

Academic Reference Standards (ARS)

Bachelor's Degree in Geology–Chemistry

The Academic Reference Standards for the award of the B.Sc. degree in Geology & Chemistry were based on the National Academic Reference Standards (NARS) published by the National Authority for Quality Assurance and Accreditation of Education (January, 2009 1st Edition; 70 % Geology+ 30% Chemistry).

1- Program Aims

- **A1.** Provide students with a solid foundation in natural sciences (mathematics, physics, chemistry, biology) as a basis for Earth and environmental studies.
- **A2.** Develop knowledge of geosciences, geochemistry, and environmental systems, with emphasis on sustainable resource management and protection.
- **A3.** Build intellectual capacity for data analysis, critical thinking, problem-solving, and application of modeling and modern technologies in geosciences.
- **A4.** Equip graduates with professional, practical, and transferable skills to work safely, ethically, and effectively in multidisciplinary and international contexts.

2. Program Learning Outcomes (PLOs)

2.1 Knowledge and Understanding

- **K1.** Core principles of mathematics, physics, chemistry, and biology relevant to Earth sciences.
- **K2.** Fundamentals of geochemistry, environmental chemistry, and analytical methods.
- **K3.** Concepts of Earth systems, natural resources, sustainability, and environmental protection.
- **K4.** Geological knowledge of minerals, rocks, structures, stratigraphy, geophysics, and hydrogeology.

2.2 Intellectual Skills

- **I1.** Analyze and interpret scientific and geoscientific data.
- **I2.** Apply problem-solving, hypothesis testing, and experimental design.
- **I3.** Critically assess literature, reports, and analytical results.
- **I4.** Integrate surface and subsurface data using modeling and simulation.

2.3 Professional and Practical Skills

- **P1.** Apply fieldwork, sampling, mapping, and laboratory techniques.
- **P2.** Prepare maps, cross-sections, and technical reports.
- **P3.** Operate analytical instruments and use GIS/remote sensing tools.
- **P4.** Conduct environmental and geochemical assessments following safety standards.

2.4 General and Transferable Skills

- **G1.** Communicate effectively through oral, written, and digital formats.
- **G2.** Work independently and collaboratively in multidisciplinary settings.
- **G3.** Use IT tools, manage data, time, and resources efficiently.
- **G4.** Commit to continuous learning, innovation, sustainability, and ethical practice.