GEORGE MASON UNIVERSITY
THE VOLGENAU SCHOOL OF ENGINEERING
B.S. DEGREE IN STATISTICS (1705 Nguyen Engineering Building, 703-993-3645)
http://statistics.gmu.edu/
2018 - 2019 CATALOG

	Department(s) & Course #(s)	Completed/ Grade(s)	Needed

MASON CORE REQUIREMENTS (31 credits)

a. Written Communication: ENGH 101 (100), ENGH 302 Natural Science Section only (C or better) (3,3)
b. Oral Communication (3)
c. Quantitative Reasoning (**satisfied by completion of major requirements**)
d. Literature (3)
e. Arts (3)
f. Western Civilization (HIST 100, 125, or acceptable transfer course)(3)
g. Social & Behavioral Science (3)
h. Natural Science (4,3)
i. Global Understanding (3)
j. Information Technology (**satisfied by completion of major requirements**)
k. Synthesis (satisfied by **STAT 490**)

Go to: http://catalog.gmu.edu/mason-core/ to link to information on Mason Core requirements.

Statistics Major Requirements (73 – 82 credits hours required)

Statistics Core (24 credits)
a. STAT 260 (3)
b. STAT 334 or STAT 346 (3)
c. STAT 354 (3)
d. STAT 362 (3)
e. STAT 456 (3)
f. STAT 463 (3)
g. STAT 489 (3)
h. STAT 490 (3)

Mathematics Core (11)
1. MATH 113, 114 (4,4)
2. MATH 203 (3)

Computational Skills Core (5 credits)
1. *CS 105 or CDS 151 (1) (**Statistical Analytics concentration must take CS 105)*
2. CS 112 (4)

Restricted Electives (18 credits)
1. Statistics electives (9 credits)– STAT courses numbered 440-499 *not used to fulfill other degree requirements
2. Technical electives (9 credits)– MATH, CDS, and/or CS courses numbered above 200; OR courses numbered above 300; BENG 322; CYSE 325; ENGH 388; IT 214; SYST 473; SYST 488

Students must earn a C or better in Major Core Requirement courses as well as in courses required to satisfy prerequisites.

Concentrations (select one and complete requirements) (15 – 24 credits)

Applied Statistics (ASTA) (15-21 credits): Students must complete 15 - 21 credits in a pre-approved minor, selected in consultation with the undergraduate coordinator.

Mathematical Statistics (MTHS) (15 credits): STAT 356; CDS 130; MATH 213; MATH 290; MATH 315

Statistical Analytics (STLA) (24 credits): STAT 472; CS 211; CS 310; CS 330; CS 450 or CDS 302; CS 484 or CDS 303; MATH 125; OR 481

GENERAL ELECTIVES (7 - 16) (List courses) At most 3 credits of 100-level RECR coursework may be taken to satisfy the degree requirements of those VSE programs that allow general electives.

MINIMUM 120 HOURS (including Minimum 45 UPPER DIVISION HOURS) to GRADUATE

This planning form is intended to be used in consultation with your academic advisor and reflects the requirements for the 2018 - 2019 Catalog; the University Catalog is the official reference for program requirements.

Volgenau School of Engineering

STATISTICS, B.S.

2018 - 2019

The Bachelor of Science in Statistics is designed to provide a framework for students to develop connections between statistical concepts and theories, and their applications to statistical practice. It will prepare statisticians who can use 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 industry.

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. 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 well prepared to continue their studies in graduate schools if they so desire.

Degree Requirements

The Statistics, B.S., program can be completed in 8 full-time semesters with an average of 15 credits each semester. Within this program, there are "cores" in topic areas essential to statistics, specifically: Mathematics, Computational Skills and Statistics Core courses.

The Restricted Statistics Elective and the Restricted Technical Elective courses allow students to select statistical applications, mathematics, and computational skills related to their specific interests and anticipated future employment. Selection of specific elective courses also provides opportunities for research in addition to the capstone experience.

Selection of a concentration allows a student to specialize in applied, theoretical, or computational aspects of statistical practice. Students will select one of three concentrations: Applied Statistics, Mathematical Statistics, or Statistical Analytics.

As a culminating experience, each student will complete a capstone course requiring application of coursework to a real-world problem. The capstone experience will provide synthesis of methods and concepts acquired in the student's undergraduate coursework, as well as opportunities for research. Part of the capstone experience will involve students working in small groups on a project and presenting their findings in a written report and an oral presentation; this experience will strengthen the student's skills in the areas of technical writing and oral communication. Students will develop the tools necessary to conduct effective consulting sessions, work collaboratively to solve problems, and utilize professional publications in statistics.

Concentration Areas

Applied Statistics

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. 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.

Mathematical Statistics

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

STATISTICS, BS

Statistical Analytics

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.

2018-2019 Sample Schedule for Undergraduate Statistics major – Applied Statistics Concentration (assuming 18 credit minor)

