

STATISTICS, BS

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The Bachelor of Science in Statistics is designed to provide a framework for students to develop connections between statistical concepts and theories, their impact to data science, and their applications to statistical practice. It will prepare statisticians to use modern statistical techniques to design studies, collect data, analyze and visualize high dimensional data sets, and draw valid conclusions in an increasingly data-centric world. In this program, students will meld the time-tested concepts and theories of statistics with modern methods of analysis, in order to interpret the data that is collected in nearly every discipline and every sector of industry and government.

The BS in Statistics requires a total of 120 credit hours, including major core requirements, concentration requirements, and Mason Core requirements. The program's major core curriculum provides students with a firm foundation in statistics, mathematics, and computing. Selection of a concentration allows a student to specialize in applied, theoretical, or computational aspects of statistical practice.

Students will select one of four concentrations: Applied Statistics, Mathematical Statistics, Sports Analytics or Statistical Analytics.

- The Applied Statistics concentration focuses on developing proficiency in analytical methods applicable to a specific discipline of the student's choosing. This is accomplished through the requirement to complete a minor in a field that makes substantial use of data analysis.
- The Mathematical Statistics concentration is designed for students interested in mastering the theoretical underpinnings of statistics and probability; this concentration is recommended for students who intend to continue graduate studies in statistics or whose main focus is on research.
- The Sports Analytics concentration is designed to provide students with an understanding of the principles of research methodology, economics, statistics, and data analytics integral to the growing field of sports analytics. This concentration will prepare students to work with sports teams as well as companies related to the field of sports such as advertisers, sponsors, etc. where data skills are crucial for today's workforce.
- The Statistical Analytics concentration blends the disciplines of computer science and statistics, as two core disciplines of data science, in a modern way and is designed for students interested in applying concepts from statistics and computer science to the analysis of complex data sets.

Graduates of this program can look forward to careers in local, state, and federal government, and in the many industries that conduct scientific research, collect, and analyze data, or where data science is essential. They will enter the workforce with the ability to impact science, public policy, technology, and industry in a positive way through their expertise in data collection, analysis, synthesis, and interpretation, each with the highest ethical standards. Graduates will also be prepared to continue their studies in graduate schools.

Admissions & Policies

Policies

Advanced Placement, Credit by Exam

A score of 5 on the Advanced Placement (AP) statistics exam qualifies students for credit in STAT 260.

Change of Major

Students considering changing their major to Statistics should consult with the College of Engineering and Computing Coordinator of Undergraduate Advising, 2500 Nguyen Engineering Building. These students must have a cumulative GPA of at least 2.75 and completed MATH 113 with a grade of C or better. See Change of Major (<http://catalog.gmu.edu/colleges-schools/engineering-computing/#requirementspolicies>) for more information.

Grades

Students must earn a C or better in Major Core requirement courses as well as in courses required to satisfy prerequisites. Also, students must earn a C or better in at least 6 credits of the courses used to fulfill the 9 credits of Statistics Restricted Electives.

Termination from the Major

No math, science, or College of Engineering and Computing 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 College of Engineering and Computing who do not successfully complete a course required for a College of Engineering and Computing major within three attempts will also be terminated.

In addition, students in the College of Engineering and Computing with evidence of continued failure to make adequate progress toward declaring or completing a College of Engineering and Computing major will be terminated from the school. Adequate progress is determined by the major program. For more information, see AP.5.2.4 Termination from the Major (<https://catalog.gmu.edu/policies/academic/undergraduate-policies/#ap-5-2-4>).

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. A third attempt of a College of Engineering and Computing course requires support by the student's major department as well as permission by the department offering the course. This permission is not guaranteed. 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 College of Engineering and Computing major may not register for a College of Engineering and Computing course without permission of the department offering the course. This applies to all undergraduate courses offered by the College of Engineering and Computing except IT 104 Introduction to Computing

(Mason Core) (<http://catalog.gmu.edu/mason-core/>) and STAT 250 Introductory Statistics I (Mason Core) (<http://catalog.gmu.edu/mason-core/>).

