



DAR ES SALAAM UNIVERSITY COLLEGE OF EDUCATION



A Constituent College of the University of Dar Es Salaam

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FACULTY OF SCIENCE

P. O Box 2329
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FACULTY OF SCIENCE (FoS)

INFORMATION TO NEW STUDENTS
2018 /2019

Faculty Administration

The Faculty of Science comprises three Departments:-

1. Department of Chemistry,
2. Department of Biological Sciences,
3. Department of Physics, Mathematics, and Informatics

The Faculty offers courses leading to an award of Bachelor of Science with Education (B.Sc. (Ed.)) degree, which is obtainable after three years.

Admission/ Entry Requirements

The Faculty of Science, admits students into its undergraduate programme under the prescribed admission regulations of the University of Dar es Salaam. Students admitted into B.Sc. (Ed) programme at DUCE shall select two major Science subjects from the following combinations:

Biology and Chemistry
Biology and Geography
Mathematics and Chemistry
Mathematics and Information Science
Physics and Chemistry
Physics and Mathematics
Physics and Biology
Physics and Geography
Chemistry and Geography

Objectives of the Programme

The overall objective of the programme is that over the three years, a student should develop sufficient mastery of subject matter and competence in two teaching subjects as well as in pedagogy.

The yearly objectives are:

- (i) By the end of the first year, the students are expected to have acquired basic skills of pedagogy and intermediate level knowledge in their respective teaching subjects to enable them participate effectively in the first Teaching Practice.
- (ii) By the end of the second year, the students should have acquired sufficient classroom teaching skills and basic theories in education as well as more advanced knowledge and exposure in their respective teaching subjects.
- (iii) By the end of the third year, it is expected that the product will be an effective A-Level Secondary School science/mathematics teacher who can teach with confidence.

Regulations Governing the Award of B.Sc. (Ed) Degree

The Faculty of Science operates a semester system of studies. Each of its disciplines offers a variety of courses, including core courses, which are compulsory to students majoring in the subject and optional courses. Each course is given a credit weighing according to the time devoted to it on the timetable. Fifteen one-hour lectures or 15 two to three-hour practical classes constitute four credits. Thus, for example, a course consisting of 30 one-hour lectures and 15 three-hour practical classes is a twelve credit course. Seminars and discussion groups are not counted in the weighing unless they make up more than a third of the total teaching hours in a course. Each student shall register for courses totaling 120 CREDITS (MINIMUM) AND 144 CREDITS (MAXIMUM) per academic year. A minimum of **388 credits** must be passed for an award of B.Sc. (Ed.) degree in a three years programme and the maximum load should be **432 credits**. Passing a course shall mean scoring a C grade or higher.

General Regulations

1. All students admitted to the Faculty of Science shall major in two subjects starting from their first year of study.
2. In addition to core courses required for his/her major subjects, Development Studies, Communication Skills and Environmental Science; a student may choose as an elective any course for which she/he can meet the prerequisites/co-requisite requirements and which is compatible with the teaching timetable.
3. At the end of the academic year every student shall, in consultation with his/her Academic Advisor, map out his/her course programme for the next year. A course programme shall be subject to approval by the Head of the Department in which the student intends to major and by the Dean of the Faculty. The Dean's approval shall constitute formal enrollment for all the courses listed in the programme. For first year students, mapping of the course programme will be done during the orientation week.

Examination Regulations

Examination and teaching practice regulations for B.Sc. (Ed.) students at the UDSM will apply at DUCE

ICT Services at the Faculty

While arrangements to offer ICT services to all students belonging to the Faculty are going on, students are advised to use the College's ICT facilities in the Computer laboratories and the Main Library. Students are advised to familiarize themselves with ARIS (Academic Registration Information System), since it manages important information on course registration, examinations results and accommodation.

