



UNIVERSITY
of
TECHNOLOGY,
MAURITIUS

School of Innovative Technologies & Engineering

Department of Industrial Systems Engineering

MSc Multimedia Systems

PROGRAMME DOCUMENT

Version 3.0
MMSv3.0
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University of Technology, Mauritius
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MSc MULTIMEDIA SYSTEMS

A. Programme Information

Multimedia is the convergence and integration of various types of digital media, including images, sound, video, text, graphics and animations. The MSc Multimedia Systems responds to a growing skills shortage in industry for engineers with a high level of training in multimedia technologies, and in particular to support broadcast, entertainment, surveillance, gaming, internet, communications and consumer industries.

The MSc Multimedia Systems not only focuses on digital signal processing and multimedia communications, but also includes topics on Advanced Multimedia Applications, Image & Video Processing, Digital Broadcasting, Multimedia Data Retrieval and Game Technology. Emphasis is placed on a learn-by-doing approach which gives the students the opportunity to put in practice what they learn in the lectures.

The MSc program is designed for students who wish to enhance and specialise their skills in the Multimedia Systems in general, and also for professionals with some working experience on Advertising, 3D Modelling, Computer Aided Design (CAD), Digital Broadcasting, Image processing & Video Processing and in the exciting field of Game Development.

This innovative programme is specifically intended to respond to the growing need of Multimedia professionals with a high level of training in multimedia technologies like TV broadcasting, Entertainment, Security (Including Biometrics) and Surveillance, Game Technologies, Internet (Multimedia Databases), Mobile Computing, Communications and consumer industries.

B. Programme Aims

The aim of the programme is to equip the students with a broad range of theoretical and practical skills required for developing interactive and creative multimedia applications, with the possibility of specialising in any of the following:

- Advanced Multimedia Application
- Multimedia Data Retrieval
- Digital Broadcasting
- Image and Video Processing
- Game Technology
- Mobile Web and Multimedia
- Graphics Programming
- Advanced Web Multimedia

Each of the above areas is aligned to a different knowledge and understanding objective of the programme. Structuring this postgraduate programme around these themes provides a variety of perspectives on Multimedia Technologies as a subject and a core understanding and knowledge of these five important areas.

C. Programme Objectives

Students admitted to this MSc programme will possess a first degree, which will normally include a substantial element of Computing / Multimedia / Mobile Technology / Graphics Design / CAD Systems / Broadcasting. The degree is designed to uplift the students' in-depth understanding on the following topics:

- Animation and Modelling
- Image & video Processing
- Virtual Reality Mark Up Language (VRML) & Computer Aided Design (CAD) Systems
- Advertising Industry
- Multimedia databases & data retrieval including XML
- Digital Broadcasting and Compression
- Console & Online Game Technology
- Graphics Programming
- Mobile Web and Multimedia
- Advanced Web Multimedia

PART I – Regulations

D. General Entry Requirements

As per UTM'S Admission Regulations, and 'Admission to Programmes of Study at Master's Degree Level'

E. Programme Entry Requirements

At least an Honours Degree in Computer Science & Engineering or Computer Aided Design or Graphics Design or Multimedia or other related qualifications (academic or professional) acceptable to the University of Technology, Mauritius

F. Programme Mode and Duration

One Semester consists of 15 weeks (excluding examination period)

Full Time: 1 Year (2 semesters)

Part Time: 1½ Years (3 semesters)

G. Teaching and Learning Strategies

- Lectures, Tutorials and Practicals
- Class Tests and Assignments
- Industrial Project
- Workshops / Seminars / Lab Sessions
- Structured Discussions & Self Directed Study
- Case Study material & scenarios centred on real world problems

H. Student Support and Guidance

Academic Tutoring: 3 hours per week per module

I. Attendance Requirements

As per UTM's Regulations and Policy

J. Credit System

1 module = 4 credits

Industrial Project = 12 credits

K. Student Progress and Assessment

The programme is delivered mainly through lectures, tutorials, and practical laboratory sessions. Students are expected to be as autonomous and research oriented as possible and activities may include reading research papers, delivering presentations, taking part in quizzes, case-studying amongst others.

Each module carries 100 marks and unless otherwise specified, will be assessed as follows:

Written examination, inclusive of reading time, of duration of 2 - 3 hours for 3 credits modules and not less than 3 hours for 4 credits modules and continuous assessment carrying up to 40% of total marks. Continuous assessment can be based on a combination of assignments, field study, workshops and class tests.

L. Evaluation and Performance

The percentage mark contributes a 100 percent weighting towards the degree classification.

