MASTER OF SCIENCE IN COMPUTER APPLICATION (MSCA)

(LIST OF COURSES BY SEMESTER)

First Year, First Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
	Computer Organization and Architecture	3				
ICT 205	Computer Interfacing	3				
	Total	9				

First Year, Second Semester

SC

	Specialization Course	3				
SC	Specialization Course	3				
	Total	12				

Second Year, First Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 204	Numerical Methods	3				
SC	Specialization Course	3				
SC	Specialization Course	3				
ICT 299	Research Seminar	1				
	Total	10				

Second Year, Second Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 399		6				
	Total	6				

MASTER OF SCIENCE IN COMPUTER SCIENCE

Degree Requirements

Specialization Courses

ICT 212	Parallel Algorithms
ICT 221	programming Language Implementation (compiler Design and Construction)
ICT 232	Biomedical Informatics
ICT 233	Probabilistic Methods in computer Science
ICT 240	Computer simulation and Modeling
ICT 242	Theory of Computation
ICT 247	Cryptography
ICT 248	Computational Mathematics
ICT285	Robotic systems
ICT 286	Models of Symbolic Learning
ICT 287	Biomorphic Computation
ICT 312	Advanced Algorithms and Randomized Algorithms
ICT 330	Advanced Scientific Computing
ICT 340	Advanced Topics in Computational Science

MASTER OF SCIENCE IN INFORMATION MANAGEMENT

Degree Requirements

Core Courses	12 units
Specialization Courses	18
Research Seminar	1
Thesis	6
Comprehensive Examination	
Total	**37 units**

MASTER OF SCIENCE IN INFORMATION MANAGEMENT (MSIM)

(LIST OF COURSES BY SEMESTER)

First Year, First Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY

Degree Requirements

Core Courses	12 units
Specialization Courses	18
Research Seminar	1
Thesis	6
Comprehensive Examination	
Total	**37 units**

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY (MSIT)

(LIST OF COURSES BY SEMESTER)

First Year, First Semester

Specialization Courses

ICT 212	Parallel Algorithms
ICT 208	Computational Complexity / Complexity Theory
ICT 249	Mobile computing

MASTER OF COMPUTER APPLICATIONS

Degree Requirements

Core Courses	15 units
Specialization Courses	15
Research Seminar	1
Thesis	6
Comprehensive Examination	
Total	**37 units**

MASTER OF COMPUTER APPLICATION (MCA)

(LIST OF COURSES BY SEMESTER)

First Year, First Semester

Course No.	Course Title	Units	Hrs/Wk		Prerequisite(s)
			Lec	Lab	

Specialization Courses

ICT 132	Biomedical Informatics
ICT 240	Computer simulation and Modeling
ICT 249	Mobile Computing
ICT 285	Robotic Systems
ICT 287	Biomorphic Computation
ICT 290	Digital Signal Processing
ICT 291	Digital Audio Processing
ICT 292	Digital Image Processing
ICT 293	Digital Image Analysis
ICT 294	Advanced Multimedia Systems
ICT 295	Computer Vision I
ICT 296	Computer Vision II
ICT 297	Introduction to Biomedical Imaging

MASTER OF COMPUTER SCIENCE

Degree Requirements

Core Courses	12 units
Specialization Courses	27
Research Seminar	1
Special Projects	3
Comprehensive Examination	
Total	**43 units**

MASTER OF COMPUTER SCIENCE (MCS)

(LIST OF COURSES BY SEMESTER)

First Year, First Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 201	Data Structures	3				
ICT 202	Computer Organization and Architecture	3				
SC	Specialization Course	3				
SC	Specialization Course	3				
	Total	12				

First Year, Second Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 206	Operating Systems	3				
SC	Specialization Course	3				
SC	Specialization Course	3				
SC	Specialization Course	3				
	Total	12				

Second Year, First Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 203	Programming Languages for Computer Science and Information Technology	3				
SC	Specialization Course	3				
SC	Specialization Course	3				
SC	Specialization Course	1				
	Total	12				

Second Year, Second Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 398 SC	Special Projects	3				

MASTER OF INFORMATION MANAGEMENT

Degree Requirements

Core Courses	12 units
Specialization Courses	27
Research Seminar	1
Special Projects	3
Comprehensive Examination	
Total	**43 units**

