



**CURRICULUM HANDBOOK**

**Master of Science [MSc]**

**in**

**MANAGEMENT OF INFORMATION TECHNOLOGY**

**[CLASS OF 2025]**

## SUMMARY

### Program Aims

In this new so-called “information age”, information has become a resource, a tool and also one of the major risks in any organisation. Therefore, the management of information becomes everyone's business in an organisation. It affects how well an organisation communicates with its clients, how secure data is, and whether the organisation has an effective way to measure its performance and meet its goals. This program is designed to produce graduates who will become the key people responsible for oversight and monitoring of this key cog in the gears of any organisation and serve as the bridge between generators and users of data and, in particular, to support the use and interpretation of data by an organization.

### Program Structure

Completion of a total of 39 credit hours is required for award of the degree. All courses will be taught and assessed on the basis of any combination of continuous assessment, examinations practical and projects. A letter grade will be awarded for each course completed. The list of courses is provided below:

#	COURSE NAME	CODE	CREDIT UNITS
1	Implementation of IT in Organizations	MIT 801	3
2	Enterprise Architecture & Business Analysis	MIT 802	3
3	Technologies for Business Intelligence	MIT 803	3
4	Enterprise Resource Planning (ERP): Technological & Methodological Issues	MIT 804	3
5	Applied Multivariate Analysis & Forecasting	MIT 805	3
6	Managing the Design & Improvement of Operational Systems	MIT 806	3
7	IT Project Management	MIT 811	3
8	Design of Business Processes & Information Systems	MIT 812	3
9	Information Design Trends	MIT 813	3
10	Information Security	MIT 814	3
11	Data Analysis & Visualization	MIT 815	3
12	User Experience: Foundations & Measures	MIT 816	3
13	Archives & Data Curation	MIT 817	3
14	Masters Thesis	MIT 818	-

### Note:

- General grade and examination requirements, calculation of GPA and CGPA, and other academic requirements can be found in [Chapter 4 of the AUST Student Handbook](#).
- A total of 39 Credit Units is required for a Master of Science degree in Management of Information Technology.

## **COURSE NAME – MIT 801: Implementation of IT in Organizations**

This course is designed to:

- teach how to generate evidence-based insights in order to make innovative recommendations to enhance organizational effectiveness;
- equip participants with the knowledge needed to understand, integrate and apply knowledge of organizational culture and social network analysis data to diagnose and address organizational problems
- develop organizational design skills that help to effectively influence organizational behavior and effectiveness
- understand the bearing of social-practice perspectives on organizational knowledge and learning and use innovative models to design technology solutions to address strategic challenges
- teach how to apply design methodology tools to anticipate system and organizational challenges and use technology to implement innovative solutions.

Topics covered: Contemporary issues in management of corporations; Organizational Structure; Understanding the IT needs and challenges of different types and sizes of organizations; Designing solutions for organizational effectiveness; Using IT to lead corporate strategy development; Using IT for talent development; Creating and sharing knowledge in organizations; Information Assurance and Security; Creating and supporting virtual teams.

## **COURSE NAME – MIT 802: Enterprise Architecture & Business Analysis**

This course aims at providing a comprehensive understanding of the principles and practice of enterprise architecture by integrating strategic, business, and technology planning methods to enable graduates to understand, analyse, justify, and communicate solutions in an enterprise. The following topics will be presented:

- Enterprise Architecture: Introduction to the concept of enterprise architecture; enterprise architecture tools and practices; enterprise modelling; enterprise information technology architecture; understanding complex organizations; cost and value management; corporate, business, and project strategy; the supply chain; enterprise integration; security.
- Business Analysis: Organizational Behavior; Global Business Environment; Business and Systems Analysis; Databases and Analytics; Management of IT Projects for Business Analysts; Process Design.

