School of Innovative Technologies and Engineering

Department of Industrial Systems Engineering

MSc in Information and Communication Technology with Specialisation in Networking

PROGRAMME DOCUMENT

VERSION 1.0

MICTN v1.0

October 2021

MSc in ICT with Specialisation in Networking

A. Programme Information

The MSc programme in Information and Communication Technology (ICT) with Specialisation in Networking aims to provide a foundation upon which a graduate can build a successful career, that is, it provides a grounding in networking for graduates who have not studied networks, computing, and related areas at degree level. The combination of the technology skills gained through this programme and the general competencies developed through the first degree in different fields other than network and computing (for example, Science, Engineering, Management, Accounting, Mathematics, etc) gives graduates a full span of experience, skills, and knowledge that are very attractive to ICT companies. In line with the Government vision, the programme is a possible solution to reduce the unemployment rate as it offers an ideal means to gain a foothold in a fast-expanding ICT industry.

This programme has been developed in consultation with leading ICT and telecom organisations in Mauritius and the state-of-the-art content is tailored to the current needs of these industries. This programme is mounted to bridge the gap between academic knowledge and professional industry-focussed requirements, thereby increasing the employability of fresh graduates and accelerating their professional performance by building their know-how and delivery within the ICT and telecom industry.

B. Programme Aims

The aims of the programme are:
(i) to bridge the gap between available skills in the current labour market and industry requirements through an industry-led training programme in Networks
(ii) to provide students with the opportunity to upgrade their skills and knowledge in specific industry focussed technologies and to provide them with a critical awareness of current problems and new insights in networking
(iii) to provide students the industrial-style methods of analysis, design, implementation, testing, and documentation in advanced system design and development and enables them to evaluate critically current research in networking fields
(iv) to provide students with knowledge and understanding of the legal, social, ethical and professional issues related to network design and development and security.

Employment Prospects
There are several careers to progress from this MSc programme. It provides the students with the technical and analytical skills needed to successfully adapt to a wide range of situations in the ever-changing world of ICT.

Completing this programme allows graduates to choose between a wide variety of ICT-related career options, including network management, performance and optimization, network policy, network operations, server management, system programming, wireless systems, the development of innovative web applications and project management, database administration, and technical support. Graduates can take what they will learn on the degree to start their own business.

C. Programme Objectives

After successful completion of the Programme, the graduates should:

- achieve a broad understanding and working knowledge of the network technologies
- intervene professionally at all levels of the hardware development life cycle and deal with complex issues, both systematically and creatively
- develop and write proper documentation for network-related projects
- acquire appropriate communication skills to handle various client-facing situations and solve complex problems
- be equipped with work-ready skills.

D. General Entry Requirements

As per UTM's Admission Regulations.

E. Programme Entry Requirements

Any recognized Bachelor's Degree in any field other than Network and Computing areas. For example, a Bachelor's Degree in Engineering fields, Science, Management, Accounting, Design, Mathematics, acceptable to the University can be considered.

F. PROGRAMME MODE AND DURATION

Full-Time: Minimum 1.5 years (3 semesters) and Maximum 3.5 years (7 semesters)
Part-Time: Minimum 2 years (4 semesters) and Maximum 4 years (8 semesters)

G. TEACHING AND LEARNING STRATEGIES

In general, for this programme, modules will be conducted via face-to-face mode. However, to cater for the impact of the COVID-19 pandemic and other similar situations, and matters connected, consequential, or related, the course may be run either via online or blended learning modes. The students would be expected to perform a substantial amount of self-learning both for the theoretical and practical parts of the modules and adopt a research-oriented approach, as far as possible.

To summarise, teaching and learning activities may include

- Lectures (L), Tutorials (T) and Practical (P) sessions
- Class Tests and Assignments
- Participating in quiz-based exercises
- Workshops / Seminars / Lab Sessions
- Industry visits so that students may observe company cultures and may network with industry professionals
- Structured Discussions & Self Development Study (SD)
- Case Study materials & scenarios centred on real-world network and software development scenarios and problems.

H. STUDENT SUPPORT & GUIDANCE

- Academic tutoring and Counselling: Group tutorials or individual tutorials are arranged for students upon request.
- Supervision of mini-projects and final year capstone projects.

I. ATTENDANCE REQUIREMENTS

As per UTM's Regulations and Policy.

J. CREDIT SYSTEM

This programme is aligned with the European Credit and Transfer System (ECTS). The programme promotes a unified procedure for academic recognition of study periods performed. The system introduces standards for assessment and comparison of study levels in various academic institutions and enables to recognition of diplomas at the European job market. ECTS credits are assigned to each module in the programme amounting to 90 credits at a Master's level.

One module is worth 6 credits and will carry 150 hours of learning to comprise 45 hours of delivery which could be any combination of face-to-face, blended, online, seminar, workshop, or joint session. The remaining 105 hours will cover self-learning, self-study, guest lecture, etc. The Capstone Project is assigned 18 credits.

K. STUDENT PROGRESS AND ASSESSMENT

The programme is delivered through lectures and seminars, and practical sessions in computer, network and electronic labs. Self-study or self-development is also important and will include reading, designing and preparing presentations, academic tutoring, writing reports and theses, and investigating problems. The importance of IT/simulation tools in modern network practice is emphasized, and students will make use of the latest software to solve problems and to develop network solutions.

