

INFORMATION TECHNOLOGY, B.S.

2020 - 2021

The BS in Information Technology program aims to meet the existing and emerging needs of industry by educating new IT workers in current IT principles and practices, and in its applications. The program focuses on equipping graduates with effective skills for interacting at the management level as well as the technical level. Graduates fill jobs that focus on the application of IT in an increasing number of emerging sub-disciplines, including network administration, information security, information systems, telecommunications, web development, computer graphics, and data management. The BS in Information Technology program is accredited by the Computing Accreditation Commission of ABET, <http://www.abet.org>.

Admission Requirements

Students who meet Mason's general eligibility requirements may apply for admission to the Information Technology major. Admission is based on the appropriateness of student's academic objectives and the likelihood of the student benefiting from the program. Preference in admission is given to students who have four years of high school mathematics, including pre-calculus.

Degree Requirements

The IT program can be successfully completed in 8 full-time semesters with an average of 15 credits each semester, as shown in the sample schedule. It is also possible for students to complete the degree on a part-time basis. The 120-credit degree requirement consists of Mason Core requirements, IT foundation and core courses, and courses required for the chosen IT concentration area. Students must complete requirements for at least one of six IT concentration areas. Lower division program courses are primarily taught at the Fairfax campus, while upper division program courses are primarily taught at the Science and Technology campus, where many Department of Information Sciences and Technology faculty offices are located. Distance education sections are available for the majority of program courses.

At least 45 semester hours of the degree requirements must be level 300 or above, and at least 30 semester hours toward the BS degree must be earned at George Mason University. Students must have a C or better in any course that satisfies a prerequisite for an IT course. To graduate with the BS in Information Technology, students must have a GPA of 2.75 or better across the IT foundation, core, capstone, and concentration courses. Additionally, students must have a C or better in their foundation, core, capstone, and concentration courses.

IT Foundation, Core, Concentration, and Capstone Requirements

In addition to Mason Core requirements, including humanities and social sciences as well as mathematics and basic sciences, the BS in Information Technology requires IT foundation, core, and concentration courses as described below. The IT major also requires a 7-credit capstone design project, to be completed over a period of two consecutive semesters.

1. Foundation Courses

IT 102 Discrete Structures or
MATH 125 Discrete Mathematics I
IT 104 Introduction to Computing
IT 105 IT Architecture Fundamentals
IT 106 Introduction to IT Problem Solving Using Computer Programming or
IT109 Introduction to Computer Programming
IT 206 Object Oriented Techniques for IT Problem Solving or
IT 209 Intro to Object Oriented Programming
IT 216 Systems Analysis and Design
STAT 250 Introductory Statistics I

3. Two-Semester Capstone Sequence

IT 492 Senior Design Project I
IT 493 Senior Design Project II

2. Core Courses

IT 207 Applied IT Programming
IT 213 Multimedia and Web Design
IT 214 Database Fundamentals
IT 223 Information Security Fundamentals
IT 300 Modern Telecommunications
IT 304 IT in the Global Economy
IT 341 Data Communications and Network Principles
IT 342 Operating Systems Fundamentals
IT 343 IT Project Management
MBUS 300 Accounting in a Global Economy
SYST 469 Human Computer Interaction

4. Other Requirements

IT 293 Applied IT: Junior Transition
COMM 100 Public Speaking or COMM 101 Fundamentals of Communication
Natural Science with Lab
Natural Science without Lab
MATH 108 Introductory Calculus with Business Applications or
MATH 113 - Analytic Geometry and Calculus

Advanced Study: Mason offers students the ability to complete both BS and MS degrees in a shorter time through an Accelerated Masters (MS) program. Choosing to pursue an accelerated MS may affect a student's choice of courses in the BS program. Students should consult with an advisor for assistance. See <http://ist.gmu.edu/go/advising> for more information.

5. Concentration Area

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Students must choose one of six concentrations from the list below. To be eligible to declare a concentration, a student must earn a B or better in the associated concentration's gateway course(s). To fulfill the requirements for a concentration, students need 15 credits made up of four courses from their chosen concentration and a fifth course chosen from any of the six concentrations. All concentration courses require a grade of B or higher in the prerequisite gateway course(s) associated with that concentration. If a student decides to declare two concentrations, they would take four courses (12 credits) from each concentration with no overlap, for a total of eight courses (24 credits).

