Master of Information Systems Management (MISM)
# Table of Contents

## Contents

1 Masters of Information Systems Management (MISM) Curriculum ................................................................. 3
   1.1 Required Courses ........................................................................................................................................ 3
   1.2 Specialization in Information Security Management .................................................................................. 4
      1.2.1 Course Requirements for Specialization in Information Security Management .............................. 4
   1.3 Specialization in Business Intelligence .......................................................................................................... 5
      1.3.1 Course Requirements for Specialization in Business Intelligence ......................................................... 5
   1.4 Specialization in Electronic Commerce ........................................................................................................ 5
      1.4.1 Course Requirements for Specialization in Electronic Commerce ......................................................... 5
   1.5 Specialization in Healthcare Informatics ...................................................................................................... 6
      1.5.1 Course Requirements for Specialization in Healthcare Informatics ....................................................... 6
   1.6 Specialization in IT Strategy and Management ............................................................................................... 7
      1.6.1 Course Requirements for Specialization in IT Strategy and Management ........................................... 7
   1.7 Business Intelligence & Data Analytics (BIDA) Concentration .................................................................... 8
      1.7.1 Course Requirements for Business Intelligence & Data Analytics (BIDA) Concentration .................. 8
   1.8 Elective Courses ............................................................................................................................................. 9
      1.8.1 Sample of Elective Courses ..................................................................................................................... 9
2 Internship Requirement ....................................................................................................................................... 10
   2.1.1 Securing an Internship .......................................................................................................................... 11
3 IS Project Courses ............................................................................................................................................... 11
1 MASTERS OF INFORMATION SYSTEMS MANAGEMENT (MISM) CURRICULUM

You will normally complete the MISM program in three semesters. The MISM curriculum is structured with required Information Systems (IS) courses, required Management courses and elective courses.

In order to successfully complete the MISM program, you must complete the following:
- 180 units of course credit;
- all required courses (unless you exempt them);
- 48 units of elective courses; and
- all other standards for graduation, including meeting minimum grade point averages.

MISM students who complete a specialization are NOT required to take elective courses in addition to the courses required for a specialization. Thus, students will be able to complete both the degree requirements and the specialization requirements with 180 units of coursework. However, you should consult your advisor and plan your course selection very carefully in order to make this possible.

1.1 Required Courses

The following is a sample schedule with all the required courses students must complete.

First Semester:
95 – 703 Database Management 12 units
95 – 710 Economic Analysis 6 units
95 – 712 Object Oriented Programming in Java 12 units
95 – 718 Professional Speaking 6 units
95 – 796 Statistics for IT Managers 6 units
94 – 70x Business English / Professional Writing* 6 units
94 – 700 Organizational Design & Implementation 6 units
xx – xxx Elective 6 units

Second Semester:
95 – 702 Distributed Systems 12 units
95 – 715 Financial Accounting 6 units
95 – 716 Principles of Finance 6 units
95 – 723 Managing Disruptive Technologies 12 units
95 – 760 Decision Making Under Uncertainty 6 units
xx – xxx Elective 18 units
Third Semester:

95 – 720 Information Systems Project# 24 units
95 – 706 Object Oriented Analysis and Design# 6 units
95 – 722 Digital Transformation 6 units
xx – xxx Elective 24 units

*Students will be placed into Business English or Professional Writing.

#Students may satisfy the Object Oriented Analysis and Design and Information Systems Project requirement by the following three courses: Data Structures and Algorithms (95-771), Design & Engineering of Intelligent Information Systems (11-791), and Intelligent Information Systems Project (11-792).

1.2 Specialization in Information Security Management

The security of data, systems, and networks has become one of the most crucial managerial, organizational, and policy issues in the country today. This specialization integrates technical, managerial and policy issues in information security and assurance. Classes in the ISM specialization are taught by faculty from the Heinz College and renowned experts in information security from the Software Engineering Institute's CERT Coordination Center.

1.2.1 Course Requirements for Specialization in Information Security Management

MISM Students wishing to complete a specialization in Information Security Management while pursuing their degree must complete the following 48 units of course work:

- Introduction to Information Security Management (12 units)

AND

- At least 36 units from the following:
  Privacy in the Digital Age (6 units)
  Information Security Risk Analysis (6 units)
  Information Security Risk Policy and Management (6 units)
  Internet Security (6 units)
  Usable Privacy and Security (12 units)
  Applied Information Assurance (12 units)
  Host Based Forensics (12 units)
  Network Situational Awareness (12 units)
  Defensive Hacking: Tactical & Strategic (12 units)
  Network Security Analysis (12 units)
1.3 Specialization in Business Intelligence

As Information Technology has become more widely deployed in organizations, opportunities arise for collecting and storing data contributed by human users (e.g., blogs, knowledge management systems, wikis) as well as the date produced as a side effect of the use of systems (e.g., transactional data, click stream data, system logs) by customers, suppliers and internal staff. Taking advantage of these opportunities requires paying attention to organizational issues (e.g., incentives for contribution to knowledge management systems) as well as a number of technical issues (e.g., data quality, middleware and systems integration, data and text mining).