MASTER OF INFORMATION MANAGEMENT (MIM)

(LIST OF COURSES BY SEMESTER)

First Year, First Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 201	Data Structures	3				
ICT 202	Computer Organization and Architecture	3				
SC	Specialization Course	3				
SC	Specialization Course	3				
	Total	12				

First Year, Second Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 206	Operating Systems	3				
SC	Specialization Course	3				
SC	Specialization Course	3				
SC	Specialization Course	3				

MASTER OF INFORMATION TECHNOLOGY

Degree Requirements

Core Courses	12 units
Specialization Courses	27
Research Seminar	1
Special Projects	3
Comprehensive Examination	
Total	**43 units**

MASTER OF INFORMATION TECHNOLOGY (MIT)

(LIST OF COURSES BY SEMESTER)

First Year, First Semester

Course No.	Course Title	Units	Hrs/Wk			Prerequisite(s)
			Lec	Lab	Total	
ICT 201	Data Structures	3				
ICT 202	Computer Organization and Architecture	3				
SC	Specialization Course	3				
SC	Specialization Course	3				

Specialization Courses

ICT 212	Parallel Algorithms
ICT 208	Computational Complexity / Complexity Theory
ICT 249	Mobile computing
ICT 254	Software Reliability and Reusability
ICT 256	Design of Interactive Systems
ICT 261	Developing Multimedia Information Systems
ICT 273	Information Technology Management
ICT 283	Project and Change Management

Prerequisite(s) : None

ICT 206 OPERATING SYSTEMS

Topics include operating system structures, multiprogramming and multiprocessing; process management; memory management; storage management, I/O systems; distributed systems; protection and security.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 207 PROGRAMMING LANGUAGES FOR INFORMATION MANAGEMENT

Topics include survey of different programming languages, evaluation and performance of each programming language, relationships and features. This course is intended for Information Management and may not be credited for Computer Science and Information Technology.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 208 COMPUTATIONAL COMPLEXITY / COMPLEXITY THEORY

Computational complexity classes, their intrinsic properties and relations between them; time and space computational complexity; classification of decision problems; complexity of optimization problems; reducibility and completeness of problems within complexity of classes, circuit complexity classes; space-

ICT 213 NETWORK PERFORMANCE AND MONITORING

Network performance evaluation; measurement techniques and tools; simulation, queuing models, case studies and applications.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None ICT 210 (Data Communications and Networking) or Consent of Instructor.

ICT 221 PROGRAMMING LANGUAGE IMPLEMENTATION (COMPILER DESIGN AND CONSTRUCTION)

The implementation of traditional and nontraditional computer programming languages; compilation including lexical analysis, parsing, optimization, code generation, testing and techniques in error correction and recovery; run-time support including run-time libraries, storage management, input-output; comparison of implementation techniques and extensive laboratory exercises and project.

ICT 242 THEORY OF COMPUTATION

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 251 DATABASE SYSTEMS

Physical and logical organization; file structures; indexing; entity relationship model; hierarchical, network and relational models; normalization; query languages and database logic; stored procedures; security and management.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 252 ECONOMIC METHODS FOR DECISION MAKING

Use of economic methods for management decisions; understanding costs and pricing; microeconomics for information and information organizations; financial management.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 253 ISSUES, TRENDS, AND STRATEGIES FOR COMPUTER SYSTEMS MANAGEMENT

Technological advances in computer systems; problems relating to ethics, security, the proliferation databases, risk analysis, telecommunications, artificial intelligence, and human-machine interaction.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 254 SOFTWARE RELIABILITY AND REUSABILITY

Principles of reliability, reusability, initiatives, and standards in software engineering, such as function point as a measure of complexity and reliability; software reliability models; software fault analysis; types of software errors; types of design errors and inherent characteristics of software that determine reliability; software redundancy; automating tools for software reliability prototypes; and real-time software reliability.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 255 INTRUSION DETECTION, INCIDENT RESONSE, AND COMPUTER FORENSICS

