21.7.1 Purpose of the programme

The purpose of the BEngTech (Extraction Metallurgy) is thus to build the necessary knowledge, understanding, abilities and skills required for further learning towards becoming a competent, practicing Extraction QUMetallurgy Technologist. Specifically, the qualification will provide the graduate with:
• preparation for a career in engineering itself and areas that potentially benefit from engineering skills, for achieving technological proficiency and to make a contribution to the economy and national development;
• the educational base required for registration as a Professional Engineering Technologist with ECSA; and
• for graduates with an appropriate level of achievement, the ability to enter NQF level 8 programmes and then proceed to Master's degrees.

21.7.2 Outcomes

Exit level outcomes:

The exit level outcomes as informed by ECSA are that students who complete this programme will be able to:
• systematically diagnose and solve broadly defined metallurgical problems by applying engineering principles;
• apply knowledge of mathematics, natural science and engineering sciences to defined and applied engineering procedures, processes, systems and methodologies to solve broadly-defined metallurgical problems;
• perform procedural and non-procedural design of broadly defined components, systems, works, products or processes to meet desired needs normally within applicable standards, codes of practices;
• conduct investigations of broadly-defined problems by locating, searching and selecting relevant data from codes, databases and literature, designing and conducting experiments, and analysing and interpreting results in order to provide valid conclusions;
• use appropriate techniques, resources, and modern engineering tools, including information technology, prediction and modeling, for the solution of broadly-defined metallurgical problems with an understanding of their limitations, restrictions, premises, assumptions and constraints;
• communicate effectively, both orally and in writing, with engineering audiences and affected parties;
• demonstrate knowledge and understanding of the impact of metallurgical activity on the society, economy, industrial and physical environment, and address issues by analysis and evaluation;
• demonstrate knowledge and understanding of metallurgical management principles and apply these to one's own work, as a member and leader in a team and to manage projects;
• engage in independent and life-long learning through well-developed learning skills; and
• comprehend and apply ethical principles and commit to professional ethics, responsibilities and norms of metallurgical technology practice.

21.7.3 Curriculum

CODE	MODULE	CODE	MODULE
First year			
First semester		Second semester	
AFINSA1	African Insights		

CETM1A1	Engineering Chemistry (Metallurgy) 1A	CETM1B1	Engineering Chemistry (Metallurgy) 1B
EDRM1A1	Engineering Drawing 1A	METMTB1	Fundamentals of Metallurgy 1B
CPSELA1	Computer Skills 1A	MPRMTB1	Metallurgy Engineering Practice 1B
ECS1AA1	Engineering Communication Skills 1A	ECS1BB1	Engineering Communication Skills 1B
MATE1A1	Engineering Mathematics 1A	MATE1B1	Engineering Mathematics 1B
PHYE1A1	Engineering Physics 1A	PHYE1B1	Engineering Physics 1B
		STAE1B1	Engineering Statistics 1B

Second year

First semester		Second semester	
		ECHMTB2	Electrochemistry 2B
GMESCA2	Engineering Geology (Metallurgy) 2A	GMESCB2	Engineering Geology (Metallurgy) 2B
HMTMTA2	Heat and Mass Transfer 2A ‘’	PREMTB2	Process Engineering 2B
MEAMTA2	Metallurgical Accounting 2A	MPRMTB2	Mineral Processing 2B
MPRMTA2	Mineral Processing 2A		
MTDMTB2	Metallurgical Thermodynamics 2B		
PSTMTA2	Analytical Techniques 2A		

Third year

First semester		Second semester	
CPRMTA3	Coal Processing 3A		
PRMMTA3	Project Methodology 3A	FAPMTB3	Ferroalloy Production 3B
FMEMTA3	Ferrous Metallurgy 3A	REFMTB3	Refractory Technology 3B
HMEMTA3	Hydrometallurgy 3A	PRDMTB3	Process Design (Metallurgy) 3B
PYRMTA3	Pyrometallurgy 3A	INMMTB3	Industrial Minerals 3B
NFMMTA3	Non-Ferrous Metallurgy 3A	PRCCHB3	Process Control (Metallurgy) 3B
		PEMMTB3	Metallurgical Project 3B
		PMEMTB3	Principles of Management and Economics 3B
		PMGMTB3	Project Management (Metallurgy) 3B