PHYD26
Planetary Geophysics

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COURSE DESCRIPTION:

This course investigates the physical processes occurring in planets and moons. Specific topics will vary but will be related to:

- evolution of terrestrial objects (e.g. planets, moons)

- planetary heat sources & thermal evolution (e.g. convection and its surface manifestations)

- effects of high temperature and pressure in planetary interiors (e.g., phase changes, stress-strain relationships)

- planetary structure and global shape (e.g. gravity, rotation, composition)

- regional effects on topography (e.g., lithospheric elasticity)

Research articles and a focus on numerical modelling studies will be used to illustrate recent advances in the field.

Prerequisite:

Knowledge of PDEs, vector calculus & Newtonian mechanics. No previous knowledge of Earth or planetary science required.

LECTURES:

10% of the final mark will come from this report.

- A twelve minute powerpoint presentation on the findings of the literature report followed by three minutes of questions (10%).

REFERENCES:

There is no required text for the course. Readings will be from the current literature and review articles. However, if you are interested in relevant texts, some are listed below.

Mantle Convection in the Earth and Planets (Schubert, Turcotte & Olson, 2001).

Geodynamics, 2nd or 3rd edition (Turcotte & Schubert, 2001).

Hydrodynamic and Hydromagnetic Stability (Chandrasekhar, 1961).

Physics of the Earth, 4th edition (Stacey and Davis, 2008)

Planetary Sciences (De Pater & Lissauer, 2001)

LECTURE NOTES:

In addition to the material delivered in class some material