Theory, skills, and tools needed in intrusion detection and computer forensics; techniques for identifying vulnerable target systems and types of malicious code, for mitigating security risks, ad for recognizing attack patterns; the conceptual and operational tools necessary

interactive system designs, and the theoretical foundations underlying the design of interactive systems.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 257 ECONOMICS OF INFORMATION

Measurement and analysis of the role information plays in the economy and the resources devoted to production, distribution, and consumption of information; economic analysis of the information industry; macroeconomics of information.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 258 LEGAL ISSUES IN INFORMATION MANAGEMENT

Introduction to legal issues in information management, antitrust, contract management, international law including intellectual property, trans-border data flow, privacy, libel, and constitutional rights.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 259 INTELLECTUAL PROPERTY

Philosophical, legal, historical, and economic analysis needed for and uses of laws protecting intellectual property; types of intellectual property (copyright, patent, trade secrecy), the interaction between law and technology, various approaches (including compulsory licensing), and the relationship between the intellectual property and compatibility standards.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 261 DEVELOPING MULTIMEDIA INFORMATION SYSTEMS

Concepts and practices associated with the creation, utilization and evaluation of multimedia for information delivery; basics of digitizing and manipulating text, sound and video/still images; and multimedia design and implementation.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 262 DISTRIBUTED DATABASE SYSTEMS

File allocation; dead-lock detection and prevention, synchronization; update consistency; query optimization and fault tolerance.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 263 PRINCIPLES OF INFORMATION RETRIEVAL

Theories and methods for searching and retrieval of text and bibliographic information; analysis of relevance, utility; statistical and linguistic methods for
automatic indexing and classification.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 270 (Information and Organization Retrieval) or Consent of Instructor

ICT 264 ORGANIZATION OF INFORMATION IN COLLECTIONS

Standards and practices for description and organization for bi

ICT 273 INFORMATION TECHNOLOGY MANAGEMENT

Principles and guidelines in managing hardware and software technology; system architecture for single user, central and networked computing systems; and single and multi-user operating systems.

ICT 279 GROUP AND ORGANIZATIONAL APPROACHES TO

ICT 285 ROBOTIC SYSTEMS

Biologically-motivated robotic systems; reactive, deliberative, and hybrid architectures; knowledge representation for robotic systems; sensor fusion and perceptual strategies; and adaptation and social behavior.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 284 (Intelligent Systems) or equivalent

ICT 286 MODELS OF SYMBOLIC LEARNING

Symbolic artificial intelligence methods for learning; inductive and explanation-based generalization; failure-driven learning; case-based learning; operationality of explanations and utility of learning; goal-driven learning; criteria for when, what and how to learn; learning in integrated architectures: pattern recognition, parametric and non-parametric learning, decision trees, Bayesian and neural networks and reinforced learning.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 284 (Intelligent Systems) or Consent of Instructor

ICT 287 BIOMORPHIC COMPUTATION

Biologically-inspired approaches to the design of intelligent systems; distributed and perceptually-grounded representations; temporal processing; neural network approaches to vision and natural language processing; evolutionary computation; comparison of symbolic and biomorphic approaches to intelligence; introduction to computing and dynamical systems.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 284 (Intelligent Systems) or Consent of Instructor

ICT 288 INFORMATION POLICY

Examination of the nature of corporate, non-profit, and governmental information policy; the appropriate role of the government in production and dissemination of information, the tension between privacy and freedom of access to information; issues of potential conflicts in values and priorities in information policy.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite : None

ICT 289 STRATEGIC COMPUTING AND COMMUNICATIONS TECHNOLOGY

Factors strongly impacting the success of new computing and communications products and services (based on underlying technologies such as electronics and software) in commercial applications; technology trends and limits, economics, standardization, intellectual property, government policy and industrial organizations; strategies to manage the design and marketing of successful products and services.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : None

ICT 291 DIGITAL AUDIO PROCESSING

Audio processing; speech processing and recognition; voice recognition and synthesis; compression of audio signals; and layers of compression.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite : ICT 290 (Digital Signal Processing)

ICT 292 DIGITAL IMAGE PROCESSING

Digitized image and its properties; data structures for image analysis; image pre-processing; an introduction to segmentation; linear discrete image transforms; image data compression and elementary case studies.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 290 (Digital Signal Processing)

