

MRes in Research Methodology - SC540

1. Objectives

The overall aim of our postgraduate research training programmes is to provide researchers with foundation-level competency in the research skills generic to their area of research studies. An MRes is ideal preparation for following a career of research or specialisation within the area of study. The overall objective of the postgraduate research degree programme is:

- To equip and support our students, academics and other researchers (on campus and off-campus) in Research with the necessary information and skills and enhance their prospects for career advancement.
- To equip researchers with the specialised research skills necessary for conducting empirical studies in academia and the public sector
- To equip post-graduate students with transferable skills necessary for professional development either within (e.g., PhD) or outside of academia
- To promote competent and ethical academic practice for future generations of academics

2. Essential Features

The Postgraduate Programme is designed for researchers. Modules will be delivered online and/or offline. Each module will be taught in seminar/workshop formats scheduled over the academic year.

Upon completion of the programme, researchers will be able to demonstrate:

- Ability to locate and utilise appropriate sources for conducting research
- Ability to plan, coordinate and conduct high quality research
- Ability to effectively present research findings both orally and in writing
- A broad knowledge of the research and statistical approaches appropriate for a given research question
- Competency in statistical analysis
- Analytical and reasoning skills with respect to work conducted in the field
- Skills necessary for professional development including interviewing skills, CV writing and grant-writing skills
- Sensitivity to the issues surrounding the promotion of good teaching practice

3. General Entry Requirements and Programme Requirements

Successful completion of an undergraduate degree with

- at least a Second Class or 50%, whichever is applicable or
- a GPA not less than 2.5 out of 4 or equivalent, from a recognised higher education institution

OR alternative qualifications acceptable to the University of Mauritius.

4. Programme Duration: Part-time / Flexible

Normal 2 yrs **Maximum** 7 yrs

5. Assessment

The programme will be assessed on the basis of reflective summaries, mini-case studies, mini-projects, oral presentations, assignments, written examinations and a project dissertation. Unless specified (e.g. RM5011 and RM 6000), each module will have a paper on written examinations of not less than 50%.

6. Minimum Credits

Number of Credits for the award:	Groups A/B	Dissertation	Total
MRes	27	9	36*
PGDipRes	24	-	24
PGCertRes	12	-	12

7. List of Modules

GROUP A: General Modules (each 3 credits)

RM 5010* Research@UoM: Processes and Methodology

RM 5011* Research Seminar Series

**compulsory*

RM 5020 Effective Research Skills

RM 5021 Proposal Writing/Budgeting/Management

RM 5022 Project Management

RM 5030 Information Technology Tools for Researchers

RM 5031 Statistical Tools for Researchers

RM 5032 Introduction to Qualitative and Quantitative Research

RM 5040 IP: From Generation to Commercialization

RM 5041 Entrepreneurship and Creativity

RM 5042 Ethical Issues in Research

GROUP B: Specialists Modules (each 3 credits)

Modules on Intellectual Property Rights

RM 6010 Patents

RM 6011 Copyright and Related Rights, IP on the Internet

RM 6012 IPR and Biotechnology, Protection of New Plant Varieties

RM 6013 Business Methods Patents and Copyright in digital environment

Modules on Quality Standards and Best Practices

RM 6020 Introduction to ISO 9000 Management Systems

RM 6021 Introduction to ISO 14000

RM 6022 Introduction to ISO 17025

RM 6023 Introduction to ISO 20000 and ITIL

RM 6024 Introduction to ISO 27000

Modules on Advanced Techniques

RM 6030 Spectroscopic Techniques

RM 6031 Image Processing Techniques

RM 6032 Remote Sensing and GIS Techniques

RM 6033 Surveying Techniques

RM 6034 Soil Analysis Techniques

RM 6035 Water Quality Analysis Techniques

RM 6036 Applied Statistics

RM 6037 Visualization Techniques

RM 6038 Use of Computer Technology in Research

RM 6039 Learning Algorithms

Specialist Modules from Faculties and Centres

RM 6000 Project - 9 Credits:

The project dissertation should be an original piece of research work, in the field of Research Methodology in Higher Education.

8. Outline Syllabus

GROUP A: GENERAL MODULES (Each 3 credits)

RM 5010 - RESEARCH@UOM: PROCESSES AND METHODOLOGY

To familiarise researchers with research strategy and processes and conduct their research effectively. Introduction to Research; Research@UoM; Research Strategies; Research Policy; Research Enterprise; Research Degree Programmes; Research Supervision; Funding Opportunities; Consultancy and Contract Research; Ethics; Code of Conduct for Research; Health and Safety; IPR; Research Events; Networks; Outreach Activities; Best Research practices; Quality Assurance for Research; Career Management for Researchers (career choice, CV's and Applications);

RM 5011 - RESEARCH SEMINAR SERIES

Researchers gain credit for attending a range of research skills, personal development and careers seminars which are provided via the PVC's Office for RCI. Researchers must attend seminars to the value of 3 credits. In most cases individual seminars have a notional value of 0.15 credits.