Contact and Inquiries

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Course Packaging Structures and Credits Distribution for B.Sc.(Ed.) Programme

1.1 Preamble

The current B.Sc. (Ed.) programme was last revised and repackaged in 2011. However, in the current exercise, some courses have been reviewed resulting into minor changes in the B.Sc. (Ed.) programme so as to cover the secondary school syllabus. Efforts have been made to maintain an acceptable level of science and mathematics content to ensure good quality of teachers produced through the programme.

1.2 Course Mapping on the Semester Time Frame

The proposed course mappings onto the semester time frame are as shown in Tables 1.1 - 1.16. It is to be noted that the indicated optional courses may be necessary for completion of the degree programme. Other additional optional courses can be selected provided prerequisites and other conditions of registration are satisfied.

Table 1.1: Semester Mapping of Common Core Courses for all Students in the B.Sc.(Ed.) Programme

Year	Semester	Course Code and Title	Credits
1	I	DS 112 Development Perspectives I	12
	II	DS 113 Development Perspective II	12
Total Credits			24

Note: Descriptions of the above courses shall be provided Faculty of Humanities and Social Sciences.

Table 1.2: Ideal Core Course Load Distribution for B.Sc. (Ed.) Programme

Year	Semester	Course Code and Title	Credits	Total
1	I	TEACHING SUBJECTS 1& 2	≥ 36*	
		EP 101 Introduction to Educational Psychology	12	24
		EF 100 Principles of Education	12	
		Optional and common courses/	Varies	
	II	TEACHING SUBJECTS 1& 2	≥ 36*	
		CT 100 Introduction to teaching	12	24
		CT 108 Secondary Education Science Methods	12	
		Optional and common courses	Varies	
2	I	TEACHING SUBJECTS 1& 2	≥ 36*	
		CT 201 Education media and Technology	12	24
		CT 101 Teaching Practice I	12	
		Optional and common courses	Varies	
	II	TEACHING SUBJECTS 1& 2		
		CT 200 Principles of Curriculum Development and Evaluation	12	12
		Optional and common courses	Varies	
3	I	TEACHING SUBJECTS 1& 2	≥ 36*	
		EP 300 Educational Measurement and Evaluation	12	36
		EP 306 Introduction to Guidance and Counseling	12	
		CT 202 Teaching Practice II	12	
		Optional and common courses	Varies	
	II	TEACHING SUBJECTS 1& 2	≥ 36*	
		EA 300 Management of Education and School Administration	12	24
		EF 303 Introduction to Entrepreneurship Education and Training	12	
		Optional and common courses	Varies	
Total				144

* Vary depending on subject combination.

Table 1.3: Semester Mapping for Common Optional Courses for the BSc. (Ed.) programme

Year	Semester	Course Code	Course Title	Credits	Total
1	I	IS 131	Introduction to Informatics and Microcomputers*	8	20
	II	CL 107	Communication Skills for Science	12	
2	I	EF 200	History of Education	12	12
	II	EP 200	Human Development and School Learning	12	12
3	I	EV 200	Environmental Science I	8	8
	II	EF 302	International and Comparative Education	12	24
		EP 303	Psychology of Adolescence	12	

* = Not taken by informatics Science students

- The descriptions of the Communication skills course shall be provided by the Faculty of Humanities and Social Sciences.
- The descriptions of the above Education courses shall be provided by the Faculty of Education.
- The description of EV 200 shall be provided by the Faculty of Science.

Table 1.4: Science Subjects and Education Mapping on Semester Time Frame

YEAR	SEMESTER	
1	I	SUBJECT 1 & 2/ EDUCATION
	II	SUBJECT 1 & 2/ EDUCATION
	July/August	Teaching Practice
2	I	SUBJECT 1 & 2/ EDUCATION
	II	SUBJECT 1 & 2/ EDUCATION
	July/August	Teaching Practice
3	I	SUBJECT 1 & 2/ EDUCATION
	II	SUBJECT 1 & 2/ EDUCATION

Table 1.5: Number of Core Credits for the Various Subject Combinations with Education and Other Compulsory Courses after the Changes

