

Master of Science in Economic Analytics at Clemson University:

Graduate Student Handbook for 2022-2023

I. Overview

Students who earn a Master of Science in Economic Analytics learn to apply microeconomic theory, describe and visualize economic data, estimate and interpret economic-statistical models, use correlational versions of the models for forecasting and causal versions for explanation, and test hypotheses to answer questions about business. The relevant business might be in agriculture, automobile manufacturing, banking and finance, competitive sports, credit, health care, or insurance.

The Master of Science in Economic Analytics (MS ECAN) is a new and important part of graduate education in the John E. Walker Department of Economics at Clemson. The Department of Economics currently consists of 33 faculty members. See <http://economics.clemson.edu/faculty-and-staff> for details about our interests. The Department is part of the [Wilbur O. and Ann Powers College of Business](#). Professor Scott Baier is the Chair of the Department. The coordinator of the MS in Economic Analytics program is Associate Professor Scott Templeton. Dr. Templeton can be reached at stemple@clemson.edu or 864-656-6680.

Students in the MS in Economic Analytics program are well prepared for jobs in the private sector. Graduates of the program have increasingly valuable skills for description and analysis of economic data for business. Our first two graduates got jobs at Bates White Economic Consulting and World Vision. Employers of recent graduates from our related MA in Economics program include Abbot Laboratories, Beacon Economics, Bloomberg LP, CareCore National, Collaborative Solutions, Deloitte, Gartner, IHS Markit, Investinet, John Burns Real Estate Consulting, Mather Economics LLC, Norfolk Southern, Northwestern Mutual Insurance, Resurgent Capital Services, Shellpoint Mortgage Servicing, and Sparks Research. A few graduates will subsequently earn doctorates in economics or statistics.

The U.S. Department of Homeland Security recognizes the MS in Economic Analytics as a Science, Technology, Engineering, and Mathematics (STEM) degree. International (F-1) students may apply for a 24-month extension of [optional practical training \(OPT\)](#) with the MS in Economic Analytics.

II. Curriculum

Economic analytics comprises 1) data analytics to describe and visualize behavior, welfare, and prices in markets, 2) estimation of correlational models for prediction of the behavior, welfare, and prices, and 3) estimation of causal economic-statistical models for explanation of these things. Thus, the curriculum for the MS in Economic Analytics is focused on applied microeconomics, economic-statistical modeling, and data analysis for economics. Most students can complete their coursework in two semesters, write and defend their theses during the summer, and graduate within 12 months.

A. Required Courses, Credits, and Grades

Students must earn at least 30 credits of course work: 24 credits for graded courses and 6 credits for thesis research (ECON 8910). A minimum of one-half of the total graduate credit hours that a student's advisory committee requires, exclusive of credits for thesis research, must be earned from 8000-level courses or above. In other words, not more than one-half of the graded courses that the advisory committee requires may be earned from 6000-level courses. Two semesters of four 3-credit graded courses per semester usually prepare the student for thesis work.

A student must take two 3-credit graduate courses in applied microeconomic theory. The two

graduate courses are usually Microeconomics for Public Policy (ECON 8230) in the fall semester and Markets, Competition, and Strategy (ECON 8430) in the spring semester. Exceptionally well-prepared students may, in rare instances, substitute Microeconomic Theory (ECON 8010) for ECON 8230 with permission of the instructor and the graduate coordinator. Students cannot substitute Organization of Industries (ECON 6240) for ECON 8430. Intermediate microeconomics (ECON 3140) or its equivalent is a pre-requisite for ECON 8230 and ECON 8430.

A student must take two 3-credit graduate courses in estimation of economic-statistical models and the use of such models for prediction and explanation with hypothesis testing. Estimation and use of such models is part of applied econometrics. Economic Analytics for Business (ECON 8700) and Advanced Economic Analytics for Business (ECON 8710) are the two highly recommended courses. An undergraduate course in econometrics, such as ECON 4050, is a prerequisite for ECON 8700. Although a student may substitute another econometric course for one of these, he or she must have permission of the instructor and graduate coordinator to do so.

