

# LV Tektonik HS2017

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**Skriptum siehe**

**<http://www.files.ethz.ch/structuralgeology/JPB/vorlesungen>**

# Lehrziele LV Tektonik

**Comprehensive understanding** of evolution, mechanics, and rheology of **divergent, convergent and wrenching tectonic systems** from the lithospheric scale to local shallow crustal and outcrop-scales.

**Assessment of mechanisms** responsible for plate movements (the Earth as a heat transfer machine, dynamics of earth mantle, plate driving forces) and subsequent **large-scale structures** (oceanic basins and cycle of the oceanic lithosphere, mountain systems and continental growth etc.) through theoretical and experimental information.

**Evaluation** of plate tectonic and other **orogenic processes** through the study of reference **examples from Alps-Himalaya orogenic system**.

# Zeitplan & Inhalt Vorlesung

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## Lithosphere

a key element of plate tectonics

- 25.09 Introduction; Plate tectonics summary, part 1 (lithosphere-mantle interactions) ek
  - 02.10. Plate tectonics summary, part 2 (plate boundaries, plate movements) ek
  - 09.10. Lithosphere strength profiles, rheology jpb
  - 16.10. Plate Isostasy + **Prüfung 1**
- Prüfung 1 ( Isostasy & PT, Rheology, 1 hour,30%) jpb&ek

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## Tektonische Systeme

(related to 3 main stress regimes)

- 23.10. Tektonische Systeme Def., Extension jpb
- 30.10. Extension/Kompression jpb
- 06.11. Kompression/strike-slip jpb
- 13.11. **Prüfung 2 (30%);** Obduction (Oman) jpb

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## Lithosphere and tectonic systems Konvergenz-Beispiele

- 13.11.                    **Prüfung 2** (1hour, 30%) Obduction                    jpb
- 20.11.                    Island-arc/Continent collision                    jpb
- 27.11.                    Continent/Continent collision                    jpb
- 04.12.                    Intracontinental collision (Asia)                    jpb
- 11.&18.12.                **Prüfung 3** (40%) (Postersession)                    jpb & ek

# Postersession (= Exam 3)

Choose topic

(in agreement with  
Proffs. Burg and/or  
Kissling)

- Obduction
- Island arc magmatism
- Accretion of island arcs
- Subduction factory
- Subduction initiation
- Extensional and collisional plateaus
- Ridge tectonics
- Continental transform fault systems
- Thick skin tectonics
- Accretionary wedge
- Mantle convection cells
- .....

Prepare poster and presentation

Present poster (3-4 min.) and follow discussion (3- 4 min.)