	MT/PH/*/+	CH/BL/*/+	BL/GE/*/+	MT/IS/*/+	MT/GE/*/+	BL/PH/*/+	CH/PH/*/+	CH/MT/*/+	EC/MT/*/+
YEAR 1	20/16/12/12	20/20/12/12	20/24/12/12	20/24/12/12	20/24/12/12	24/16/12/12	20/16/12/12	20/20/12/12	24/20/12/12
	12/12/12/24	12/8/12/24	20/24/12/24	12/12/12/24	12/24/12/24	20/12/12/24	12/12/12/24	12/12/12/24	24/12/12/24
YEAR 2	0/12/0/12	24/20/0/12	20/24/0/12	0/12/0/12	0/24/0/12	20/12/0/12	24/12/0/12	24/0/0/12	24/0/0/12
	36/20/0/24	20/28/0/24	28/24/0/24	36/24/0/24	36/24/0/24	28/20/0/24	20/20/0/24	20/36/0/24	24/36/0/24
YEAR 3	24/16/0/36	20/24/0/36	24/24/0/36	24/20/0/36	24/24/0/36	24/16/0/36	20/16/0/36	20/24/0/36	24/24/0/36
	24/24/0/24	16/16/0/24	16/24/0/24	24/28/0/24	24/24/0/24	16/16/0/24	16/24/0/24	16/24/0/24	24/24/0/24
TOTAL (SCIENCE)	228	240	284	236	272	224	224	240	260
+Education (Incl. PT)	144	144	144	144	144	144	144	144	144
*DS112 & DS113	24	24	24	24	24	24	24	24	24
Total	346	408	454	404	440	392	392	408	428

The common core courses taken by all the B.Sc. (Ed.) students in the Faculty of Science are summarized in Table 1.5.

Table 1.6: Semester Mapping for Common Optional Courses for All B.Sc. (Ed.) Students

Course Code	Course Title	Credits	Total
DS 211	Entrepreneurship, small business and development	8	8
SC 215	Scientific Methods	8	8
EV 300	Environmental Science II	8	8

The course mapping Tables for the individual subjects are as follows:

Biology in Tables 1.7 & 1.8; Chemistry in Tables 1.9 & 1.10; Mathematics in Tables 1.11 & 1.12; Physics in Tables 1.13 & 1.14; Computer Science in Tables 1.15 & 1.16; and Geography in Tables 1.17.

Table 1.7: Semester Mapping of Biology Core Courses for the B.Sc. (Ed.) Programme

Year	Semester	Course Code & Title	Credits	Total	
1	I	BL 111 Introductory Cell Biology and Genetics	12	20	
		ZL 121 Invertebrate Zoology	8		
		EDUCATION			
	II	EDUCATION			20
		ZL 122 Chordate Zoology	8		
CH 113 Chemistry for Life Sciences Students		12			
2	I	ZL 210 Vertebrate Anatomy and Physiology I	8	20	
		BT 130 Evolutionary Botany	12		
		EDUCATION			
	II	ZL 220 Vertebrate Anatomy and Physiology II	12	28	
		BL 113 Ecology I	8		
		BT 113 Introduction to Plant Physiology	8		
		EDUCATION			
3	I	BT 225 Taxonomy of Higher Plants	12	24	
		ZL 236 Introductory Entomology and Parasitology	12		
		EDUCATION			
	II	EDUCATION			16
		ZL 302 Evolution	8		
		BT 327 Anatomy of Angiosperm	8		
Total Credits				128	

* Course not taken by Chemistry majors

Table 1.8: Semester Mapping of Biology Optional Courses for the B.Sc.(Ed.) Programme

Year	Semester	Course Code & Title	Credits	Total
2	I	EV 200 Environmental sciences I	8	16
		ZL 124 Developmental Biology	8	
3	I	BL 215 Ecology II	12	40
		BT 211 Fundamentals of Soil Science	8	
	II	SC 215 Scientific Methods	8	
		BL 331 Cell Biology and Molecular Genetics	12	
Total Credits				56