A student must take two 3-credit graduate courses in data analysis for economics. Data Analysis for Economics (ECON 8600) and Advanced Data Analysis for Economics (ECON 8610) are usually the two courses. Although a student may substitute another data science course for one of these, he or she must have permission of the instructor and graduate coordinator to do so.

A student must also take 6 credits of elective courses in economics, statistics, or subjects from other departments with approval of the MS program coordinator and the student’s advisor.

B. One-Year Typical Schedule of Courses for MS in Economic Analytics

Semester	Course	Credits
Fall	Microeconomics for Public Policy (ECON 8230)	3
Fall	Data Analysis for Economics (ECON 8600)	3
Fall	Economic Analytics for Business (ECON 8700)	3
Fall	An elective 6000- or 8000-level ECON or other pre-approved course	3
	Subtotal for Fall	12
Spring	Markets, Competition, and Strategy (ECON 8430)	3
Spring	Advanced Data Analysis for Economics (ECON 8610)	3
Spring	Advanced Economic Analytics for Business (ECON 8710)	3
Spring	An elective 6000- or 8000-level ECON or other pre-approved course	3
	Subtotal for Spring	12
Summer	Thesis Research (ECON 8910)	6
	Total for Three Semesters in Twelve Months	30

Check course availability through iRoar at <https://casauth.clemson.edu/>. Use Public Access to the Syllabus Repository at <https://etpr.app.clemson.edu/repository/> to download previous syllabi.

Students who initially enroll in a fall semester can earn their MS degree by August of the next year. Students who enter the program in a spring semester might not be able to finish within 12 months because Microeconomics for Public Policy (ECON 8230), Data Analysis for Economics (ECON 8600), and Economic Analytics for Business (ECON 8700) are offered only in fall semesters.

A student must have a grade point average of 3.0 or better, on a scale of 0 to 4, to earn a graduate degree from Clemson University.

The MS in Economic Analytics is a STEM degree while the MA in Economics is not. The MS in Economic Analytics has two required courses in economic analytics. The MA in Economics has one such required course. The MS in Economic Analytics has two required courses in data analysis

for economics. The MA in Economics has none. The MS in Economic Analytics requires two 3-credit elective courses while the MA in Economics requires five 3-credit elective courses.

C. Elective Courses: Economic Field Courses (Semester Recently Offered)

ECON 6020 – Law and Economics (Fall and Spring)
ECON 6060 – Advanced Econometrics
ECON 6100 – Economic Development (Fall)
ECON 6110 – Economics of Education
ECON 6120 – International Microeconomics (Fall)
ECON 6130 – International Macroeconomics
ECON 6220 – Monetary Economics
ECON 6230 – Economics of Health (Fall and Spring)
ECON 6250 – Antitrust Economics (Fall)
ECON 6260 – Seminar in Sports Economics (Fall and Spring)
ECON 6270 – Development of the American Economy (Spring)
ECON 6280 – Cost-Benefit Analysis (Fall)
ECON 6290 – Economics of Energy Markets
ECON 6400 – Game Theory (Spring)
ECON 6570 – Natural Resource Use, Technology, and Policy (Spring)
ECON 8050 – Macroeconomics (Spring, course primarily for doctoral students)
ECON 8110 – Economics of Environmental Quality (Spring)
ECON 8150 – Economic History of the United States
ECON 8260 – Economic Theory of Regulation (Fall)
ECON 8270 – Economics of Institutions and Organizations (Spring)

