

Masters in Research Methodology

A Joint Regional Training Programme by the
Member Universities of the Regional Universities
Forum for Capacity Building in Agriculture
(RUFORUM)



Masters in Research Methodology

**A Joint Training Programme by the Member
Universities of RUFORUM**

Information Booklet

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(RUFORUM)

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Table of content

Summary	i
1.0 Background	1
2.0 Uniqueness of the programme	3
3.0 Programme management	4
4.0 Programme focus	4
5.0 Programme structure and curriculum	5
6.0 Course description	6
7.0 Admission requirements	12
8.0 Programme quality assurance	13
9.0 Risk management	15
10.0 Funding and sustainability	15
11.0 Contact details	15

Summary

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is a strategic undertaking by universities in east and southern Africa *to pool their efforts to build capacity for the region within the region*. It recognises the existence of different levels of capacities and competencies in the member universities, and will marshal these to develop high quality research and graduate training programmes that respond to market needs and serve to strengthen innovation capacity.

This programme aims at furthering the regional collaboration by collectively training Masters Level Research Methodology Specialists to support and guide research activities. Currently no university in the region is offering such a degree programme, partly because singly no university has the required capacity and competence to offer such a programme. The programme responds to a widespread regional need and has the following unique characteristics:

- It is offered in common regional facilities but drawing human resource from all the RUFORUM member universities and beyond.
- The common facilities will rotate among the member countries and universities so as to build capacity in all the countries and universities.
- The degree will be awarded by the hosting or home university.
- The Programme will have a strong applied component which will interphase the traditional biometry and general and emerging research methodology approaches.
- The academic programme is for two years and will draw students from both biological and social sciences.
- The courses will be based on modules to allow participation of both registered students and persons interested in particular modules.
- There will be a flexible common grading system across the member universities, based on Grade Point Average (GPA), to allow transfer of credits across the member universities.
- Initially the programme will be piloted at Jomo Kenyatta University of Agriculture and Technology, and the University of Malawi (Bunda College) before rolling-out to other universities.

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1.0 Background

Recently several major reports have emphasized the importance of science and technology for development of the Africa region (Eicher, 2006; Johanson & Saint, 2007)^{1, 2}. In the areas of agriculture and rural development the National Agricultural Research Systems (universities, national research organizations etc.) will continue being the heart of the research effort. Yet capacity to conceptualise, plan and implement effective research is often limited. Research proposals received by the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), International Foundation for Science (IFS) and others highlight the problems. The difficulties can be traced to a number of causes related to changes in research for development. These include:

- The changing focus of research for development to generate impact on major problems
- The need for integrating, cross-disciplinary work
- The blurring of boundaries between research and extension, with non-governmental organisations and others now playing a role in development
- The emergence of new disciplines such as environmental economics and sustainability science
- The need for multi-scale approaches, that look beyond the plot to farms, landscapes and regions
- Challenging research paradigms such as participation/stakeholder involvement

The research methods needed to work in this new environment are also new and changing rapidly. However, the training offered by universities in research methods has not kept up. Furthermore, there is very limited capacity to offer research methods support to researchers. In fact, there is very limited human resource capacity in terms of numbers and competence throughout sub-Saharan Africa. This limited capacity and inadequate support to the changing priorities of agricultural research has unfortunately weakened the quality of research and progress towards increasing food and nutritional security and alleviating poverty (CTA, 1997)³. Thus, it is proposed to facilitate training of a cohort of young⁴ and practical Research Methodology Specialists to

¹Eicher, C.K. 2006. The evolution of agricultural education and training: Global insights of relevance to Africa. Department of Agricultural Economics, Michigan State University, East Lansing, Michigan.

²Johanson, R. & Saint, W. 2007. Cultivating knowledge and skills to grow African agriculture. Report to the World Bank, June 2007.

³CTA, 1997. Strengthening biometry and agricultural research. Summary and recommendations of a CTA/University of Hohenheim workshop, 1996. CTA (Technical Centre for Agricultural and Rural Cooperation), Wageningen, The Netherlands.

⁴FARA (Forum for Agricultural Research in Africa), 2006. Agricultural research delivery in Africa. An assessment of the requirements for efficient, effective and productive National Agricultural Research Systems in Africa. Executive Summary and Strategic recommendations. FARA, Accra, Ghana.

support the National Agricultural Research and Extension Systems. The training would be linked to on-going research by the NARS (National Agricultural Research Systems) and other research programmes such as under RUFORUM, Collaborative Group on International Agricultural Research (CGIARs) and Sub Saharan Africa (SSA) Challenge Programme.

