INFORMATION TECHNOLOGY, BS

Banner Code: VS-BS-INFT

Academic Advising

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The Information Technology, BS prepares students to apply IT to support business processes. The degree produces graduates with strong problem-solving, writing, and communication skills who successfully compete for technical employment and are prepared for advanced study. The objectives of the Information Technology, BS program relate to the abilities of the graduates several years after graduation. Graduates of the program are expected within three to five years of graduation to have:

- Been employed in a position in which they have successfully used their information technology skills (including: problem solving, analytic, presentation and personal skills) as evidenced by achieving improved organizational objectives;
- Progressed through increasing levels of responsibility in the workplace;
- Demonstrated ethical, social and professional responsibility consistent with professional societies;
- Worked effectively in teams, whether as a participant or as a leader;
- Grown through self-study, continuing education and professional development relevant to their profession.

The program can be successfully completed in eight full-time semesters with an average of 15 credits each semester. 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. At least 30 credits toward the BS degree must be earned at Mason, and at least 45 credits must be at or above the 300 level. Upper division courses in the program are taught at the Science and Technology campus, where many Department of Information Sciences and Technology faculty offices are located.

This bachelor's degree program is accredited by the Computing Accreditation Commission of ABET (http://www.abet.org).

Admissions & Policies

Admissions

Students who meet Mason's general eligibility requirements may apply for admission to the IT major. Admission is based on the appropriateness of the 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 precalculus.

Policies

For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Change of Major

Mason students considering a change of major to Information Technology must have a minimum GPA of 3.00 in all completed 100 and 200 level IT foundation and core courses completed at Mason that are required for the major, and a grade of C or better in IT 106 Introduction to IT Problem Solving Using Computer Programming. Grades in approved foundation and core substitution courses taken at Mason will be included.

Note: IT courses at the 300 and 400 level are restricted to students who have declared an Information Technology major, minor, or undergraduate certificate, and to students in the BAS or BIS program.

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.

Grades

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.

Termination from the Major

No math, science, or Volgenau School of Engineering course that is required for the major may be attempted more than three times. Those students who do not successfully complete such a course within three attempts will be terminated from the major. Undeclared students in the Volgenau School who do not successfully complete a course required for a Volgenau School major within three attempts will also be terminated. For more information, see AP.5.2.4 Termination from the Major.

Once a student has attempted one of these courses twice unsuccessfully, the third attempt must be no later than the next semester of enrollment, excluding summers. Failure to take the course at that time will result in termination from the major. If the student is unable to take the course when required, the student may request an extension to a future semester; extensions require approval of the student's advisor, their department, and the Associate Dean for Undergraduate Programs. The deadline for extension requests is the add deadline for the semester in which the course is required.

Students who have been terminated from a Volgenau School of Engineering major may not register for a Volgenau School course without permission of the department offering the course. This applies to all undergraduate courses offered by the Volgenau School except IT 104 Introduction to Computing (Mason Core) and STAT 250 Introductory Statistics I (Mason Core).

A student may not declare any major in the Volgenau School of Engineering if the student has previously met the termination criteria for that major at any time, regardless of what the student's major was at the time the courses were taken.

Requirements

Degree Requirements

Total credits: 120

Foundation Courses

IT 102	Discrete Structures	3
or MATH 125	Discrete Mathematics I (Mason Core)	
IT 104	Introduction to Computing (Mason Core)	3
IT 105	IT Architecture Fundamentals	3
IT 106	Introduction to IT Problem Solving Using Computer Programming	3
IT 206	Object Oriented Techniques for IT Problem Solving	3
IT 216	Systems Analysis and Design	3
STAT 250	Introductory Statistics I (Mason Core)	3
Total Credits		21

Core Courses

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
Total Credits		33

Two-Semester Sequence of Approved Capstone Design Courses

IT 492	Senior Design Project I (Mason Core)	3
IT 493	Senior Design Project II (Mason Core)	4
Total Credits		7

Information Technology Concentrations

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.

Concentration Gateway Courses

Database Technology and Programming (DTP)

IT 206	Object Oriented Techniques for IT Problem Solving	3
or IT 214	Database Fundamentals	

Health Information Technology (HIT)

IT 214	Database Fundamentals	3

Information Security (INFS)

IT 223	Information Security Fundamentals	3

Information Technology Entrepreneurship (ITE)

IT 106	Introduction to IT Problem Solving Using Computer Programming	3

Networking and Telecommunications (NTEL)

IT 341	Data Communications and Network Principles	3

Web Development and Multimedia (WDM)

IT 213	Multimedia and Web Design	3

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. Students may choose to have two concentrations. To be eligible, the student must have a B or better in the gateway course for each concentration. If two concentrations are declared, the student must take four courses in each concentration, for a total of eight concentration courses.

