



Discipline Information

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

Code: GSA5805 - 2 Type: POS
Name: Tectonics and Sedimentation
Concentration area: Geotectônica (44141)

Approval dates:

CCP: 05/02/2014 CPG: 25/02/2014 CoPGr:

Activation date: 25/02/2014 Inactivation date:

Workload:

Total: 120 h Theory: 3 h Practice: 3 h Study: 2 h

Credits: 8 Duration: 15 weeks

Professors: 2052941 - Renato Paes de Almeida - 25/02/2014 until today

Content:

1. Global Tectonics and contexts of Sedimentary Basins formation; Foundations of Global Tectonics; Evidence for Plate Tectonics; Types of plate interaction and resulting geological products; Sedimentary Basins as the result of global dynamics. 2. Subsidence mechanisms; Changes in the lithosphere causing subsidence; Mechanical subsidence; Thermal subsidence; Flexural subsidence; Other subsidence mechanisms (dynamic topography, intra-plate stresses) 3. Concepts of structural geology applied to Sedimentary Basins. Principles of brittle structural geology; Stress and strain in sedimentary basins; Normal faults and related structures; Strike-slip faults in Sedimentary Basins; Reverse faults and related structures. 4. Infill models for Sedimentary Basins. Stacking patterns resulting from the interaction among sediment input, subsidence and eustasy; Depositional Sequences and Systems Tracts; Sedimentary response to tectonic activation events. 5. Origin, infill, forming tectonics, diagnostic features, variability, seismic expression and post-sedimentary evolution of Rift Basins and Interior Sags. 6. Origin, infill, forming tectonics, diagnostic features, variability, seismic expression and post-sedimentary evolution of Atlantic Type Margins. 7. Origin, infill, forming tectonics, diagnostic features, variability, seismic expression and post-sedimentary evolution of Basins related to Transform Plate Margins. 8. Origin, infill, forming tectonics, diagnostic features, variability, seismic expression and post-sedimentary evolution of Arc Related Basins. 9. Origin, infill, forming tectonics, diagnostic features, variability, seismic expression and post-sedimentary evolution of Basins related to Collisional Settings.

Bibliography:

ALLEN, P. A. & ALLEN, J. R. 1990. Basin analysis - principles and applications. Blackwell Scientific, 451p. ALLEN, P. A., & ALLEN, J. R. 2005. Basin analysis – principles and applications (2nd ed., p. 549). Blackwell Scientific. BALLY, A. W. 1983. Seismic expression of structural styles - a picture and work atlas. Tulsa, American Association of Petroleum Geologists, Studies in Geology #15, 3v. BALLY, A. W. 1988. Atlas of seismic stratigraphy. Tulsa, American Association of Petroleum Geologists, Studies in Geology #27, 2v. BUSBY, C. & AZOR A. P. 2012. Tectonics of Sedimentary Basins: Recent Advances, Wiley-Blackwell, 664P. BUSBY, C. J. & INGERSOLL, R. V. 1995. Tectonics of Sedimentary Basins. Blackwell Science, 577p. HANCOCK, P.L. 1994. Continental deformation. Pergamon. 421p. TURCOTTE, D. L., & SCHUBERT, G. 2002. Geodynamics (2nd ed., p. 456). Cambridge Univ. Press. WANGEN, M. 2010. Physical Principles of Sedimentary Basin Analysis (p. 527). Cambridge University Press.