Thus, this initiative aims to develop a new cadre of professionals who are able to:

1. Train scientists in the research methods needed to work in the emerging areas,
2. Support scientists in the planning, implementation and reporting of effective research for development.

The human resources which are available to train these new professionals are scattered within the region. It is therefore proposed to introduce a regional Masters Programme in Research Methodology which will pool resources within the region, in particular the scattered teaching staff and other existing facilities to provide quality training in research methods. The regional training approach will also foster a closer interaction which will enrich training, and provide the much needed support to the practicing research methods specialists, especially those who are just joining the work force. The new approach will also promote more collaborative research which is necessary and sometimes mandatory for integrated solutions and approaches to development goals.

The trained graduates are expected to work in national research stations, university institutions, non-governmental organizations involved in research and any other similar institutions that need research methods support.

Target goal

To build, sustain and strengthen regional capacity for teaching, learning and practice of impact oriented research for development and scientific progress.

Programme objectives

1. To mount a regional graduate training programme in Research Methodology built on a strong foundation of theoretical and practical norms and standards geared towards meeting the current international concerns including the Millennium Development Goals, the dynamic trends and changing roles in research agenda, and current demand for impact and increased accountability.

2. To produce graduates with a solid foundation in research methods concentrating on professional and soft skills and equipped with current tools for today's research.
3. To promote collaborative network amongst regional institutions to enable them share and exploit existing research potential within the region to inform relevant policy.
4. To produce at least 150 graduates within five years, with knowledge and skills essential for carrying out and supporting quality research for development, well versed or able to identify research priorities or regional problems and subsequently offer relevant research approach focused on their resolutions.

2.0 Uniqueness of the programme

- 1. Fills gaps between theoretical rigor and practical needs** - Training in traditional areas of statistics and biometry have tended to emphasize mathematical statistics with little on the ground design and emerging development issues which require complementary competencies. Further, they are mostly theoretical and leave a big gap between the advisor and advisee, resulting in several complaints by researchers about inadequacies in advice by statisticians. The graduates of this programme will serve to provide the interface between statisticians and research practitioners.
- 2. Regional ownership of the programme** - Most of the universities in the region lack the capacity to mount a Masters Programme in Research Methodology. However, when the universities are brought together, the capacity is enhanced and mounting the programme is collaboratively viable. Furthermore, consultative meetings among the RUFORUM universities emphasised the need for joint ownership of programmes while building capacity of member universities. This programme is therefore a response to that need. Experts to teach in the programme at the common facilities will come from as many of the RUFORUM universities as is practically feasible and elsewhere in the region and beyond. Efforts will be made to engage external experts to assist in guiding students' research. Additionally, the programme will rotate among the member countries and universities. The students will obtain the degree from the common facility or home university or any one of the other RUFORUM member universities. Further, the curriculum developed is a joint product of all the 12 member universities of RUFORUM and other actors. Likewise, curriculum review will be a consultative and continual process. The programme is also designed in such a way that it anchors on complementary programmes in the region, especially the on-going research for development activities. Efforts will also

be made to ensure that all countries benefit from the programme through application of local fees and equity of participation of students. The programme will specifically promote women education, with a target of at least 40% females. In addition, a deliberate effort will be made to strengthen the weaker departments in the region, through extra scholarships and teaching support.

3. Strong inter-linkage among fields of study - The learning process will integrate different research fields such as social sciences, agricultural experimentation, clinical and public health studies.

4. Innovative approaches - Apart from imparting skills in basic areas of biometry, there will be strong emphasis in application of appropriate research methodology in innovation systems research and development impact assessment, etc. Teaching approaches will also be student-friendly to foster life-long learning.

3.0 Programme management

3.1 Course management system

A common course management system has been adopted from the outset to enable the courses to function on a regional basis. Initially Moodle will be used, and the system will be managed by a backstopping institution. The system will be used for the training materials, discussion forums, quizzes and so on. All students and resource persons will be registered. An "alumni" course will later be established, to support graduates from the Masters programme.

