

# MASTER OF INFORMATION TECHNOLOGY AND MANAGEMENT

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At the conclusion of their studies, graduates of this degree should be able to:

- Deliver optimal technical and policy technology solutions for the problems of business, industry, government, non-profit organizations, and individuals in each student's particular area of focus
- Work with, lead, and manage teams in an enterprise environment to collaboratively arrive at optimal technology solutions
- Manage and deploy information resources applicable to each student's particular area of focus in an enterprise setting

All students are required to complete a minimum of three core courses which are included as a part of each program specialization. These core courses will ensure an ability to develop software applications at a competent level using a contemporary programming language, the capability to employ and deploy appropriate system technologies, and a grasp of business development knowledge appropriate to the discipline. Students electing not to complete a specialization must complete at least one course from each of the seven core subject topic areas. Advisers will assist students in the selection of core courses most relevant to their interests and career goals.

The specializations are meant to guide students in their course selection, allowing them to focus on a particular area of information technology, depending on their interests, background, and career goals. Alternative courses in each specialization may be available at the discretion of the student's adviser.

## Curriculum

### Master of Information Technology and Management (without Specialization)

Code	Title	Credit Hours
<b>Programming</b>		<b>(3)</b>
Select three credit hours of Programming courses		3
<b>Application Development</b>		<b>(3)</b>
Select three credit hours of Application Development courses		3
<b>Information Systems Technologies</b>		<b>(3)</b>
Select three credit hours of Information Systems Technologies courses		3
<b>Information Technology Architectures</b>		<b>(3)</b>
Select three credit hours of Information Technology Architectures courses		3
<b>Design</b>		<b>(3)</b>
Select three credit hours of Design courses		3
<b>Management</b>		<b>(3)</b>
Select three credit hours of Management courses		3
<b>Innovation</b>		<b>(3)</b>
Select three credit hours of Innovation courses		3
<b>Elective Courses</b>		<b>(9)</b>
Select nine credit hours		9
<b>Total Credit Hours</b>		<b>30</b>

### Master of Information Technology and Management (with Specialization)

Code	Title	Credit Hours
<b>Specialization Courses</b>		<b>(24)</b>
Select 24 credit hours from approved core and specialization courses <sup>1</sup>		24
<b>Elective Courses</b>		<b>(6)</b>
Select six credit hours		6
<b>Total Credit Hours</b>		<b>30</b>

<sup>1</sup> Students may select courses in order to fulfill a desired specialization. See Specializations tab on this page for more details. The three required core courses are included in each program specialization.

## Graduate Core Courses by Subject and Topic

The following courses comprise the graduate core courses:

### Subject: Software Development

#### Topic: Programming

Code	Title	Credit Hours
ITMD 510	Object-Oriented Application Development	3
ITMD 512	Structured and Systems Programming	3
ITMD 514	Programming for Data Analytics	3
ITMD 515	Advanced Software Programming	3
ITMS 514	Programming for Cybersecurity Analytics	3

### Subject: System Technologies

#### Topic: Application Development

Code	Title	Credit Hours
ITMD 541	Web Application Foundations	3
ITMD 553	Enterprise Intelligent Device Applications	3
ITMD 554	Mass-Market Intelligent Device Applications	3
ITMD 555	Open-Source Intelligent Device Applications	3
ITMD 566	Service-Oriented Architectures	3
ITMT 593	Embedded Systems	3

#### Topic: Information Systems Technologies

Code	Title	Credit Hours
ITMO 544	Cloud Computing Technologies	3
ITMO 553	Open Source System Administration	3
ITMO 556	Introduction to Open Source Software	3
ITMS 558	Operating Systems Security	3

#### Topic: Information Technology Architectures

Code	Title	Credit Hours
ITMO 540	Introduction to Data Networks and the Internet	3
ITMO 554	Operating Systems Virtualization	3
ITMS 548	Cyber Security Technologies	3
ITMT 535	Data Center Architecture	3

### Subject: Business Development

#### Topic: Design

Code	Title	Credit Hours
ITMD 511	Application Development Methodologies	3
ITMD 532	UML-Based Software Development	3
ITMD 534	Human and Computer Interaction	3
ITMT 531	Object-Oriented System Analysis, Modeling, and Design	3

#### Topic: Management

Code	Title	Credit Hours
ITMM 537	Vendor Management and Service Level Agreements	3
ITMM 570	Fundamentals of Management for Technology Professionals	3
ITMM 571	Project Management for Information Technology Management	3
ITMM 574	Information Technology Management Frameworks	3
ITMM 575	Networking and Telecommunications Management	3
ITMS 578	Cyber Security Management	3

**Topic: Innovation**

Code	Title	Credit Hours
ITMM 581	Information Technology Entrepreneurship	3
ITMM 582	Business Innovation	3
ITMD 535	Human-Computer Interaction Design	3

