



UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
UNIVERSITY OF DAR ES SALAAM
DAR ES SALAAM UNIVERSITY COLLEGE OF
EDUCATION
FACULTY OF SCIENCE



**INFORMATION TO NEW POSTGRADUATE STUDENTS
2023/2024**

Faculty Administration

The Faculty of Science comprises three Departments: -

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

The Faculty currently offers postgraduate courses leading to the award of Master of Science with Education (M.Sc. (Ed.)), Master of Science in Environmental Biology (M. Sc. Env. Biol.), and Master of Science in Industrial Chemistry (M. Sc. Ind. Chem.) degrees which are obtainable after two years.

Admission/ Entry Requirements

The Faculty of Science admits students into its Postgraduate programme under the prescribed admission regulations of the University of Dar es Salaam. Students admitted into M.Sc. (Ed) programme at DUCE shall select one primary Science subject of specialization. Candidates applying for the M.Sc. (Ed.) programme shall hold B.Sc. (Ed.) or B.Ed. (Science) degrees from a recognized institution with at least a lower second-class degree classification of GPA not less than 2.7. Graduates from non-education science degree programmes, or equivalent qualifications, will be required to undertake a postgraduate diploma in Education as a prerequisite programme prior to admission into the M.Sc. (Ed.) programme.

Entry arrangement for the M.Sc. (Env. Biol.) and M.Sc. (Ind. Chem.) programmes shall require a person to have at least a lower second-class degree classification of GPA not less than 3.0 and 2.7 respectively or its equivalent from a recognized institution of higher learning. Applicants who hold unclassified degrees such as Bachelor of Veterinary Medicine and Doctor of Medicine shall have at least a B grade average in related subjects.

Objectives of the Programmes

The overall objective of the programmes is to create a critical mass of well-educated and competent scientists equipped with the necessary knowledge, skills and attitudes, and hence promote science culture in society in general for industrial development. Specifically, the graduate of these programmes are expected to have:

- (i) Broadened and consolidated basic and applied science content knowledge in their area of specialization;
- (ii) Deepened and consolidated scientific skills and knowledge in their area of specialization;
- (iii) Increased competence in scientific research;
- (iv) Enhanced competence in designing and handling experimental work;
- (v) Developed competence in integrating ICT in executing their duties.

The yearly objectives are:

Year 1 Objectives:

By the end of the first year, a student should be able to:

- (i) Demonstrate mastery of basic and applied science content knowledge in his/her area of specialization;
- (ii) Apply core practical skills and knowledge in the chosen areas;
- (iii) Design and implement laboratory experiments;
- (iv) Integrate ICT in relevant areas of specialization;

Year 2 Objectives:

By the end of the second year, a student should be able to:

- (i) Develop and write a scientific research proposal;
- (ii) Design and implement scientific research;
- (iii) Write a scientific report/paper;
- (iv) Write a scientific dissertation/thesis.

Regulations Governing the Award of M.Sc. 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 all students majoring in the subject and optional/elective 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 credits 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 120 CREDITS (MINIMUM) courses in the first year and 60 CREDITS of Dissertation in the second year. A minimum of **180 credits** must be passed for an award of M.Sc. degree in two years. Passing a course shall mean scoring a B grade or higher.

General Regulations

1. All students admitted in M. Sc. shall major in one Science subject starting from their first year of study.
2. In addition to core courses required for his/her major subject, 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. 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.

Examination Regulations

Examination regulations for M.Sc. 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.

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

1.1 Course Mapping on the Semester Time Frame

The course mappings onto the semester time frame are shown in Tables 1.1 - 1.5. It is to be noted that the indicated optional courses may be necessary to complete the degree programme. Additional optional courses can be selected provided that the prerequisites and other conditions of registration are satisfied.