3.2 Capacity and facilities

The programme will draw course instructors from all the RUFORUM member universities. Since the pool is relatively limited, additional expertise will be sourced from research institutions in the region and other knowledge centres within and outside the region. At a regional level, the programme will be coordinated through a Regional Academic Advisory Board (RAAB) answerable to RUFORUM. The RAAB will consist of at least one expert per RUFORUM participating country, and with the RAAB Chairperson rotating among the member countries. The hosting university and participating universities will identify hosting departments or units within their institutions.

4.0 Programme focus

The programme focuses on development of skills and attitudes required to support research, orient students to think creatively, value teamwork and

partnerships and prepare them for the leadership roles that will be expected of them on completion of their studies. The programme is professional.

5.0 Programme structure and curriculum

The programme will take a modular approach with one year of course work and one year of attachment, research and thesis. Thesis will be oriented towards practical and problem-solving issues. The coursework are structured into six bridging courses for those requiring up-grading, eight core courses and electives. **All candidates will be required to take and pass all core courses and at least 2 electives to proceed to their internship/research work.** A preparatory course manual will be sent to students offered admission to help them prepare for the course. The following are the bridging, core and elective courses:

Bridging courses (each 2 credit hours)

- RM 501 Statistical Mathematics (targeting people with limited mathematics/statistics)
- RM 502 Matrices (targeting people with limited mathematics/statistics)
- RM 503 Descriptive statistics (targeting people with limited mathematics/statistics)
- RM 504 Statistical modelling (targeting people with limited mathematics/statistics)
- RM 505 Principles of Agriculture (targeting people with limited biosciences)
- RM 506 Socioeconomics and Development (targeting people with limited social science background)

Core Courses (8 + Thesis)- 3 credit hours for each core course except Research

- RM 601 Research Methods 1
- RM 602 Research Methods 2
- RM 603 Data and Information Management
- RM 604 Research Implementation Skills and Seminars
- RM 605 Statistical Methods 1
- RM 606 Statistical Methods 2
- RM 607 Research Methodology Consultancy
- RM 608 Statistical Computing
- RM 609 Thesis/Research/Internship Project

Electives (students to take at least 2), each course 3 credit hours

- RM 610 Environmental and Spatial Statistics and GIS
- RM 611 Epidemiology and Public Health

- RM 612 Clinical trials
- RM 613 Bioinformatics and Molecular Genetic methods
- RM 614 Research Issues in Measuring Developing Goals
- RM 615 Quantitative Methods in Environmental Economics
- RM 616 Research approaches in Market and Innovation systems
- RM 617 Climatic variability and Climate change

6.0 Course descriptions

Bridging course (6 courses)

The aim is to provide students from an applied science first degree with the necessary basic mathematical, statistical and computing skills. Degree holders in mathematical sciences will also undergo a bridging programme in the biosciences and social sciences. Students will only do the required courses and on case by case basis.

RM 501: Statistical Mathematics

Sets, Mappings and functions: definition, domain, range, composition and inverse functions. Introduction to limits, continuity and differentiability. Differentiation by first principles and by rule for X^n , sums, products, quotients, chain rule, logarithmic and exponential functions. Integration: simple integrals, double integrals. Combinatorial, Permutations and Binomial expansion. The emphasis will be for the students to apply the mathematical principles to real world problems in biology and agriculture.

RM 502: Matrices

Matrix operations, Diagonal, triangular and symmetric matrices, determinants and properties of determinants. Cramer's rule; Dimension and rank; Eigen values and Eigen vectors; random vectors and linear combinations, orthogonal matrices; least squares; linear independence. Matrix applications. Students will have these concepts linked to the work they will be involved with in the future.

RM 503: Descriptive statistics

Data sources, data types, numerical summaries of real data, exploratory data analysis, graphs and tables, data at multiple levels. The emphasis will be on using real data sets, with students producing their own tables, analysis and interpretation – learning by doing is encouraged here.

RM 504: Statistical modelling

The key concepts of statistical inference. Point estimation (maximum likelihood, method of moments, least squares, properties of estimators). Interval estimates, and significance tests. The concepts will be used to enhance the

analysis of real data sets, analysed initially using descriptive methods. The “learning by doing” approach will be continued here.

RM 505: Principles of Agriculture

Basic elements of agronomy, crop protection, animal husbandry, animal-human health interactions, natural resource management. An overview of the role of agriculture in national economy, Agriculture and population growth; agriculture and rural development. Land use and land law. Agro-ecological zones and farming systems. Biological and ecological factors affecting agricultural production. Subsistence and commercial agriculture. Field visits will be used for learning case studies.

