Computational Physics (Cambridge University Press)

Vesely, Franz J.: Computational Physics: An Introduction (Springer)

Binder, Kurt and Heermann, Dieter W.: Monte Carlo Simulation in Statistical Physics (Springer)

Fehske, H.; Schneider, R.; Weisse, A.: Computational Many-Particle Physics (Springer)

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