

Volgenau School of Engineering - Information Technology, BS

| Catalog Year: 2019 - 2020 | | Grades | | |
|---|--|---------|--------|--------|
| Mason Core Requirements | Course Information | Credits | Earned | Needed |
| Written Communication: | ENGH 101 (100) | 3 | | |
| *Oral Communication | *Satisfied by Major Requirements | | | |
| *Quantitative Reasoning | *Satisfied by Major Requirements | | | |
| *Information Technology | *Satisfied by Major Requirements | | | |
| Arts | | 3 | | |
| Literature | | 3 | | |
| Global Understanding | | 3 | | |
| Natural Science | *Satisfied by Major Requirements | | | |
| Social & Behavioral Science | | 3 | | |
| Western Civ/World History | | 3 | | |
| Written Communication: | ENGH 302 | 3 | | |
| *Capstone/Synthesis | *Satisfied by Major Requirements | | | |
| <p>Major Requirements (75-76 credits) 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. Furthermore, students must have a B or better in gateway courses for the respective concentration</p> | | | | |
| Foundation Courses (21 credits) | | Credits | Earned | Needed |
| IT 102 or MATH 125 | Discrete Structures or Discrete Math | 3 | | |
| IT 104 | Introduction to Computing | 3 | | |
| IT 105 | IT Architecture Fundamentals | 3 | | |
| IT 106 or IT 109 | Intro to IT Problem Solving Using Computer Programming or Introduction to Computer Programming | 3 | | |
| IT 206 or IT 209 | Object Oriented Techniques for IT Problem Solving or Introduction to Object Oriented Programming | 3 | | |
| IT 216 | Systems Analysis and Design | 3 | | |
| STAT 250 | Introductory Statistics I | 3 | | |
| Core and Capstone Courses (40 credits) | | Credits | Earned | Needed |
| IT 207 | Applied IT Programming | 3 | | |
| IT 213 | Multimedia and Web Design | 3 | | |
| IT 214 | Database Fundamentals | 3 | | |
| IT 223 | Information Security Fundamentals | 3 | | |
| IT 300 | Modern Telecommunications | 3 | | |
| IT 304 | IT in the Global Economy (Mason Core) | 3 | | |
| IT 341 | Data Communications and Network Principles | 3 | | |
| IT 342 | Operating Systems Fundamentals | 3 | | |
| IT 343 | IT Project Management | 3 | | |
| MBUS 300 | Accounting in a Global Economy | 3 | | |
| SYST 469 | Human Computer Interaction | 3 | | |
| IT 492 | Senior Design Project I | 3 | | |
| IT 493 | Senior Design Project II | 4 | | |
| Other Major Requirements (14 - 15 credits) | | | | |
| COMM 100 or COMM 101 | | 3 | | |
| IT 293 | | 1 | | |
| MATH 108 or MATH 113 | | 3-4 | | |
| Natural Science with Lab | | 4 | | |
| Natural Science Overview | | 3 | | |
| <p>Information Technology Concentration (15 credits) 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 five concentrations. Students</p> | | | | |
| Concentration Course # 1 | | 3 | | |
| Concentration Course # 2 | | 3 | | |
| Concentration Course # 3 | | 3 | | |
| Concentration Course # 4 | | 3 | | |
| Concentration Course # 5 | | 3 | | |
| Advisor Notes: | | | | |

Volgenau School of Engineering

INFORMATION TECHNOLOGY, B.S.

2019 - 2020

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 five 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

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

INFORMATION TECHNOLOGY, BS

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 *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

Students choose one of five 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 five concentrations. All concentration courses require a grade of B or better in the prerequisite gateway course(s) associated with that concentration.

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

Web Development (WDev)

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

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

Network and Telecommunications (NTEL)

Gateway: IT 341 Data Comm/Network Princpls

- 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

Cyber Security (CYBR)

Gateway: IT 223 Info Security Fundamentals

- IT 352 Security Administration of Linux Systems
- IT 353 Information Defense Technologies
- IT 357 **OR** CRIM 304 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

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

2018-2019 Sample Schedule for Undergraduate Information Technology majors

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

Fairfax Campus: Nguyen Engineering Building, Rm. 5400
4400 University Dr., Fairfax, VA 22030, MSN 1G8
Phone (703) 993-3565; Fax (703) 993-2972

Science and Technology Campus: Bull Run Hall, Rm. 102
10900 University Blvd., Manassas, VA 20110, MSN 4F5
Phone (703) 993-8461; Fax (703) 993-8450

INFORMATION TECHNOLOGY, BS

| First Semester | Credit | Second Semester | Credit |
|--|---------------|---|---------------|
| 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 Prog | 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 | 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 |
| | | Total Hours | 16 |
| Fifth Semester | | Sixth Semester | |
| IT 207 Applied IT Programming | 3 | IT 342 Operating System Fundamentals | 3 |
| IT 300 Modern Telecommunications | 3 | IT 343 IT Project Management | 3 |
| IT 304 IT in the Global Economy | 3 | IT Concentration Course | 3 |
| IT 341 Data Communications and Network | 3 | MBUS 300 Accounting in a Global Economy | 3 |
| SYST 469 Human Computer Interaction | 3 | Elective | 3 |
| Total Hours | 15 | Total Hours | 15 |
| Seventh Semester | | Eighth Semester | |
| IT 492 Senior Design Project I | 3 | IT 493 Senior Design Project II | 4 |
| IT Concentration Course | 3 | IT Concentration Course | 3 |
| IT Concentration Course | 3 | IT Concentration Course | 3 |
| ENGH 302 Adv Comp (Business, Nat Sci, or Multi Disc)*** | 3 | Elective | 3 |
| Elective | 3 | Total Hours | 13 |
| Total Hours | 15 | | |

*<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.