

Dynamics of the Mantle and Lithosphere

(651-4008-00 G)

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Monday 10:00 - 12:00 - NO Bld. Rm. F39 [lecture]

Thursday 08:00 - 10:00 - NO Bld. Rm. F39 [practical]

Overview and Objectives

- Emphasis on conceptual understanding of physical processes, combined with simple quantitative analysis
- Develop a sense of “scale” of relevant physical parameters in the context of geodynamic processes
- Become comfortable with equations describing physical processes, enabling approximate calculations to be performed which provide insight
- Understand the limitations of simple “back of the envelope” calculations
- Develop an understanding of the current “state of the art” in geodynamic research

Topic-wise Lecture Schedule

- 22 Feb: Thermal structure of the Earth
- 29 Feb: Fundamentals of mantle dynamics
- 07 March: Rheology
- 14 March: Advanced mantle dynamics
- 21 March: Subduction dynamics
- 04 April: Constraining the rheology of the Earth
- 11 April: Paper(s) discussions

Course Structure

- Class schedule is as follows:
 - Monday 10:00 - 12:00 - Topic lecture
 - Thursday 08:00 - 10:00 - Practical class
- Each practical classes consists of an assignment based on the lecture from Monday. You should complete the assignment in the allocated 2 hrs
- Solutions to practical class problem sets can be submitted up until the next practical class. Hand-written solutions, or a single PDF sent via email are accepted
- Problem sets will be corrected. I will not look at any late submissions
- Exercises will consist of: calculations, computer experiments, oral presentations, discussions, group work
- **Participation in practical classes is mandatory**

Assessment

- There will be no (or very little) homework
- There will be no exam
- Your mark will be determined solely upon:
 - (i) Completing the material from each practical class
 - (ii) “Participation” - this means coming to lectures, asking questions in lectures and practical classes
- I will record “participation” throughout each lecture

Consultation

please make an appointment via email
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Teaching Material

- All information and material will be available here:
<http://jupiter.ethz.ch/~gfdteaching/dymali/2017>