Georg-August-Universität Göttingen **Module B.Geo.712: Plate tectonic theory and kinematics - a geological perspective**	6 C 4 WLH

Learning outcome, core skills:	**Workload:**
This course explains the history of the theory of plate tectonics as a kinematic concept rooted in an inverse model, matching data (earthquake slip vectors, ocean spreading rates, transform fault directions, and today, GPS data) to plate geometries and the euler poles describing their relative motions. As such, it deals with all associated geological concepts to do with plates, such as the earth's mantle, the nature of the lithosphere and crust, the physical laws governing their behaviour like elasticity and viscous flow. It explains kinematics (quantitative description of motions of plates) and deformation (zones where rates of motion change across plate edges, leading to shortening or extension). It also deals with strain and strain rate as kinematic quantities calculated from displacements and velocities. More generally it covers the concept of plate boundary zones – the regions of more diffuse deformation around plate edges that cover a large part of the earth's surface today, such as the Himalaya-Tibet region, or the Central Andes. The course also deals with natural hazards arising from plate tectonic induced seismicity, such as earthquakes, (particularly intraplate earthquakes) and tsunamis. Part of the module also covers calculating the "geophysical inverse" used to determine global euler vectors, from natural data. The course is based on a number of important, historical papers, including most of the original ones on plate tectonics itself. Course assessment is based on a report/ presentation on topics chosen during the semester.	Attendance time: 56 h Self-study time: 124 h

Course: B.Geo.712.C **Plate tectonic theory and kinematics** (Lecture, Exercise, Seminar)	4 WLH
Examination: Written examination (120 minutes) B.Geo.712.Mp: Plate tectonic theory and kinematics **Examination prerequisites:** regular attendance in seminar and exercise	6 C

Examination requirements:	
Each student will cover one or two papers from a selection of key literature in topics in geodynamics over the course of the semester (depending on class size) and will be expected to research background to this, as well as using and understanding relevant lecture material, to give a presentation (15-30 min, depending on class size).	

Admission requirements: none	**Recommended previous knowledge:**
Language: English, German	**Person responsible for module:** Dr. rer. nat. David Andrew Hindle
Course frequency:	**Duration:**

each winter semester	1 semester[s]
Number of repeat examinations permitted: twice	**Recommended semester:** from 5
Maximum number of students: not limited	