Masters of Science in Information (MSI)
Degree Requirements | Big Data Analytics

Pathway	Big Data Analytics
Cohort	Fall 2024

Graduation Requirements

Credits & GPA	Courses

• **Credits:**
  ○ 39 SI credits
  ○ 48 total graduate-level credits (500-level or higher)
• **GPA:**
  ○ Minimum cumulative **3.0 GPA**
	• **Completion of:**
	  ○ Core Courses
	  ○ Mastery Prerequisite Courses
	  ○ Mastery Course
	  ○ Selective Requirement (2 Courses)
	  ○ Elective Courses
	• Minimum of **C-** grade in all courses

All other graduation requirements are located in the [MSI and MHI Student Handbook].

Important Terminology

Course Types	Acronyms

• **Prerequisite** (prereq): a requirement to complete **before** the listed course.
• **Corequisite** (coreq): a requirement to complete **before or during** the same semester as the listed course.
	• **Semester Types:**
	  ○ F = Fall semester
	  ○ W = Winter semester
	• **Courses:**
	  ○ SI = School of Information

Core Courses

Core Courses should be taken during the first semester of the MSI degree program. A minimum final grade of **C-** is required for all the courses listed below.

Course	Credits	Semester
☐ **SI 500:** Problem-Solving with People, Information, and Technology	3	F
☐ **SI 506:** Programming I	3	F / W

Mastery Prerequisite Courses

The Mastery Prerequisite Courses are a set of mandatory courses that must be completed to meet the eligibility requirements for enrolling in the Mastery Course (SI 699) for this Pathway. It is imperative that all Mastery Prerequisite Courses are successfully completed **before** the intended semester of pursuing the Mastery Course. A minimum final grade of **C-** is required for all the courses listed below.

Course	Credits	Semester
☐ **SI 504:** Servers, The Shell, and Git	1.5	F / W
☐ **SI 507:** Intermediate Programming ***Prereq:*** *SI 506* | ***Coreq:*** *SI 504*	3	F / W
☐ **SI 544:** Introduction to Statistics and Data Analysis	3	F
☐ **SI 568:** Becoming a Data Scientist (formerly - Intro to Applied Data Science) ***Coreq:*** *SI 618*	1.5	W
☐ **SI 602:** Math Foundations ***Prereq:*** *SI 504, SI 506, SI 544*	3	F/W
☐ **SI 618:** Data Manipulation and Analysis ***Prereq:*** *SI 506, SI 544* | ***Coreq:*** *SI 507*	3	F / W
☐ **SI 670:** Applied Machine Learning ***Prereq:*** *SI 507, SI 544, SI 618* | ***Coreq:*** *SI 602* **OR** **SI 671:** Data Mining ***Prereq:*** *SI 507, SI 544, SI 618* | ***Coreq:*** *SI 602*	3 3	F F

Mastery Course

The Mastery course (SI 699) serves as the culminating capstone course for the MSI degree. The successful completion of all Core Courses and Mastery Prerequisite Courses is a prerequisite requirement for enrolling in SI 699. Hence, it is essential to note that Core Courses and Mastery Prerequisite Courses **cannot be taken concurrently** with or subsequent to SI 699. The failure to meet the prerequisite requirements for the Mastery Course will result in delayed degree completion and graduation. A minimum final grade of **C-** is required for SI 699.

Course	Credits	Semester
☐ **SI 699:** Big Data Analytics ***Required to complete Core Courses and Mastery Prerequisite Courses first***	3	F / W

Selective Requirement (Pick 2)

It is required to complete **TWO** of the Selective Requirement courses from the list below to complete the MSI degree. These courses are **not** considered prerequisites to the Mastery Course and can be completed concurrently with the Mastery Course. A minimum final grade of **C-** is required for all the courses listed below.

Course	Credits	Semester
☐ **SI 608:** Networks ***Prereq:*** *SI 507* | ***Coreq:*** *SI 618*	3	F
☐ **SI 649:** Information Visualization (3 credits) (F/W) ***Prereq:*** *SI 506, SI 507, SI 544*	3	F / W
☐ **SI 650:** Information Retrieval ***Prereq:*** *SI 507, SI 618*	3	F
☐ **SI 630:** Natural Language Processing: Algorithms and People ***Prereq:*** *SI 506, SI 507, SI 544 & SI 618*	3	W
☐ **SI 670:** Applied Machine Learning ***Prereq:*** *SI 506, SI 507, SI 544, SI 618* | ***Coreq:*** *SI 602* **AND** **SI 671:** Data Mining: Methods and Applications ***Prereq:*** *SI 506, SI 507, SI 544, SI 618* | ***Coreq:*** *SI 602*	3 3	F F

Course Waivers

The UMSI Course Waiver Policy is designed to allow UMSI students, through one of three methods, to demonstrate proficiency and knowledge in the subject matter of a particular course in lieu of formally completing the course. There are three potential ways to waive an SI course: Skill-Based Waivers, Individual Review Waivers, and Automatic Waivers.

- ***NOTE:*** *Course waivers do not count for credit, nor reduce the number of credits required to complete a degree. Instead, receiving a course waiver allows the student to choose a more advanced course or another course of interest to fulfill the credit requirement. More information on course waivers can be found on the UMSI Course Waivers site. Questions can be directed to umsi.waivers@umich.edu.*

UMSI Internship Courses

MSI students are eligible to receive up to 9 credits for approved internships through the UMSI Internship program. Most internships are typically completed in the Summer semester between the first and second year in the program, with the credits backdated to the prior winter semester:

- **SI 681:** Internship/Field Experience *(most common option for summer internships)*
- **SI 690**: Internship/Field Experience *(most common for F / W internships)*
- **SI 688:** Immersive Applied Projects in the Social Sector

For more information about the internship, refer to the MSI Internship Program Handbook.

Elective Courses

In addition to the 39 required SI credits, MSI students must complete 9 additional graduate-level credits to meet the required 48 total credits to complete the degree. These credits are referred to as “cognate”, or elective credits, and can be made up of any graduate-level course at the University of Michigan (typically any course at or above the 500 level).

UMSI elective courses are published for each upcoming semester on the MSI Academic Advising Resource site. Graduate-level courses at the University of Michigan can be found on Wolverine Access, Atlas, or the Rakham Programs of Study website.

Recommended SI Electives for Big Data Analytics

Course	Credits	Semester
SI 505: Career and Internship Studio: Design Your Success	1	F / W
SI 510: Information Ethics	3	W
SI 529: Online Communities	3	F / W
SI 534: Theories of Social Influence	3	F
SI 563: Game Theory	3	F
SI 564: SQL and Databases	1.5	F / W
SI 617: Choice Architecture	3	W
SI 652: Incentives and Strategic Behavior in Computational Systems	3	W

Advised Course Sequence

The advised course sequence represents the courses and the order that certain courses should be taken in each term to promote student success and degree completion. It will provide clarity by identifying an efficient, timely path for completing the **Big Data Analytics** pathway.

It is important to note that the advised course sequence is not an official degree plan, but rather serves as a tool for proactive discussion to plan for required and elective courses with an MSI/MHI Academic Advisor. Students should confirm their course selections with an Academic Advisor to ensure a smooth registration process and timely degree completion in two academic years (four terms). Students can visit the MSI Academic Advising Resource site to learn how to connect with an Academic Advisor.

The course sequences provided outline potential sequences dependent on previous programming experience, including recommendations for students that are new to programming, have some programming experience, or have advanced programming experience.

The following document contains the advised course sequences:
MSI Course Planning Worksheet for Big Data Analytics