



Department of Earth Sciences

Abbottabad University of Science and Technology



STRATA



Reading the Earth from the foothills of the Himalaya

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A Classroom Without Walls

Where the mountains themselves are the teaching collection

The Department of Earth Sciences at Abbottabad University of Science and Technology sits at the base of the youngest and most active mountain system on Earth. That accident of geography is also the department's greatest academic asset.

Established with the vision of developing skilled earth scientists capable of addressing contemporary geological and environmental challenges, the department is built around a simple conviction: geology is learned as much on the outcrop as in the lecture hall. Teaching combines theoretical grounding with practical training, so that students develop a working understanding of Earth systems and how those systems interact with human activity.

What we study

The academic focus spans geological processes, Earth materials, natural resources, environmental dynamics and geohazards. Field-based learning, laboratory work and analytical skills carry particular weight in the curriculum, giving students a route from classroom concept to real-world application.

AUST's position beside the geologically diverse terrain of northern Pakistan — the Himalayan foothills, the Hazara region and

adjacent structural zones — places complex tectonics, stratigraphy, mineral resources and environmental problems within reach of a day's travel.

The people behind the program

A team of qualified faculty members covers a wide span of sub-disciplines, among them structural geology, sedimentology, geological mapping, mineralogy, environmental geology, hydrogeology and geophysics. Alongside teaching and research, faculty take on academic mentoring, and the curriculum is reviewed on a continuing basis to keep it aligned with national and international standards and open to interdisciplinary approaches.

Research with a national purpose

Research is treated as a core part of the department's work rather than an add-on. Faculty and students are encouraged into projects that speak to national priorities: natural resource management, environmental

degradation, climate variability, water resources and geohazard assessment. Partnerships with universities, research institutions and scientific organizations at home and abroad extend that capacity, while seminars, workshops, conferences and field excursions keep the academic environment in contact with emerging trends.

Where our graduates go

The department aims to produce graduates who are academically competent, professionally skilled and socially responsible — prepared for academia, research organizations, government departments, industry and environmental consultancies. Through human resource development, scientific research and community awareness, it continues to engage with the geological and environmental challenges facing Pakistan and the wider region.



Laboratory work sits alongside field training: specimen and thin-section study in the department's teaching lab.



Students with a relief model of the department's field-mapping area, presented at a departmental exhibition.

Department at a glance	2016	BS Geology M.Phil. Geology	6
	Year of establishment	Degree programs offered	Faculty members

Message from the Head of Department



Mr. Faisal Shah

Head of Department

On choosing Earth Sciences, and choosing Abbottabad

It is my pleasure to be part of Abbottabad University of Science and Technology — a young university, and one growing quickly. AUST lies at the base of the world's youngest and most distinctive mountain system, the Himalaya, and that setting shapes everything this department does.

The location gives our students something few programs can offer: the chance to study geological processes in a real-time, active mountain setting. From here there is straightforward access to the Karakoram,

Himalaya and Hindu Kush ranges in the north, and to the Salt and Trans-Indus ranges in the south.

Earth sciences study the planet itself — its physical and chemical composition, its history, and its evolution within the solar system. Earth scientists are drawn in particular to the processes that have shaped the planet and will continue to modify it.

The work that follows from that is varied. An earth scientist may search for hydrocarbons, minerals and water resources. They may work

on evaluating and remediating environmental hazards, or on the prevention and prediction of natural disasters — earthquakes, volcanic eruptions, landslides, erosion and floods.

That is the strongest reason to study earth sciences in Abbottabad: the opportunity for outdoor academic learning and research that combines fieldwork with the latest technology, applied to the Earth we actually live on.

“A good reason to choose Earth Sciences in Abbottabad is the opportunity it provides for outdoor academic learning and research.”



Teaching on the outcrop: measuring and describing a roadside section with students during a departmental field day.



Field parties travel out from campus into the Hazara region and the surrounding structural zones.

The Faculty

Six specializations, one department

The department’s teaching and research rest on a compact faculty whose combined expertise reaches from the deep record preserved in sedimentary rock to the satellite data used to monitor ground movement today.