**Specializations****APPLIED DATA SCIENCE AND AI**

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 514	Programming for Data Analytics	3
ITMD 521	Big Data Infrastructure	3
ITMD 522	Data Mining and Machine Learning	3
ITMD 523	Advanced Topics in Data Management	3
ITMD 524	Applied Artificial Intelligence and Deep Learning	3
ITMD 537	Data Science Practicum	3
Select six credit hours from the following:		6
INTM 522	Modeling for Decision-Making	3
ITMD 525	Topics in Data Science and Management	3
ITMD 526	Data Warehousing	3
ITMD 529	Advanced Data Analytics	3
ITMD 566	Service-Oriented Architectures	3
ITMD 561	Web Intelligence	3
ITMS 527	AI for Cybersecurity	3
<b>Total Credit Hours</b>		<b>24</b>

**Computer and Information Security**

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMO 540	Introduction to Data Networks and the Internet	3
ITMO 556	Introduction to Open Source Software	3
ITMS 514	Programming for Cybersecurity Analytics	3
ITMS 548	Cyber Security Technologies	3
ITMS 578	Cyber Security Management	3
Select six credit hours from the following:		6
Any 500-level ITMS elective <sup>1</sup>		6
Select three credit hours from the following:		3
Any 500-level ITMO elective		3
Any 500-level ITMS elective		3
ITMM 586	Information Technology Auditing	3
<b>Total Credit Hours</b>		<b>24</b>

<sup>1</sup> ITMS 579 may only be taken once as part of this requirement

## Data Modeling and Management

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 510	Object-Oriented Application Development	3
ITMD 514	Programming for Data Analytics	3
ITMD 521	Big Data Infrastructure	3
ITMD 523	Advanced Topics in Data Management	3
ITMD 526	Data Warehousing	3
ITMS 528	Database Security	3
Select six credits from the following:		6
ITMD 522	Data Mining and Machine Learning	3
ITMD 525	Topics in Data Science and Management	3
ITMD 529	Advanced Data Analytics	3
ITMD 541	Web Application Foundations	3
ITMD 555	Open-Source Intelligent Device Applications	3
ITMD 566	Service-Oriented Architectures	3
ITMT 531	Object-Oriented System Analysis, Modeling, and Design	3
<b>Total Credit Hours</b>		<b>24</b>

## Information Technology Infrastructure

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 510	Object-Oriented Application Development	3
ITMO 540	Introduction to Data Networks and the Internet	3
ITMO 556	Introduction to Open Source Software	3
Select three credit hours from the following:		3
ITMM 537	Vendor Management and Service Level Agreements	3
ITMM 571	Project Management for Information Technology Management	3
ITMM 574	Information Technology Management Frameworks	3
ITMM 575	Networking and Telecommunications Management	3
ITMS 578	Cyber Security Management	3
Select 12 credit hours from the following:		12
ITMD 541	Web Application Foundations	3
ITMD 545	Web Real-Time Communication	3
ITMM 576	Data Center Management	3
ITMO 517	Shell Scripting for System Administration	3
ITMO 533	Enterprise Server Administration	3
ITMO 541	Network Administration and Operations	3
ITMO 542	Wireless Technologies and Applications	3
ITMO 544	Cloud Computing Technologies	3
ITMO 546	Telecommunications Over Data Networks	3
ITMO 547	Telecommunications Over Data Networks: Projects and Advanced Methods	3
ITMO 550	Enterprise End-User System Administration	3
ITMO 553	Open Source System Administration	3
ITMO 554	Operating Systems Virtualization	3
ITMO 557	Storage Technologies	3
ITMS 558	Operating Systems Security	3
ITMS 588	Incident Response, Disaster Recovery, and Business Continuity	3
ITMT 535	Data Center Architecture	3
<b>Total Credit Hours</b>		<b>24</b>

## IT Management and Entrepreneurship

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 510	Object-Oriented Application Development	3
ITMD 534	Human and Computer Interaction	3
ITMM 570	Fundamentals of Management for Technology Professionals	3
ITMM 581	Information Technology Entrepreneurship	3
ITMM 582	Business Innovation	3
Select three credit hours from the following:		3
ITMD 553	Enterprise Intelligent Device Applications	3
ITMD 554	Mass-Market Intelligent Device Applications	3
ITMD 555	Open-Source Intelligent Device Applications	3
Select six credit hours from the following:		6
Any 500-level ITMM elective		
ITMD 556	Intelligent Device Projects	3
ITMS 578	Cyber Security Management	3
TECH 565	Introduction to Social Commerce	3
TECH 581	Consulting for Technical Professionals	3
<b>Total Credit Hours</b>		<b>24</b>

## Management Information Systems

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 510	Object-Oriented Application Development	3
ITMD 521	Big Data Infrastructure	3
ITMD 523	Advanced Topics in Data Management	3
ITMD 566	Service-Oriented Architectures	3
ITMM 574	Information Technology Management Frameworks	3
Select six credit hours from the following:		6
ITMM 537	Vendor Management and Service Level Agreements	3
ITMM 572	Process Engineering for Information Technology Managers	3
ITMM 586	Information Technology Auditing	3
ITMO 554	Operating Systems Virtualization	3
ITMT 531	Object-Oriented System Analysis, Modeling, and Design	3
Select three credit hours from the following:		3
INTM 522	Modeling for Decision-Making	3
ITMD 514	Programming for Data Analytics	3
ITMD 515	Advanced Software Programming	3
ITMD 525	Topics in Data Science and Management	3
ITMD 526	Data Warehousing	3
ITMD 529	Advanced Data Analytics	3
ITMD 532	UML-Based Software Development	3
ITMM 537	Vendor Management and Service Level Agreements	3
ITMO 544	Cloud Computing Technologies	3
ITMO 557	Storage Technologies	3
ITMS 528	Database Security	3
TECH 565	Introduction to Social Commerce	3
TECH 581	Consulting for Technical Professionals	3
<b>Total Credit Hours</b>		<b>24</b>

