

FACT SHEET

PhD Aquaculture and Fisheries Science

Rationale

Aquaculture and fisheries production are major contributors to national economies. In sub-Saharan Africa, capture fisheries is also important contributing on average 4% to GDP. There is however, a general decline in capture fisheries the world over, but more so in sub-Saharan Africa. To supplement the declining production of fish from capture fisheries, governments in sub-Saharan Africa have embarked on developing aquaculture at both smallholder and commercial levels. In southern Africa, Malawi has been mandated to co-ordinate the Inland Fisheries and Aquaculture Sectors of the region. To implement this, a state-of-the-art research and training facility was established at Bunda College in Lilongwe in 1999. Following an independent review of existing capacities for capacity development for the aquaculture and fisheries sector, Bunda (now Lilongwe University of Agriculture and Natural Resources) was identified to host a regional facility for training at both MSc. and PhD levels for the RUFORUM countries and others.

Graduate Profile

Graduates of the PhD Programme will have skills and knowledge in:

- Key issues and trends in agricultural development, especially in the Aquaculture and Fisheries sector.
- Design and implementation of training, research and development programmes.
- Formulation and implementation of policies relevant to sustainable use and management of natural resources, especially Aquaculture and fisheries resources

Programme duration

This is a three-year Programme consisting of one year of coursework and two years of research.

(Continued on page 2)

Programme Objectives

- 1) Develop and build capacity in order to support economic advancement of the eastern and southern Africa region, especially the Aquaculture and Fisheries sector.
- 2) Equip students with a deeper understanding of the theoretical framework underlying aquaculture and fisheries sciences and practices
- 3) Equip students with skills in articulating aquaculture and fisheries issues for public and private sectors, as well as, for international and non-governmental organizations
- 4) Strengthen regional collaboration while rationalizing the use of existing resources (human and infrastructure) in the region.

Host Institution

Lilongwe University of Agriculture and Natural Resources, Bunda College Campus,
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(Continued from page 1)

Mode of delivery

This comprises of:

1. Course work – All courses have strong theory and practical components to achieve the objectives of graduating skills that are able to apply their learning to the real world situation.
2. The Candidates field work which leads in the development of the thesis and other publications.
3. Five of the PhD AQFS courses have been developed as e-courses and are hosted on the LU-ANAR and RUFORUM Moodle Learning Management Systems [<http://www.ruforum.activemoodle.com/>]. These courses are: Aquaculture and Fisheries Economics; Fish Bioenergetics; Aquaculture Nutrition and Feed Technology; Aquaculture Production, Systems & Engineering; Molecular Biology & Genetics. This e-content is freely available for sharing, modifying and re-use.

Curriculum structure and content

The following are the bridging, core and elective courses:

Semester 1 Core Courses - 3 credit hours for each core course except AAE 614 (2.5 hours)

AQF 611 Aquaculture and Fisheries Economics

AQF 612 Fisheries and Aquatic Resources Management

AQF 613 Molecular Biology and Genetics

AQF 614 Biostatistics and Research Methods

AAE 614 Life Skills and Personal Development

Semester 2 Core Courses: Aquaculture Production Systems and Engineering

AQF 621 Aquaculture Nutrition and Feed Technology

AQF 622 Aquaculture Production Systems and Engineering

AQF 623 Fish Reproduction and Breeding

AQF 624 Water Quality Management

Semester 2 Core Courses: Aquaculture production Systems and Engineering

AQF 625 Advanced Fish Population Dynamics and Stock Assessment

AQF 626 Fisheries Ecology

AQF 627 Limnology and Oceanography

AQF 628 Advanced Resources Economics and Management

Electives (students take at least 2), each course 3 credit hours Except AQF 632 (2.5 Credit hours) and AQF 637 (0.3 Credit Hours)

AQFS 631 Business Management in Aquaculture

(Continued on page 3)

(Continued from page 2)

- AQF 632 Biotechnology Applications in Aquaculture
- AQF 633 Integrated Agriculture and Aquaculture Systems
- AQF 634 Fisheries Bioenergetics
- AQF635 Fish Taxonomy and Systematics
- AQF 636 Fisheries Bio economics, Theory Modeling and Management
- AQF 637 Fish Quality Management