## **COURSE NAME – MIT 803: Technologies for Business Intelligence**

Topics to be covered includes:

- Advanced Database Management: Advanced topics in Structured Query Language (SQL), dimensional modeling for Data Warehousing (DW) systems, and some next generation (NoSQL) and cloud-based database architectures that address current Big Data challenges.
- Analytics Strategy and Practice: Case studies and analytics related issues in the context of organizational strategy.
- Analytics for Big Data: Fundamental concepts of distributed algorithms to analyze large-scale data in various domains; data mining on large data and applications (MapReduce); data storage, query and business intelligence with distributed databases.

- Social Media and Network Analysis. Supply Chain Management. Marketing Analytics.
- Predictive Models and Applications for Business: Advanced machine learning techniques and applications. Neural networks and deep learning, hierarchical models, Bayesian networks. Use of Python and various other packages.

### **COURSE NAME – MIT 804: Enterprise Resource Planning (ERP): Technological & Methodological Issues**

Topics to be covered includes:

- fundamentals of Enterprise Resource Planning (ERP);
- the design and development of ERPs;
- inventory management;
- building a business case for improved productivity;
- design and implementation of integrated enterprise-wide business solutions using a range of software support modules in areas like marketing, sales, product design, inventory control, procurement, distribution, quality, finance, human resources, and service information;
- integrating different aspects of the organization to provide needed operational planning and control activities;
- enabling transparency and avoiding duplication of information in an effort to achieve quality productivity goals
- how organizations keep track of inventory, information, and customers, as well as strategies used to replenish inventory.

### **COURSE NAME – MIT 805: Applied Multivariate Analysis & Forecasting**

The primary aim of the course is to enable students to understand the central role of data analytics in the formulation of strategy for effective management of enterprises by being able to transform data into actionable insights; develop statistically sound and robust analytic solutions; demonstrate leadership; formulate and manage plans to address operational issues; evaluate constraints on the use of data; assess data structure and data life cycle.

Topics to be covered includes:

- generalized linear models;
- introduction to predictive analysis;
- regression and multivariate analysis;
- database systems and data preparation;
- data visualization;
- selected modeling techniques;
- distribution theory and Laplace transforms;
- the Poisson process and continuous time Markov chains;
- hidden Markov models for time series;
- decoding hidden Markov models;
- structural equation modeling;
- boundary layer theory;
- vector auto-regression, causality, and co-integration;
- Generalized Method of Moments (GMM);
- frequentist and Bayesian information theoretic alternatives to GMM;
- basic queuing models;
- transfer function models;

- time series and forecasting;
- stochastic models and forecasting

### **COURSE NAME – MIT 806: Managing the Design & Improvement of Operational Systems**

Topics to be covered include:

- General Principles of Quality Assurance and Reliability of Systems in Business;
- Spreadsheets as Management and Operational Tools;
- Management of Technology and Innovation;
- Managing Supply Chain Operations;
- IT Service Management;
- Logistics Management;
- Reverse Logistics: Resource Estimating and Scheduling;
- Project and Change Management;
- Lean Production Systems;
- Enterprise Information System Models;
- Continuous Improvement Tools and Techniques: lean techniques, quality management, TQM, JIT, and product experimental design;
- Adaptive Project Management;
- Group and Interpersonal Dynamics in Complex Organizations;
- Financial Intelligence for Strategic Decision-Making

### **COURSE NAME – MIT 811: IT Project Management**

Topics to be covered include:

- Introduction to Project Management, concepts and definitions;
- Project Management Context;
- Project Management Processes;
- Project Management Knowledge Areas;
- Management of Project Scope, Time, Cost, Quality, Human resources, communication;
- Project Risk Management;
- Project Procurement Management;
- Project Stakeholder Management; Managing Project Integration

### **COURSE NAME – MIT 812: Design of Business Processes & Information Systems**

The course aims to cover fundamental and critical areas of knowledge in information systems and how to design and integrate information systems to support business operations. Essential software programming will be taught, and content will also cover software development concepts and structure of databases and their applications.

