

## Course Outline – Bachelor of Science (External) Degree Programme

### Biology Stream

First Year	Second Year	Third Year
<b>Semester I</b>		
BIO 111-2 Genetics and Cell Biology BIO 112-1 Principles of Ecology BIO 113-1 Introduction to Biochemistry CHE 121-3 Fundamentals of Chemistry CHE 122-1 Laboratory Safety and Management CHE 123-1 Elementary Chemistry Laboratory PHY 141-3 Classical Mechanics I PHY 142-2 Properties of Matter	BIO 211-2 Microbiology BIO 212-2 Entomology BIO 213-1 Introduction to Fisheries and Aquaculture CHE 221-3 Inorganic Chemistry CHE 222-1 Inorganic Chemistry Laboratory PHY 241-2 Solid State Physics PHY 242-2 Electrostatics and Magnetostatics	BIO 311-2 Molecular Biology and Recombinant DNA Technology BIO 312-1 Enzymology BIO 313-1 Sustainable Bioenergy Systems CHE 321-2 Physical Chemistry II CHE 322-2 Analytical Chemistry CHE 323-1 Analytical Chemistry Laboratory PHY 341-2 Matter and Radiation PHY 342-2 Current Electricity and Electromagnetic Induction
ELE 151-2 Effective English Usage ELE 152-1 Principles of Management	ELE 251-2 Basic statistics ELE 252-2 Educational Psychology ELE 253-1 Green Technology	ELE 351-2 Basics of Engineering Technologies ELE 352-2 Laboratory and Classroom Management Technology
<b>Semester II</b>		
BIO 114-2 Plant Diversity BIO 115-2 Animal Diversity BIO 116-1 Human Nutrition CHE 124-3 Organic Chemistry CHE 125-1 Organic Chemistry Laboratory PHY 143-2 Waves and Vibrations PHY 144-1 Optics PHY 145-1 Physics Laboratory I	BIO 214-2 Plant Physiology BIO 215-2 Animal Physiology CHE 223-2 Physical Chemistry I CHE 224-2 Spectroscopic Methods CHE 225-1 Physical Chemistry Laboratory PHY 243-2 Analog Electronics PHY 244-2 Introduction to Quantum Mechanics PHY 245-1 Physics Laboratory II	BIO 314-2 Animal and Human Parasites BIO 315-2 Ecosystems Management BIO 316-1 <i>In vitro</i> Propagation Techniques CHE 324-3 Industrial and Environmental Chemistry CHE 325-1 Industry and Environmental Chemistry Laboratory PHY 343-2 Digital Electronics PHY 344-2 Thermal and Statistical Physics PHY 345-1 Physics Laboratory III
ELE 153-1 Introduction to Information Technology ELE 154-1 Fundamentals of Leadership ELE 155-1 Communication Skills	ELE 254-1 Fundamentals of Economics ELE 255-1 Science Education ELE 256-2 Project Management	ELE 353-1 Quality Assurance ELE 354-1 Research Methodology and Scientific Writing ELE 355-3 Teacher Professionalism

## Mathematics Stream

First Year	Second Year	Third Year
<b>Semester I</b>		
MAT 131-3 Linear Algebra MAT 132-2 Vector Analysis CHE 121-3 Fundamentals of Chemistry CHE 122-1 Laboratory Safety and Management CHE 123-1 Elementary Chemistry Laboratory PHY 141-3 Classical Mechanics I PHY 142-2 Properties of Matter	MAT 231-3 Differential Equations and Applications MAT 232-2 Classical Mechanics II CHE 221-3 Inorganic Chemistry CHE 222-1 Inorganic Chemistry Laboratory PHY 241-2 Solid State Physics PHY 242-2 Electrostatics and Magnetostatics	MAT 331-2 Graph Theory and Combinatorics MAT 332-3 Statistical Methods CHE 321-2 Physical Chemistry II CHE 322-2 Analytical Chemistry CHE 323-1 Analytical Chemistry Laboratory PHY 341-2 Matter and Radiation PHY 342-2 Current Electricity and Electromagnetic Induction
ELE 151-2 Effective English Usage ELE 152-1 Principles of Management	ELE 251-2 Basic Statistics ELE 252-2 Educational Psychology ELE 253-1 Green Technology	ELE 351-2 Basics of Engineering Technologies ELE 352-2 Laboratory and Classroom Management Technology
<b>Semester II</b>		
MAT 133-2 Real Analysis MAT 134-2 Linear Programming CHE 124-3 Organic Chemistry CHE 125-1 Organic Chemistry Laboratory PHY 143-2 Waves and Vibrations PHY 144-1 Optics PHY 145-1 Physics Laboratory I	MAT 233-2 Complex Analysis MAT 234-2 Advanced Linear Programming CHE 223-2 Physical Chemistry I CHE 224-2 Spectroscopic Methods CHE 225-1 Physical Chemistry Laboratory PHY 243-2 Analog Electronics PHY 244-2 Introduction to Quantum Mechanics PHY 245-1 Physics Laboratory II	MAT 333-2 Numerical Methods for Scientific Computing MAT 334-1 Laboratory on Mathematical Software MAT 335-1 Seminar in Mathematics Education CHE 324-3 Industrial and Environmental Chemistry CHE 325-1 Industry and Environmental Chemistry Laboratory PHY 343-2 Digital Electronics PHY 344-2 Thermal and Statistical Physics PHY 345-1 Physics Laboratory III
ELE 153-1 Introduction to Information Technology ELE 154-1 Fundamentals of Leadership ELE 155-1 Communication Skills	ELE 254-1 Fundamentals of Economics ELE 255-1 Science Education ELE 256-2 Project Management	ELE 353-1 Quality Assurance ELE 354-1 Research Methodology and Scientific Writing ELE 355-3 Teacher Professionalism