RM 506: Socioeconomics and Development

Processes of environmental, economic, and social change from the global, regional and local perspectives; elements of rural sociology and community dynamics, emergence of new forms of production, exchange, consumption, and governance and their impacts on food and agriculture and trade; an understanding of National Growth, National budgets, projects, short and long term goals, and impact assessment.

Core Courses (8 courses + Thesis)

RM 601: Research Methods I

What is research?, The Research process, Problem Analysis, Conceptualizing research ideas, Setting up objectives and hypothesis, Literature review, Development and management of projects, Ethics of research, Monitoring and Evaluation and Qualitative research methods, Participatory research and approaches. Using research design principles in participatory and other research approaches. Innovation system and ‘boundary organization’ approaches. This module will use examples from a broad range of disciplines, social and biophysical and give students hands-on experience in a range of tools.

RM 602: Research Methods II

Design of surveys: Covers the basic principles of the design of surveys, case studies, ethnographic approaches with illustrative examples drawn from a variety of applications. Topics to be addressed include choice of variables and models, sample size requirements, type of sampling scheme and measurement issues. Also survey plans and management, quality control, handling non-response. Application of survey ideas in ecology, land analysis, wildlife management, etc. The course covers principles of surveys in all relevant areas, not just the narrow application to surveys of human populations.

Design of experiments: describes how studies should be designed so that the data are as informative as possible. Emphasis is on the core statistical

principles and how they can be applied to laboratory, field, glasshouse, animal, clinical, research establishments and industrial experiments.

Qualitative research: The qualitative research will include focus groups; individual depth interviews (IDIs), ethnography, observational research, usability research, idea generation, and other qualitative approaches.

RM 603: Data and Information Management

Data management issues and problems, survey and experimental data, software for handling data: spread sheet programmes, statistical packages and skills for students to develop own programmes using open source software, data base packages. Data management: design of data entry system, linking data from different packages, data entry and checking for errors, validation and verification, pivot tables, database structure, validation and verification, meta data, data logs, data policy. Students will learn by using sets of data and applying the relevant techniques. Team approaches will be used to help build teamwork skills.

RM 604: Research Implementation Skills and Seminars

Seminars and presentation skills. Writing grant proposals for research, scientific writing (publication and technical reports), technical reviewing of reports and papers. Soft skills (team work), Communication and dissemination of research results, Scientific/Literature critiquing. The course will consist mostly of hands-on training and practical application.

RM 605: Statistical Methods I

Describes the principles that underlie the application of statistical techniques. Probability theory and distribution theory are revised, Bayesian and frequentist theories are explored, and likelihood methods are developed in detail. Modern approaches using Bayesian methods introduced.

Statistical inference: This will cover sampling distributions, point and interval estimations, properties of estimators, principles of Bayesian estimations, and hypothesis testing. A practical approach will be taken, that highlights the limitations of much earlier emphasis on hypothesis testing, and develops modeling, estimation and prediction as the central idea in statistical inference.

Linear models: incorporates both regression and analysis of variance models for continuous response data. Estimation, hypothesis testing and techniques for variable selection are examined in detail. Contrasts, quantitative factors, comparisons of treatments means and result presentations. Missing values and violations of assumptions. Residual and other diagnostics for assessment of goodness-of-fit are discussed. Experiments in farmers' fields.

RM 606: Statistical Methods II

Generalized linear models: are used to model data that may not be regarded as normally distributed, such as data in the form of proportions or counts. These models play a central role in modern biometry. The course considers the theoretical and computational aspects of the generalised linear model, as well as the practical applications.

Hierarchical structures modelling: This will focus on methodology for the analysis of data with complex patterns of variability such as those arising from longitudinal and nested designs: e.g., measurements on subjects over time, or on plots within fields within farms within villages. The goal is to provide students with knowledge and confidence to use hierarchical modeling in their discipline through understanding of statistical theory behind hierarchical models set up and estimation. The following will be considered the random intercept model, the random slope model, model selection and model fit, Longitudinal data analysis, more complex variance structures: modeling heteroscedasticity and crossed random effects and multivariate models, design of multilevel studies spatial data.