First Semester	Credits	Second Semester	Credits	Third Semester	Credits	Fourth Semester	Credits
STAT 260 Intro to Stat Practice	3	STAT 362 Intro to Com Stat Pack	3	STAT 334 Intro to Prob Mod & Sim	3	STAT 354 Prob. and Stat.	3
MATH 113 Analyt Geo and Calc I	4	MATH 114 Analyt Geo and Calc II	4	MATH 203 Linear Algebra	3	Minor Requirement	3
CS 105 Comp Ethics and Society	1	CS 112 Intro to Comp Programing	4	Minor Requirement	3	Technical Elective	3
Mason Core*	3	Mason Core*	3	Mason Core*	3	Mason Core*	3
Mason Core*	3			General Elective	4	Mason Core*	4
Total Hours	**14**	**Total Hours**	**14**	**Total Hours**	**16**	**Total Hours**	**16**
Fifth Semester	**Credits**	**Sixth Semester**	**Credits**	**Seventh Semester**	**Credits**	**Eighth Semester**	**Credits**
STAT 456 App Regr Analysis	3	STAT 463 Intro to Expl Data Analy	3	STAT 489 Pre-Cap Prof Develop.	3	STAT 490 Capstone in Stat.	3
Statistics Elective	3	Statistics Elective	3	Statistics Elective	3	Minor Requirement	3
Minor Requirement	3	Minor Requirement	3	Minor Requirement	3	Technical Elective	3
Mason Core*	3	ENGH 302 Adv Comp (Nat Sci)***	3	Technical Elective	3	General Elective	3
Mason Core*	3	Mason Core*	3	General Elective	3	General Elective	3
Total Hours	**15**	**Total Hours**	**15**	**Total Hours**	**15**	**Total Hours**	**15**

2018-2019 Sample Schedule for Undergraduate Statistics major - Mathematical Statistics Concentration

First Semester	Credits	Second Semester	Credits	Third Semester	Credits	Fourth Semester	Credits
STAT 260 Intro to Stat. Practice	3	STAT 362 Intro to Comp. Stat Pack	3	MATH 203 Linear Algebra	3	STAT 346 Prob. for Engin.	3
MATH 113 Analyt Geo and Calc I	4	MATH 114 Analyt Geo and Calc II	4	MATH 213 Analyt Geo and Calc III	3	MATH 290 Intro Adv Math	3
CS 105 Comp. Ethics and Society	1	CS 112 Intro to Comp Programing	4	CDS 130 Computing for Scientists	3	Technical Elective	3
Mason Core*	3	Mason Core*	3	Mason Core*	3	General Elective	4
Mason Core*	3			Mason Core*	4	Mason Core*	3
Total Hours	**14**	**Total Hours**	**14**	**Total Hours**	**16**	**Total Hours**	**16**
Fifth Semester	**Credits**	**Sixth Semester**	**Credits**	**Seventh Semester**	**Credits**	**Eighth Semester**	**Credits**
STAT 354 Prob and Stat	3	STAT 463 Intro to Exp Data Analy	3	STAT 489 Pre-Cap Prof Develop	3	STAT 490 Capstone in Stat	3
STAT 356 Statistical Theory	3	MATH 315 Advanced Calculus I	3	STAT 456 Applied Reg Analysis	3	Statistics Elective	3
Mason Core*	3	Statistics Elective	3	Statistics Elective	3	Technical Elective	3
Mason Core*	3	ENGH 302 Adv Comp (Nat Sci)***	3	Technical Elective	3	General Elective	3
General Elective	3	Mason Core*	3	General Elective	3	General Elective	3
Total Hours	**15**	**Total Hours**	**15**	**Total Hours**	**15**	**Total Hours**	**15**

2018-2019 Sample Schedule for Undergraduate Statistics major – Statistical Analytics Concentration

First Semester	Credit	Second Semester	Credits	Third Semester	Credits	Fourth Semester	Credits
STAT 260 Intro to Stat Practice	3	STAT 362 Intro to Comp Stat. Pack	3	STAT 334 Intro to Prob. Mod & Sim	3	STAT 354 Probability & Stat	3
MATH 113 Analy Geom & Calc I	4	MATH 114 Analyt Geo & Calc II	4	MATH 203 Linear Algebra	3	MATH 125 Discrete Math,	3
CS 105 Comp Ethics & Society	1	CS 112 Intro to Comp. Prog.	4	CS 211 Object-Oriented Prog.	3	CS 310 Data Structures	3
Mason Core*	3	Mason Core*	3	Mason Core*	3	Technical Elective	3
Mason Core*	3			Mason Core*	4	Mason Core*	3
Total Hours	**14**	**Total Hours**	**14**	**Total Hours**	**16**	**Total Hours**	**15**
Fifth Semester	**Credits**	**Sixth Semester**	**Credits**	**Seventh Semester**	**Credits**	**Eighth Semester**	**Credits**
STAT 456 App Regr Analysis	3	STAT 463 Intro to Expl Data Analy	3	STAT 489 Pre-Capstone	3	STAT 490 Capstone in Stat	3
CS 330 Formal Meth. and Mod.	3	STAT 472 Intro to Stat. Learning	3	CS 484 Data Mining	3	Statistics Elective	3
OR 481 Num. Methods in Engin.	3	CS 450 Database Concepts	3	Statistics Elective	3	Technical Elective	3
Statistics Elective	3	ENGH 302 Adv Comp (Nat. Sci)***	3	Technical Elective	3	General Elective	3
General Elective	4	Mason Core*	3	Mason Core*	3	Mason Core*	3
Total Hours	**16**	**Total Hours**	**15**	**Total Hours**	**15**	**Total Hours**	**15**

* http://catalog.gmu.edu/mason-core/ Mason Core Categories: One course from each: Oral Communication, ENGH101, Arts, Global Understanding, Literature, Western Civilization/World History, Social/Behavioral Science, Natural Science w/ Lab, Natural Science Non-Lab.

*** ENGH 101 and Mason Core-Literature must be completed before taking ENGH 302.

Program Questions? Email: statistics@gmu.edu
Website: statistics.gmu.edu

Fairfax Campus: Nguyen Engineering Building, Rm.1705
4400 University Dr., Fairfax, VA 22030, MSN 4A7
Phone (703) 993-3645; Fax (703) 993-1700