

Foundation Courses for MS students

To ensure that students have an adequate background in mathematical methods and computer science, the program requires the following four [foundation courses](#) or their equivalents:

- **INFS 501** Discrete and Logical Structures for Information Systems
- **INFS 515** Computer Organization
- **INFS 519** Program Design and Data Structures
- **SWE 510** Object Oriented Programming in Java

Prospective students are asked to indicate on their application if previously taken courses may satisfy these foundation requirements. Provisional admission is offered if a student has some deficiencies in preparation, but is otherwise a strong applicant. In such cases, students are advised of the necessary foundation courses to be satisfactorily completed with a grade of B or better before beginning the core curriculum. Foundation courses do not earn credit toward the MS degree.

Students have one opportunity to test out of their required foundation courses before beginning their first semester. The exams are given before classes begin in January and August and can only be taken once. Students failing any one of the exams must take the equivalent course before enrolling in the core curriculum courses.

More information regarding the foundation courses and test out exams can be found on [this page](#).

Students entering the MS-ISA, MS-ISYS, and MS-SWE programs must have course work or equivalent knowledge in the following five foundation areas: (1) **introductory programming** in any programming language; (2) knowledge of an **object-oriented programming** language such as Java, C++, or C#; (3) **data structures** and algorithms; (4) **machine organization** such as those given in computer system architecture or assembly language courses; (5) and topics in **discrete mathematics**, including sets, propositional and predicate logic, relations, functions, trees, graphs, and inductive proofs. The level of knowledge required in these areas is equivalent to that taught in undergraduate courses, and may be achieved by taking the following George Mason University graduate courses:

- **COMP 501** Computer Programming Foundations I **or** **SWE 510** Object Oriented Programming in Java
- **COMP 502** Mathematical Foundations of Computing I **or** **INFS 501** Discrete and Logical Structures for Information Systems

- **COMP 503** Computer Systems Foundations I **or INFS 515** Computer Organization
- **COMP 511** Computer Programming Foundations II **or INFS 519** Program Design and Data Structures

Provisional admission is offered if a student has some deficiencies in preparation, but is otherwise a strong applicant. (**Note:** *Due to federal requirements, students on F1/J1 visas are not eligible for provisional admission.*) In such cases, students are advised of the necessary foundation courses to be satisfactorily completed with a grade of B or better before beginning the core curriculum. Foundation courses do not earn credit toward the MS degree.

Students have one opportunity to test out of their required foundation courses before beginning their first semester. Additionally, if a student feels they have taken an equivalent course that was overlooked, an appeal process is available. More information on these options can be found on the [policies and procedures](#) page.

The following undergraduate courses offered at GMU will serve as equivalents for the corresponding foundation courses.

Foundation Topics	GMU Grad	GMU Undergrad CS	GMU Undergrad IT	NVCC
Object-oriented programming	COMP 501 or SWE 510	CS 211	IT 206 or IT 209	CSC 223
Discrete math	COMP 502 or INFS 501	MATH 125	MATH 125 (not MATH 112)	MATH 288
Machine organization	COMP 503 or INFS 515	CS 367	IT 342	<i>none</i>
Data structures	COMP 511 or INFS 519	CS 310	IT 306 or IT 309	<i>none</i>