

**Information Technology and Computer Technology Departments**

**Master in Information Technology Program**

1. **PROGRAM OVERVIEW**

Today's rapid advancement in information and communications technology (ICT) continues to induce change in an unprecedented rate. Being seen as an on-going information revolution, these changes open opportunities for motivated individuals who have taken the initiative to enhance their current qualifications with market-oriented skills and expertise.

Anchored on the idea of a holistic professional development, the Master's in Information Technology (MIT)program combines knowledge in organizational systems, information security, information management, and service management. Based on a multidisciplinary curriculum, the program shall equip professionals with the necessary tools, knowledge, skill requirements, and understanding of the latest technologies that are being used in today’s business-organizational environment. The program also addresses the behavioral, managerial and technical aspects of ICT in the context of organizational systems.

The MIT program is designed to address the rapid rise in demand for professionals versed in information technology information security, risk management, and service management by offering courses that would enable students to make an immediate contribution to the workplace.

|  |  |  |
| --- | --- | --- |
| Academic Program Components | Description | Units |
| Remedial Courses | Set of courses designed to allow non IT/CS candidates to have sufficient academic background and ensure meaningful participation in the program. (Same as MSIT) | *18* |
| Foundation Courses | Foundation courses are program offerings that would allow graduate students to learn best practices on ICT and its relevance to human systems. | 15 |
| Specialization/Elective Courses | The MIT program offers a set specialization courses that would allow students to focus on specific areas of specialization. | 15 |
| Capstone Project | This requirement allows students to demonstrate mastery of both a specific topic. This requirement serves as a summative expression of what the graduate student has learned in the program. | 6 |
|  | **TOTAL** | 36 *(15)* |

1. **Program Objectives**

The MIT program aims to develop IT professionals who are equipped with industry relevant skills and expertise. Mindful of the demands and challenges of the Philippine ICT industry, the program envisions itself to be a venue for learning and sharing of knowledge. Lastly, the program aims to create an environment that will nurture and transform ICT professionals to become experts and innovators in their respective fields of endeavour.

1. **Remedial Courses: Diploma in Information Technology (DIP-IT)**

The MSIT and MIT programs are designed to accommodate motivated individuals coming from non-IT/CS academic backgrounds. The Diploma in Information Technology (Dip-IT) is an 18-unit offering that is composed of courses designed to bridge the technical knowledge gap of non IT/CS applicants. The Dip-IT courses serve as a remedial course offering for non-IT/CS graduates seeking to complete a MSIT or MIT degree. Dip-IT courses are as follows:

* + 1. [DIP-IT001] Project Management & IS Development
    2. [DIP-IT002] IT Resource Management
    3. [DIP-IT003] Basics of Databases
    4. [DIP-IT004] Basic programming
    5. [DIP-IT005] Advanced programming
    6. [DIP-IT006] Introduction to Software Engineering

1. **Foundation Courses (15 units)**

The MIT program is composed of a 15-unit of foundation course offering designed to bridge the domains of technology and human-organizational systems. The foundation courses are as follows:

* Advanced OS and Networking
* Advanced Systems Design and Implementation
* Technology and Project Management
* IS Architecture
* IT Service Management

1. **Elective Courses (15 units)**

The MIT program is composed of a 15-unit elective offering designed to allow students to specialize in the areas of Information Security and Business Continuity.

Track 1 (Enterprise Agility)

* Risk Management and Business Continuity Planning
* Information Security and Regulatory Compliance
* Business Intelligence and Analytics
* Enterprise Architecture
* Emerging Trends in Computing

Track 2 (Security Engineering and Management)

* Fundamentals of Information Security
* Secure Programming
* Ethical Hacking and Forensics
* Information Security Enforcement and Compliance
* Emerging Trends in Computing

1. **Capstone Project (6-units)**

A Masters Capstone Project is a culminating activity that generates an output pertinent to the area of business and IT integration. This may be but not limited to policy development and management systems design that focuses on aligning technology and trends with business objectives. The student concerned must hold key responsibilities towards the development of the capstone project. The Capstone Project may be pilot tested or evaluated by a panel of domain experts and the result of the research and development must be presented in a public forum.

