

Higher Institute of Earthquake studies and Research

COURSE : Tectonic plate

CONTACT HOURS: 6 hours weekly

Description:

This course will discuss theories of the major processes of Earth dynamics: plate tectonics and internal convection; the continents and their history of breakup, drifting, and collisions; the ocean basins and their formation by seafloor spreading and their relation to upwelling in the mantle; and other important Earth phenomena will be related to plate tectonics, such as earthquakes, volcanoes, biological evolution, and climate changes.

Aims & Objectives:

1. Explain the basics of the theory of plate tectonics.
2. Explain mechanism plate tectonics
3. Discuss the major evidence in support of the theory of plate tectonics.
4. Explain what is meant by "seafloor spreading".
5. List the three types of plate boundaries and describe the type of motion involved at each.
6. Explain what Pangea was.
7. Explain how convection currents are related to plate tectonics.

Syllabus:

Chapter 1: Introduction to Plate Tectonics.

Chapter 2: Development of plate tectonic theory.

Chapter 3: Plate motions (kinematics).

Chapter 4: Divergent Plate Boundaries.

Chapter 5: Convergent Plate Boundaries.

Chapter 6: Plate Boundary Zones.

Chapter 7: Continental Evolution.

Chapter 8: Hotspots and Plumes.

Course Outline:

Week 1: Introduction to Plate Tectonics.

Week 2: : Development of plate tectonic theory.

Week 3: Plate motions (kinematics).

Week 4 : Plate motions (kinematics).

Week 6: Divergent Plate Boundaries.

Week 7: Convergent Plate Boundaries.

Week 8: : Plate Boundary Zones.

Week 9: Hotspots and Plumes.

Instructional Methodology & Teaching Resources:

Lectures, examples, applications

- The geology of earthquakes – Robert S. Yeats Kerry Sieh Clarence R Allen 1997.
- Balassanian S. Yu., Nazaretian S. N., Martirosyan A. H. Seismic Hazard Assessment in Armenia 2002., natural hazard, 18
- Баласанян С. Ю., Назаретян С. Н., Амирбекян Б. С., Сейсмическая защита и ее организация, Г., Эльдorado, 2004
- Очерки геологии Сирии. Труды выпуска 526. Ответственный редактор: Академик Ю. Г. Леонов. Москва, Наука, 2000
- Rukieh, M., 1997. Tectonics of Lebanon and the western part of Syria using space imagery interpretation. in:Remote Sensing Magazine, No. 9. Damascus.
- Fowler, C. M. R. (1990), The Solid Earth, an introduction to Global Geophysics, Cambridge Univ. Press.
- Gordon, R. G. (1995), Present plate motion and plate boundaries, Glob. Earth Phys., AGU Ref. Shelf, 1, 66–87.
- Gripp, A. E., and R. G. Gordon (1990), Current plate velocities relative to the hotspots incorporating NUVEL-1 global plate motion, Geophys. Res. Lett., 17, 1109–1112.
- Gripp, A. E., and R. G. Gordon (2002), Young tracks of hotspots and current plate velocities, Geophys. J. Int., 150, 321–364.
- Heflin et al. (2004), <http://sideshow.jpl.nasa.gov/mbh/series.html>.
- Henderson, D. M. (2001), New visualization of global tectonic plate motions and plate boundary interactions, Terra Nova, 13, 70–78.
- Minster, J. B., and T. H. Jordan (1978), Present-day plate motions, J. Geophys. Res., 83, 5331– 5354
- David T. Allison .(2004) , STRUCTURAL GEOLOGY LABORATORY MANUAL.

Head of Department:

Date:

Vice dean:

Date:

Dean:

Date: