

# MARIAN UNIVERSITY COLLEGE

A CONSTITUENT COLLEGE OF ST. AUGUSTINE UNIVERSITY OF TANZANIA



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## CURRICULUM FOR ALL UNDERGRADUATE PROGRAMMES

2017/2018

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## **FACULTIES/DEPARTMENTS/UNITS**

### **Faculty of Natural and Applied Sciences**

The Faculty of Natural and Applied Sciences has operational units of Biological and Marine Sciences, Chemistry and Environmental Sciences, Mathematics and Statistics, Physics and Electronics. The Faculty is committed to offering courses with a strong practical component, ensuring all students develop confidence and competence in the full range of practical skills.

### **Department of Education and Training**

The Department offers a three-year degree programme leading to the award of Bachelor of Education in Science (two teaching subjects).

### **Department of Mathematics and ICT**

The Department offers the three-year degree programmes leading to the award of Bachelor of Science in Mathematics and Statistics and Bachelor of Science in Computer Science.

### **Programme assessment strategy**

Each course will be assessed by coursework assessment and by examination during the end of the semester in which the course is completed. Assessment will be by a variety of methods, appropriate for the knowledge and skills required by the course – examinations, tests, quiz, assignments, homework, practical, written papers. The MARUCO general assessment regulations shall be applied.

### **Grading System and Classification of the Degree programme**

The degree will be classified in accordance to the general University College examination regulations and guidelines.

<b>Range of Marks</b>	<b>Grade</b>	<b>Grade Point</b>	<b>Description</b>	<b>Degree Class</b>	
70 - 100%	A	4.4 - 5.0	Excellent	4.4 - 5.0	First class
60 - 69%	B+	4.0 - 4.3	Very Good	3.5 - 4.3	Upper Second
50 - 64%	B	3.0 - 3.9	Good	2.7 - 3.4	Lower second
40 - 59%	C	2.0 - 2.9	Pass	2.0 - 2.6	Pass
35 - 39%	D	1.0 - 1.9	Fail	< 2.0	Fail
0 - 34%	E	0 - 0.9	Bad Fail		

### **General Examination Regulations**

The general examination regulations and guideline governing the award of Bachelor degree at MARUCO shall apply.

## PROGRAMME AND COURSE DESCRIPTIONS

### BACHELOR OF EDUCATION IN SCIENCE (Two Teaching Subjects)

#### FIRST YEAR

COURSE CODE	COURSE NAME	SEMESTER	UQF CREDIT
<b>GENERAL CORE COURSES</b>			
GST 101	Basic Microcomputer Applications	1	6
GST 102	Communication and Study Skills	1	6
<b>EDUCATION COURSES</b>			
EDU 101	Introduction to Educational Psychology	1	8
EDU 102	General Teaching Methods	1	8
EDU 103	Philosophy of Education	2	10
EDU 104	Educational Media and Technology	2	10
<b>BIOLOGY COURSES</b>			
BIO 101	Animal form and Classification	1	8
BIO 102	Introduction to Biochemistry	1	8
BIO 103	Cytology and Cell Physiology	2	10
BIO 104	Introduction to Microbiology and Mycology	2	10
<b>CHEMISTRY COURSES</b>			
CHE 101	Basic Analytical Chemistry	1	8
CHE 102	Physical Chemistry 1	1	8
CHE 103	Systematic Inorganic Chemistry	2	10
CHE 104	Basic Organic Chemistry	2	10
<b>GEOGRAPHY COURSES</b>			
GEO 101	Physical Geography	1	8
GEO 102	Climatology	1	8
GEO 103	Spatial Organizations	2	10
GEO 104	Surveying, Cartography and Map Analysis	2	10
<b>MATHEMATICS COURSES</b>			
MTH 101	Foundations of Analysis	1	8
MTH 102	Calculus I	1	8
MTH 103	Linear Algebra	2	10
MTH 104	Calculus II	2	10
<b>PHYSICS COURSES</b>			
PHY 101	Mechanics	1	8

PHY 102	Electromagnetism	1	8
PHY 103	Vibrations and waves	2	10
PHY 104	Optics	2	10

## SECOND YEAR

COURSE CODE	COURSE NAME	SEMESTER	UQF CREDITS
<b>GENERAL CORE COURSES</b>			
GST 201	Social and Professional Ethics	3	6
GST 202	Development Studies	3	6
<b>EDUCATION COURSES</b>			
EDU 201	Chemistry Teaching Methods	3	8
EDU 202	Biology Teaching Methods	3	8
EDU 203	Physics Teaching Methods	3	8
EDU 204	Mathematics Teaching Methods	3	8
EDU 207	Geography Teaching Methods	3	8
EDU 121	Teaching Practice I	3	10
EDU 209	Research Methods	4	10
EDU 210	Education Assessment and Evaluation	4	10
EDU 211	Curriculum Development	4	8
<b>BIOLOGICAL COURSES</b>			
BIO 201	Introduction to Ecology	3	8
BIO 202	Introduction to Immunology and Parasitology	3	8
BIO 203	Plant Systematics	4	8
BIO 204	Introduction to Genetics and Molecular Biology	4	8
<b>CHEMISTRY COURSES</b>			
CHE 201	Descriptive Chemistry of Transitional Metals	3	8

CHE 202	Chemical thermodynamics	3	8
CHE 203	Physical Chemistry II	4	8
CHE 204	Descriptive Inorganic Chemistry	4	8
<b>GEOGRAPHY COURSES</b>			
GEO 201	Quantitative Methods in Geography	3	8
GEO 202	Environmental Education and Conservation	3	8
GEO 203	Population Geography	4	8
GEO 204	Remote Sensing	4	8
<b>MATHEMATICS COURSES</b>			
MTH 201	Vectors and Vector Mechanics	3	8
MTH 202	Ordinary Differential Equations	3	8
MTH 301	Mathematics Statistics	4	8
MTH 207	Partial Differential Equations	4	8
<b>PHYSICS COURSES</b>			
PHY 201	Thermodynamics	3	8
PHY 202	Analogue electronics	3	8
PHY 203	Quantum mechanics	4	8
PHY 204	Digital electronics	4	8

### THIRD YEAR

COURSE CODE	COURSE NAME	SEMESTER	UQF CREDIT
<b>EDUCATION COURSES</b>			
EDU 303	Guidance and Counseling	5	8
EDU 307	Research Project in Education	5	10
EDU 212	Teaching Practice II	5	10
EDU 306	Management of Education and School	5	10
EDU 301	Sociology of Education	6	10
EDU 304	Human Behaviour and Learning*	6	8
EDU 302	Educational Planning and Economics*	6	8
EDU 305	International and Comparative Education*	6	8
<b>BIOLOGICAL COURSES</b>			
BIO 301	Synecology and Environmental	5	8
BIO 302	Animal Physiology	5	8

BIO 303	Mechanisms of Evolution and Diversity of Life	6	8
BIO 304	Plant Physiology and Structure	6	8
<b>CHEMISTRY COURSES</b>			
CHE 301	Coordination Chemistry and Organometallic Compounds	5	8
CHE 302	Electrochemistry	5	8
CHE 303	Instrumental Methods of Analysis	6	8
CHE 304	Advanced Organic Chemistry	6	8
CHE 305	Introduction to Polymer Chemistry*	6	8
CHE 306	Environmental Chemistry*	6	8
CHE 307	Natural Products*	6	8
CHE 308	Chemistry of Heterocyclic Compounds*	6	8
<b>GEOGRAPHY COURSES</b>			
GEO 301	Population and Development	5	8
GEO 302	Geographical Information Systems (GIS)	5	8
GEO 303	Environmental Disaster Management*	6	8
GEO 304	Natural Resources Management*	6	8
GEO 305	Project Planning and Management	6	8
GEO 306	Urban Planning and Management*	6	8
GEO 307	Environmental Policy and Planning*	6	8
GEO 308	Environmental Assessment	6	8
<b>MATHEMATICS COURSES</b>			
MTH 205	Abstract Algebra	5	8
MTH 302	Linear Programming	5	8
MTH 303	Numerical Analysis	6	8
MTH 304	Complex Analysis	6	8
<b>PHYSICS COURSES</b>			
PHY 301	Atomic Physics	5	8
PHY 302	Geophysics	5	8
PHY 303	Nuclear physics	6	8
PHY 304	Energy and Environment	6	8

\*Optional Courses (Semester 5 and 6)

## BACHELOR OF SCIENCE IN MATHEMATICS AND STATISTICS

### FIRST YEAR

#### SEMESTER 1

COURSE CODE	COURSE NAME	CREDIT
MTH 101	Foundations of Analysis	8.0
MTH 102	Calculus I	8.0
MTH 105	Introduction to Microeconomics Analysis	10.0
STA 101	Introduction to Statistics and Probability	8.0
STA 104	Applied Statistics	8.0
STA 105	Operation Research I	10.0
GST 101	Basic Microcomputer Applications	6.0
GST 102	Communication and Academic Study Skills	6.0
<b>TOTAL FOR SEMESTER 1</b>		<b>64.0</b>

#### SEMESTER 2

COURSE CODE	COURSE NAME	CREDIT
MTH 103	Linear Algebra	10.0
MTH 104	Calculus II	10.0
STA 102	Probability Distributions I	10.0
MTH 106	Basics of Computer Programming	10.0
STA 103	Sampling Theory and Methodology	8.0
STA 106	Design and Analysis of Experiments	10.0
<b>TOTAL FOR SEMESTER 2</b>		<b>58.0</b>

### SECOND YEAR

#### SEMESTER 3

COURSE CODE	COURSE NAME	CREDIT
MTH 201	Vector and Vector Mechanics	8.0
MTH 202	Ordinary Differential Equations	8.0
MTH 205	Abstract Algebra	8.0
STA 201	Probability Distributions II	8.0
STA 202	Time Series Analysis	8.0
STA 206	Theory of Estimation	6.0
GST 201	Social and Professional Ethics	6.0
FPT 101	Field Practical Training I	10.0
<b>TOTAL FOR SEMESTER 3</b>		<b>62.0</b>

#### SEMESTER 4:

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
STA 205	Non Parametric Tests	10.0
MTH 206	Number Theory	8.0
MTH 207	Partial Differential Equations	8.0
STA 204	Categorical Data Analysis	10.0
STA 203	Regression Analysis	10.0
GST 202	Development Studies	6.0
STA 207	Research Methodology	10.0
<b>TOTAL CORE</b>		<b>60.0</b>

**THIRD YEAR  
SEMESTER 5**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
MTH 308	Functional Analysis	10.0
MTH 307	Mathematical Information Technology	10.0
STA 301	Operations Research II	10.0
STA 303	Multivariate Analysis	10.0
STA 305	Quality Control Methods	10.0
STA 307	Research Project	10.0
FPT 201	Field Practical Training II	10.0
<b>TOTAL FOR SEMESTER 5</b>		<b>70.0</b>

**SEMESTER 6**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
MTH 305	Graph Theory	10.0
MTH 303	Numerical Analysis	10.0
MTH 304	Complex Analysis	10.0
STA 304	Stochastic Processes	10.0
<b>TOTAL CORE</b>		<b>40.0</b>
STA 302	Mathematical Modeling Techniques*	10.0
MTH 306	Non Linear Programming*	10.0
BCS 303	Project Management*	10.0
<b>TOTAL ELECTIVES</b>		<b>30.0</b>
<b>TOTAL FOR SEMESTER 6</b>		<b>70.0</b>



## BACHELOR OF SCIENCE IN COMPUTER SCIENCE (BSc CS)

### FRIST YEAR

#### SEMESTER 1

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
BCS 100	Introduction to Informatics	8.0
BCS 110	Microcomputer Applications	6.0
BCS 106	Calculus	8.0
BCS 101	Computer Architecture	10.0
BCS 104	Discrete Structures	10.0
BPH 113	Social Ethics I	6.0
BSS 110	Development Studies I	6.0
BLG 108	Communication Skills I	6.0
<b>TOTAL FOR SEMESTER 1</b>		<b>60.0</b>

#### SEMESTER 2

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
BCS 102	Introduction to Computer Programming	10.0
BCS 103	Algorithm & Data Structures	10.0
BMS 110	Introduction to Business Management	6.0
BCS 105	Linear Algebra	10.0
BPH 114	Social Ethics II	8.0
BSS 130	Development Studies II	8.0
BLG 128	Communication Skills II	8.0
<b>TOTAL FOR SEMESTER 2</b>		<b>60.0</b>

**SECOND YEAR****SEMESTER 3**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
BCS 200	Network Design & Administration I	10.0
BCS 203	Software Engineering	10.0
BCS 207	Structure of Programming Languages	10.0
BCS 202	Operating Systems	8.0
BCS 215	Probability and Statistics	8.0
BMS 222	Small Businesses and Entrepreneurship	6.0
BPT 199	Field Practical Training I	10.0
<b>TOTAL FOR SEMESTER 3</b>		<b>62.0</b>

**SEMESTER 4**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
BCS 201	Database Design	8.0
BCS 208	Computer Graphics and Multimedia	10.0
BCS 206	PC Diagnostics and Maintenance	10.0
BCS 205	Linux System Administration	8.0
BCS 210	Programming in C	8.0
BCS 213	Compilers	8.0
BCS 214	Theory of Computation	8.0
<b>TOTAL FOR SEMESTER 4</b>		<b>60.0</b>

**THIRD YEAR****SEMESTER 5**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
BCS 300	Systems Analysis and Design	10.0
BCS 301	Internet Programming and E-Applications	10.0
BCS 304	Professional Practices of Information Systems	8.0
BCS 399	Final ICT Project	10.0
BPT 299	Field Practical Training II	10.0
<b>TOTAL CORE</b>		<b>48.0</b>
BCS 307	Operations Research	8.0
BCS 313	Distributed Systems	8.0
BCS 211	Geographical Information System (GIS)	8.0
BCS 310	Computer Simulation and Modelling	8.0
<b>TOTAL FOR ELECTIVES</b>		<b>32.0</b>
<b>TOTAL FOR SEMESTER 5</b>		<b>80.0</b>

**SEMESTER 6**

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>CREDIT</b>
BCS 302	Database Systems	10.0
BCS 216	Numerical Analysis	8.0
BCS 315	Network Design and Administration II	10.0
BCS 204	Management Information Systems	10.0
BCS 305	Computer System Security	10.0
<b>TOTAL CORE</b>		<b>48.0</b>
BCS 311	Introduction Artificial Intelligence	10.0
BCS 303	Project Management	8.0
BCS 209	Advanced Software Engineering	8.0
<b>TOTAL FOR ELECTIVES</b>		<b>26.0</b>
<b>TOTAL FOR SEMESTER 6</b>		<b>74.0</b>

## Certificate in Information Technology (1 Year)

COURSE CODE	COURSE NAME	CREDIT
<b>Semester 1</b>		
CIT 111	Professional Skills for IT and Office Automation	10.0
CCS 112	Introduction to Computer Hardware and Peripherals	10.0
CCS 111	Basics in Computer Programming	10.0
CIT 112	Fundamentals of Information Technology	10.0
CMT 111	Basic Mathematics	10.0
CSC 111	English Language Proficiency	10.0
<b>Semester 2</b>		
CIT121	Computer Repair, Troubleshooting and Maintenance	10.0
CCS 121	Introduction to Computer Networking	10.0
CIT 122	Database Fundamentals	10.0
CCS 122	Introduction to Web Designing and Implementations	10.0
CCS 123	Fundamentals of Operating System and their Configurations	10.0
CIT 123	Introduction to Multimedia Systems	10.0