RM 5020 - EFFECTIVE RESEARCH SKILLS

Presentation skills; Data Presentation Skills; Research Writing Skills - for Articles, Reports and Thesis; Effective Interview Skills; Team building skills; Communication Skills; Interpersonal Skills; Knowledge Transfer Skills; Viva Voce; Teaching Skills; Information Skills; Effective Use of the Library; Survey Skills; Interview Skills;

RM 5021 - PROPOSAL WRITING/BUDGETING/MANAGEMENT

Gathering of background information. Components of Proposal. General principles of bid writing (an idea for submission to a funder - Research Councils, Charities, and the EU). Budgeting – Managing your grants/Research project. Managing a research project; Management Concepts and Functions. The Internal and External Environments of the Organisation. Social Responsibility and Ethics in Management. Managerial Decision Making. The planning process. The nature of Organisation Structure. Organisational Control.

RM 5022 - PROJECT MANAGEMENT

Finance, operations and communication. Project management fundamentals and principles. Topics include project life cycles, organization and charters; work breakdown structures; responsibility matrixes; as well as planning, budgeting and scheduling systems. Planning and control methods such as PERT/CPM, Gantt charts, earned value systems, project management software applications and project audits are introduced.

RM 5030 - INFORMATION TECHNOLOGY TOOLS FOR RESEARCHERS

The objectives in this course is to introduce to the researcher the effective use of information technology tools available for the conduct of research and the communication of research results. Web Searching and Information Retrieval. Database Manipulation. WebForum; Webpage Authoring; Templates and Typesetting Tools; Working with Data. Import and Export Formats; Spreadsheets and Database Tools; Graphics and Images; Paper Writing and Presentations;

RM 5031 - STATISTICAL TOOLS FOR RESEARCHERS

This course aims to provide to the researcher a knowledge of statistical tools available to sort through his data during the course of the research work.

Description of Data; Data Exploration and Visualisation; Hypothesis Tests; Linear Models; Sampling Methods; Experimental Design

RM 5032 - INTRODUCTION TO QUALITATIVE AND QUANTITATIVE RESEARCH

Explores the foundations, methods and processes of Q&Q research; Data management and analysis qualitatively and quantitatively and their advantages and limitations in solving real problems. Role of computers and spreadsheet models in quantitative analysis; Case Studies; researchers will propose and conduct mini-case studies.

RM 5040 - IP: FROM GENERATION TO COMMERCIALIZATION

Intellectual Property as a tool for as a Tool for Economic, Technological and Social Development; Fields of Intellectual Property Protection (Copyright , Patents, Trademarks, Industrial Design, Protection of New Varieties of Plants, Geographical Indications); Trade Related Aspects of Intellectual Property Rights; IP and Biotechnology; Traditional Knowledge and Cultural Expressions (Folklore); Status of IP in Mauritius and the major Stakeholders; Management of IP- Technology Transfer Offices; Commercialization of IP; Approaches to commercially Exploit IP; Case Studies;

RM 5041 - ENTREPRENEURSHIP AND CREATIVITY

Nature of entrepreneurship; Skills to write successful business plans; Start ups; Spin-out companies; Marketing; The concept of marketing, Service Quality and Customer satisfaction. Marketing Communication, The marketing mix, Green Marketing. Development of a business plan.

RM 5042 - ETHICAL ISSUES IN RESEARCH

Intentions and uses of research; Political dimensions; Epistemology of ethics; Ethical issues in research; Respect ethical motivation; Relevant Research Policies; Human Research. Animal Research, Biosafety; Export Issues;

GROUP B: SPECIALIST MODULES (Each 3 credits)

INTELLECTUAL PROPERTY RIGHTS

RM 6010 - PATENTS

Purpose of a patent, Conditions for patentability, Exclusive rights conferred by a patent, Patent enforcement, the PCT, Patent Classification systems, Patent databases and Search, Structure and information provided by a patent document;, Drafting a Patent document.

RM 6011 - COPYRIGHT AND RELATED RIGHTS, IP ON THE INTERNET

Types of works covered by copyright, Rights protected by copyright, Limitations, the Berne Convention, Enforcement of rights, Related Rights; The TRIPS Agreement and the WIPO Copyright Treaty; Protection of Databases; TRIPS and Enforcement issues; Collective Management of Rights; Copyright on the Internet.

