

**Summer Semester 2016**  
**Introduction to Computational Physics (UKWR2)**

**Lecturers: Rainer Spurzem, Ralf Klessen**

**Location Wed 9:15-10:45 INF 227 KIP Hörsaal 2,**

**Fri 11:15-12:00 INF 308 Physik HS-Gebäude, Hörsaal 2**

The Lecture will be offered in **English Language**. There will be one tutorial in German, others in English.

**Lecture Time Plan**

(subject to change depending on progress of lecture)

Wed 9.15	Fri 11.15	Tutorial Sheet	Spurzem	Klessen	Chapter-Number: Topic
20.4	23.4.	-		x	Introduction, 1-3: Practical Exercises/Mathematica
27.4	29.4.	1		x	4: Ord. Diff. Eqs. I: Two-Body Problem, Elementary Euler
4.5.	(6.5.)	2		x	6: Ord. Diff. Eqs. II: Runge-Kutta (2,4,higher) and more
11.5.	13.5.	3		x	5. Linear Algebra I / Matrices / Eigenvalues
18.5.	20.5.	4		x	5. Linear Algebra II / Householder / QR-QM, ...
25.5.	(27.5.)	5		x	5. Linear Algebra III quantum mechanics, Schrödinger-Eq.
1.6.	3.6.	6	x		6: Ord. Diff. Eqs. III: Population Dynamics / Stability I
8.6	10.6.	7	x		6. Ord. Diff. Eqs. IV: Lorenz-Attractor, Nonl. Dynamics
15.6.	17.6.	8	x		6. Ord. Diff. Eqs. V: Lorenz-Attractor, Nonl. Dynamics
22.6.	24.6.	9	x		6. Ord. Diff. Eqs. VI: Advanced Methods, Numerov, SPH, GPU??
29.6.	1.7.	10	x		Advanced Methods? Heat Transport? GPU?
6.7.	8.7.	11	x		8,9: Random Numbers, Monte Carlo method
13.7.	15.7.	12	x		9: Monte Carlo methods, Ising Model
20.7.	22.7.	-			Preparation Week (lecture?) Outlook
27.7.	29.7.	-			Exam Week (no lecture)