1. **Program of Study**

Guided by the need to assist students in their pursuit for higher knowledge, MIT students are given options on how to complete the program. A student can either take the part time option (a) or the full time option (b). Students are required to finish all core courses before taking the elective offerings.

1. Part-Time Load for Foundation Courses

|  |  |  |
| --- | --- | --- |
| **Term 1 (6 units)** | **Term 2 (6 units)** | **Term 3 (6 units)** |
| * Advanced OS and Networking * Advanced Systems Design and Implementation | * Technology and Project Management * IS Architecture | * IT Service Management * Elective 1 |
|  |  |  |
| **Term 4 (6 units)** | **Term 5 (6 units)** | **Term 6 (3 units)** |
| * Elective 2 * Elective 3 | * Elective 4 * Capstone 1 (Proposal) | * Elective 5 |
|  |  |  |
| **Term 7 (3 units)** |  |  |
| * Capstone 2 (Final Defense) |  |  |

1. Full-Time Load for Foundation Courses

|  |  |  |
| --- | --- | --- |
| **Term 1 (9 units)** | **Term 2 (9 units)** | **Term 3 (9 units)** |
| * Advanced OS and Networking * Advanced Systems Design and Implementation * Technology and Project Management | * IS Architecture * IT Management * Elective 1 | * Elective 2 * Elective 3 * Capstone 1 (Proposal) |
|  |  |  |
| **Term 4 (6 units)** | **Term 5 (3 units)** |  |
| * Elective 4 * Elective 5 | * Capstone 2 (Final Defense) |  |

**Foundation Courses:**

**Advanced Operating Systems and Networking**

The requirement of a mission critical information system goes beyond the usual desktop and consumer-based network system. Concepts in advanced operating system and networking allow the IT practitioner to identify server and operating system requirements for distributed systems. This course includes discussion on advanced operating systems architecture (e.g., client-server, cooperating systems) and network services for distributed systems (e.g., time synchronization, name services). It equips the IT practitioner with skills in maintaining and optimizing complex systems while providing robust connectivity for the IT infrastructure.

**Advanced Systems Design and Management**

This course develops the skills necessary to analyze, design, and manage the implementation of enterprise-wide information systems, using modern methodologies, models, tools, and techniques. It covers best practices in requirements analysis, process modeling, problem analysis, systems design, and systems implementation. It combines theory and practice for the purpose of understanding the whole systems development life cycle. Students are expected to collaborate on projects involving analysis and prototyping of applications that address real-world problems and use current and emerging information and communication technologies.

**Technology and Project Management**

Success of an Information Technology (IT) project is highly dependent on how it is managed.  The project manager is continually faced with changing environment, technologies, resources, requirements, and risks.  To support project managers, continuous learning on the project principles, concepts, tools and techniques is required.  These will include preparation of project plans, project management and control, and implementing projects while managing change and handling conflicts. Emphasis is on handling risks management and projects whose members reside in varied locations and time zones.

**Information System Architecture**

The architecture of an information system (IS) defines the system in terms of its components and the interactions among those components. Developing an IS architecture includes the definition of processes based on business, information and technical perspectives. This course includes discussions on the principles, standards, trends, technical foundation for systems implementation, networks and systems administration, hardware and software procurement, and computing resource management.

**Information Technology Service Management (ITSM)**

IT organizations seek to optimize IT spending and improve customer focus, and they try to make sure that IT services and technologies are delivered on time, within budget, and within a measurable value to the business units.  To generate a higher return on investments (ROI), many organizations are seeking ways to improve IT services at a lower cost.  With IT Service Management (ITSM), several practice frameworks have been adopted focusing on Service-as-a-Lifecycle, and describing the ITSM as a full cycle to support the organizations' strategic goals and objectives.

