

DEPARTMENT OF GEOLOGY

1. PROGRAMME AIMS, STRUCTURE AND RATIONALE

Rationale: Following approval and support by the government of Rwanda, the University of Rwanda will start a School of Mining and Geology in the College of Science and Technology, beginning academic year 2015/16. The rationale for creation of the School is based on the perceived primary and important role the latter will play in national economic, growth through development and support of a strong mining industry. Primarily, the School will be responsible for creating skilled capacity in Geology and Mining. Moreover, there is need to understand the Geology and Geochemistry of our rocks in detail. In turn, such knowledge will inform on what natural resources lie underground, on their distribution and on their concentration. Such information will be cardinal to supporting the mining component of the School in its quest to develop smart and efficient methods to harness mineral and other resources, such as geothermal energy. On a more general note, the School is poised to become a regional center of excellence for geological and related studies of, the not-so-well-studied, Rift Valley/Great Lakes region.

Aims: The degree course aims to guarantee that the College of Science and Technology continues to offer a world-class Mining degree over the coming years, ensuring that it maintains its current status as offering one of the leading undergraduate degrees in this field.

The key objectives of the BSc in Geology Programme are as follows:

- To provide students with a solid technical basis in all the key areas of the Mining profession through delivery of a coherent, coordinated and balanced degree course, integrating core basic science, engineering courses and mining and geology courses with practical application.
- To enable students to acquire a mature appreciation of the context in which mining projects are developed.
- To develop in our students excellence in oral, written and graphical communication.
- To provide students with sufficient time to explore the subject, to carry out self-organised study, and to think about the issues and challenges of the material allowing progressively, over the 4 years, more time for self-directed study as a better preparation for professional practice.
- To prepare future graduates with a potential to enter professional practice and the capacity to have a beneficial impact upon it, whether in the business sector or mining by developing skills of management, planning, organization and teamwork, inculcating to them an understanding of professional behaviour and by developing the intellectual capacity and breadth of vision to remain a learner for life.

2. PROGRAMME LEARNING OUTCOMES

A. Knowledge and Understanding

At the end of the programme students should be able to demonstrate knowledge and understanding of:

- A1. Basic mathematics, physics and chemistry that are relevant to geology;
- A2. The fundamental concepts, principles and the theories and essential facts underpinning the geology field;
- A3. Business and management techniques that is relevant to geology;
- A4. The role of the engineer in society and the constraints within which their engineering judgment will be exercised;
- A5. The professional and ethical responsibilities of geologists and miners;
- A6. The international rules and regulations relating to trade of minerals.

B. Cognitive/Intellectual skills/Application of Knowledge

At the end of the programme students should be able to:

- B1. Plan, conduct and report a programme of original research;
- B2. Analyse and solve problems relating to the field;
- B3. Design a system, component or process to meet a need;
- B4. Be creative in the solution of problems and in the development of designs;
- B5. Formulate the test hypotheses;
- B6. Evaluate designs, processes and products and make improvements;
- B7. Integrate and evaluate information and data from a variety of sources;
- B8. Take a holistic approach in solving problems and designing systems, applying professional judgments to balance risks, costs, benefits, safety, reliability and environmental impact.

C. Communication/ICT/Numeracy/Analytic Techniques/Practical Skills

At the end of the programme students should be able to:

- C1. Plan and execute safely a series of experiments;
- C2. Use laboratory and workshop equipment to generate data;

- C3. Analyse experimental results and determine their strength and validity;
- C4. Prepare technical sketches and drawings;
- C5. Prepare technical reports;
- C6. Demonstrate excellence in oral, written and graphical communication
- C7. Give technical presentations;
- C8. Use scientific literature effectively;
- C9. Take notes effectively;
- C10. Write computer programs;
- C11. Use computational tools and packages.

D. General transferable skills

At the end of the programme students should be able to:

- D1. Communicate effectively (in writing, verbally and thorough drawings);
- D2. Apply mathematical skills (algebra, geometry, modelling, analysis, quantify uncertainty);
- D3. Work as a member of an interdisciplinary team
- D4. Transfer techniques and solutions from one aspect of geology to another;
- D5. Use information and communications technology;
- D6. Manage resources and time;
- D7. Learn independently in familiar and unfamiliar situations with open-mindedness and in the spirit of critical enquiry;
- D8. Learn effectively for the purpose of continuing professional development and in a wider context throughout their career.