Bayesian methods: This section introduces the theoretical and applied foundations of Bayesian statistical analysis in a manner accessible to researchers. The course includes basic topics such as setting up a probability model, conditioning on observed data, and the essential ideas behind likelihood inference and prediction. The fundamentals of Bayesian statistics are reviewed, including Bayes Law and prior and posterior distributions, as well as summarizing the model and checking sensitivity to the assumptions. Practical applications will be developed with a variety of parametric forms including so-called non-informative prior densities. All of the fundamental Bayesian simulation techniques will be reviewed including numerical integration, importance of sampling, the EM algorithm, and the primary Markov Chain Monte Carlo algorithms: Gibbs sampling and Metropolis-Hastings. Students will be introduced to WinBugs software.

RM 607: Research Methodology Consultancy

Students will be exposed to a series of practical exercises derived from real research problems to give them experience with the kind of problems that they will meet in their professional life. Students produce a report for each exercise. Teamwork will be emphasized in this course particularly – since students will inevitably work in teams in the real world.

RM 608: Statistical Computing

This course provides an introduction to a number of statistical packages. SPSS and emerging free tools, particularly R and GenStat Discovery are introduced in the opening sessions of the module. Subsequently, the emphasis

of this course will be on developing strategies for learning new packages, and on combining the use of different packages in a single piece of work.

RM 609: Internship/Thesis/Research Project

The student is attached as an intern in a given research study. The student will provide support to the project in research methods but also carry out studies of the effectiveness of the project and alternative. They will be guided by a 'task list', which will prompt their close involvement in all phases of the research from project concept to reporting and delivering. The report will not be a traditional research thesis, but a portfolio of reports of their activities on all these tasks. The internship provides the candidate with an opportunity to focus on an application of research methods to develop research skills and consolidate knowledge accumulated from other courses. The candidate shall undertake the internship under appropriate supervision and present their series of 'reports' in a documented scholarly form. The document should provide a critical perspective of the research study.

Elective courses (8 courses)

These courses will focus on strengthening practical applications of research issues and approaches learnt in the core courses to real life situations. They will also explore research methods needed to address major emerging research for development interest of the region and other topical areas. The exact collection of courses available to any cohort will depend on the emerging issues of high priority, and availability of resource people to teach them. Typical courses include;

RM 610: Environmental & Spatial Statistics and GIS

Review components of environment-composition, agents of change, spatial and temporal dynamics; deterministic and stochastic components (of environment); Modelling types; Differential- and Markov-based models and applications in analysis of sequential changes; Precipitation or Pollution models etc; Spatial pattern analysis (models); Krigging and Variograms; Vector and Raster based GIS; Practical applications of GIS with software.

RM 611: Epidemiology and Public Health

Describes key concepts associated with the design and analysis of epidemiological studies. Cohort and case-control studies are considered in detail. Measures of mortality and disease rates. Standardization of disease and mortality rates. Disease diagnosis and screening. Specificity and sensitivity. Cohort and case-control studies will be considered in detail. The difference and similarity between the two methods will be studied taking into account the advantages and disadvantages of both prospective and retrospective studies. Introduction to infectious disease modeling and control.

RM 612: Clinical trials

Are conducted for the purpose of evaluating new drugs and medical procedures. The design of clinical trials, meta-analysis and a discussion of ethical issues feature in this module. The module will focus more on phase III and IV type of clinical trials not on phase I and II trials meant specifically for early stages of drug development as this is not the focus in this MSc programme. Inclusion and exclusion criteria to participate in a clinical trial. Different methods of analysis depending on type of end point data. Stoppage rules for two and more than two arms in a clinical trial. Statistical analyses using GenStat and R.

RM 613: Bioinformatics and Molecular Genetics Studies

Evolution theory, process and measurable elements such as protein and DNA sequences. Review of various molecular tools used to study variation in DNA and protein sequences. Analysis of neutral marker data (AFPL, SSRs). Statistical analysis of DNA and protein polymorphisms; introduction to data mining, BLAST and FASTA searches, analysis of BLAST data, identification of conserved domains, aligning them, tree construction. QTL analysis and introduction to functional genomics (microarray data processing, population genetics analysis, phylogenetic approaches, etc.).