Table 1.9: Semester Mapping of Chemistry Core Courses for the B.Sc. (Ed.) Programme

Year	Semester	Course Code & Title	Credits	Total
1	I	CH 118 Basic Analytical and Physical Chemistry	12	20
		CH 121 Chemistry Practicals I	8	
		EDUCATION		
	II	CH 117 Organic Chemistry I	12	12
EDUCATION				
2	I	CH 219 Systematic Inorganic Chemistry	12	24
		CH 243 Organic Chemistry II	12	
		EDUCATION		
	II	CH 241 Chemistry Practicals III	8	20
		CH 201 Chemical Thermodynamics	12	
EDUCATION				
3	I	CH 290 Chemical Kinetics and Electrochemistry	12	20
		CH 248 Instrumental Methods in Analytical Chemistry	8	
		EDUCATION		
	II	CH 341 Chemistry Practicals VI	8	16
		CH 364 Coordination Chemistry	8	
EDUCATION				
Total Credits				112

Table 1.10: Semester Mapping of Chemistry Optional Courses for the B.Sc.(Ed.) Programme

Year	Semester	Course Code & Title	Credits	Total
2	I	CH 280 Organic Structure, Reactions and Mechanism	12	24
	II	CH 262 Analytical and Environmental Chemistry	12	
3	I	CH 377 Industrial Chemistry	12	20
	II	CH 323 Organic Spectroscopy	8	
Total Credits				44

Students are strongly advised to opt for CH 323.

Table 1.11: Semester Mapping of Mathematics Core Courses for B.Sc. (Ed.) Programme

Year	Semester	Course Code & Title	Credits	Total
1	I	MT 100 Foundations of Analysis	12	24
		MT 127 Linear Algebra I	12	
		EDUCATION		
	II	MT 136 Ordinary Differential Equation I	8	20
MT 120 Analysis 1: Functions of a Single Variable		12		
		EDUCATION		
2	I	MT 200 Analysis 2: Functions of Several Variables	12	24
		MT 233 Mathematical Statistics	12	
		EDUCATION		
	II	MT 278 Linear Programming	12	12
		EDUCATION		
3	I	MT 357 Abstract Algebra	12	12
			EDUCATION	
	II	MT 310 Analysis 3: Complex Analysis 1	12	24
		MT 360 Functional Analysis	12	
		EDUCATION		
Total Credits				116

Table 1.12: Semester Mapping of Optional Mathematics Courses for B.Sc.(Ed.) Programme

Year	Semester	Course Code and Title	Credits	Total
2	II	MT 274 Numerical Analysis	12	24
		MT 227 Linear Algebra II	12	
3	I	MT 389 Mathematics Project	8	20
	II	MT 389 Mathematics Project	8	
		MT 378 Queuing Theory and Inventory Models	12	
Total Credits				44

Table 1.13: Semester Mapping of Physics Core Courses for the B.Sc. (Ed.) Programme

Year	Semester	Course Code & Title	Credits	Total
1	I	PH 127 Vibrations and Waves and Optics	12	20
		PH 122 Classical Mechanics	8	
		EDUCATION		
	II	PH 116 Experimental Methods of Physics I	8	20
		PH 128 Electromagnetism	12	
EDUCATION				
2	I	PH 247 Experimental Methods of Physics II	8	8
		EDUCATION		
	II	PH 217 Quantum Physics	12	20
		PH 220 Statistical Thermodynamics	8	
EDUCATION				
3	I	PH 339 Electronics	12	12
		PH 346 Physics Project	8(4)	
		EDUCATION		
	II	PH 351 Physics of the Atom	12	20
		PH 346 Physics Project	8(4)	
EDUCATION				
Total Credits				100

Table 1.14: Semester Mapping of Optional Physics Courses for B.Sc. (Ed.) Programme