A student may not declare any major in the College of Engineering and Computing 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

Major Core

Statistics Core

Code	Title	Credits
STAT 260	Introduction to Statistical Practice I	3
STAT 334	Introduction to Probability Models and Simulation ¹	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3
STAT 456	Applied Regression Analysis	3
STAT 463	Introduction to Exploratory Data Analysis	3
STAT 489	Pre-Capstone Professional Development	3
STAT 490	Capstone in Statistics (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
Total Credits		24

1

Students in the Mathematical Statistics concentration must take STAT 346.

Mathematics Core

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core) (http://catalog.gmu.edu/mason-core/) ^{1,2}	4
MATH 114	Analytic Geometry and Calculus II ³	4
MATH 203	Linear Algebra	3
Total Credits		11

1

Math 123-124 (<http://catalog.gmu.edu/courses/math/>) may be taken in place of MATH 113 if student does not have sufficiently high math placement scores to be eligible for MATH 113.

2

MATH 115 may be taken in place of MATH 113 if student qualifies.

3

MATH 116 may be taken in place of MATH 114 if student qualifies.

Computational Skills Core

Code	Title	Credits
CS 112	Introduction to Computer Programming (Mason Core) (http://catalog.gmu.edu/mason-core/)	4
Total Credits		4

Restricted Electives

Statistics

Code	Title	Credits
Select nine credits of STAT electives ^{1,2}		9
STAT 356	Statistical Theory	
STAT courses numbered 440-499 (http://catalog.gmu.edu/courses/stat/)		
Total Credits		9

1

May not be used to fulfill other degree requirements.

2

Grades of C or better are required in at least 6 credits.

Technical

Code	Title	Credits
Select nine credits of technical electives. Specific course selections must be pre-approved by the undergraduate coordinator. Students may need to choose electives to satisfy prerequisites for some of these courses. In some cases, students will need to contact other departments for permission to enroll. ¹		9
CDS courses numbered between 100-399 (http://catalog.gmu.edu/courses/cds/)		
CS courses numbered above 200 (http://catalog.gmu.edu/courses/cs/)		
MATH 125	Discrete Mathematics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	
MATH courses numbered above 200 (http://catalog.gmu.edu/courses/math/)		
OR courses numbered above 300 (http://catalog.gmu.edu/courses/or/)		
BENG 322	Health Data Challenges	
CYSE 101	Introduction to Cyber Security Engineering	
ENGH 388	Professional and Technical Writing	
IT 214	Database Fundamentals	
SOCI 391	Big Data, Technology, and Society	
SYST 438	Analytics for Financial Engineering and Econometrics	
SYST 468	Applied Predictive Analytics	
SYST 473	Decision and Risk Analysis	
SYST 488	Financial Systems Engineering	
Total Credits		9

1

May not be used to fulfill other degree requirements.

Concentrations

Select one concentration and complete all requirements.

Concentrations

- Concentration in Applied Statistics (ASTA)
- Concentration in Mathematical Statistics (MTHS)
- Concentration in Sports Analytics (SPAL)
- Concentration in Statistical Analytics (STLA)

Concentration in Applied Statistics (ASTA)

Focuses on developing proficiency in analytical methods applicable to a specific discipline of the student's choosing. This is accomplished through the requirement to complete a minor in a field that makes substantial use of data analysis.

Code	Title	Credits
Students must complete 15 - 21 credits in a pre-approved minor, selected in consultation with the undergraduate coordinator. Courses taken to fulfill the minor requirements that are not used to fulfill Major Core or Restricted Electives requirements are considered unique to the minor. At least 15 credits of the minor coursework, technical electives, general electives, and additional Mason Core courses must be at or above the 300 level.		15-21

Concentration in Mathematical Statistics (MTHS)

Designed for students interested in mastering the theoretical underpinnings of statistics and probability; this concentration is recommended for students who intend to continue graduate studies in statistics or whose main focus is on research.

Code	Title	Credits
STAT 356	Statistical Theory	3
CDS 130	Computing for Scientists (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
MATH 125	Discrete Mathematics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
MATH 213	Analytic Geometry and Calculus III ¹	3
MATH 300	Introduction to Advanced Mathematics	3
MATH 315	Advanced Calculus I	3
Total Credits		18

1

MATH 215 may be taken in place of MATH 213 if student qualifies.

Code	Title	Credits
At least 9 credits of the technical electives, general electives, and additional Mason Core courses must be at or above the 300 level.		

Concentration in Sports Analytics (SPAL)

Code	Title	Credits
SPMT 201	Introduction to Sport Management	3
SPMT 425	Sport Analytics	3
SRST 450	Research Methods	3

ECON 103	Contemporary Microeconomic Principles (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
ECON 104	Contemporary Macroeconomic Principles (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
Select six credits of SPMT electives		6
SPMT courses numbered between 400-499 (http://catalog.gmu.edu/courses/spmt/)		
Select three credits of a computational elective		3
CDS 130	Computing for Scientists (Mason Core) (http://catalog.gmu.edu/mason-core/)	
SYST 468	Applied Predictive Analytics	
SYST 473	Decision and Risk Analysis	
Total Credits		24

Code	Title	Credits
At least 6 credits of the concentration computational elective, technical electives, general electives, and additional Mason Core courses must be at or above the 300 level.		

Concentration in Statistical Analytics (STLA)

Blends the disciplines of computer science and statistics in a very modern way and is designed for students interested in applying concepts from statistics and computer science to the analysis of massive data sets.

Code	Title	Credits
STAT 472	Introduction to Statistical Learning	3
CS 211	Object-Oriented Programming	3
CS 310	Data Structures	3
CS 330	Formal Methods and Models	3
CS 450	Database Concepts	3
or CDS 302	Scientific Data and Databases	
CS 484	Data Mining	3
or CDS 303	Scientific Data Mining	
MATH 125	Discrete Mathematics I (Mason Core) (http://catalog.gmu.edu/mason-core/)	3
OR 481	Numerical Methods in Engineering	3
Total Credits		24

Additional Mason Core

Code	Title	Credits
Foundation Requirements		
Written Communication (http://catalog.gmu.edu/mason-core/#written)		6
Oral Communication (http://catalog.gmu.edu/mason-core/#oral)		3
Core Requirements		
Literature (http://catalog.gmu.edu/mason-core/#literature)		3
Arts (http://catalog.gmu.edu/mason-core/#arts)		3
Global History (http://catalog.gmu.edu/mason-core/#global-history)		3
Global Understanding (http://catalog.gmu.edu/mason-core/#global)		3

Social and Behavioral Sciences (http://catalog.gmu.edu/mason-core/#social-behavioral-science)	3
Natural Science (http://catalog.gmu.edu/mason-core/#natural-science)	7
Total Credits	31

General Electives

Code	Title	Credits
The number of general elective credits varies with choice of concentration		
Total Credits		8-17

4-Year Plan

Bachelor of Science in Statistics Sample Plan of Study

Detailed four year plans and degree planning checklists can be found at <https://advising.gmu.edu/current-student/majors-at-mason/>.

Accelerated Master's

Statistics, BS/Biostatistics, Accelerated MS

Overview:

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Biostatistics, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/biostatistics-ms/>) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (<https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7>) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (<http://catalog.gmu.edu/policies/academic/graduate-policies/>).

BAM Pathway Admission Requirements:

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Biostatistics, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/biostatistics-ms/>) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00.
- Completion of the following Mason courses each with a grade of C or better:

Code	Title	Credits
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
STAT 334	Introduction to Probability Models and Simulation	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements:

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS program with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability ¹	3
STAT 554	Applied Statistics I ¹	3
STAT 560	Biostatistical Methods ²	3
STAT 663	Statistical Graphics and Data Exploration ¹	3

¹ May be counted as a Technical Elective towards the BS program requirements.

² Replaces the corresponding undergraduate version STAT 460 as a Statistical Elective. Credit may not be received for both STAT 460 and STAT 560.

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (<https://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7>) policies.

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 Graduate Recruitment and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Data Analytics Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Data Analytics Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/data-analytics-engineering-ms/>) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (<http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7>) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (<http://catalog.gmu.edu/policies/academic/graduate-policies/>).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Data Analytics Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/data-analytics-engineering-ms/>) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of at least 3.0.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy

requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
CS 504	Principles of Data Management and Mining	3
or CS 584	Theory and Applications of Data Mining	
OR 541	Operations Research: Deterministic Models (Credit may not be received for both OR 441 and OR 541.)	3
or OR 531	Analytics and Decision Analysis	
STAT 515	Applied Statistics and Visualization for Analytics	3
or STAT 554	Applied Statistics I	
STAT 663	Statistical Graphics and Data Exploration I	3

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS program.