Table 1.1: Semester Mapping for Science Education Courses for all Students in the M.Sc.(Ed.) Programme

Year	Semester	Course Code and Title	Credits
1	I	Core courses	
		FE 600a_DUCE: Research Methods in Education	12
		CT 605_DUCE: Computer assisted Learning	12
		Elective courses	
		CT 600_DUCE: Curriculum and Teaching	12
	CT 603_DUCE: Professional Development in SMT	12	
	II	Core courses	
		FE 600b_DUCE: Research Methods in Education	12
		EP 604_DUCE: Theories of Teaching and Learning	12
		Elective courses	
CT 604_DUCE: Assessment of Performance in SMT		12	
EA 607_DUCE: Management of Education Systems and Institutions	12		

Note: The Faculty of Education shall provide descriptions of the above courses.

Table 1.2: Semester Mapping for Biology Courses

Year	Semester	Course Code and Title	Credits
1	I	Core courses	
		BL 661_DUCE: Genetics	12
		BL 617_DUCE: Molecular Biology	12
		ZL 604_DUCE: Protozoology and Helminthology	12
		Elective courses	
		ZL 612_DUCE: Animal Reproductive Physiology	12
		BC 604_DUCE: Aquatic Biodiversity and Conservation	12
		BT 601_DUCE: Advanced Plant and Fungal Systematics	12
		II	Core courses
	BL 607_DUCE: Biostatistics		12
	BL 662_DUCE: Biological methods and techniques		12
	BL 663_DUCE: Advanced Physiology		12
	Elective courses		
	BT 605_DUCE: Plant Protection		12
	BL 668_DUCE: Soil-Plant-Water Relations		12
BL 670-DUCE Fauna and Flora of East Africa	12		
ZL 616_DUCE: Insect Ecology, Pest and Vector Management	12		
2		BL 699_DUCE: Dissertation	60

Table 1.3: Semester Mapping for Chemistry Courses

Year	Semester	Course Code and Title	Credits
1	I	Core courses	
		CH 606_DUCE: Advanced Coordination Chemistry	12
		CH 619_DUCE: Physical Chemistry	12
		Elective courses	
		CH 603_DUCE: Solid State Chemistry	12
		CH 607_DUCE: Advanced Physical Organic Chemistry	12
	II	Core courses	
		CH 651_DUCE: Chemistry of Biomolecules	12
		CH 618_DUCE: Structure, Properties and Applications of Polymers	12
		CH 630_DUCE: Advanced Analytical Chemistry and Instrumentation	12
		Elective courses	
		CH 394_DUCE: Fundamentals of Theoretical Chemistry*	12
		CH 610_DUCE: Surface and Colloid Chemistry	12
		CH 611_DUCE: Heterocyclic Chemistry	12
CH 613_DUCE: Advanced Environmental Chemistry	12		
CH 616_DUCE: Chemistry of Natural Products	12		
2		CH 699_DUCE: Dissertation	60

Table 1.4: Semester Mapping for Mathematics Courses

Year	Semester	Course Code and Title	Credits
1	I	Core courses	
		MT 641_DUCE: Advanced Mathematical Statistics	12
		MT 662_DUCE: Optimization Methods of Operations Research	12
		Elective courses	
		MT 657_DUCE: Methods of Mechanics	12
		MT 660_DUCE: Computer Applications and Programming	12
	II	Core courses	
		MT 663_DUCE: Ordinary Differential Equations I	12
		MT 602_DUCE: Numerical Analysis	12
		MT 605_DUCE: Advanced Linear Algebra	12
		Elective courses	
		MT 601_DUCE: Advanced Probability Theory	12
		MT 608_DUCE: Algebraic Geometry	12
MT 610_DUCE: Complex Analysis	12		
2		MT 699-DUCE: Mathematics Dissertation	60

Table 1.5 Semester Mapping for Physics Courses

Year	Semester	Course Code and Title	Credits
1	I	Core courses	
		PH 611_DUCE: Electrodynamics	12
		PH 613_DUCE: Electronics	12
		PH 617_DUCE Quantum mechanics	12
		Elective courses	
		PH 615_DUCE: Computational physics	12
		PH 616_DUCE Statistical mechanics	12
	II	Core courses	
		PH 618_DUCE: Condensed Matter Physics	12
		PH 619_DUCE: Nuclear Physics and instrumentation	12
		Elective courses	
		PH 620_DUCE: Aerosol Physics	12
		PH 621_DUCE: Atmospheric dispersion and air quality modelling	12
		PH 623_DUCE: Physics of sustainable electricity generation	12
PH 625_DUCE: Nuclear technique and applications	12		
2		PH 699_DUCE: Dissertation	60