For the award of the degree, all modules must be passed overall with passes in the examinations, coursework, and other forms of assessment. All modules will carry 100 marks and will be assessed as follows (unless otherwise specified):

(i) Written examinations and/or practical examinations will normally carry a weightage of 60% unless otherwise specified.

(ii) Continuous assessment will normally carry a weightage of 40% unless otherwise specified.

(iii) Continuous assessment for the following specific modules (Programming Complexity, Linux OS Architecture, Web Development Frameworks and Tools, Server Management, Advanced Data-driven Application) shall be 100% of the total marks. Continuous assessment can be based on a combination of assignments, field studies, workshops, and class tests.

(iv) The overall pass mark for a module is 40%.

Grading

Grade	Marks x (%)
A	$x \geq 70$
B	$60 \leq x < 70$
C	$50 \leq x < 60$
D	$40 \leq x < 50$
F	$x < 40$
A - D	Pass
F	Referred

L.   EVALUATION OF PERFORMANCE

The % mark at Level M contributes a 100% weighting towards the Master's degree classification.

M.   AWARD CLASSIFICATION

Overall weighted mark y (%)	Classification
$y \geq 70$	MSc with Distinction
$60 \leq y < 70$	MSc with Merit
$40 \leq y < 60$	MSc
$y < 40$	No Award

For the award of this Degree, a total of 90 credits is required.

Students who fail to qualify for the award of the degree may be awarded as follows:

1. Postgraduate Certificate in Information and Communication Technology: a minimum of 30 credits

2. Postgraduate Diploma in Information and Communication Technology: a minimum of 60 credits.

N. PROGRAMME ORGANISATION AND MANAGEMENT

Programme Director / Coordinator: Dr Vinaye ARMOOGUM

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Programme Design Committee:
Dr Vinaye Armoogum, Dr J. Narsoo, Dr (Mrs) Sandhya Armoogum, Dr Nawaz Mohamudally, Mr Rishi Heerasing, Dr Hemant Chittoo, Mr Dudley Tse, Dr Shireen Panchoo, Mr Pillay Kanaksabee and Prof KMS Soyjaudah.

Industry Partners and Reviewers:
- Orange Business Services
- Huawei Technologies (Mauritius) Co. Ltd
- Harel Mallac Technologies
- Linkbynet Indian Ocean (LIO) Ltd
- Checkout.

O. PROGRAMME STRUCTURE (Full-Time)

YEAR 1 (Level M – 54 Credits)							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	ECTS Credits	Code	Modules	Hrs/Wk L/T/P+SD	ECTS Credits
MITN5101C	Programming Complexity	3+7	6	MITN5207C	Server Management	3+7	6
MITN5102C	Data Communications and Networking	3+7	6	MITN5208C	WAN Technologies	3+7	6
MITN5103C	Linux OS Architecture	3+7	6	MITN5209C	Advanced Data-driven Application	3+7	6
MITN5104C	LAN Switching and Wireless LAN	3+7	6	ISM5102C	Entrepreneurship	3+7	6
MITN5105C	Web Development Frameworks and Tools	3+7	6	MITN5011C	MSc ICT Capstone Project	-	-

YEAR 2 (Level M – 36 Credits)							
Semester 3							
Code	Modules	Hrs/Wk L/T/P+SD	ECTS Credits				
MITN5312C	Routing Techniques	3+7	6				
MITN5313C	Security Networking	3+7	6				
MGMT5310C	Strategic Management	3+7	6				
MITN5011C	MSc ICT Capstone Project	-	18				

P. PROGRAMME STRUCTURE (Part-Time)

YEAR 1 (Level M – 48 Credits)

Semester 1				Semester 2			
Code	Modules	Hrs/Wk L/T/P+SD	ECTS Credits	Code	Modules	Hrs/Wk L/T/P+SD	ECTS Credits
MITN5101C	Programming Complexity	3+7	6	MITN5105C	Web Development Frameworks and Tools	3+7	6
MITN5102C	Data Communications and Networking	3+7	6	MITN5207C	Server Management	3+7	6
MITN5103C	Linux OS Architecture	3+7	6	MITN5208C	WAN Technologies	3+7	6
MITN5104C	LAN Switching and Wireless LAN	3+7	6	ISM5102C	Entrepreneurship	3+7	6

YEAR 2 (Level M – 42 Credits)

Semester 3				Semester 4			
Code	Modules	Hrs/Wk L/T/P+SD	ECTS Credits	Code	Modules	Hrs/Wk L/T/P+SD	ECTS Credits
MITN5209C	Advanced Data-driven Application	3+7	6	MITN5313C	Security Networking	3+7	6
MITN5312C	Routing Techniques	3+7	6	MGMT5310C	Strategic Management	3+7	6
MITN5011C	MSc ICT Capstone Project	-	-	MITN5011C	MSc ICT Capstone Project	-	18

Total Number of ECTS Credits = 90.

Total Number of ECTS Hours = 1800 (excluding the number of hours spent to complete the Capstone project).

Version 1.0 was approved and launched in October 2021.