GEORGE MASON UNIVERSITY | Volgenau School of Engineering

INFORMATION TECHNOLOGY, B.S.

2015 - 2016

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 the following six IT concentration areas: Database Technology and Programming, Healthcare IT, Information Security, Networking and Telecommunications, Web Development and Multimedia and IT Entrepreneurship. The Information Sciences and Technology department is based at the Prince William campus, although 100- and 200-level courses are also available at Fairfax.

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 earn a C or better in any foundation, core, capstone, concentration, or other course that satisfies a prerequisite for an IT course. To graduate with the BS degree in IT, 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 five concentration courses as well as their capstone courses.

IT Foundation, Core, Capstone, and Concentration 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 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

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 Networking Principles
- IT 343   IT Project Management
- MBUS 300 Managing Financial Resources
- MBUS 301 Managing People and Organizations
- SYST   469 Human Computer Interaction

3. Two-Semester Capstone Sequence
- IT 492   Senior Design Project I
- IT 493   Senior Design Project II

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
  - o MATH 113 - Analytic Geometry and Calculus
- IT102 Discrete Structures

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5. Concentration Area

Students choose one of six concentrations from the list below. 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.

Database Technology and Programming (DTP)

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	Information Storage and Management Technologies
IT 390	Rapid Development of Scalable Applications Credits
IT 410	Java Web Programming Credits
IT 414	Advanced Database
IT 490	Application Maintenance and Spiral Development

HEALTHCARE IT (HIT)

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

Information Security (INFS)

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 Information Systems
IT 462	Information Security Principles
IT 466	Network Security II
IT 467	Network Defense

Networking and Telecommunications (NTEL)

IT 342	Operating Systems Fundamentals
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 and Overlay Networks
IT 484	Voice Communications Technologies
IT 488	Fundamentals of Satellite Communications

Web Development and Multimedia (WDM)

IT 315	Mobile Development
IT 331	Web I: Web Development
IT 332	Web Site Administration
IT 335	Web Development Using Content Management Systems
IT 390	Rapid Development of Scalable Applications Credits
IT 413	Digital Media Editing
IT 415	Information Visualization
IT 431	Web II: Advance Web Development
IT 436	Agile Web Development

Information Technology Entrepreneurship (ITE)

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

Sample Schedule for BS in Information Technology *(for students without an Associate Degree)*

First Semester	Credits	Second Semester	Credits
ENGH 101 Composition	3	Nonlab Natural Science	3
HIST 100 History of Western Civilization	3	Literature	3
IT 104 Introduction to Computing	3	COMM 100 Public Speaking	3
IT 105 IT Architecture Fundamentals	3	IT 106 Introduction to IT Problem Solving Using Computer Programming	3
MATH 108 Introductory Calculus with Business Applications	3	IT 102 Discrete Structures	3
Total Hours	**15**	**Total Hours**	**15**

Third Semester	Credits	Fourth Semester	Credits
Natural Science with Lab	4	Arts	3
Social/Behavioral Science	3	STAT 250 Introductory Statistics I	3
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
Total Hours	**16**	IT 293 Applied IT: Junior Transition	1
		Total Hours	**16**

Fifth Semester	Credits	Sixth Semester	Credits
Elective	3	IT Concentration Course	3
ENGH 302 Advanced Composition (Bus/Nat Sci/Tech)	3	IT 300 Modern Telecommunications	3
IT 341 Data Communications and Network Principles	3	IT 304 IT in the Global Economy	3
MBUS 300 Managing Financial Resources	3	IT 343 IT Resources Planning	3
SYST 469 Human Computer Interaction	3	MBUS 301 Managing People and Organizations	3
Total Hours	**15**	**Total Hours**	**15**

Seventh Semester	Credits	Eighth Semester	Credits
IT Concentration Course	3	IT Concentration Course	3
IT Concentration Course	3	IT Concentration Course	3
Global Understanding	3	Elective	3
Elective	3	IT 493 Senior Design Project II	4
IT 492 Senior Design Project I	3	**Total Hours**	**13**
Total Hours	**15**		