



Discipline Information

The following dates are in (dd/mm/yyyy) format.

Code: GMG5883 - 1 Type: POS
Name: Strain, shear zones and faults
Concentration area: Geotectônica (44141)

Approval dates:

CCP: 14/12/2016 CPG: 15/12/2016 CoPGr:

Activation date: 15/12/2016 Inactivation date:

Workload:

Total: 30 h Theory: 10 h Practice: 10 h Study: 10 h

Credits: 2 Duration: 1 weeks

Professors: 915463 - Ginaldo Ademar da Cruz Campanha - 15/12/2016 until today
10227590 - Haakon Fossen - 15/12/2016 until today

Objectives:

The goal of the discipline is to provide a overview of faults and shear zones, from initiation to the development of large-scale structures and populations in various crustal and tectonic environments, including a general background on relevant deformation and strain theory.

Rationale:

It is a modern and up-to-date approach on the subject

Content:

Part 1: Deformation theory (Definitions, Translation, rotation and strain, deformation matrix, coaxiality and vorticity, 2D vs. 3D deformation) (Deformation exercises) Part 2: Strain (Methods, exercises, 2D vs. 3D, fabrics) Part 3: Shear zones (Dimensions, properties, initiation, growth, scaling relations, rheology, deformation mechanisms, strain, vorticity/coaxiality, tectonic settings, deformation partitioning) (exercise: extracting information from small-scale structures, strain and offset estimates, vorticity analysis) Part 4: Faults (definition, initiation, growth, deformation bands, relay structures, scaling of fault properties, drag/fault propagation folding, faults and fluid flow, fault sealing, restoration and balancing, strike-slip faults) (communication, restoration of sections and maps) Part 5: Rifting, general evolution, role of reactivation of structures (preexisting structures + multiphase rifting), relationship faults and shear zones, experiments and numerical models, influence of salt (exercise seismic line)

Bibliography:

Fossen, H. 2010. Structural Geology. Cambridge University Press Fossen, H. 2012 Geologia Estrutural . Oficina de Textos. e-learning modules: (<http://folk.uib.no/nglthe/StructuralGeoBook2ndEd.html>)

Type of Assessment:

Exercises and tests