The graduate courses may be counted as Technical Electives toward the Statistics, BS program requirements, with approval of the Statistics Department undergraduate coordinator.

While still in undergraduate status, a maximum of six additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (<http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7>) policies.

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 (<https://registrar.gmu.edu/forms/>) that is submitted to the Office of the University Registrar and the VSE Graduate Admissions and Recruitment office. At the completion of MS requirements, a master's degree is conferred.

Statistics, BS/Operations Research, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Statistics, BS and an Operations Research, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (<https://catalog.gmu.edu/policies/academic/graduate-policies/#text>) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (<https://catalog.gmu.edu/policies/academic/graduate-policies/>).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Statistics, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH requirements. Students must additionally complete MATH 203 Linear Algebra prior to applying for the graduate program.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Operations Research, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>) program. Students already admitted in the BAM Pathway will be admitted to the Operations Research, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Statistics course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses

from the Statistics course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. Students are highly recommended to select courses marked as core courses because it applies to the master's degree regardless of the graduate-level concentration chosen in the Operations Research, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>). The undergraduate version of these courses, if any, may *not* be applied toward the Operations Research, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>). Credit may not be received for both the undergraduate and graduate version of these courses.

- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Operations Research, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/operations-research-ms/>) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Statistics courses:

Code	Title	Credits
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST/OR 568	Applied Predictive Analytics (Core)	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	
OR 541	Operations Research: Deterministic Models (Core)	
OR 542	Operations Research: Stochastic Models (Core)	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP.6.7 Bachelor's/Accelerated Master's Degrees (<https://catalog.gmu.edu/policies/academic/graduate-policies/#text>).

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

Statistics, BS/Systems Engineering, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program and obtain a Statistics, BS and a Systems Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/systems-engineering-ms/>) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP.6.7 Bachelor's/Accelerated Master's Degrees (<http://catalog.gmu.edu/policies/academic/graduate-policies/#text>) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP.6 Graduate Policies (<http://catalog.gmu.edu/policies/academic/graduate-policies/>).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Statistics, BS students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of at least 3.3, and completion of all MATH requirements.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific pre-requisites.

Accelerated Master's Admission Requirements

The criteria for admission are identical to criteria for admission to the Systems Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/systems-engineering-ms/>) program. Students already admitted in the BAM Pathway will be admitted to the Systems Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/systems-engineering-ms/>) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- An overall GPA of at least 3.3
- Successfully meeting Mason's requirements for undergraduate degree conferral (graduation) and completing the application for graduation.

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, undergraduate students interested in taking graduate courses must choose from the following:

Advanced Standing course: Students must complete all credits that satisfy requirements for both the BS and MS programs. Up to four courses (12 credits) of approved master's level courses taken as part of the undergraduate degree may be applied to the graduate degree. The courses selected for this purpose must be approved by the academic advisors of both the BS and MS programs and by the SEOR department chair. For the BS programs that allow undergraduate electives from the department of system engineering and operations research, the students may choose the graduate version of such elective courses to replace the corresponding undergraduate courses.

- Students selecting up to two courses (6 credits) of approved master's level courses may select from the combined Statistics course list and Systems Engineering and Operations Research course list given below.
- Students selecting up to three or four courses (9 or 12 credits) of approved master's level courses may select at most two courses from the Statistics course list and select the remaining courses from the Systems Engineering and Operations Research course list given below. The undergraduate version of these courses, if any, may *not* be applied toward the Systems Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/systems-engineering-ms/>). Credit may not be received for both the undergraduate and graduate version of these courses.
- Except for the courses marked as core, any course chosen from either course list can be used to satisfy SYST 505 Systems Engineering Principles core requirement in the Systems Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/systems-engineering-ms/>) program.
- Some of the courses in the Systems Engineering and Operations Research course list applies only to certain concentrations in the Systems Engineering, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/engineering/systems-operations-research/systems-engineering-ms/>) program.
- Students must pay attention to the prerequisites required for a course, and the master's degree concentration that the course may satisfy.