Four courses selected from a single concentration	12
One course chosen from a different concentration	3
Total Credits	15

Database Technology and Programming (DTP)

IT 306	Program Design and Data Structures	3
IT 308	Event-Driven Programming	3
IT 314	Database Programming	3
IT 315	Mobile Development	3
IT 322	Health Data Challenges	3
IT 344	Information Storage and Management Technologies	3
IT 369	Data and Application Security	3
IT 390	Rapid Development of Scalable Applications	3
IT 410	Web Programming	3
IT 414	Database Administration	3
IT 490	Application Maintenance and Spiral Development	3

Health Information Technology (HIT)

HAP 360	Introduction to Health Information Systems	3
IT 322	Health Data Challenges	3
IT 324	Health Information Technology Fundamentals	3
IT 390	Rapid Development of Scalable Applications	3
STAT 362	Introduction to Computer Statistical Packages	3

Information Security (INFS)

IT 352	Security Administration of Linux Systems	3
IT 353	Information Defense Technologies	3
IT 357	Computer Crime, Forensics, and Auditing	3
IT 366	Network Security I	3
IT 369	Data and Application Security	3

IT 429	Security Accreditation of Information Systems	3
IT 462	Information Security Principles	3
IT 466	Network Security II	3
IT 467	Network Defense	3

Information Technology Entrepreneurship (ITE)

IT 315	Mobile Development	3
IT 390	Rapid Development of Scalable Applications	3
IT 490	Application Maintenance and Spiral Development	3
IT 495	Turning Ideas into Successful Companies	3
IT 496	Decision Making in IT Ventures	3
MBUS 304	Entrepreneurship: Starting and Managing a New Enterprise	3

Network and Telecommunications (NTEL)

ECE 301	Digital Electronics	3
IT 366	Network Security I	3
IT 441	Network Servers and Infrastructures	3
IT 445	Advanced Networking Principles	3
IT 455	Wireless Communications and Networking	3
IT 465	Peer-to-Peer Systems and Overlay Networks	3
IT 484	Voice Communications Technologies	3
IT 488	Fundamentals of Satellite Communications	3

Web Development and Multimedia (WDM)

IT 315	Mobile Development	3
IT 331	Web I: Web Development	3
IT 332	Web Server Administration	3
IT 335	Web Development using Content Management Systems	3
IT 390	Rapid Development of Scalable Applications	3
IT 415	Information Visualization	3
IT 431	Web II: Advanced Web Development	3
IT 436	Agile Web Development with Open Source Frameworks	3

Other Major Requirements

Select 7 credits of natural science, including at least one 4-credit course with lab [1]		7
COMM 100	Public Speaking (Mason Core)	3
or COMM 101	Interpersonal and Group Interaction (Mason Core)	
IT 293	Applied IT: Junior Transition	1
MATH 108	Introductory Calculus with Business Applications (Mason Core)	3-4
or MATH 113	Analytic Geometry and Calculus I (Mason Core)	
Total Credits		14-15

[1] Students should choose these from the list of courses approved for Mason Core (these credits can also apply toward Mason Core requirements).

Additional Mason Core

Students must complete all Mason Core requirements not fulfilled by major requirements. All students must complete at least 24 credits of social science and humanities coursework, which is normally satisfied by the 24 credits of Mason Core social science and humanities courses listed here, including COMM 100 Public Speaking (Mason Core) or COMM 101 Interpersonal and Group Interaction (Mason Core).

Written Communication	6
Literature	3
Arts	3
Western Civilization/World History	3
Social and Behavioral Sciences	3
Global Understanding	3
Total Credits	21

Writing-Intensive Requirement

The university writing-intensive requirement is satisfied by IT 343 IT Project Management.

