Module Name
Geophysics of the Solar System

Type of Module	**Module Code**
Advanced Module	AM-GEOSOSYS

Identification Number	**Workload**	**Credit Points**	**Term**	**Offered Every**	**Start**	**Duration**
MN-GM-GEOSOSYS	180 h	6 CP	1. – 3. Semester	WiSe	Winter Term Only	1 Semester

1	**Course Types**	**Contact Time**	**Private Study**	**Planned Group Size**
	a) Lectures	30 h	60 h	30
	b) Exercise	30 h	60 h	

2 Module Objectives and Skills to be Acquired

Students will get an overview of the planetary bodies in our solar system, their geophysical properties and interactions.
Acquired skills are mathematical/geophysical tools to describe: global properties of planetary bodies, dynamical evolution of planetary bodies.
Non-specific skills: Critical assessment of scientific knowledge.

3 Module Content

- Structure/Overview of the solar system
- Formation of the solar system
- Dynamics of the solar system:
- Point masses and Kepler's laws
- n-body problem
- Dynamics on finite rigid bodies (e. g. precession and nutation)
- Dynamics of non-rigid bodies (tidal interactions)
- Internal structure of the planets
- Planetary atmospheres
- Planetary magnetic fields, their space plasma environments including aurorae
- The sun
- Minor bodies: Comets, asteroids, ...
- Extra-solar planets

4 Teaching Methods

Lectures and exercises (exercises require attendance)

5 Prerequisites (for the Module)

Formal: None
With regard to the contents: Basic knowledges in Classical mechanics, ordinary differential equations, Laplace equation in spherical coordinates.

6 Type of Examination

Written examination (graded).

7 Credits Awarded

Successful participation in the exercises (50 % of the possible points have to be obtained) and passing of the examination.

8	**Compatibility with other Curricula** • Other modules of equal value can be admitted and announced by the examination board after agreement. • Suitable as an elective course for mathematics, physics and geoscience students
9	**Proportion of Final Grade** 6/114
10	**Module Coordinator** J. Saur
11	**Further Information** **Recommended Literature:** Beatty et al., The New Solar System, Sky Publishing Corporation and Cambridge University Press. Advanced Literature: Baumjohann und Treumann, Basic Space Plasma Physics, Imperial College Press.