01	Mr. Faisal Shah Lecturer & Head of Department	Specializes in sedimentology and palaeontology, working with the depositional record and the fossil evidence contained within it. As Head of Department he also carries responsibility for academic coordination and the department’s development.		Highest qualification PhD in progress faisalshah@aust.edu.pk
02	Dr. Zahid Imran Bhatti Assistant Professor	Works in earthquake seismology and structural geology – the deformation history of rock bodies and the seismic behavior of an actively deforming region, a subject of direct consequence in northern Pakistan.		Highest qualification PhD zahid@aust.edu.pk
03	Dr. Muhammad Sajid Lecturer	Specializes in mineral exploration and economic geology, concerned with how mineral deposits form, how they are identified, and how they are assessed for economic use.		Highest qualification PhD sajidgeology@aust.edu.pk
04	Mr. Abdus Salaam Lecturer	Teaches and researches in petroleum geology and geological hazards, connecting subsurface resource assessment with the study of hazards that affect populations at the surface.		Highest qualification PhD in progress abdussalamgeology@aust.edu.pk
05	Mr. Abdul Ghaffar Fazal Lecturer	Specializes in geohazards, InSAR, GIS and geochemistry, bringing satellite-based deformation monitoring and spatial analysis to bear on hazard assessment in mountainous terrain.		Highest qualification PhD in progress ghaffargeology@aust.edu.pk
06	Miss Mubashra Bashir Lecturer	Specializes in GIS, remote sensing and climate change. As an educator she teaches Environmental Impact Assessment, environmental pollution and the sustainable management of natural resources.		Highest qualification PhD in progress Mubashrabashir5@gmail.com

Expertise across the department

- Sedimentology and palaeontology
 - Structural geology and earthquake seismology
 - Mineral exploration and economic geology
- Petroleum geology
 - Geohazards, InSAR, GIS and geochemistry
 - GIS, remote sensing and climate change

Academic Activities

Conferences, seminars and the conversations around them

Beyond the timetable, the department keeps an active calendar of conferences, seminars, workshops and guest lectures. These events do two things at once: they bring current research and external

expertise onto campus, and they give students a setting in which to meet practising scientists, ask questions and present their own thinking. The two activities below represent the

department's recent engagement, spanning climate and extreme-weather science on one side and environmental management on the other.

International Conference on Extreme Weather Events

Impacts and Responses

An international forum addressing the impacts of extreme weather events and the responses available to communities and institutions.

Organizers
AUST, SEGMIT, HEC, PCRWR and PMD

Date
3–4 February 2026

Venue
AUST, Abbottabad

Keynote / resource person
Mr. Faisal Shah



The inaugural session of the conference at AUST.



A commemorative shield presented to a visiting delegate.

Awareness Seminar on Environment and Waste

Theme
Environmental pollution and waste management

Date
10 December 2021

Venue
Orish Hall, AUST

Speaker / resource person
Abrar Ahmed Tanoli

A seminar convened to raise awareness of environmental pollution and the management of waste — a subject that connects the department's environmental geology teaching to everyday practice on campus and in the surrounding community.



Students and faculty at the awareness seminar on environmental pollution and waste management.

Into the Field

Where the syllabus meets the outcrop

Fieldwork is the part of an earth sciences degree that cannot be substituted. Rock relationships, structural geometry and landscape processes are understood properly only when they are walked over, measured and drawn.

The department's field program takes advantage of a setting few institutions can match — the Himalayan foothills, the Hazara region and the adjacent structural zones, all within reach of the campus — giving students

direct exposure to complex tectonics, stratigraphy, mineral occurrences and environmental conditions.

Field mapping, section measurement and sample collection train students in

observation and in the discipline of recording what is actually there. It is also where classroom concepts are tested against evidence, and where many students first find the sub-discipline they want to pursue.



Geological field excursion across different terrains of the Salt Range.



Working up a wadi section through the red beds of the Salt Range Formation.



Logging a bedded sequence: students working through a section with the lecturer.