D. Other Electives: Potentially Relevant Courses from Other Departments

AGRB 6090 – Commodity Futures Markets
AGRB 6560 – Prices
CRP 8040 – Introduction to GIS for Planning and Policy (Fall, 4 credits)
CPSC 6300 – Applied Data Science (Fall)
FOR 6340 and FOR 6341 – Geographical Information Systems for Natural Resources and Lab
STAT 6020 – Introduction to Statistical Computing (Fall and Spring)
STAT 8020 – Statistical Methods II (Fall and Summer)
STAT 8040 – Sampling (Spring)
STAT 8050 – Design and Analysis of Experiments (Fall and Spring)
STAT 8170 – Multivariate Statistics (Spring)

E. Academic Probation

A graduate student who does not maintain a grade point average (GPA) of at least 3.0 is put on academic probation or may be dismissed from MS in Economic Analytics program. There are two levels of academic probation: R1 for those on probation for the first time and R2 for those beyond the first time. Students who are placed on probation because their GPA has fallen below 3.0 are expected to raise their GPA to at least 3.0 within nine credit hours. Although students who fail to do so may be dismissed from their program at this point, those who make excellent progress may be given another chance to do so within the next nine credit hours. Students who are placed on academic probation must file a Graduate Student Plan for Success ([GSPS](#)), which must be signed by the graduate coordinator and approved by the Graduate School. The student has the responsibility to contact the coordinator of the MS in Economic Analytics program for discussion about and

approval of the Plan for Success.

III. Administrative Requirements: Policies, Procedures, and Forms

Clemson University and its Graduate School have many policies and procedures that applicants, admitted students, and faculty must follow. Each student is responsible to know about these policies and procedures, which are found in the current [Graduate Student Handbook](https://www.clemson.edu/graduate/students/policies-procedures/index.html). See <https://www.clemson.edu/graduate/students/policies-procedures/index.html> for details.

As a result of its policies and procedures, the Graduate School also has forms that should be filled out and filed in a timely fashion to ensure that an applicant is considered for admission and an admitted student graduates on time. Students are responsible for meeting administrative requirements and also keeping track of any subsequent changes. Students must consult the Graduate School Announcements and updates on the Graduate School's website. Forms for enrolled students are available at <https://www.clemson.edu/graduate/students/forms.html>.

Some of the most important policies, procedures, and forms are discussed below in this section. Although the information in this section is correct at the time of its being written, students are responsible for any and all subsequent changes. That is, the information in this section cannot substitute for and is not necessarily the information available on the Graduate School's websites.

A. Application and Admission to Program

To apply for admission to the MS in Economic Analytics program, please follow the instructions at <https://www.clemson.edu/graduate/admissions/index.html> and complete the online application. Applications should be completed by February 15 to guarantee a decision and notification before April 15 for the fall. Applications submitted after Feb. 15 will be reviewed as capacity allows. Students who have unusual backgrounds or circumstances and want to apply for possible admission for the spring semester should submit a completed application by October 1 and notify the [graduate coordinator](#) if they do. Applications submitted after Oct. 1 will be reviewed as capacity allows. We recommend that students apply for Fall admission to be able take the required courses in sequence.

An applicant's grades, Graduate Record Examination (GRE) scores, statement of purpose, at least two letters of recommendation, academic background, and relevant work or personal experience are required for a complete application and, along with the reputation of his or her alma mater, are the criteria for an admission decision. There is no minimum grade point average or minimum GRE score that automatically disqualifies an application for consideration. However, admitted students usually have earned an A or B, or equivalent scores, for their courses, particularly those in economics, statistics, and other mathematics. Median scores of students recently admitted to the MA in Economics, our sister program, on the quantitative, verbal, and analytical writing parts of the GRE are 160 (74th percentile), 154 (65th percentile), and 4 (59th percentile). We expect that median scores on the GRE for students admitted into the MS in Economic Analytics will be similar. (See also <http://www.clemson.edu/graduate/admissions/preparing-to-apply/median-scores.html> for details.) The criteria for admission to the MS in Economic Analytics, although a STEM degree, are the same as the criteria for admission to the MA in Economics.

