Computer Science, MSCS—Align (Portland)

Master of Science in Computer Science—Align students come from a wide variety of backgrounds, with undergraduate majors including math, biology, history, engineering, and classics. The program begins with a two-semester introductory sequence, which provides the foundational knowledge for students from nontechnical backgrounds to succeed. Students have an opportunity to acquire both the knowledge needed to transition into a new career and the practical skills to build the next great app.

MS Thesis Committee

The MS thesis committee must satisfy the following conditions:

1. A total of three members, including the advisor.

2. Two members from Khoury College of Computer Sciences (or affiliated to Khoury).

3. At least one member who is at "arm's length" from the particular work in the thesis. This means that there should be at least one member who isn't a co-advisor on the thesis.

4. External members are allowed but not required.

More members (internal or external) can be added as readers to the committee, so long as the above minimum requirements are fulfilled.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Align Bridge Coursework

Students are required to take all bridge courses unless otherwise determined by the program.

A grade of B or higher is required in each course.

Code	Title	Hours
Fundamentals		
CS 5001 and CS 5003	Intensive Foundations of Computer Science and Recitation for CS 5001	4
Discrete Structures		
CS 5002	Discrete Structures	4
Object-Oriented Design		
CS 5004 and CS 5005	Object-Oriented Design and Recitation for CS 5004	4
Additional ALIGN courses		
CS 5008 and CS 5009	Data Structures, Algorithms, and Their Applications within Computer Systems and Recitation for CS 5008	4

Core Requirements

Code	Title	Hours
Algorithms		
CS 5800	Algorithms	4

Breadth Areas

Code	Title	Hours
Select three courses from two of the three following breadth areas:		12
Artificial Intelligence and Data Science		
CS 5100	Foundations of Artificial Intelligence	
CS 5150	Game Artificial Intelligence	
CS 5200	Database Management Systems	
CS 5330	Pattern Recognition and Computer Vision	
CS 6120	Natural Language Processing	
CS 6140	Machine Learning	
CS 6200	Information Retrieval	
CS 6220	Data Mining Techniques	

CS 6240	Large-Scale Parallel Data Processing
CS 7140	Advanced Machine Learning
Systems and Software	
CS 5400	Principles of Programming Language
CS 5500	Foundations of Software Engineering
CS 5520	Mobile Application Development
CS 5600	Computer Systems
CS 5610	Web Development
CS 5700	Fundamentals of Computer Networking
CS 5850	Building Game Engines
CS 6410	Compilers
CS 6510	Advanced Software Development
CS 6620	Fundamentals of Cloud Computing
CS 6650	Building Scalable Distributed Systems
Theory and Security	
CS 6760	Privacy, Security, and Usability
CS 7805	Complexity Theory
CY 5770	Software Vulnerabilities and Security
CY 6740	Network Security

Electives

Code	Title	Hours
Complete 12 semester hours from the following:		12
CS 5097	Mixed Reality	
CS 5100 to CS 7980		
CS 7990	Thesis	
CS 8674	Master's Project	
CS 8982	Readings	
CY 5001	Cybersecurity: Technologies, Threats, and Defenses	
CY 5010	Cybersecurity Principles and Practices	
CY 5130	Computer System Security	
CY 5210	Information System Forensics	
CY 6120	Software Security Practices	
DS 5110	Essentials of Data Science	
DS 5230	Unsupervised Machine Learning and Data Mining	

Program Credit/GPA Requirements

36-44 total semester hours required
Minimum 3.000 GPA required