

SCHOOL OF ENGINEERING (SOE)

**DEPARTMENT OF CIVIL, ENVIRONMENTAL AND GEOMATICS
ENGINEERING**

**BSc DEGREE PROGRAMME IN WATER & ENVIRONMENTAL
ENGINEERING**

PROGRAMME LEARNING OUTCOMES

A. Knowledge and Understanding

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

- A1. The fundamental concepts, principles and theories of water and environmental engineering.
- A2. The principles of Design and code of practice of Hydraulic Structures
- A3. Water supply, sanitary systems and Environmental Engineering
- A4. Design of Waste water treatment plants, and management of solid wastes
- A5. Surveying, GIS and its applications in water and environmental engineering
- A6. Applied Mathematics, Basic Science and Engineering sciences relevant to water and environmental engineering
- A7. Soil mechanics, Geotechnics and Building Materials
- A8. Water and environmental engineering procurement, managing finance, engineering legalisation, professional ethics and Construction process in water and environmental engineering fields.
- A9. Business and management techniques relevant to Water and environmental engineering.

B. Cognitive/Intellectual skills/Application of Knowledge

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

- B1. Define the different alternatives solutions to the Engineering problems
- B2. Design Engineering elements and systems to meet a need, evaluate critically and make improvements of Practical Project Applications
- B3. Critically assess engineering work done by others.
- B4. Apply professional knowledge to produce a commercial risk assessment.
- B5. Apply technical and professional knowledge to assess environmental and social impact of water and environmental engineering activities.
- B6. Use scientific and engineering principles in the development of solutions to problems in water and environmental engineering.

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

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

- C1. Plan, conduct and prepare technical and managerial report on an individual research programme
- C2. Analyse and solve engineering and management problems, using appropriate mathematical methods as necessary
- C3. Be creative in the solution of problems in design and development
- C4. Integrate and evaluate information and data from a variety of sources
- C5. Take a holistic approach to solving problems and designing systems applying professional judgement to balance risks, cost, benefits, safety, reliability, aesthetics and environmental impact.
- C6. Use computational tools and packages appropriate to water and environmental engineering and give presentations using a variety of media
- C7. Use laboratory and field work equipment to generate data and use competently and safely standard engineering laboratory instrumentation.
- C8. Analyse, evaluate and interpret the experimental and survey results and assess their validity

D. General transferable skills

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

- D1. Communicative effectively in writing, verbally and drawings
- D2. Apply mathematical skills-algebra, geometry, modelling and analysis
- D3. Learn independently in familiar and unfamiliar situations with open mindedness and in a sprit of critical enquiry
- D4. Work constructively as a members of a team and to manage both time and other sources effectively to meet the deadlines
- D5. Undertake Lifelong Learning
- D6. Use Information and Communication Technology
- D7. Demonstrate general numerical skills and problem solving skills.
- D8. Manage tasks and solve problems, transfer techniques and solutions from one area to another, apply critical analysis and judgement.
- D9. Aspire to belong to national and international professional associations that promote still strong ethical standards and integrity.