International applicants must take an English test and submit official scores. Admitted international students have a cumulative score in the range of 90 to 110 on the Test of English as a Foreign Language (TOEFL) iBT and at least 20 for listening and 20 for speaking. If an admitted international student has not taken the TOEFL, she instead has earned a score of at least 60 on the Pearson Test of English (PTE) Academic or 7.0 on the International English Language Testing System (IELTS). An applicant with a low TOEFL, PTE Academic, or IELTS score can still be

admitted conditional on completing Level 112 of an ELS course and retaking the GRE. International applicants who have studied abroad for at least two years in the U.S. or other English-speaking country and completed their undergraduate education there are not required to retake any English test. However, their applications will be evaluated as if they were domestic students.

Admitted students have usually studied univariate and multivariate calculus, introductory probability and statistics, intermediate microeconomics, and undergraduate econometrics. Students who majored in economics or agricultural economics or who majored in mathematics or statistics but took intermediate microeconomics typically have adequate backgrounds. Excellent students with inadequate backgrounds in economics may be admitted but may also be required to take extra, co-requisite undergraduate courses, such as intermediate microeconomics. Domestic students with inadequate backgrounds may also apply as non-degree seekers, take co-requisite undergraduate or even core graduate courses, and then apply to the program.

B. Tuition and Fees

Tuition and fees are set by Board of Trustees during their July meeting for the upcoming academic year. The MS in Economic Analytics program is a Tier 2 program for purposes of tuition. In 2022-2023 full-time graduate students will pay tuition of \$5,429 per semester if they are residents of South Carolina and \$11,283 per semester if they are non-residents. All full-time students will pay \$598 per semester in fees. A student must take at least nine-credit hours in each of the Fall and Spring semesters to be full time. Part-time students will pay \$743 per credit if they are residents and \$1,488 per credit if they are non-residents. Part-time students also pay \$46 in additional fees. Check our [online calculator for tuition and fees](#) for the latest information about costs. Grading, research, and teaching assistantships are not available to students in the MS in Economic Analytics program.

International students pay in-state tuition if they come from any of the following locations, as indicated by their passports: 1) Taiwan, 2) Rhineland-Palatinate, or Rhineland-Pfalz, Germany, 3) Thuringen, Germany, 4) Brandenburg, Germany, and 5) Queensland, Australia. They pay in-state tuition because their respective governments have Sister-State Agreements with South Carolina.

All graduate students are required to have health insurance. Students who are already covered by policies that meet the University's requirements are eligible for waivers. All others are covered by the Clemson University Student Insurance Plan. Fees for health insurance are included with tuition and fees for Fall and Spring semesters and students are automatically enrolled. The premium for health insurance during the summer is included in the fee for the Spring semester.

C. Major Advisor, the Advisory Committee, and Plan of Study

The major advisor, other members of the advisory-examining committee, and courses that a student choose are important choices because they can affect opportunities for employment or doctoral education. A student's major advisor is also the chair of the student's advisory-examining committee. A faculty member from the Department of Economics must serve as the major advisor or at least a co-advisor. The faculty member who is asked must also agree to serve as the major advisor. The major advisor assists the student in course selection, supervises research, leads the student's advisory-examining committee, and writes letters of recommendation for jobs or doctoral programs. Students should choose a major advisor by the middle of their second semester or the start of their final semester. Students should be available to regularly meet with their major advisor. The graduate program coordinator serves as interim advisor until the student selects one.

The student, in consultation with his or her major advisor, also chooses at least two other members of the advisory-examining committee by the middle of his or her second semester or the start of the student's final semester. Members of this committee review and approve elective courses, review

and approve the thesis, and participate in a final oral examination. They may also write letters of recommendation for future jobs or admissions to doctoral programs.