Maximum marks attainable: 1100

Module grading structure:

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

M. Award Classification

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

Minimum Credits Required for Award of:

Master's Degree:	42
Postgraduate Diploma:	30
Postgraduate Certificate:	18

Note: There is no re-sit in Master Dissertation

N. Programme Organisation & Management

Programme Director and Coordinator: Mr. A. Gopee

Contact Details:

- Room: G 2.27
- Telephone Number: 207 52 50
- Email: agopee@uamail.utm.ac.mu

Part II - Programme Structure

O. MSc Multimedia Systems – Full Time (Version 3.0)

<i>Semester 1</i>				<i>Semester 2</i>			
Code	Module	L+P/T	Credit	Code	Module	L+P/T	Credit
MULT 5101C	Multimedia Applications	2 + 2	4	MULT 5105C	Game Programming	2 + 2	4
MULT 5102C	Multimedia Data Retrieval	2 + 2	4	MULT 5106C	Digital Broadcasting	2 + 2	4
MULT 5103C	Graphics Programming	2 + 2	4	MULT 5107C	Mobile Web and Multimedia	2+2	4
MULT 5104C	Advanced Web Multimedia	2 + 2	4	MULT 5108C	Image and Video Processing	2 + 2	4
PROJ 5109C	Master Dissertation						12

P. MSc Multimedia Systems – Part Time (Version 3.0)

<i>Semester 1</i>				<i>Semester 2</i>			
Code	Module	L+P/T	Credit	Code	Module	L+P/T	Credit
MULT 5101C	Multimedia Applications	2 + 2	4	MULT 5104C	Advanced Web Multimedia	2 + 2	4
MULT 5102C	Multimedia Data Retrieval	2 + 2	4	MULT 5105C	Game Programming	2 + 2	4
MULT 5103C	Graphics Programming	2 + 2	4	MULT 5106C	Digital Broadcasting	2 + 2	4
				PROJ 5109C	Master Dissertation		

<i>Semester 3</i>			
Code	Module	L+P/T	Credit
MULT 5107C	Mobile Web and Multimedia	2+2	4
MULT 5108C	Image and Video Processing	2 + 2	4
PROJ 5109C	Master Dissertation		12

Q. MODULE OUTLINE

MULT5101C : Multimedia Applications

- Advertising industry
- Advanced Animation & ActionScript
- 3D Modelling & CAD systems
- VRML Mark up Language
- Selected topics on image and video segmentation
- Tracking Copyright protection and Authentication of Multimedia data
- Medical and stereo imaging

MULT5102C: Multimedia Data Retrieval

- Object Oriented Database Concepts
- Web Based Databases
- Content Based image retrieval
- Metadata, descriptors and descriptors spaces
- Content based image and video cataloguing
- Web XML applications
- Semantic based annotation and retrieval

MULT5103C: Graphics Programming

- Graphics API
- Views & Projections
- Principles of Modelling
- Modelling in OpenGL
- Lighting & Shading techniques
- Dynamics & Animations
- Anti-aliasing and Blending
- texture Mapping Using Per-pixel Shading
- special effects; Reflections; Ray Tracing
- Introductory Game Programming
- Games and SceneGraph Libraries
- Overview and comparative analysis of current games libraries and functionality available
- Interactive scene
- Building using games libraries

MULT5104C: Advanced Web Multimedia

- Introduction to Network Game Programming
- Mobile and internet game development
- Industry standard Application Programming Interfaces such as Microsoft DirectX
- Web Multimedia Design,
- Streaming Media,
- Advanced scripting for web multimedia,
- Multimedia Testing,
- Live Broadcast & Web Accessibility,
- Multi-user distributed multimedia,
- Mobile Multimedia applications, and Podcasts

MULTX5105C: Game Programming

- Game Technology & Programming
- Media for computer games

- Console game architecture and game design techniques
- Console game development
- 3D Graphics Programming
- Programming Environments and Game development
- Advanced Network Game Programming
- Mobile and internet game development
- Industry standard Application Programming Interfaces such as Microsoft DirectX

MULT5106C: Digital Broadcasting

- Development of digital broadcasting
- Operation of audio compression techniques
- Operation of video compression techniques
- Modulation techniques in digital broadcasting
- Conditional access in digital broadcasting
- Standards currently used for satellite, cable, terrestrial and audio digital broadcasting
- Likely future developments in digital broadcasting.

MULT5107C: Mobile Web and Multimedia

- Uses and types of media on mobile devices for web and applications
- Sensors for multimedia applications
- Mobile web pages
- Use of HTML / CSS to create mobile web applications
- Comparison of native to browser based applications
- Use of style sheets for mobile web applications
- Offline API / Geolocation
- Use of Javascript frameworks to create applications effects
- Wrappers to send HTML applications to the app stores
- Design / User experience for mobile
- Mobile gaming

MULT5108C: Image and Video Processing**Module Content:**

- Fundamental tasks involved in creating and processing image and video information
- Techniques in computer assisted image interpretation
- Knowledge about filters and filter design technologies for image enhancement, denoising, deblurring, etc.
- Describe special compression techniques and design requirements of image and video coding
- Image and video coding standards: JPEG, JPEG200, MPEGx and H.26x