RM 614: Research issues in Measuring Development Goals

Much research for development for the region is driven by commitment to meet Millennium Development Goals and other qualitative targets. But how are these measured and monitored? Topics covered include national and international official statistics – how they are generated, sources, quality and limitations. Concepts and principles of gender, gender analysis framework and methods, gender analysis tools, livelihoods analysis framework, the sustainable livelihoods approach. Designing and evaluating indicators. Design of baseline survey and monitoring surveys. Down scaling data. Applications from a range of sectors will be discussed but will include poverty and human welfare, plus at least one environmental area (e.g water).

RM 615: Quantitative Methods in Environmental Economics

This course will focus on relevant mathematical and statistical techniques required in environmental economics. It will include introduction to quantitative methods for environmental assessment and decision making. Concepts of environmental assessment; applicability and limitations of quantitative methods for evaluation of environmental impacts and potential health effects to assist in decisions such as whether to undertake proposed projects, design of policies and regulations, and implementation of measures to protect human health or the environment. This module aims to show how quantitative techniques may be applied to the analysis of environmental problems.

RM 616: Research approaches in Market and Innovation systems

Commercial best bets in agriculture, foresight process. Innovation systems. Organising and managing innovation platforms. Markets. Target marketing, how research is organized and conducted, and methodological elements. Qualitative marketing research, Quantitative marketing research methods, Multivariate analysis in marketing research, International marketing research approaches, Value chain analysis.

RM 617: Climate Variability and Climate Change

Methods for studying climate change. Applications of climatic analyses in areas such as agriculture, water resources, renewable energy, buildings and construction, health. Producing reference and tailored products. Producing and using statistical models for daily rainfall and other climatic variables. Use of crop (and other) simulation models. Producing, downscaling and evaluating seasonal forecasts.

7.0 Admission requirements

The following are requirements for admission to the Masters Programme in Research Methodology:

- Applications will be solicited from graduates with a Bachelor's degree in any field.
- Applicants without a strong foundation in mathematics/statistics or biological science or social science or English language shall be expected to undertake bridging courses. The implementation of the remedial courses will have latitude depending on situations existing in a given admission year.
- No age limit.
- Female applicants will be strongly encouraged to apply so that over time gender balance of 50 percent is achieved.
- Short-listing, and where applicable, selections of students for the programme will be done by home universities /Institutions/National Forums, although individual applications will be entertained. Scholarships if any from RUFORUM will be awarded by RAAB.

Duration of study

The period of study shall be 2 years, first year for coursework and second for thesis research. Students who do not complete the degree training in 24 months may be allowed an extension of 6-18 months, on advice of the

Student's Advisory Committee, but will be responsible for paying the additional fees. The students shall be normally required to renew their candidature through annual registrations.

8.0 Programme quality assurance

Quality Control will be implemented at regional as well as at individual university level.

Regional level: Regional Academic Advisory Board

A Regional Academic Advisory Board (RAAB) comprising representatives of the collaborating 12 universities and other research centres in the region will be responsible for the quality assurance of the programme. The body will oversee the following:

- Appropriateness of the programme's structure and curriculum to meet its learning objectives
- Coherence of the programme with the given objectives
- Adequacy of the admission requirements
- Appropriateness and effectiveness of the utilization of the existing human, physical and financial resources
- Scaling out the programme to the different universities

Hosting university level

In addition to the quality control measures such as admission of students and curriculum development discussed above, other quality control measures include monitoring course coverage, use of external examiners and use of a combination of in-country and outside supervisors for students' theses. Below are some descriptions of the quality control measures which may vary depending on the hosting university.

Examination procedures

Generally, students should pass all end of semester or quarter examinations in core courses and selected elective courses, to qualify to proceed to do their internship and research.

Course requirements

Students will be required to complete all core courses and all electives selected with end of semester examinations. All courses will have a strong practical

component to achieve the objectives of graduating students with practical skills who are able to apply their learning to the real world. The courses should be completed with a cumulative grade of B- or better, with pass mark for all the courses taken. Students will re-do and pass failed courses. Table below presents the proposed grading system for the programme, but with flexibility to fit individual participating university's regulations.

Grading system for the programme

Range of marks	Letter grade for course	Grade points for course	Quality of grades
90-100	A+	4.0	Exceptional
85-89	A	3.8	Exceptional
80-84	A-	3.6	Exceptional
75-79	B+	3.4	Superior
70-74	B	3.2	Superior
65-69	B-	3.0	Pass
60-64	C	2.5	Compensatable
50-59	D	2.0	Below average
<50	F	0.0	Fail

Student supervision

Students will be encouraged to have their supervisory committee in place and to start working on their proposals before the end of the second semester of their programme. Based on the student's topic of study, the student *must* choose one member of staff as a major supervisor. Each student will generally have three supervisors (one from the hosting institution and one preferably from another RUFORUM university. The third supervisor will be from any source but preferably the internship institution.