A student fills out an online form, GS2 Committee Selection, to create the committee. In iRoar the student clicks buttons called Students and Student Records and then selects the links GS2 Committee Selection and Thesis. After these selections in the online form, the student selects the faculty names, associated job titles, and desired committee positions of the members. See https://www.clemson.edu/graduate/files/pdfs/gs2_committee_new.pdf for more details.

Required courses, elective courses, and any undergraduate, co-requisite course that addresses a deficiency in background are listed in a form called the GS2 Plan of Study. The student must file the GS2 Plan of Study by the middle of his or her second semester or before the start of his or her final semester as an enrolled student. The exact date of the deadline for filing the GS2 Plan of Study can be found at <https://www.clemson.edu/graduate/students/deadlines.html>. A student can amend the GS2 Plan of Study if academic plans change. The final version of the GS2 Plan of Study is important because someone in Enrolled Student Services determines the student's eligibility for graduation by checking each course listed against the student's transcript.

Please refer to <https://www.clemson.edu/graduate/students/plan-of-study/index.html> for more information about the GS2 Committee Selection and GS2 Plan of Study.

D. Final Examination: Thesis and Oral Examination

The final examination of a student who earns a MS in Economic Analytics consists of two parts: 1) the [thesis](#) and 2) an oral examination. The oral examination is typically a student's oral [defense](#) of her thesis but might also include questions that a member of the examining committee might ask to ascertain that the student can competently apply economic and statistical knowledge. MS students in Economic Analytics have two attempts to pass the oral exam. Students must write and defend their thesis in a timely fashion or risk dismissal. The thesis should be scheduled and successfully defended at least three to four weeks prior to graduation. Formal notification of a thesis defense is due in Enrolled Services at least 10 days prior to the defense. The notification is made through an online form called "[Submit Defense Form](#)". The information must include the student's name, program of study, title of thesis, major advisor, date, time, and location. The student arranges the date, time, and place for a defense of a thesis in consultation with the major advisor and other committee members. The graduate student also contacts Kimmie Albertson at kr2@clemson.edu or 864-656-3497 to reserve a room for his or her defense. Copies of the thesis should be sent to the student's advisory committee at least seven days before the defense. The student's major advisor and other members of the advisory committee conduct the oral examination, but all faculty members may attend. A [GS7M](#) must be signed and submitted approximately two weeks before last day of classes of the semester of graduation to indicate passage of the final examination and successful defense of the thesis. The defense must be scheduled early enough to allow a student time for committee-required revisions to the thesis before the deadline for submission of the GS7M and the thesis. After the exam, revisions in the thesis by the student must be approved by the major advisor and committee members. The exact dates when the GS7M must be filed and the thesis must be submitted are found at <https://www.clemson.edu/graduate/students/deadlines.html>.

IV. Plan for BA or BS in Economics to Master of Science in Economic Analytics

A. Overview of Bachelor-to-Master Plan

The Bachelor-to-Graduate plan enables undergraduate majors in economics (BA or BS) to take graduate courses and also earn their MS in Economic Analytics. An undergraduate economics

major with an approved Bachelor-to-Graduate Plan may enroll in graduate courses for dual use and, thereby, satisfy course-content requirements of the Masters' degree and the undergraduate major in economics. The numerical credits for a dual-use course, however, cannot be counted twice to satisfy the minimum requirements for unique credits of both degrees. In particular, students must earn at least 120 and 30 unique credits for their Bachelor's and Master's degrees. For example, an economics major could use the 6000-level version of Cost-Benefit Analysis (ECON 6280) in lieu of the undergraduate version of the course (ECON 4280) to satisfy part of her major's requirement of 9 or 12 credits from elective courses in economics for her BS or BA and also use the course's 3 credits to reach the 30 unique credits required for her MS degree. The student would need to earn 123 credits to graduate with her BA or BS, however, so that 120 of them were actually unique.