Topics to be covered include:

- Introduction to business information systems;
- Systems Analysis and Design;
- Basics of Selected Programming Language;
- Introduction to databases;
- Business Intelligence Modelling;
- Enterprise Systems;
- Data Curation and Management;

- Business process modeling, design and simulation;
- Operations and Business Process Management;
- Applied Project Management;
- Business Intelligence and Data Warehousing;
- Design of Workflow Management Systems;
- Digital Continuity;
- Information Security and Assurance in a Networked;
- World Information Technology and Marketing in the New Economy;
- Contemporary Topics in Information Systems

### **COURSE NAME – MIT 813: Information Design Trends**

In many ways, this is an “open” course, which allows the instructor latitude to discuss new ideas, trends and technologies, especially considering how rapidly trends change in this field.

### **COURSE NAME – MIT 814: Information Security**

The two-sided coin of proliferation of data and the rampant nature of cyber attacks makes for a fertile field of study and practical applications. These are the twin issues that inform the basis of this course. The following topics will be covered:

- An overview of key Cybersecurity Issues;
- Introduction to cryptography and security mechanisms;
- Computer Security;
- Network security;
- Threat Detection and Response Methods;
- Disaster Recovery Planning;
- Layered, Defensive Techniques;
- Study of Hacker Techniques;
- Understanding Cyber Crime;
- Intrusion Detection, & Incident Response;
- Penetration Testing;
- Digital Forensics;
- Specialized Defence Practices;
- Advanced real-life lab sessions and simulations;
- Understanding the technology behind smart cards, security tokens and their applications;
- Security testing: theory and practice;
- Network Security;
- Information Security Risk Management;
- Secure Software Systems;
- Software Reverse Engineering;
- Mobile Security

### **COURSE NAME – MIT 815: Data Analysis & Visualization**

The presentation of data now plays a critical role in the shaping of opinion, policy, and decision making in today’s increasingly data-driven economies. Therefore, the content of this course is intended to respond to the increased demand for experts who can turn data into a usable asset in business. The following topics will be covered:

- Information aesthetics and data visualization;

- Designing Infographics;
- Data Presentation Techniques;
- Interactive Data Visualization;
- Visual Analytics;
- Multiple Imputation Techniques;
- Human Information Behavior;
- Instructional Technologies, Geographic Information Systems;
- Machine Learning;
- Data Visualization with Advanced Excel;
- Data Visualization with Tableau;
- Applied plotting and charting using Python;
- Building Data Visualization Tools

### **COURSE NAME – MIT 816: User Experience: Foundations & Measures**

Topics to be covered include:

- Human-Computer Interaction;
- Theory and Methods in Knowledge Media Design;
- Introduction to User Experience Design;
- Visual Design;
- Usability Evaluation;
- Interface and Information Design;
- Interaction Design and Evaluation;
- Interactive Technologies in a Business Environment;
- Creative Design Lab;
- Web Development;
- Augmented Reality;
- Real-time Performance;
- Introduction to the Internet of Things (IoT);
- Ethics of Science and Technology Management;
- Knowledge Media & Learning

### **COURSE NAME – MIT 817: Archives & Data Curation**

In today's world of Knowledge Economies and Data-driven decision-making, the secure storage and transfer of data between entities has now become an important part of any business strategy. This course is intended to provide students the requisite knowledge and skills to provide the support services needed to achieve the data management and storage needs of academic, governmental, public, and industrial organizations.

The course will cover:

- Information Organization and Access;
- Foundations of Data Curation;
- Programming for data management professionals;
- Metadata Theory and Practice;
- Digital Preservation;
- Design of Digitally Mediated Information Services;
- Structure and Management of Databases;
- Big Data and NoSQL;
- Digital Libraries;
- Systems Analysis and Management;

- Information Modelling;
- Principles of Information Storage and Retrieval;
- Administration and Use of Archival Materials;
- Ontology Development;
- Ontologies in the Humanities and Natural Sciences;
- Interfaces to Information Systems;
- Preserving Information Resources;