

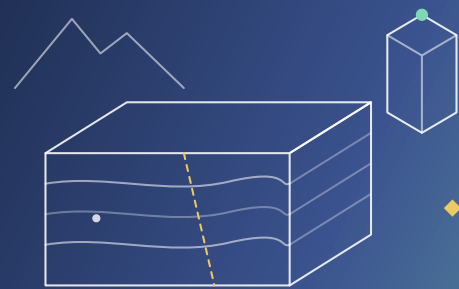
Module code

SPG-3405

Type of module

Undergraduate: Geosciences – Elective

Geotectonics



Modular credits

4

Total student
engagement

56 hours

Prerequisite

**SPG-1203 Introduction
to Geology**

Anti-requisite

None

Aims

To provide students with a comprehensive understanding of plate tectonic theory and its applications to Earth's dynamic systems, lithospheric deformation, natural hazards, and resources. Students integrate theory, data analysis, case studies, and digital tools to solve geotectonic problems.

Module learning outcomes (MLO)

On successful completion of this module, a student will be expected to be able to:

MLO 1

Evaluate and classify tectonic settings and associated geological features.

MLO 2

Interpret tectonic processes using maps, geophysical data, and digital modelling.

MLO 3

Analyse links between tectonics, seismicity, volcanism, and orogeny.

MLO 4

Evaluate tectonic hazards and their impact on society and sustainability.

MLO 5

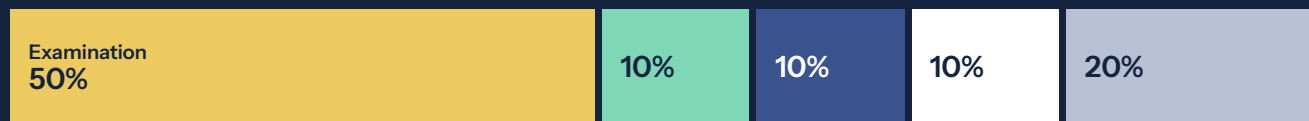
Communicate geotectonic concepts and case study findings effectively.

Module contents

Historical development of plate tectonic theory	Structure of lithosphere and asthenosphere	Divergent boundaries (mid-ocean ridges, rifting, basins)
Convergent boundaries (subduction, collision, orogeny)	Transform boundaries and strike-slip tectonics	Intraplate tectonics (hotspots, LIPs, continental deformation)
Plate kinematics and reconstructions (using GPlates)	Tectonics, seismicity, and volcanism	Tectonic controls on natural resources
Tectonic hazards and sustainable development	Regional tectonics: SE Asia and the Pacific	Integration of geotectonic datasets (maps, satellite, geophysics)
Case studies (Himalayas, Andes, Banda Arc, East African Rift)		

Assessment

50% Examination
50% Coursework



■ Examination – 50%
 ■ Weekly quizzes – 10%
 ■ Short-answer written assignments – 10%
 ■ Oral poster presentation (tectonic case study and analysis) – 10%
 ■ Regional tectonic case study report – 20%

Formative assessment

Weekly discussions and problem-based exercises with feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	50%
Coursework	50%
Individual	30%
Weekly quizzes	10%
Short-answer written assignments	10%
Oral poster presentation (tectonic case study and analysis)	10%
Group	20%
Regional tectonic case study report	20%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1	PLO 1 (Fundamental Theoretical Knowledge in Geosciences)	2	PLO 2 (Application of Scientific Methods and Data Analysis)
3	PLO 3 (Integrated Laboratory, Field, and Technical Skills)	4	PLO 4 (Critical Thinking and Problem-Solving Skills)
7	PLO 7 (Independent Learning and Professional Development)		

Sustainability concept addressed

11	SDG 11 Sustainable Cities and Communities
13	SDG 13 Climate Action
15	SDG 15 Life on Land

Digital skills/software used (not limited to)

- Plate reconstruction software (e.g. GPlates, Seismic Explorer and GeoMap App)
- GIS software (e.g. QGIS/ArcGIS)
- Word processing software (e.g. Microsoft Word)
- Presentation software (e.g. PowerPoint)

Micro-credentialling option

No

Stackable towards GenBESTARI Undergraduate Degree Programme or other relevant Lifelong Learning Programmes

No

Document details

Office **ODVCE** Document date **23 June 2026** Status **New** Approval **GBF (12/02/2006)**