Information about the MS program in Statistics at GWU

We are glad you are interested in our MS program in Statistic at the GWU. This handout contains information about the MS program, a typical first year schedule and approved courses outside of the Department. You may have many questions after reading this handout. The MS advisors are available to answer your questions by email or to meet with you in person.

Admission Prerequisites

Preparation for the program should include courses in multivariable calculus (Equivalent to Math 2233 at GWU), Linear Algebra/Matrix theory (Math 2184), and at least two undergraduate statistics courses, including Regression Analysis. Some experience, either in theoretical or applied probability and/or statistics is desirable but not required. Experience with computer programming and statistical packages (SAS/R) are helpful. If you have been required to take remedial courses, please do so within the first year of your study. You must present your transcript showing that you have satisfied the prerequisites to the MS coordinator for Statistics (Phillips Hall, Room 107).

Degree Requirements

For each entering student, an individualized program leading to the M.S. degree will be designed with the help of the MS program advisor by taking into account the individual's strengths and deficiencies, as judged from transcripts and interviews. All candidates for the MS in Statistics must complete at least 30 units of graduate credit approved for the MS program in Statistics (No thesis option). The department may also approve a program of study consisting of 24 credit hours of course work plus a thesis (Stat 6998-6999). The MS students may take **up to two (six credits) approved graduate courses** outside the Statistics department, but in related fields (e.g., Economics, Management and Finance, Computer Science, Engineering, Mathematics or Public Health). See the list of approved courses at the end of this document. Students must maintain a minimum cumulative grade point average of B (3.0) in all course work.

Qualifying courses completed at GW before application and admission to the MS program may be used to satisfy some of the program's course requirements. A maximum of two courses of credit hours of approved graduate work required for the MS degree can be transferred from another degree-granting division of GW or another accredited university. Up to 24 credit units may also be counted towards the student's PhD degree (if admitted to the PhD), provided that they meet the requirements of the PhD program.

The course requirements listed below are special to this department and must be read in conjunction with the general requirements of the Graduate School. Additional information on graduate studies at GW can be found at the University Bulletin
http://bulletin.gwu.edu/courses/stat/

All students are required to take Stat 6201—6202: Mathematical Statistics.

A typical first year schedule: Normal course load is 3 courses or 9 credits per semester (including deficiency requirements).

First semester	Second Semester
Stat 6201 (Required),	Stat 6202 (Required),
Stat 6215,	Stat 6216,
Stat 6207,	Stat 6210,
Stat 6214,	Stat 6217
Stat 6197	or Stat 6242
or Stat 6287	

Descriptions of first year MS courses:

6201–02 Mathematical Statistics (3–3)

Probability, distribution theory, sampling theory, estimation, sufficient statistics, hypothesis testing, analysis of variance, multivariate normal distribution. Prerequisite: Math 2233, 2184.

6207 Methods of Statistical Computing I (3)

Error analysis, computational aspects of linear models, sweep operator, random number generation, simulation, resampling. Optimization, numerical integration (Gaussian quadrature, Simpson's rule); E–M algorithm. Prerequisite: Stat 2118, 4157–58; Math 2184; knowledge of a programming language.

6210 Data Analysis (3)

Review of statistical principles of data analysis, using computerized statistical procedures. Multiple regression and the general linear model, analysis of contingency tables and categorical data, logistic regression for qualitative responses. Prerequisite: Stat 2118, 4157 or 6201, and 2183 or equivalent.

6214 Applied Linear Models (3)

Introduction to regression techniques for discrete and continuous response variables. The course includes a computing component using SAS and S$^+$. Prerequisite: Math 2233 and 2184. (Fall, alternate years)

6215-16 Applied Multivariate Analysis (3-3)

Application of multivariate statistical techniques to multidimensional research data from the behavioral, social, biological, medical, and physical sciences. Prerequisite: Stat 3119, 4157–58; Math 2184. (Alternate academic years)

6217   Design of Experiments (3)

Design and analysis of single- and multiple-factor experiments. Includes block designs, repeated measures, factorial and fractional factorial experiments, response surface experimentation. Prerequisite: Stat 4157–58; Math 2184.