Database Technology and Programming (DTP)

Gateway: IT 206 or IT 209 OO Tech/IT Problem Solving and IT 214 or IT 194 Database Fundamentals

REQUIRED: IT 306 Program Design and Data Structures or IT 309 Data Structures and Algorithms in Python **AND** IT 314 Database Programming
 IT 315 Mobile Development
 IT 322 Health Data Challenges
 IT 369 Data and Application Security
 IT 390 Rapid Dev of Scalable Applications
 IT 409 Python Web Programming
 IT 410 Web Programming
 IT 414 Database Administration
 IT 491 Intro to Applied Natural Language Processing
 IT 495 Turning Ideas into Successful Companies

Health Information Technology (HIT)

Gateway: IT 214 or IT 194 Database Fundamentals

HAP 360 Intro to Health Information Systems
 IT 322 Health Data Challenges
 IT 324 Health Information Technology Fundamentals
 IT 390 Rapid Dev of Scalable Cloud Applications
 STAT 362 Intro to Computer Statistical Packages

Cyber Security (CYBR)

Gateway: IT 223 Info Security Fundamentals

IT 352 Security Administration of Linux Systems
 IT 353 Information Defense Technologies
 IT 357 Computer Crime, Forensics, and Auditing
 IT 366 Network Security
 IT 369 Data and Application Security
 IT 429 Security Accreditation of Info Systems
 IT 462 Applied Cyber Threat Analysis
 IT 466 Foundations of Cryptography and Security
 IT 467 Network Defense

Web Application Development (WADV)

Gateway: IT 213 or IT 193 Multimedia/Web Design

IT 315 Mobile Development
 IT 331 Web I: Web Development
 IT 332 Web Server Administration
 IT 335 Web Dev Using Content Mgmt Systems
 IT 390 Rapid Dev of Scalable Cloud Applications
 IT 415 Information Visualization
 IT 431 Web II: Advanced Web Development
 IT 479 Digital Media and Web Design Capstone

Network and Telecommunications (NTEL)

Gateway: IT 341 Data Comm/Network Prncpls

ECE 301 Digital Electronics
 IT 366 Network Security
 IT 441 Network Servers and Infrastructures
 IT 445 Advanced Networking Principles
 IT 455 Wireless Communications and Networking
 IT 465 Peer-to-Peer Systems/Overlay Networks
 IT 484 Voice Communications Technologies
 IT 488 Fundamentals of Satellite Communications

Cloud Computing (CCG)

Gateway: IT 341 Data Comm/Network Prncpls

IT 442 Cloud Infrastructure
 IT 451 Cloud Services Management
 IT 461 Application Development in Cloud
 IT 471 Big Data on Cloud Systems
 IT 481 Cloud Security

2020-2021 Sample Schedule for Undergraduate Information Technology majors

First Semester	Credits	Second Semester	Credits
MATH 108 Introductory Calculus with Business Applications or MATH 113 Analytic Geometry and Calc I	3	IT 102 Discrete Structures or MATH 125 Discrete Mathematics I	3
IT 104 Introduction to Computing	3	IT 106 Intro to IT Problem Solv Using Comp Progr or IT 109 Intro to Comp Progr	3
IT 105 IT Architecture Fundamentals	3	Mason Core*	3
Mason Core*	3	Mason Core*	3
Mason Core*	3	Mason Core*	3
Total Hours	15	Total Hours	15
Third Semester		Fourth Semester	
IT 206 or IT 209 Intro Object Oriented Programming	3	STAT 250 Introductory Statistics I	3
IT 213 Multimedia and Web Design	3	IT 216 Systems Analysis and Design	3
IT 214 Database Fundamentals	3	IT 223 Information Security Fundamentals	3
Mason Core Natural Science with lab*	4	IT 293 Applied IT: Junior Transition	1
Mason Core*	3	Mason Core*	3
Total Hours	16	Mason Core*	3
Fifth Semester		Total Hours	16
IT 207 Applied IT Programming	3	Sixth Semester	
IT 300 Modern Telecommunications	3	IT 342 Operating System Fundamentals	3
IT 304 IT in the Global Economy	3	IT 343 IT Project Management	3
IT 341 Data Communications and Network	3	IT Concentration Course	3
SYST 469 Human Computer Interaction	3	MBUS 300 Accounting in a Global Economy	3
Total Hours	15	Elective	3
Seventh Semester		Total Hours	15
IT 492 Senior Design Project I	3	Eighth Semester	
IT Concentration Course	3	IT 493 Senior Design Project II	4
IT Concentration Course	3	IT Concentration Course	3
ENGH 302 Adv Comp (Business, Nat Sci, or Multi Disc)***	3	IT Concentration Course	3
Elective	3	Elective	3
Total Hours	15	Total Hours	13

*<http://catalog.gmu.edu/mason-core> Mason Core Categories: One course from each: Oral Communication, ENGH 100 or 101, Arts, Global Understanding, Literature, Western Civilization/World History, Natural Science w/ Lab, Natural Science Non-Lab. *** ENGH 100 or 101 and Mason Core-Literature must be completed before taking ENGH 302.

Program Questions? Email: bsit@gmu.edu; Website: <http://ist.gmu.edu>; Advising Appointments: <http://ist.gmu.edu/go/advising>

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