Students will be expected to make an oral presentation of their theses/papers/research project proposals to the hosting faculty soon after completing the course requirements, and before proceeding for research.

Thesis (RM 609)

Each student will conduct a thesis research/papers/project research with a strong component of applied statistics and team work, which will be in partial fulfillment of the requirements for the award of a Masters in Research Methodology. The examination of the thesis/papers/project will take two forms: [1] Thesis/papers/project evaluation, and [2] An Oral examination (viva voce).

Thesis, published papers and/or team research work evaluation

In consultation with the home Postgraduate and Research Dean, the Head of the Department will submit the candidate's work to an external examiner based on relevant qualifications and experience. Where the requirements are to be fulfilled by working in a team on a research project, in addition to the written work, a report from the research team leader will be included. In addition to the external examiner, the department/postgraduate dean will also identify two internal assessors to evaluate the thesis. The examiners shall assess the thesis and submit reports based on the respective university's standard thesis examination procedures. Generally, procedures in the awarding degree university will be followed.

Oral defence

The candidate will make a *viva voce* presentation of the thesis/papers/project to a committee appointed by the university awarding the degree.. The recommendation of the committee will be communicated to the graduate school with clear recommendation for degree award, award after minor corrections, resubmit or decline.

9.0 Risk management

The programme has been designed to provide safeguards against manageable risks.

10.0 Funding and sustainability

The programme will rely on resources mobilised by the RUFORUM Network, and from funds generated from training, research and development activities.

11.0 Contact details

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About RUFORUM Strategic Framework for Capacity Strengthening

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is an association of 12 universities in East and Southern Africa that recognises the important and largely unfulfilled position that universities occupy in contributing to the wellbeing of small-scale farmers throughout the sub-region. This task may be addressed not only through better trained graduates entering the rural development workforce, but also by conducting more relevant and development-oriented research that is directly linked to participatory outreach programmes.

Vision: RUFORUM sees vibrant agricultural innovation systems with fully integrated universities who play a leading role in nurturing the systems through high-performing agricultural science graduates who are innovative and responsive to changing demands.

Mission: RUFORUM's Mission is to foster innovativeness and adaptive capacity of universities engaged in agricultural and rural development to develop and sustain high quality in training, innovative and impact oriented research, and collaboration.

The mission is achieved through five strategic goals:

- Masters and PhD programmes that are responsive to stakeholder needs and national/regional development goals

- Shared research and training facilities and capacities for enhanced economies of scope and scale
- Innovative training, research and outreach activities supported by adaptive management structures in universities contributing to policy and development practice
- Operational capacity and approaches for innovative, quality and impact-oriented research for development mainstreamed in universities
- A dynamic regional platform for policy advocacy, lobbying, coordination and resource mobilisation for improved training, research and outreach by universities

The achievements of these goals require capacity and competences to innovate. Hence RUFORUM has a strategy for capacity development which involves;

Strengthen Human Resource Development capacity by

1. Rationalizing resources for training quality and cost-effectiveness (regional PhD, M.Sc. and Post-doc programmes)
2. Regional Networks of specialisation characterized by:

- Shared lecturers (12 universities and beyond)
 - Shared facilities- centres of leadership
 - Joint curriculum development and credit transfer system
 - Payment of local fees among participating universities
 - Strong international partnership in training and research
3. Competitive grant scheme and other funding modalities for M.Sc training and research based on the principle of subsidiarity
 4. Nurturing capacity where weak and enhancing participation of all the member universities
 5. Promoting women education
 6. Supporting staff and student exchange
7. Support staff to engage in research and training activities, hence promoting staff retention
- Strengthen Innovation capacity by**
1. Creation of innovation support platforms, i.e.,
 - National Forums which are National chapters of RUFORUM (multi-stakeholder platforms of university and non-university actors)
 - Regional thematic groups and Academic Advisory or Accreditation bodies
 2. Supporting partnership and linkages to regional and international knowledge centres
 3. Continuity of mission through mentoring and internship
 4. Skills and competence development in key gap areas