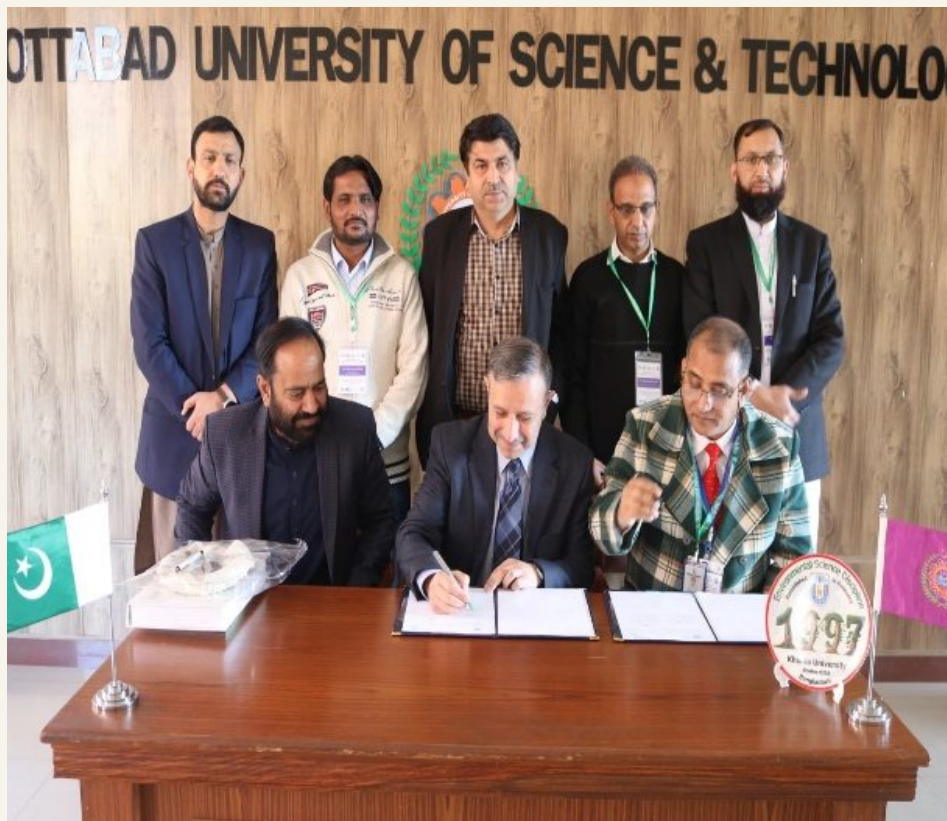


Belemnite-bearing bed recorded during a field exercise.

Partnerships and Linkages

Working beyond the department's own walls

Collaboration is how a young department grows quickly. Formal agreements with universities and research organizations open routes that a single department cannot build alone: shared expertise, access to facilities and data, and exposure for students to research environments beyond their own campus. Two agreements are recorded below.



Khulna University

Signed
4 February 2026

Dhaka, Bangladesh



**Hydrocarbon Development
Institute of Pakistan**

Signed
15 September 2022

Islamabad

Signing of the memorandum of understanding between Abbottabad UST and Khulna University, Dhaka, Bangladesh.

Memorandum of understanding between Abbottabad UST and the Hydrocarbon Development Institute of Pakistan.

Get in Touch

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ABBOTTABAD UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Earth Sciences



ALUMNI SPOTLIGHT



Syed Abdullah Shah
BS Geology
Session 2018–2022

PhD Researcher China University of Petroleum, Beijing

Following his MS, he is now pursuing doctoral research (2026–2030) focused on AI-driven reservoir evaluation, integrating computer vision, machine learning and large language models to assess reservoir quality in deep and ultra-deep reservoirs.

CSC Scholarship Recipient China University of Petroleum, Beijing

After completing his BS in Geology at AUST, he earned a CSC scholarship and completed his master's degree in Geological Resources and Geological Engineering.



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ALUMNI SPOTLIGHT



Muhammad Daud Khan

BS Geology (Gold Medalist)
Session 2018–2022

PhD Researcher

**China University of Petroleum,
Beijing (CUPB)**

Following his MS, he is now pursuing doctoral research (2026–2030) focused on unsupervised learning for image segmentation to characterize microporosity, alongside machine learning approaches to assess reservoir potential in tight sandstones.

CSC Scholarship Recipient

**China University of Petroleum,
Beijing (CUPB)**

After completing his BS in Geology at AUST, he earned a CSC scholarship and completed his master's degree in Geological Resources and Geological Engineering.



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ALUMNI SPOTLIGHT



Ahmad Ali

BS Geology

Session 2017–2021

Well Test Engineer

TAQA Well Solutions

Kingdom of Saudi Arabia

After completing his BS in Geology at AUST, Ahmad began his career in the oil and gas industry. He now works as a Well Test Engineer, supporting offshore well testing operations.

Offshore Operations

His work includes well data acquisition, pressure and flow monitoring, testing equipment, and field data analysis. He contributes to safe, efficient testing programmes in line with international health, safety and environmental (HSE) and operational standards.