ICT 293 DIGITAL IMAGE ANALYSIS

Include shape representation and description; object recognition; mathematical morphology; texture and more advanced case studies in image analysis.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 292 (Digital Image Processing)

ICT 294 ADVANCED MULTIMEDIA SYSTEMS

Include video and audio processing; integration and compression; pre-processing of audio and video signals; post processing of signals; compression of synthesized signals.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 293 (Digital Image Analysis)

ICT 295 COMPUTER VISION I

Include shape representation and description; object recognition and case studies in high level processing.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : ICT 293 (Digital Image Analysis)

ICT 296 COMPUTER VISION II

Pattern recognition and artificial intelligence techniques; advanced topics in segmentation; 3D vision,

ICT 299 RESEARCH SEMINAR

ICT 397 DIRECTED STUDY

Topics that best contribute to the academic goals of the student but are not appropriately covered in courses offered. These can be studied by the student himself but under the direction of a faculty member. Students intending to enroll in the course must request for approval from the faculty member and the department concerned before registration. The course may be taken for a credit of 1-15 units with a grade of S or N (Satisfactory or Not Satisfactory). At most 6 units may be no lectures but laboratory work may be done as needed.

Credit : 1-15 (0 hr lec, as needed lab hours)
Prerequisite(s) : None Consent f Instructor, department concerned and completion of 18 units of required coursework to include 6 units of specialization courses.

ICT 398 SPECIAL PROJECTS

Independent study under the direction of a faculty member, culminating in a written report.

Credit : 6 units (0 hrs lec, 0 hrs lab)
Prerequisite(s) : Coursework (Completion of 12 units including 6 units of specialization courses.)

ICT 399 THESIS

Research under the direction of a member of the graduate faculty leading to an MS thesis.

Credit : 3 units (3 hrs lec, 0 hrs lab)
Prerequisite(s) : Must have completed all coursework

FACULTY PROFILE

1 Ambe, Aloha May H. — MIT (Multimedia & Interactive Systems), ADMU, 2006
BS Info Tech, MSU-IIT, 2002

2 Cabido, Manuel C. — MS Computer Science (Software Engineering), ADMU, 1999
BS Mathematics, MSU-IIT, 1988

3 Dimalen, Davis M. — MS Computer Science (Natural Language Processing), DLSU, 2004
BS Computer Science, MSU-Marawi, 1988

4 Dimalen, Editha D. — MS Computer Studies (Natural Language Processing), DLSU, 2003
BS Computer Science, MSU-Marawi, 1998

5 Dinawanao, Dante D. — MS Computer Science (Operating System, Computer Networks, Distributed Computing), DLSU, 2003
BS Computer Science, MSU-IIT, 1994

6 Empig, Ernesto E. — MS Information Technology, Ateneo de Davao University, 2005
BSIEd Electronics, MSU-IIT, 1993

7 Malabanan, Cenie V. — MIT (Multimedia), Queensland Univ. of Tech., Australia, 2004
Diploma in Commerce, University of Wollongong, Australia, 1993
Bachelor of Engineering Technology, MSU-IIT, 1988
Diploma in Engineering Technology, MSU-IIT, 1980

8 Mostrales, Eli S. — MS Electrical Engineering, 1976, University of the Philippines-Diliman, Quezon City
BS Electrical Engineering, 1972, MSU-Main, Marawi City

9 Porquis, Lope Ben C. — MS in Computer Application, MSU-IIT, 2007
BSECE, MSU-IIT, 2001

10 Pinzon, Jeremy V. — MS Computer Science (Computer Hardware System) ADMU, 1986
BS Electrical Engineering, MSU-Marawi, 1972

11 Que Esteves, Chona B. — Master in Business Management (General Management), MSU-IIT, 1993
Associate in Secretarial Science, University of San Carlos, 1974
Bachelor of Arts, Dansalan College, 1972

12 Soliva, Delilah L. — Master in Business Management, MSU-IIT, 1985
BS Business Administration (Accountancy), MSU-IIT, 1975

13 Taculin, Alquine Roy F. — MS Computer Science, UP-Los Baño ʿ ! t= ᵀ 4 Ч U[illegible] ʎ S Computer Science, MSU-IIT, 192[illegible]