Method (s) of assessment

Coursework

The Assessment of Students Course work is based on all courses taught in any one semester and it is done at the end of each semester. At the end of the course/ module, each lecturer administers a questionnaire for evaluation. The questionnaire are designed by Lilongwe University of Agriculture and Natural Resources through the Registrar's Office to capture issues of course/module content, delivery and relevance of such courses for the region

Thesis

The research Project is examined by written thesis and oral presentation. Student's thesis is examined by two internal (within the university) examiners and one external examiner followed by oral presentation/examination at the Faculty the student is registered. The candidates who fail their research thesis work are allowed two re-submissions and then discontinued after a fail in the second re-submission

Implementation progress and achievements

The Aquaculture and Fisheries Degree Programme was launched in 2009. Subsequent cohorts of students reported in 2010 up to 2015.

Student numbers

Table 1 below gives a summary of student's statistics, including the numbers that applied for the Programme per intake.

Table 1: Student numbers in the Aquaculture and Fisheries Sciences Programme (2009-2015)

The drastic reduction in the number of enrolled students was due lack of funding to provide scholarships support.

(Continued on page 4)

(Continued from page 3)

Year of Intake	Student Numbers (% females in brackets)	Status of Students	Countries of origin of the students
Cohort 1 (2009)	10 (10%)	A total of 6 students have graduated and the remaining 4 are completing their thesis write-up	Uganda, Zambia, Malawi, Kenya
Cohort 2 (2010)	2 (10%)	Completing the thesis write-up and working on journal publications for submission	Uganda and Zambia
Cohort 3 (2011)	1 (0%)	Completing the thesis write-up and working on journal publications	Malawi
Cohort 4 (2012)	2 (50%)	Completing the thesis write-up and papers will be sent for external examination	Uganda & Zambia
Cohort 5 (2013)	2 (0%)	Completed coursework and the students are now conducting research activities in their home countries	Nigeria & Malawi
Cohort 6 (2014)	2 (0%)	Just concluded course work and will proposals will be presented to the department	Uganda & Mozambique
Cohort 7) 2015	5	The students have just been recruited and will begin coursework by October 2015	

Staff exchanges – visiting lecturers

National: 4, Regional: 4, International: 2

Where the graduates are going

The programme has contributed to building the capacity of the staff from member universities as well as national research institutions. Some of the PhD students have graduated and resumed duties at their workplaces. Examples:

1. Wales Singini – Dean of Faculty and Lecturer Mzuzu University, Malawi
2. Fanuel Kapute – Associate Professor & Coordinator for Post graduate studies— Mzuzu University, Malawi
Sr Jane Yatuha – Lecturer, Mbarara University, Uganda
3. Joshua Valeta – Director of Distance Learning, Lilongwe University of Agriculture and Natural Resources
4. Godfrey Kamugisa – Lecturer, Makerere University
5. Alexander Bulirani – Director of Fisheries, Ministry of Agriculture – Fisheries Department, Malawi
6. Alexander Kefi - National Aquaculture Research and Development Centre (NARDC), Kitwe, Zambia
7. Albert Nsonga – National Aquaculture Research and Development Center (NARDC), Zambia
8. Leston Yoyola Phiri – Department of Fisheries, Zomba, Malawi
9. Caleb Lewuantai – Lecturer, Egerton University, Kenya

(Continued on page 5)

(Continued from page 4)

Programme Outputs

1. Publications and manuscripts:

- 10 Theses
- 15 Journal papers
- 10 papers in conference proceedings

2. Five of the PhD AQFS courses have been developed as e-courses and are hosted on the LUANAR and RUFORUM Moodle Learning Management Systems [<http://www.ruforum.activemoodle.com/>]. These courses are: Aquaculture and Fisheries Economics; Fish Bioenergetics; Aquaculture Nutrition and Feed Technology; Aquaculture Production, Systems & Engineering; Molecular Biology & Genetics. This e-content is freely available for sharing, modifying and re-use.