Title of module: **Simulation of Motion**

Lecturer: Prof. Dr.-Ing. Georg Weidner

Qualification aim: On completion of this course, the students should have some background knowledge on Multibody Systems. They should be able to simulate the kinematic and dynamic behaviour of mechanisms with a motion simulation software.

Content:

1. Bodies and their Properties
2. Joints (pin joints, slot joints, curve joints)
3. Springs (linear springs, rotational springs)
4. Dampers (linear dampers, rotational dampers)
5. Actuators (linear actuators, motors)
6. Collision
7. Friction
8. Initial Conditions
9. Parameters of Simulation (time step, accuracy)

Projects:

1. Harmonic vibrations
2. Non-Linear vibrations
3. Friction problems
4. Compensation of weight
5. Dynamics of crank mechanisms
6. Impact problems
7. Windscreen-wiper
8. Four-stroke engine

Teaching method:	lectures and computer lab. 2 x 90 min. per week
Necessary knowledge:	fundamentals in physics (mechanics of rigid bodies)
Usability:	Mechanical Engineering (B.Eng.)
Preconditions for the granting of credits:	examination in computer lab.: 120 min.
Credits:	5 ECTS-Credits
Frequency:	annually in winter semester
Work load:	150 hours (present time: 60h + self-study: 90h)
Duration of one unit:	90 min.
Supporting documents:	exercises
Recommended publications:	http://www.design-simulation.com/WM2D/