


UE Intérieurs planétaires

 ECTS
3 credits

 Component
UFR PhITEM
(physique,
ingénierie, terre,
environnement,
mécanique)

 Semester
Automne

- **Teaching language(s):** French
- **Open to exchange students:** Yes
- **Code d'export Apogée:** PAX9SRAF

Presentation

Description

This course focuses on the structure and dynamics of planets and satellites of the solar system and exoplanets. We will first describe the observables relevant to the study of the structure and dynamics of planets, whether they are accessible from Earth (dimensions, mass, moment of inertia, average density) or through space missions (surface topography and morphology, gravity field, magnetic field, seismology, heat flux, surface chemical/mineral composition). Space missions (the James Webb Space Telescope or the Insight mission, for example) bring a harvest of astonishing observations indicating an unsuspected richness of behavior. These observables and the questions they raise will be discussed in a comparative planetology perspective, and confronted with models from high pressure mineralogy, fluid and solid mechanics, and electromagnetism. Why do the Earth and Venus - of similar masses and compositions - have such different dynamic behaviors (plate tectonics and magnetic field for the Earth, absence of tectonics and magnetic field for Venus)? What factors determine the presence or absence of a planetary magnetic field? How to explain the hemispheric asymmetry observed on Mars or the Moon? The varied dynamics - volcanism and cryovolcanism, tectonics - of satellites of Jupiter and Saturn such as Io or Encélade? Will we find an Earth twin planet among the exoplanets, and how to determine if it is habitable?

Teaching will be held in french or english



Course parts

UE Intérieurs planétaires - CM/TD

Lectures (CM) & Teaching Unit (UE)

21h

Useful info

Campus

➤ [Grenoble - University campus](#)