

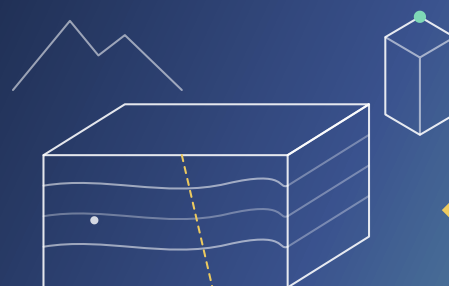
Module code

SPG-2202

Type of module

Undergraduate: Geosciences – Major Core

Structural Geology



Modular credits

4

Total student
engagement

56 hours

Prerequisite

None

Anti-requisite

None

Aims

To familiarise students with the geometry, kinematics, and mechanics of geological structures. It emphasizes field observation, geometric analysis, and mechanical interpretation to develop skills for solving structural problems in research, resource management, and hazard assessment.

Module learning outcomes (MLO)

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

MLO 1

Recognise and classify brittle and ductile structures through field and laboratory observations.

MLO 2

Measure, record, and analyse structural data including attitudes, folds, faults, and lineations.

MLO 3

Interpret structural maps, cross-sections, and stereographic projections to deduce deformation patterns.

MLO 4

Apply geometric and kinematic models to reconstruct deformation histories and tectonic settings.

MLO 5

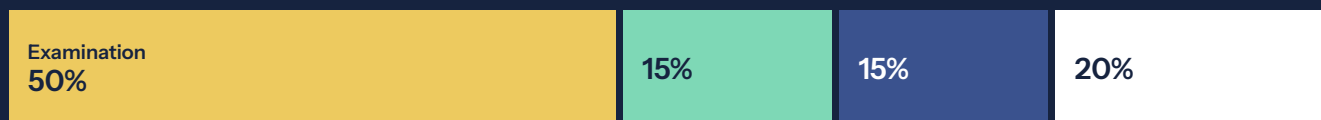
Evaluate and communicate structural interpretations and their implications for resources and geohazards through diagrams and reports.

Module contents

Introduction to structural geology	Stress, strain, and deformation principles	Joints, veins, and brittle fractures
Fault systems: normal, reverse, strike-slip	Fold classification and mechanics	Cleavage, schistosity, and ductile deformation
Stereographic projection and stress analysis	Geometrical techniques: cross-sections, balanced sections	Tectonic fabrics and strain markers
Regional structural styles (Himalayas, Appalachians, Alps)	Structural controls on hydrocarbon, mineral, and groundwater resources	Structural geology in hazard assessment (earthquakes, landslides)
Modern digital tools in structural geology		

Assessment

50% Examination
50% Coursework



■ Examination — 50% ■ Structural problem sets — 15% ■ Short written assignments — 15%
■ Structural case study — 20%

Formative assessment

Weekly quizzes,
discussion and
feedback

Summative assessment

COMPONENT		WEIGHTING
Examination		50%
Coursework		50%
Individual		30%
Structural problem sets		15%
Short written assignments		15%
Group		20%
Structural case study		20%

Graduate attributes and skills

Programme learning objectives (PLO) addressed

1

PLO 1 (Fundamental Theoretical Knowledge in Geosciences)

3

PLO 3 (Integrated Laboratory, Field, and Technical Skills)

7

PLO 7 (Independent Learning and Professional Development)

2

PLO 2 (Application of Scientific Methods and Data Analysis)

4

PLO 4 (Critical Thinking and Problem-Solving Skills)

Sustainability concept addressed

9

SDG 9 Industry, Innovation, Infrastructure

11

SDG 11 Sustainable Cities and Communities

Digital skills/software used (not limited to)

Geological mapping and visualization software (e.g. QGIS, ArcGIS, Field-Move, Midland Valley, Google Earth Pro)

3D modelling and structural analysis tools (e.g. Leapfrog Geo, Stereo32)

Data processing and spreadsheet software (e.g. Microsoft Excel)

Word processing software (e.g. Microsoft Word)

Learning management system (e.g. Canvas)

Micro-credentialling option

No

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

No

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