Business Intelligence is about addressing these challenges and using analytics to address a range of strategic, tactical and operational planning problems. This specialization in BI prepares you to address the technical, strategic and managerial issues associated with the extraction, transformation, representation, and analysis of data.

1.3.1 Course Requirements for Specialization in Business Intelligence

MISM Students wishing to complete a specialization in Business Intelligence while pursuing their degree must complete the following 48 units of course work:

- Data Structures and Algorithms (12 units)
- Data Mining (6 units)
- Data Warehousing (6 units)
- Applied Data Science (6 units)

AND

- At least 18 units from the following:
  Geographic Information Systems (12 units)
  Advanced Relational Database Management (6 units)
  NoSQL Database Management (6 units)
  Business Process Modeling (6 units)
  Marketing and Digital Strategy (6 units)
  Large Scale Data Analysis for Public Policy (6 units)

1.4 Specialization in Electronic Commerce

The Internet has given rise to new organizational forms (e.g., virtual organizations) and markets which feature electronic transaction models in new categories of products and services which include consumer-business, business-business and intra-organizational
commerce in physical as well as digital products. With the increased popularity and significance of the Internet, most organizations will need to carefully study this technology in order to develop strategies best suited to their context.

Successful Electronic Commerce involves blending technological, marketing and management practices in ways that are fundamentally new considering issues (e.g., copyright, privacy, content selection and rating, and intellectual property) that can have potentially profound implications for society.

1.4.1 Course Requirements for Specialization in Electronic Commerce

MISM Students wishing to complete a specialization in Electronic Commerce while pursuing their degree must complete the following 48 units of course work:

- Measuring Social (12 units)
- Marketing and Digital Strategy (6 units)
- E-Commerce Technologies (6 units) or Service Oriented Architectures (6 units)

AND

- At least 24 units from following list:
  - Data Mining (6 units)
  - Internet Security (6 units)
  - Lean Entrepreneurship (6 units)
  - Business Process Modeling (6 units)
  - Tech Startup: Tools & Techniques (6 units)

1.5 Specialization in Healthcare Informatics

As hospitals, insurers, governments, and consumers press for more effective treatments, more efficient providers, and cheaper healthcare, the importance of effectively collecting, managing, and analyzing information grows. The challenges associated with combining biological, medical and healthcare knowledge, organizational management, strategic analysis, and technological innovation into effective systems is the subject of healthcare informatics. In recent years, there has been an explosion in person-specific data. Having so much data available has allowed knowledge discovery in data (or data mining) to take a central stage.

Many other and diverse new areas are simultaneously emerging. As a result, healthcare informatics is simultaneously promoting diverse areas such as:

a. Decision making and decision support
b. Healthcare information technology adoption and diffusion

c. Public health informatics

d. Social and digital analytics in healthcare.

1.5.1 Course Requirements for Specialization in Healthcare Informatics

MISM Students wishing to complete a specialization in Healthcare Informatics while pursuing their degree must complete the following 48 units of course work:

- Health Economics (12 units)
- Health Care Information Systems (12 units)

AND

- At least 24 units from the following list:
  - Introduction to Information Security Management (12 units)
  - Data Mining (6 units)
  - Advanced Relational Database Management (6 units)
  - NoSQL Database Management (6 units)
  - Privacy in the Digital Age (6 units)
  - Data Warehousing (6 units)
  - Business Process Modeling (6 units)
  - Measuring Social (12 units)
  - Healthcare Informatics Project course (24 units)

* Health Economics takes the place of Economic Analysis requirement

1.6 Specialization in IT Strategy and Management

The IT Strategy & Management specialization is geared for students with CIO aspirations. Students take a combination of leadership, process, and IT management classes to prepare them to lead organization in today's complex, digital world. The focus of this concentration is on understanding and leveraging the connectivity across people, processes, and technology.

IT-enabled relationships and services are redefining organizational boundaries. This redefinition calls for a blended set of business, technology, and interpersonal skills.

1.6.1 Course Requirements for Specialization in IT Strategy and Management

MISM Students wishing to complete a specialization in IT Strategy and Management while pursuing their degree must complete 48 units of the following course work:
• Business Process Modeling (6 units)
• Negotiations (6 units)
• IT Project Management (6 units)
• Strategy Development (6 units)
• IT Global Sourcing (6 units)
• Power and Influence (6 units)
• Marketing and Digital Strategy (6 units)
• IT Business Leadership (6 units)
• Introduction to Supply Chain Management and Systems (6 units)
• Product Management for Information Technology (6 units)

AND

• Students are required to join the AT Kearney/Tepper/MISM project alternative

1.7 Business Intelligence & Data Analytics (BIDA) Concentration

Students in the MISM-BIDA concentration acquire the skills to integrate cutting edge information and analytic technology practices with applied business methods. The program features a cohesive blend of data analytics, management, strategy, and IT courses. MISM-BIDA graduates are cross-trained in business process analysis and skilled in predictive modeling, GIS mapping, analytical reporting, segmentation analysis, and data visualization.

