



## Volgenau School of Engineering

# INFORMATION TECHNOLOGY, B.S.

2017 - 2018

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  
 IT 206 Object Oriented Techniques for IT Problem Solving  
 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  
 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.

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## 5. Concentration Area

Students choose one of six concentrations from the list below. To be eligible to choose a concentration, a student must have a B or better grade in the concentration's gateway course. 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 better in the prerequisite gateway course.

### Database Technology and Programming (DTP)

Gateway: IT 206 OO Tech/IT Problem Solving *or*  
IT 214 Database Fundamentals

IT 306 Program Design and Data Structures  
IT 308 Event-Driven Programming  
IT 314 Database Management  
IT 315 Mobile Development  
IT 322 Healthcare Data Challenges  
IT 344 Info Storage and Management Technologies  
IT 369 Data and Application Security  
IT 390 Rapid Dev of Scalable Applications  
IT 410 Java Web Programming  
IT 414 Database Administration  
IT 490 Application Maintenance/Spiral Development

### Health Information Technology (HIT)

Gateway: IT 214 Database Fundamentals

HAP 360 Intro to Health Information Systems  
IT 322 Healthcare Data Challenges  
IT 324 Electronic Health Records  
IT 390 Rapid Dev of Scalable Applications  
STAT 362 Intro to Computer Statistical Packages

### Information Security (INFS)

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 I  
IT 369 Data and Application Security  
IT 429 Security Accreditation of Info Systems  
IT 462 Information Security Principles  
IT 466 Network Security II  
IT 467 Network Defense

### Information Technology Entrepreneurship (ITE)

Gateway: IT 106 Intro to IT Problem Solving

IT 315 Mobile Development  
IT 390 Rapid Dev of Scalable Applications  
IT 490 Application Maintenance/Spiral Development  
IT 495 Turning Ideas into Successful Companies  
IT 496 Decision Making in IT Ventures  
MBUS 304 Entrepreneurship: Starting/Managing  
a New Enterprise

### Network and Telecommunications (NTEL)

Gateway: IT 341 Data Comm/Network Pncpls

ECE 301 Digital Electronics  
IT 366 Network Security I  
IT 441 Network Servers and Infrastructures  
IT 445 Advanced Networking Principles II  
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

### Web Development and Multimedia (WDM)

Gateway: IT 213 Multimedia/Web Design

IT 315 Mobile Development  
IT 331 Web I: Web Development  
IT 332 Web Site Administration  
IT 335 Web Dev Using Content Mgmt Systems  
IT 390 Rapid Dev of Scalable Applications  
IT 415 Information Visualization  
IT 431 Web II: Advanced Web Development  
IT 436 Agile Web Development

## 2017-2018 Sample Schedule for Undergraduate Information Technology majors

First Semester	Credits	Second Semester	Credits
MATH 108 Introductory Calculus with Business Applications	3	IT 102 Discrete Structures	3
IT 104 Introduction to Computing	3	IT 106 Introduction to IT Problem Solving Using Computer Programming	3
IT 105 IT Architecture Fundamentals	3	Mason Core*	3
Mason Core*	3	Mason Core*	3
Mason Core*	3	Mason Core*	3
<b>Total Hours</b>	<b>15</b>	<b>Total Hours</b>	<b>15</b>
<b>Third Semester</b>		<b>Fourth Semester</b>	
IT 206 Object Oriented Techniques for IT Problem Solving	3	IT 207 Applied IT Programming	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*	4	IT 293 Applied IT: Junior Transition	1
Mason Core*	3	STAT 250 Introductory Statistics I	3
<b>Total Hours</b>	<b>16</b>	Mason Core*	3
<b>Fifth Semester</b>		<b>Total Hours</b>	<b>16</b>
ENGH 302 Adv Comp (Business, Nat Sci, or Multi-Disc)***	3	<b>Sixth Semester</b>	
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
<b>Total Hours</b>	<b>15</b>	Elective	3
<b>Seventh Semester</b>		<b>Total Hours</b>	<b>15</b>
IT 492 Senior Design Project I	3	<b>Eighth Semester</b>	
IT Concentration Course	3	IT 493 Senior Design Project II	4
IT Concentration Course	3	IT Concentration Course	3
Mason Core*	3	IT Concentration Course	3
Elective	3	Elective	3
<b>Total Hours</b>	<b>15</b>	<b>Total Hours</b>	<b>13</b>

\* <http://masoncore.gmu.edu> Mason Core Categories: One course from each: Oral Communication, ENGH101, Arts, Global Understanding, Literature, Western Civilization/World History, Natural Science w/ Lab, Natural Science Non-Lab. \*\*\* ENGH 101 and Mason Core-Literature must be completed before taking ENGH 302.

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

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