RM 6012 - IPR AND BIOTECHNOLOGY, PROTECTION OF NEW PLANT VARIETIES

The international framework for the protection of IP; how patent law protects biotechnological inventions; legal requirements and administrative steps to get biotechnology patents; The nature of plant breeder's rights systems, Protection for new plant varieties; UPOV; Rights afforded to the rights holder.

RM 6013 - BUSINESS METHODS PATENTS AND COPYRIGHT IN DIGITAL ENVIRONMENT

The emergence of business method Patents; Pros and two cons of business method patents; Why patents are important for progress in electronic commerce; digital content and associated copyright issues; peer-to-peer file sharing; exceptions and limitations to copyright in a digital environment; digital rights management and technological protection measures. Managing intellectual property (IP) assets relevant to electronic commerce strategy; IP issues important to Web site development; International transactions; Jurisdiction and enforcement of intellectual property rights on the Internet; the Domain Name System; Linkage between Domain Name System and Trademarks; Uniform Domain Name Dispute Resolution Policy.

QUALITY STANDARDS AND BEST PRACTICES

RM 6020 - INTRODUCTION TO ISO 9000 MANAGEMENT SYSTEMS

Why standards matter; ISO and International Standardisation; Benefit to Society; ISO and world trade; ISO and developing countries; Why the International Organization of Standards exists; Highlights of each ISO 9001 Quality Management System requirements; Implementation activities of each related Management System; Differences between ISO 9001:2000 and ISO/TS 16949:2002, ISO 13485:2003, and AS 9100:2001.

RM 6021 - INTRODUCTION TO ISO 14000

Environmental Management Definitions, Concepts, and Guidelines; Requirements of ISO 14001:2004 standard; Clauses of ISO 14001:2004; Importance and Benefits of an Environmental Management Systems; The Registration Process;

RM 6022 - INTRODUCTION TO ISO 17025

Concepts and techniques of Quality Management System Standard for Testing and Calibration Laboratories through implementation of ISO 17025 standard.; Requirements; The ISO 17025 Standard; Organizations;

RM 6023 - INTRODUCTION TO ISO 20000 AND ITIL

What is ISO 20000?; ISO 20000 Contents; Requirements; The ISO 20000 Standard; Why the need for IT service Management. A specification for a service management system. A code of practice. Overview of ITIL (IT Infrastructure Library). The 4 Ps. Key Principles of IT service Management - Service Delivery, Service Support, ICT Infrastructure Management , Planning to Implement Service Management, Application Management, The Business Perspective, Security Management.

RM 6024 - INTRODUCTION TO ISO 27000

Basics of Information Security; Development, History, and Current Status of ISO/IEC 17799:2005; Reasons to Adopt an Information Security Management System; Costs and Resources to Implement an Information Security Management System; Available Information Security Controls; The Registration Process

MODULES ON ADVANCED TECHNIQUES**RM 6030 - SPECTROSCOPIC TECHNIQUES**

Selected spectroscopic techniques. Theory, Experimentation and Applications.

RM 6031 - IMAGE PROCESSING TECHNIQUES

Image Fundamentals, Image Transformations and Operations, Image Storage, Image Analysis

RM 6032 - REMOTE SENSING AND GIS TECHNIQUES

Remote Sensing; Data structures, spatial referencing, geographic data processing and reporting, GIS as a decision making tool. Applications of GIS.

RM 6033 - SURVEYING TECHNIQUES

Principles of Surveying. Control and Detailed Survey. Adjustments. Remote Sensed Imagery. Errors and Adjustments. Survey Devices. GPS.

RM 6034 - SOIL ANALYSIS TECHNIQUES

Soil; Soil Taxonomy; Physical/ Physico-chemical./Biological/Mineralogical/ Engineering properties of soils; Soil pollution; Soil sampling and analytical techniques;

RM 6035 - WATER QUALITY ANALYSIS TECHNIQUES

Water Quality. Water Characteristics. Water Quality Standards. Experimentation Techniques.

RM 6036 - APPLIED STATISTICS

Regression models and applications. Models for categorical data. Multivariate analysis. Bootstrap models. Forecasting models.

RM 6037 - VISUALIZATION TECHNIQUES

Scalar field visualisations in two and three dimensions. Vector fields visualisation techniques. Multivariate visualisation. Human visual perception.

RM 6038 - USE OF COMPUTER TECHNOLOGY IN RESEARCH

Graphs and Animations. Computational methods. Applications.

RM 6039 - LEARNING ALGORITHMS

R programming. Supervised and unsupervised learning. Classification algorithms. Probabilistic learning.