6242   Regression Graphics/Nonparametric Regression (3)

Linear regression, nonparametric regression, smoothing techniques, additive models, regression trees, neural networks, and dimension reduction methods. Prerequisite: Stat 2118; Math 2233, 2184, or equivalent.

6287   Modern Theory of Sample Surveys (3–3)

Application of statistical theory to the sampling of finite populations. Simple, stratified, cluster, double and subsampling. Special topics, including super-populations and randomized response. Prerequisite: Stat 4157–58 or equivalent.

Second year and PhD level courses:

There are many elective second year courses that you can consider after taking Stat 6201-6202. Please see the semester schedule for current offerings. You can take Stat 6289 courses (Topics in Statistics). Advanced students may also consider PhD level courses (Stat 8XXX) during their second year. They are only open to MS students who satisfy the prerequisites.

Please speak to your advisor before signing up for advanced PhD level courses.

Note: **MS credit is NOT given to the following courses: Stat 6104, 6233, 6234, 6236, or 6238.**

Advising

Students in their first semester of the program must meet with the MS advisor prior to signing up for classes. Students are suggested to continue to seek advice throughout their time in the program. Students should also meet with their MS advisor if there is any question of whether their course work may be applied towards the degree. All students must familiarize themselves with GW, CCAS, and departmental graduate procedures and policies as presented here and in the current GW Graduate Bulletin. It is the student's responsibility to ensure that they adhere at all times to all stated rules and regulations. The Graduate Bulletin also lists the rules and regulations of individual departments, many of which have requirements beyond those listed in the CCAS policies.

English Language Requirements for International Students

Students with TOEFL scores of at least 600 (paper-based) or 250 (computer-based) or 100 (Internet-based) or an overall hard score of 7.0 on the academic IELTS with no individual hard score below 6.0 are exempted. Students may be required to take EAP (English for Academic Purposes) courses. Students placed in EAP courses must register for these courses in their first semester. For additional information, please refer to the section on University Regulations in the University Bulletin for Graduate Programs.

Transfer of Credits

A student who is a degree candidate in Columbian College of Arts and Sciences may request transfer of post-baccalaureate, graduate-level course work taken outside the School. You can only transfer two courses in the MS program in Statistics. This request should be submitted within the first semester of matriculation. Students who wish to transfer credit into their program should consult their advisors as early as possible and arrange for the department to petition CCAS via the appropriate form. Once enrolled as CCAS degree candidates, students are not permitted to transfer course work taken outside the university, except under extraordinary circumstances (petitions must be submitted, in advance, through the department to the CCAS Graduate Office).

For a transfer of credit to be approved, all of the following conditions must be met:
- o The course work must have been taken at an accredited college or university.
- o The department must approve it as appropriate to the student's program of studies.
- o It must have been taken within the past two years.
- o It must not have been applied to the completion of requirements for another degree.
- o The student must have received a grade of "B" or better.
- o An official transcript showing completion of the course work must be on file in the CCAS office before the request can be considered.

The Master's Thesis

All Master's theses must be supervised by a director plus one reader. It is up to the student to find a topic and a thesis advisor. Ask your advisor for guidance. Only after you find a thesis adviser you should register for Stat 6998 and Stat 6999 over two semesters.

Approved courses outside of the department:

Course No.	Course Name
CSCI 6212	Design & Analysis of Algorithms
CSCI 6364	Database Management Systems
CSCI 6442	Database Systems II
CSCI 6907	Big Data & Analytics
ECON 8375	Econometrics I
ECON 8377	Econometrics II
FINA 6223	Investment Analysis & Portfolio Mgmt
MATH 6201	Real Analysis I
MATH 6202	Real Analysis II
MATH 6230	Complex Analysis
MATH 6441	Introduction to Financial Math
MATH 6620	Graph Theory
MKTG 6243	Marketing Research
PUBH 6002	Biostatistical Applications for Public Health
DATS 6102	Introduction to Data Science
DATS 6102	Data Warehousing