2.0 Course Packaging Structures and Credits Distribution for M.Sc.(Env. Biol.) Programme

Table 2.1: Year One Semester I

Course Code	Course Title	Core/ Elective	Credits
EB 601	Applied Ecology	Core	12
EB 602	Bioethics	Core	12
EB 603	Biodiversity Conservation and Management	Core	12
EB 604	Environmental Pollution and Control	Core	12
EB 605	Plant Pathology	Elective	12
EB 606	Environmental Biotechnology	Elective	12
GE 633*	Applied geographical information systems	Elective	12
ZL 630*	Physiology and the environment	Elective	12

Note: A minimum of one elective course should be taken in the semester I

Table 2.2: Year One Semester II

Course Code	Course Title	Core/ Elective	Credits
EB 608	Scientific research methods	Core	12
EB 609	Environmental Assessment	Core	12
EB 612	Environmental Microbiology	Core	12
EB 613	Environmental Education	Core	12
EB 610	Parasite Ecology	Elective	12
EB 611	Ecological Entomology	Elective	12
EB 614	Environmental law, policy and Management systems	Elective	12
EB 607	Climate change and Disaster Management	Elective	12
			60

Note: A minimum of one elective course should be taken in each semester.

*Courses adopted from existing M.Sc. programmes at UDSM - Mwl. J.K. Nyerere Campus.

Table 2.3: Year Two Semester (I & II): EB 699 Dissertation credit 60

Course Code	Course Title	Core/Elective	Credits
EB 699	Dissertation	Core	60
			60

3.0 Course Packaging Structures and Credits Distribution for M.Sc.(Ind. Chem.) Programme

Table 3.1: Semester I, Year one – Industrial Processes and Biotechnology Stream

Course Code	Course Name	Core/option	Credits
CH 631	Scientific Methods and Analytical Techniques	Core	12
CH 632	Chemical Kinetics and Catalysis	Core	12
CH 633	Advanced Inorganic Chemistry	Core	12
CH 634	Advance Organic Chemistry	Core	12
CH 635	Environmental Pollution, Toxicology and Public Health	Core	12
Total			60

Table 3.2: Semester II, Year one – Industrial Processes and Biotechnology Stream

Course Code	Course Name	Core/option	Credits
CH 636	Industrial Inorganic Chemistry	Core	12
CH 637	Industrial Organic Chemistry	Core	12
CH 638	Food Chemistry and Biotechnology	Core	12
CH 639	Advanced Biochemistry	Core	12
Total			48

Note: A minimum of one elective course should be taken in this semester

Table 3.3: Semester I, Year one – Petroleum Chemistry and Allied Processes Stream

Course Code	Course Name	Core/option	Credits
CH 631	Scientific Methods and Analytical Techniques	Core	12
CH 632	Chemical Kinetics and Catalysis	Core	12
CH 633	Advanced Inorganic Chemistry	Core	12
CH 634	Advance Organic Chemistry	Core	12
CH 635	Environmental Pollution, Toxicology and Public Health	Core	12
Total			60

Table 3.4: Semester II, Year one – Petroleum Chemistry and Allied Processes Stream

Course Code	Course Name	Core/option	Credits
CH 640	Petroleum Geochemistry	Core	12
CH 641	Petroleum Chemistry and Technology	Core	12
CH 642	Oil and Gas Exploration	Core	12
CH 643	Advances in Biofuel Production	Core	12
			48

Note: A minimum of one elective course should be taken in this semester.

Table 3.5: Semester II, Year one – Common Optional Courses for all Streams

Course Code	Course name	Core/Option	Credits
CH 644	Industrial Nanotechnology	Option	12
CH 645	Bioactive Natural Products and Formulation	Option	12
CH 646	Industrial Processes and Pollution Management	Option	12
CH 647	Green Chemistry	Option	12
CH 648	Industrial Entrepreneurship and Innovation	Option	12

Table 3.6: Semester I and II Year two - Dissertation – for all streams

Course Code	Core/option	Credits
CH 699	Core	60

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