

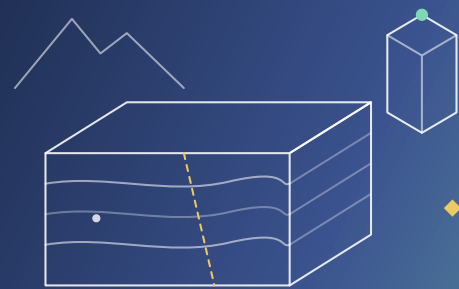
Module code

SPG-3404

Type of module

Undergraduate: Geosciences – Elective

Seismic Methods



Modular credits

4

Total student
engagement

56 hours

Prerequisite

**SPG-1203 Introduction
to Geology**

Anti-requisite

None

Aims

To equip final-year students with advanced knowledge of seismic reflection methods for subsurface imaging and hydrocarbon exploration. It integrates theory, data processing, and 2D–3D interpretation to build skills in structural and stratigraphic analysis, reservoir evaluation, and industry-ready practice.

Module learning outcomes (MLO):

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

MLO 1

Analyse the principles of seismic wave propagation and reflection.

MLO 2

Analyse acquisition methods and assess data quality factors.

MLO 3

Apply basic seismic processing for enhanced subsurface imaging.

MLO 4

Interpret 2D and 3D seismic data for structural and stratigraphic analysis.

MLO 5

Integrate seismic and well data for reservoir characterisation and mapping.

MLO 6

Use industry software to model and evaluate subsurface geology.

Module contents

Fundamentals of seismic waves and reflection principles	Seismic data acquisition: 2D and 3D survey design	Sources, receivers, and field procedures
Data processing: deconvolution, velocity, stacking, migration	Seismic display and polarity conventions	Structural and stratigraphic seismic interpretation
Seismic facies and reservoir characterisation	Seismic-to-well tie and data integration	Practical 2D/3D seismic interpretation training
Industry-standard software applications		

Assessment

60% **40%**
Examination Coursework



■ Examination — 60%
 ■ Class test — 15%
 ■ Assignments — 5%
 ■ Software Demonstration — 10%
 ■ Oral Presentation — 10%

Formative assessment

Weekly discussion and feedback

Summative assessment

COMPONENT	WEIGHTING
Examination	60%
Coursework	40%
Individual	30%
Class test	15%
Assignments	5%
Software Demonstration	10%
Group	10%
Oral Presentation	10%

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

4	SDG 4 Quality Education
7	SDG 7 Affordable and Clean Energy
9	SDG 9 Industry, Innovation, and Infrastructure

Digital skills/software used (not limited to)

- Application software (e.g. Microsoft Word, Microsoft Excel, Petrel (modelling software), PaleoScan (seismic interpretation software))
- Learning management systems (e.g. Canvas)

Micro-credentialling option

No

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

No

Document details

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