A maximum of 12 credit hours of graduate courses that satisfy requirements for the MS in Economic Analytics may be taken for dual use. Approved graduate courses may satisfy electives of the bachelor's degree. Approved 8000-level courses may be substituted for required undergraduate courses in economics. However, 6000-level counterparts of 4000-level courses that are required for the bachelor's degree cannot be counted toward the Master's requirements. See "1.3. Special Applicant Categories" in the Graduate School's [Policy Handbook](#) for similar information about the "Combined Bachelor's/Master's degree".

B. Eligibility and Admission Requirements

Undergraduate economics majors who have earned at least 90 credits at Clemson and have a grade point average of at least 3.4 are eligible for the Bachelor-to-Master plan. Students use form "[GS6-Bachelor-to-Graduate—Request for Combined Education Plan](#)" to seek approval for participation in the plan. The GRE requirement for admissions to the Graduate School is waived for all students who are approved for the Bachelor's-to-Master's plan to pursue the MS in Economic Analytics.

C. Approval and Acceptance into Plan

Economic majors at Clemson should consult both their undergraduate academic advisor and the graduate program coordinator of the master's program, Scott Templeton (stemple@clemson.edu). Approval to join the plan is required by the students' undergraduate advisor, Chairperson of the Economics Department, graduate coordinator of the masters' program, and the Graduate School.

Once the [GS6-Bachelor-to-Graduate](#) form is signed and submitted to the graduate school, the Graduate School tracks a student's progress until graduation with the Bachelor's degree in Economics. Upon completion of the undergraduate degree in economics and meeting the required GPA, the student is officially accepted into the MS in Economic Analytics. In other words, upon graduation with the BA or BS in Economics and meeting the GPA requirement, students are sent letters that inform them of their full acceptance into the MS in Economic Analytics program. Their status in iRoar is also updated to graduate student.

D. Graduate Program Requirements of the Bachelor-to-Master Plan

The curricular requirements for the MS component of the Bachelor-to-Master plan are identical to those for the MS in Economic Analytics. A student must earn at least 30 credits in graduate economics or other approved courses and 6 of the 30 credits must be thesis research (ECON 8910). A student must also maintain a 3.0 graduate grade-point average. Not more than one-half of the credits from graded courses that the advisory committee requires may be from 6000-level courses.

V. Other Educational and Career-Related Resources at Clemson

In addition to the courses that our department offers in economic analytics and data analysis, the

Clemson Visualization Lab has twelve workshops in [data visualization and analytics](#). See <https://sites.google.com/g.clemson.edu/vizlab/home?authuser=0> for details.

Palmetto Cluster is Clemson University's high performance computing resource. People who run the Palmetto Cluster offer training in R, Python, and machine learning in these languages, among other things. See <https://www.palmetto.clemson.edu/palmetto/training/schedule/> for the training schedule. The [Clemson Center for Geospatial Technologies](#) (CCGT) currently offers eleven free [workshops](#) to train students in geographic information systems and enable them to earn certificates.

Graduate students can access services and programs of Clemson's [Center for Career and Professional Development](#). Clemson has “[great career services](#)” among colleges and universities in the U.S. according to the 2021 Princeton Review, and has earned this superlative rating for the past ten years. Clemson also ranked 3rd best among public universities for [internships](#), according to the Review. [The Michelin Career Center](#), which is part of the Center for Career and Professional Development, has various informational services for [graduate students](#). The Graduate School has its own set of online resources for professional development and career planning called Grad360°. The graduate coordinator and departmental chair occasionally provide our students with information about job openings.

To improve their study methods, time management, and test preparation, graduate students can use resources of the Academic Success Center, such as [success strategy worksheets](#). The beautiful and spacious [new buildings](#) of the Wilbur O. and Ann Power College of Business also enhance the education and professional development of our graduate students.

To access electronic copies of previously approved theses for the MA in Economics and the MS in Economic Analytics, use this link: https://tigerprints.clemson.edu/theses_econ/.