1.7.1 Course Requirements for Business Intelligence & Data Analytics (BIDA) Concentration

The following is a sample schedule with all the required courses MISM-BIDA students must complete.

First Semester:
95 – 703 Database Management 12 units
95 – 712 Object Oriented Programming in Java 12 units
95 – 718 Professional Speaking 6 units
95 – 796 Statistics for IT Managers 6 units
95 – 791 Data Mining 6 units
94 – 700 Organizational Design & Implementation 6 units
xx – xxx Elective 12 units

Second Semester:
95 – 702 Distributed Systems 12 units
95 – 710 Economic Analysis 6 units
95 – 719 Accounting and Finance Foundations 6 units
95 – 797 Data Warehousing 6 units
95 – 852 Applied Data Science 6 units
95 – 866 Advanced Business Analytics 6 units
94 – 834 Applied Econometrics I 6 units
94 – 70x Business English / Professional Writing* 6 units
xx – xxx Elective 6 units

Third Semester:
95 – 722 Digital Transformation 6 units
95 – 760 Decision Making Under Uncertainty 6 units
95 – 720 Data Analytics Capstone Project 24 units
xx – xxx Elective 24 units

* Students will be placed into Business English or Professional Writing.

1.8 Elective Courses

Students in MISM program are required to take at least 48 units of elective courses. A number of courses offered by the MISM Program and the Heinz College will satisfy this requirement. In addition, the School of Computer Science, and other Carnegie Mellon departments offer courses that may satisfy this requirement. Check with your advisor before registering for a course from another academic unit if you wish to have it serve as an elective.

1.8.1 Sample of Elective Courses

95-729 E-Commerce Technologies 6 units
95-732 Marketing and Digital Strategy 6 units
95-733 Internet Technologies 6 units
95-736 Advanced Relational Database Management 6 units
95-737 NoSQL Database Management 6 units
95-771 Data Structures and Algorithms 12 units
95-775 IT Business Leadership 6 units
95-794 Tech Startup: Tools and Techniques 6 units
95-797 Data Warehousing 6 units
95-808 IT Project Management 6 units
95-831 Enterprise Architectures 6 units
95-865 Text Analytics 6 units
95-869 Hadoop and MapReduce 6 units
95-880 Python for Developers 6 units
95-881 Web Application Development 6 units
2 INTERNSHIP REQUIREMENT

MISM students starting in the summer semester are not required to do an internship. Students starting in the fall semester are required to do a summer internship after completing two semesters of the MISM program. The completion of an internship is a graduation requirement.

Minimally, the internship requires the equivalent of ten weeks (280 hours) of full-time employment that has formal supervision, is professional in nature, includes work that is of importance to the organization, and has significant educational value.

Before beginning the internship, students must complete the online Career Services Internship Reporting Form for approval.

The internship will be verified with the students’ supervisors and then approved. Students must notify their Career Advisor of any significant changes in their internships, such as length, location, hours of work, etc.

Once the internship has been approved, students will be registered for the zero-unit internship course. Students will not receive academic credit for the internship, but it will be reflected on their transcript as a course with P/F grade. If a student plans to exempt the internship, they will need to complete the Petition for Course Exemption. Near the end of the internship, the Career Services Office will request supervisors to complete a Student Performance Evaluation Form.

**F1 Visa Students:** You must apply for Curricular Practical Training (CPT) employment authorization for your summer internship. CPT authorization is required regardless of the internship being paid or unpaid. CPT is only available to F-1 students who have not
graduated and who have been enrolled on a full-time basis for one full academic year (i.e. fall and spring.) If your degree program requires you to complete a summer internship, you can qualify for CPT. Processing CPT may take up to 2 weeks and you cannot begin employment until you receive authorization. Guidelines, forms and instructions can be found at the Office of International Education’s website.

2.1.1 Securing an Internship

If you are required to do an internship, you will be responsible for securing a suitable internship. Career Services will provide assistance through counseling, workshops on resume preparation and interview skills, and listings of potential internships. You can make an appointment to discuss your situation and you are encouraged to come to workshops that cover the essential skills for finding the right internship.

3 IS PROJECT COURSES

Project courses are organized around significant management problems, the solution of which requires a mix of technological, organizational, and social skills. As opposed to the traditional classroom setting, project courses are organized as an exercise in group problem solving. Students are divided into teams guided by faculty from a department in the university.

Students may satisfy the Information Systems Project together with the Object Oriented Analysis and Design requirement by the following three courses: Data Structures and Algorithms, Design & Engineering of Intelligent Information Systems, and Intelligent Information Systems Project.

Data Structures and Algorithms is a pre-requisite or co-requisite for the Software Engineering sequence. Content of Design & Engineering of Intelligent Information Systems overlaps significantly with the content of Object Oriented Analysis and Design (OOAD) and hence you can exempt OOAD by taking Design & Engineering of Intelligent Information Systems.