MPCS 12-Course MS in CS Program Requirements
Data Analytics Specialization

THE UNIVERSITY OF CHICAGO | MASTERS PROGRAM IN COMPUTER SCIENCE

Placement Exams & Immersion Courses

Choose 1:
- ☐ **MPCS Programming Placement Exam** or
- ☐ **MPCS 50101 Concepts of Programming (Immersion Programming)**

Choose 1:
- ☐ **Discrete Math Placement Exam** or
- ☐ **MPCS 50103 Discrete Math (Immersion Math)**

Immersion classes are in addition to the 12 degree required courses. Students have the choice to take immersion classes or take the placement exams.

Core Courses

Programming Choose 1
- ☐ **Java Programming***
- ☐ **Python Programming***

*Students taking MPCS 50101 Concepts of Programming (Immersion Programming) must enroll in Java or Python.

- ☐ **Advanced Programming****
- ☐ **C Programming****
- ☐ **Intermediate Python Programming****

**Advanced programming classes are only available through the MPCS Programming Placement Exams.

Only one core programming class is allowed. Additional programming classes cannot be taken as an elective or 6th core class.

All core programming classes are offered in the Autumn quarter. Only Python Programming is offered in the Winter quarter.

Theory Choose 1
- ☐ **Algorithms**
- ☐ **Intermediate Algorithms**
- ☐ **Advanced Algorithms**
- ☐ **Topics in Algorithmic Game Theory**

Intermediate Algorithms requires a previous algorithms class.

Advanced Algorithms and Topics in Algorithmic Game Theory can be taken as an elective or 6th core class after the core theory requirement is fulfilled.

Systems Choose 3
- ☐ **Advanced Computer Architecture**
- ☐ **Advanced Computer Systems**
- ☐ **Compilers**
- ☐ **Databases**
- ☐ **Distributed Systems**
- ☐ **Functional Programming**
- ☐ **GPU Programming**
- ☐ **Intro to Computer Security**
- ☐ **Intro to Computer Systems**
- ☐ **Intro to Unix Systems**
- ☐ **Networks**
- ☐ **Operating Systems**
- ☐ **Parallel Programming**

Additional core systems classes can be taken as an elective, specialization or 6th core class after the core systems requirement is fulfilled.

Data Analytics Specialization

Requirement DA-1: Core Data Analytics Courses
Students must complete the following sequence of classes:
- ☐ **MPCS 53110 – Foundations of Computational Data Analysis**
- ☐ **MPCS 53111 – Machine Learning**

Note: MPCS 53110 can be skipped by passing the Data Placement Exam. Passing the exam does not count as a class towards graduation requirements.

Requirement DA-2: Advanced Data Analytics Courses
Students must take one of the following courses (two if MPCS 53110 was skipped):
- ☐ **MPCS 53112 – Adv Data Analytics**
- ☐ **MPCS 53003 – Adv Databases**
- ☐ **MPCS 53014 – Big Data Application Architecture**
- ☐ **MPCS 57200 – Generative AI**
- ☐ **MPCS 53113 – Natural Language Processing**
- ☐ **MPCS 58020 – Time Series Analysis and Stochastic Processes**

12th Course Requirement: Choose 1
- ☐ **Additional Core Theory or Core Systems class (6 core total)**
- ☐ **Practicum Course**
- ☐ **Additional Specialization Course (4 Specialization total)**

Data Analytics Specialization Requirements (Continued)

Elective Courses
Choose 3

- ☐ Advanced C++
- ☐ Advanced Data Analytics
- ☐ Advanced iOS
- ☐ Advanced Topics in Cloud Computing
- ☐ Advanced UI/UX
- ☐ Android Application Development
- ☐ App Development Capstone
- ☐ Applied Data Analysis
- ☐ Applied Financial Technology
- ☐ Applied Software Engineering
- ☐ Big Data App Architecture
- ☐ C++ for Advanced Programmers
- ☐ Cloud Computing
- ☐ Entrepreneurship in Technology
- ☐ Foundations of Computational Data Analysis
- ☐ Full Stack Software Engineering
- ☐ Generative AI
- ☐ High Performance Computing
- ☐ Human-Computer Interaction
- ☐ Intro to Blockchain
- ☐ Intro to Scientific Computing
- ☐ Intro to Software Engineering
- ☐ iOS Application Development
- ☐ Machine Learning
- ☐ MPCS Practicum
- ☐ Natural Language Processing
- ☐ OO Architecture
- ☐ OO Programming
- ☐ Product Management
- ☐ Software Quality Assurance
- ☐ Time Series Analysis and Stochastic Processes
- ☐ Topics/Software Engineering
- ☐ Topics/Software: Making an Impact
- ☐ UI/UX Design
- ☐ Web Development

Elective classes can be taken after three core classes are completed or concurrent with the third core class.

Check course prerequisites for eligibility.

12-Course Internship Requirement

This requirement is usually fulfilled by doing a technology-oriented summer internship. This internship qualifies for degree based CPT.

☐ **Internship: Company** _____ **Dates** _____

Sample Course Plan: **Pass both placement exams or elect to take summer immersion courses.**

Academic Year	Summer	Autumn	Winter	Spring
1	Immersion Programming Discrete Math (or Placement Exams)	Core Programming Algorithms Core Systems	Core Systems Specialization Elective	Core Systems Specialization Elective
2	Internship	Specialization Additional Core/ Specialization Elective		

Sample Course Plan: **Pass programming placement exam, Discrete Math needed, autumn start.**

Academic Year	Summer	Autumn	Winter	Spring
1	Pass Programming Placement Exams	Core Programming Core Systems Discrete Math	Core Systems Algorithms Elective	Core Systems Specialization Elective
2	Internship	Specialization Specialization Elective	Elective*	

*Can take a class in the summer quarter or take four classes in the spring or autumn to graduate at the end of the autumn quarter.

THE UNIVERSITY OF CHICAGO | MASTERS PROGRAM IN COMPUTER SCIENCE