Year	Semester	Course Code And Title	Credits	Total
2	I	PH 222 Advanced Mechanics	8	20
		PH 204 Mathematical Methods of Physics	12	
	II	PH 249 Fundamentals of Materials Science	8	8
3	I	PH 319 Fundamental of Atmospheric Physics	8	24
		PH 334 Energy in the Environmental	8	
		PH 317 Fundamental of Electrodynamics	8	
	II	PH 332 Solid State Physics	8	16
		PH 364 Earth-Atmosphere system	8	
Total Credits				68

Table 1.15: Semester Mapping of Core Computer Science Courses for B.Sc. (Ed.) Programme

Year	Semester	Course Code & Title	Credits	Total
1	I	IS 142 Introduction to High Level Programming	12	24
		IS 161 Basic Computer Applications	12	
		EDUCATION		
	II	IS 137 Data Structure and Algorithms	12	12
		EDUCATION		
2	I	IS 245 Operating Systems	12	12
		EDUCATION		
	II	IS 263 Database Concepts	12	24
		IS 292 Object Oriented Programming	12	
EDUCATION				
3	I	IS 272 Software Development I	12	28
		IS 383 Internet Applications and Programming	8	
		IS 335 Final Year Project I	8	
		EDUCATION		
	II	IS 261 Network Design and Programming	12	20
		IS 335 Final Year Project II	8	
EDUCATION				
Total Credits				120

Table 1.16: Semester Mapping of Optional Science Courses for B.Sc. (Ed.) Programme

Year	Semester	Course Code And Title	Credits	Total
1	II	IS 151 Digital Circuitry	12	
2	II	IS 258 PC- Maintenance	8	
3	I	IS 333 System analysis and Design	12	24
	II	IS 353 Implementation of Data base	12	
Total Credits				44

Table 1.17: Semester Mapping of Core Geography Courses for B.Sc. (Ed.) Programme

Year	Semester	Course Code and Title	Credits	Total
1	I	GE 140 Introduction to Physical Geography	12	24
		GE 142 Spatial Organisation	12	
		EDUCATION		
	II	GE 141 Climatology	12	12
		EDUCATION		
2	I	GE 244 Quantitative Methods in Geography	12	24
		GE 240 Soil Resources	12	
		EDUCATION		
	II	GE 245 Remote Sensing	12	36
		GE 247 Population Studies	12	
GE 144 Surveying and Mapping Science		12		
		EDUCATION		
3	I	GE 249 Research Methods in Geography	12	24
		GE 352 Natural Resources Management	12	
		EDUCATION		
	II	GE 353 Geographical Information Systems	12	24
		GE 349 Contemporary Geography of Africa	12	
EDUCATION				
Total Credits				144

Note: Descriptions of geography courses are provided by the Faculty of Humanities and Social Sciences.

Table 1.18: Semester Mapping of Core Economics Courses for B.Sc. (Ed.) Programme

Year	Semester	Course Code and Title	Credits	Total
1	I	EC 116 Introductory Microeconomic Analysis I	12	24
		EC 117 Introductory Microeconomic Analysis I	12	
		EDUCATION		
	II	EC 126 Introductory Microeconomic Analysis II	12	24
		Introductory Macroeconomic Analysis II	12	
EDUCATION				
2	I	EC 216 Intermediate Microeconomic Analysis I	12	24
		EC 217 Intermediate Macroeconomic Analysis I	12	
		EDUCATION		
	II	EC 226 Intermediate Microeconomic Analysis II	12	24
		EC 227 Intermediate Macroeconomic Analysis II	12	
EDUCATION				
3	I	EC 371 Monetary Economics I	12	24
		EC 373 International Economics I	12	
		EDUCATION		
	II	EC 381 Monetary Economics II	12	24
		EC 383 International Economics II	12	
EDUCATION				
Total Credits				144

Note: Descriptions of economics courses are provided by the Faculty of Humanities and Social Sciences.