**Elective Track 1 (Enterprise Agility)**

**Risk Management and Business Continuity Planning**

Risks are an inherent part of any organization, thus minimizing the cost and impact of risks has become a major area of focus and concern. This course introduces and discusses various risk management concepts, tools, and techniques emphasizing on the design and implementation of risk management frameworks and architectures. Topics covered include how to perform risk assessments, determine control gaps, identify emerging threats, determine compliance violations, and how to qualify the current risk level for presentation to executive level management. Being part of an organizations risk, the integration of a Business Continuity Planning into the organization is also discussed focusing on how it is structured and how it functions to provide cost conscious planning, provisioning, and response to corporate threatening incidents/events, regardless of their source.

**Information Security and Regulatory Compliance**

Lawmakers continuously enact new regulations in order to address the growing concerns with regards to information security and privacy. In order to successfully achieve the objectives of the new regulations, organizations must closely monitor itself and implement new systems to address the new requirements as well as comply with existing regulatory requirements. These proactive capabilities must be an integral part of a company’s standard business processes. The course provides the foundational knowledge, understanding, analysis and synthesis that is needed to develop a practical information security management system, to the standard set by the ISO/IEC 27001:2005 and BS ISO/IEC 17799:2005.

**Business Intelligence and Analytics**

As organizational managers recognize how integral knowledge and information management are to the bottom line, the need to transform data into actionable knowledge has created the impetus to refine the methods, analytical tools, data mining techniques and approaches the business use in an environment what is now called the business intelligence (BI) space. This refinement has become critical to organizations striving to succeed in this highly competitive global landscape. Also, with huge data coming from various sources like social media sites, data applications, and so on, coupled with the increased demand for analytics skills, organizations are faced with challenges on how to manage, categorize, store, process, analyze, interpret, and present big data (structured and unstructured ones) with reasonable accuracy and timeliness to predict future business trends, in order to sustain the organizations' competitive advantage. Areas on big data analytics include forecasting, simulation, optimization, mining and business intelligence.

**Enterprise Architecture**

Enterprise architecture provides a comprehensive set of models that describe the functions and structure of an enterprise. It provides the enterprise a map to plan for business and technology changes through systematic IT planning and architecting. Some enterprise architecture methodologies and frameworks include Zachman's, TOGAF, Federal Enterprise Architecture, and the Gartner Methodology.

**Emerging Trends in Computing**

The pace with which technology change is very rapid and every IT practitioner should be able to cope with emerging trends. This course enhances and develops the students’ knowledge in the management of emerging technologies by analyzing how they evolve, determining how it can be used to solve current IT problems. This allows the student to understand, assess, evaluate and invest in future technologies for the IT infrastructure.

**Elective Track 2 (Security Engineering and Management)**

**Fundamentals of Information Security**

Information security is defined as the preservation of confidentiality, integrity and availability of information. As a security engineer, he/she is expected to know the ten domains of information security, identify threats and vulnerabilities, and the appropriate safeguards to mitigate them.

**Secure Programming**

Applications in the IT infrastructure may contain vulnerabilities. Security engineers when developing and auditing programs should adhere to industry approved secure programming practices. Emphasis will be given to: understanding information security concepts, secure programming practices, auditing techniques and tools, and common threats to application and their mitigation strategies.

**Ethical Hacking and Forensics**

The information technology infrastructure today is considered an important part of any organization. Vulnerabilities in the system can be used by users within or outside the organization to create a successful attack or bring the system down. These vulnerabilities can be identified and verified by hacking into the system but should be done in a structured, disciplined and ethical manner while also providing countermeasures. Aside from finding vulnerabilities, the security engineer is also expected to be able to be able to backtrack what happened in the aftermath of an attack in computers, digital storage media and network infrastructure.

**Information Security Enforcement and Compliance**

After formulating the information security policy, the security engineer must create the implementation details of the policy. The implementation detail forces the users in the organization to comply with the security policy. This includes guidelines in evaluating equipment and software for the IT infrastructure in relation to data security, backup and recovery mechanisms, installation and upgrading of software, access to resources in the IT infrastructure and business continuity.

**Emerging Trends in Computing**

The pace with which technology change is very rapid and every IT practitioner should be able to cope with emerging trends. This course enhances and develops the students’ knowledge in the management of emerging technologies by analyzing how they evolve, determining how it can be used to solve current IT problems. This allows the student to understand, assess, evaluate and invest in future technologies for the IT infrastructure.