



PHY1261 Astronomy and geophysics

[15h+7.5h exercises] 2 credits

This course is taught in the 2nd semester

Teacher(s): Véronique Dehant, Jean-Pascal van Ypersele de Strihou
Language: French
Level: First cycle

Aims

This course will give a first knowledge of the Earth and of the universe in general to the students; it will show the evolution to the recent developments of studies related to spherical astronomy, geometrical and dynamic geodesy, Earth rotation, geophysics, and astrophysics.

Main themes

The course will be composed of: 1. Astronomy and coordinate frames; astronomical localization of a site at the Earth surface. 2. Knowledge of the geometry and dynamics of the Earth; additional knowledge from artificial satellites; gravity acceleration. 3. Earth rotation, precession, and nutations; polar motion of the Earth. 4. Motion of the Earth around the Sun; Time definition; consequences in terms of climate. 5. Parallaxes and aberrations. 6. Solar system: structure, composition, motion, masses, dimensions, and characteristics of the planets. 7. General structure of the universe and stellar evolution; characteristics of particular objects of the universe.

Content and teaching methods

The course will be given in a "magisterial" form. It is documented by photos on overheads and films.

The exercises are closely related to the lectures; some of the exercises are additionally visualized at the planetarium. The students are invited at the Planetarium for a show as presented to the general public, but this session is followed by a session prepare for the student in particular.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Pre-requisite: General background in mechanics from first year of Baccalaureate, such as moment of inertia, rotation of a body, etc.

Support: A syllabus is available at the DUC.

Evaluation: A written examination containing several theoretical questions on the matter given during the course and one or two exercises similar to those given during the exercise sessions.

Note:

(1) One lecturer alternatively each year (V. Dehant (even years) / J.-P. van Ypersele de Strihou (odd years)) for the course; and for the exercises and the Planetarium session, one assistant (L. Koot, contractual at the Royal Observatory of Belgium, for 2006).

(2) The session at the Planetarium is offered to the students following the course by the Royal Observatory of Belgium. A specialized technician and a scientist from the Planetarium are provided by the Royal Observatory of Belgium to the students for this session.

Other credits in programs

MAP22	Deuxième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(2 credits)	
MATR23	Troisième année du programme conduisant au grade d'ingénieur civil en science des matériaux	(2 credits)	
PHYS12BA	Deuxième année de bachelier en sciences physiques	(2 credits)	Mandatory