Electives

Select additional coursework to bring the total number of credits to 120	8-9
Total Credits	8-9

Accelerated Master's

Information Technology, BS/Information Security and Assurance, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Information Security and Assurance, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Information Security and Assurance, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with 6 credits overlapping with the two following courses:

Code	Title	Credits
INFS 612	Principles and Practices of Communication Networks (satisfies IT 441 requirement in the BS program)	3

ISA 562	Information Security Theory and Practice (satisfies IT 462 requirement in the BS program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Program Design and Data Structures as part of their concentration requirements in the BS program.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Information Systems, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Information Systems, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.30. Criteria for admission are identical to the criteria for admission to the Information Systems, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with 6 credits overlapping with the following two courses:

Code	Title	Credits
INFS 614	Database Management (satisfies IT 414 requirement in the BS program)	3
INFS 622	Information Systems Analysis and Design (satisfies as one DTP concentration course in the BS program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Program Design and Data Structures as part of their concentration requirements in the BS program.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate

Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Software Engineering, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Software Engineering, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Software Engineering, MS Program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with 6 credits overlapping with the following two courses:

Code	Title	Credits
CS 550	Database Systems (satisfies IT 414 requirement in the BS program)	3
SWE 619	Object-Oriented Software Specification and Construction (satisfies as one DTP concentration course in the BS program)	3

Note:

Students must complete MATH 125 Discrete Mathematics I (Mason Core) as their discrete math requirement and IT 306 Program Design and Data Structures as part of their concentration requirements in the BS program

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Digital Forensics and Cyber Analysis (title change pending SCHEV approval), Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Digital Forensics and Cyber Analysis, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply for this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Digital Forensics and Cyber Analysis, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with 6 credits overlapping with two of the following three courses:

Code	Title	Credits
CFRS 500	Introduction to Forensic Technology and Analysis	3
CFRS 510	Digital Forensics Analysis (satisfies the IT 357 requirement for the INFS concentration in the BS program)	3
CFRS 660	Network Forensics (satisfies as one NTEL concentration course in the BS program)	3

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/ Telecommunications, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Telecommunications, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply for this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.25. Criteria for admission are identical to criteria for admission to the Telecommunications, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs.

Code	Title	Credits
Select six credits from the following (the TCOM courses listed for 1.5 credits must be taken in pairs):		6
TCOM 500	Modern Telecommunications (To satisfy the IT 300 BS, AIT requirement)	
TCOM 530	Data Communications Fundamentals (To satisfy the IT 341 BS, AIT requirement)	
TCOM 535	The TCP/IP Suite of Internet Protocols (To satisfy the IT 441 BS, AIT requirement)	
TCOM 631	Voice Over IP (To satisfy the IT 484 BS, AIT requirement)	
Total Credits		6

Note:

Students in the accelerated option who have passed IT 341 Data Communications and Network Principles with a grade of B or higher will not be required to take TCOM 530 Data Communications Fundamentals, which is listed in the MS TCOM core. Alternative sections of TCOM courses to satisfy requirements in the AIT undergraduate program may be made with the approval of the undergraduate academic advisor.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.

Information Technology, BS/Applied Information Technology, Accelerated MS

Overview

Highly-qualified students in the Information Technology, BS have the option of obtaining an accelerated Applied Information Technology, MS.

For more detailed information, see AP.6.7 Bachelor's/Accelerated Master's Degrees. For policies governing all graduate degrees, see AP.6 Graduate Policies.

Admission Requirements

Students in the Information Technology, BS program may apply to this option if they have earned 90 undergraduate credits with an overall GPA of at least 3.30. Criteria for admission are identical to criteria for admission to the Applied Information Technology, MS program.

Accelerated Option Requirements

Students must complete all credits that satisfy requirements for the BS and MS programs, with 6 credits overlap.

Students register for 6 credits of AIT 500-level core courses in place of the corresponding IT 300-level courses required for the undergraduate degree requirements.

Students must register for two of the following courses in place of the corresponding 300-level courses:

Code	Title	Credits
AIT 512	Algorithms and Data Structures Essentials (satisfies the IT 306 requirement in the BS program)	3
AIT 524	Database Management Systems (satisfies the IT 314 requirement in the BS program)	3
AIT 542	Fundamentals of Computing Platforms (satisfies the IT 342 requirement in the BS program)	3

Students may take additional graduate-level courses as part of their BS technical electives with advisor approval. These additional graduate-level courses will not count toward the MS degree. See AP.1.4.4 Graduate Course Enrollment by Undergraduates.

Degree Conferral

Students must apply the semester before they expect to complete the BS requirements to have the BS degree conferred. In addition, at the beginning of the student's final undergraduate semester, students must complete a Bachelor's/Accelerated Master's Transition form that is submitted to the Office of the University Registrar and the VSE Graduate Admissions Office. At the completion of MS requirements, a master's degree is conferred.