Select from the following Statistics courses:

Code	Title	Credits
STAT 544	Applied Probability	
STAT 554	Applied Statistics I	

Select the remaining from the following Systems Engineering and Operations Research courses:

Code	Title	Credits
SYST 573	Decision and Risk Analysis	
SYST 538	Analytics for Financial Engineering and Econometrics	
SYST/OR 568	Applied Predictive Analytics	
SYST 588	Financial Systems Engineering I: Introduction to Options, Futures, and Derivatives	
OR 541	Operations Research: Deterministic Models	
OR 542	Operations Research: Stochastic Models	

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP6.7 Bachelor's/Accelerated Master's Degrees (<http://catalog.gmu.edu/policies/academic/graduate-policies/#text>).

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

Statistics, BS/Statistical Science, Accelerated MS

Overview

Highly-qualified undergraduates may be admitted to the bachelor's/accelerated master's program (BAM) and obtain the Statistics, BS and the Statistical Science, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/statistical-science-ms/>) in an accelerated time-frame after satisfactory completion of a minimum of 138 credits.

Admitted students are able to use up to 12 graduate credits in partial satisfaction of requirements for the undergraduate degree. Upon completion and conferral of the bachelor's degree and with satisfactory performance (grade of 'B' or better) in each of the graduate courses, students are given advanced standing in the master's program.

See AP6.7 Bachelor's/Accelerated Master's Degrees (<http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7>) for policies related to this program.

Students in an accelerated degree program must fulfill all university requirements for the master's degree. For policies governing all graduate degrees, see AP6 Graduate Policies (<http://catalog.gmu.edu/policies/academic/graduate-policies/>).

BAM Pathway Admission Requirements

Applicants to all graduate programs at George Mason University must meet the admission standards and application requirements for graduate study as specified in Graduate Admissions Policies and Bachelor's/Accelerated Master's Degree policies.

Students will be considered for admission into the BAM Pathway after completion of a minimum of 60 credits with an overall GPA of 3.0.

Students who are accepted into the BAM Pathway will be allowed to register for graduate level courses after successful completion of a minimum of 75 undergraduate credits and course-specific prerequisites.

Accelerated Master's Admission Requirements

Students already admitted in the BAM Pathway will be admitted to the Statistical Science, MS (<http://catalog.gmu.edu/colleges-schools/engineering-computing/school-computing/statistics/statistical-science-ms/>) program, if they have met the following criteria, as verified on the Bachelor's/Accelerated Master's Transition form:

- Completion of Mason's requirements for undergraduate degree conferral (graduation) and completion of application for graduation.
- An overall GPA of 3.00,
- Completion of the following Mason courses each with a grade of C or better.

Code	Title	Credits
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
STAT 334	Introduction to Probability Models and Simulation	3
or STAT 346	Probability for Engineers	
STAT 354	Probability and Statistics for Engineers and Scientists II	3
or STAT 360	Introduction to Statistical Practice II	
STAT 362	Introduction to Computer Statistical Packages	3

Accelerated Pathway Requirements

To maintain the integrity and quality of both the undergraduate and graduate degree programs, students complete all credits that satisfy requirements for the BS and MS programs, with up to twelve credits overlap chosen from the following graduate courses:

Code	Title	Credits
STAT 544	Applied Probability ¹	3
STAT 554	Applied Statistics I ¹	3
STAT 560	Biostatistical Methods ²	3
STAT 574	Survey Sampling I ³	3
STAT 663	Statistical Graphics and Data Exploration ¹	3

¹ May be counted as a Technical Elective towards the BS program requirements.

² Replaces the corresponding undergraduate version STAT 460 as a Statistical Elective. Credit may not be received for both STAT 460 and STAT 560.

³ Replaces the corresponding undergraduate version STAT 474 as a Statistical Elective. Credit may not be received for both STAT 474 and STAT 574.

All graduate course prerequisites must be completed prior to enrollment. Each graduate course must be completed with a grade of B or better to apply toward the MS degree.

While still in undergraduate status, a maximum of 6 additional graduate credits may be taken as reserve graduate credit and applied to the master's program. These can be chosen from STAT 500-519 and STAT 540-799. Reserve graduate credits do not apply to the undergraduate degree.

For more detailed information on coursework and timeline requirements, see AP6.7 Bachelor's/Accelerated Master's Degrees (<http://catalog.gmu.edu/policies/academic/graduate-policies/#ap-6-7>) policies.

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 and Enrollment Services. At the completion of MS requirements, a master's degree is conferred.