## Smart Technology and Innovation

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 510	Object-Oriented Application Development	3
ITMD 556	Intelligent Device Projects	3
ITMM 582	Business Innovation	3
ITMO 556	Introduction to Open Source Software	3
ITMT 593	Embedded Systems	3
Select three credit hours from the following:		3
ITMD 553	Enterprise Intelligent Device Applications	3
ITMD 554	Mass-Market Intelligent Device Applications	3
ITMD 555	Open-Source Intelligent Device Applications	3
Select three credit hours from the following:		3
ITMD 511	Application Development Methodologies	3
ITMD 556	Intelligent Device Projects	3
ITMO 542	Wireless Technologies and Applications	3
ITMO 544	Cloud Computing Technologies	3
Select three credit hours from the following:		3
ITMD 541	Web Application Foundations	3
ITMD 545	Web Real-Time Communication	3
ITMD 553	Enterprise Intelligent Device Applications	3
ITMD 554	Mass-Market Intelligent Device Applications	3
ITMD 555	Open-Source Intelligent Device Applications	3
ITMD 556	Intelligent Device Projects	3
ITMO 540	Introduction to Data Networks and the Internet	3
ITMO 541	Network Administration and Operations	3
ITMO 546	Telecommunications Over Data Networks	3
INTM 522	Modeling for Decision-Making	3
TECH 565	Introduction to Social Commerce	3
<b>Total Credit Hours</b>		<b>24</b>

## Software Development

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 510	Object-Oriented Application Development	3
ITMD 515	Advanced Software Programming	3
ITMD 536	Software Testing and Maintenance	3
ITMD 541	Web Application Foundations	3
ITMM 571	Project Management for Information Technology Management	3
Select three credit hours from the following:		3
ITMD 511	Application Development Methodologies	3
ITMD 513	Open Source Programming	3
ITMD 532	UML-Based Software Development	3
Select six credit hours from the following:		6
ITMD 511	Application Development Methodologies	3
ITMD 512	Structured and Systems Programming	3
ITMD 513	Open Source Programming	3
ITMD 519	Topics in Software Development	3
ITMD 532	UML-Based Software Development	3
ITMD 534	Human and Computer Interaction	3
ITMD 553	Enterprise Intelligent Device Applications	3
ITMD 554	Mass-Market Intelligent Device Applications	3

ITMD 555	Open-Source Intelligent Device Applications	3
ITMD 556	Intelligent Device Projects	3
ITMM 572	Process Engineering for Information Technology Managers	3
ITMS 518	Coding Security	3
ITMT 531	Object-Oriented System Analysis, Modeling, and Design	3
TECH 565	Introduction to Social Commerce	3

**Total Credit Hours** **24**

## Systems Analysis

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 510	Object-Oriented Application Development	3
ITMD 511	Application Development Methodologies	3
ITMD 534	Human and Computer Interaction	3
ITMD 536	Software Testing and Maintenance	3
ITMM 572	Process Engineering for Information Technology Managers	3
ITMT 531	Object-Oriented System Analysis, Modeling, and Design	3
Select three credit hours from the following:		3
ITMD 541	Web Application Foundations	3
ITMD 553	Enterprise Intelligent Device Applications	3
ITMD 554	Mass-Market Intelligent Device Applications	3
ITMD 555	Open-Source Intelligent Device Applications	3
Select three credit hours from the following:		3
INTM 522	Modeling for Decision-Making	3
ITMD 532	UML-Based Software Development	3
ITMM 574	Information Technology Management Frameworks	3
ITMM 575	Networking and Telecommunications Management	3
ITMM 586	Information Technology Auditing	3
ITMS 578	Cyber Security Management	3
TECH 581	Consulting for Technical Professionals	3

**Total Credit Hours** **24**

## Web Design and Application Development

Code	Title	Credit Hours
<b>Required Courses</b>		<b>(24)</b>
ITMD 534	Human and Computer Interaction	3
ITMD 541	Web Application Foundations	3
ITMD 542	Full-Stack Web Development	3
ITMD 547	Web Systems Integration	3
ITMM 582	Business Innovation	3
Select three credit hours from the following:		3
ITMD 543	Front-End Web Development	3
ITMD 544	Back-End Development	3
Select six credit hours from the following:		6
ITMD 543	Front-End Web Development	3
ITMD 544	Back-End Development	3
ITMD 545	Web Real-Time Communication	3
ITMD 546	Web Microservices and APIs	3
ITMD 549	Topics in Web Development	1-3
ITMD 566	Service-Oriented Architectures	3

**Total Credit Hours** **24**