

The Applied Economics Graduate Club's Unofficial Guide

To the
Programs and Policies of the
Applied Economics Graduate Program

Academic Year 2009-2010

Comments on
Core Courses, Minors, and Elective Courses
for the

Master's Program

This handout was written by the Grad Club to assist new students pursuing an M.S. degree in Applied Economics at the University of Minnesota. The following comments and course descriptions reflect the experiences of individual graduate students and should not be taken as the official viewpoint of the APEC Department or the Grad Club. New students are encouraged to speak with other students and professors to obtain a better understanding of course, major field and thesis options.

COURSES

Course Materials

Required texts and other supplies for courses are available through the University's bookstore. In addition, many professors provide additional readings throughout the semester, which are made available either on-line or through reserve readings in Waite Library. Students wishing to save money on books can check on-line used book sites or ask more-advanced students if they are willing to loan/sell used textbooks.

Required Courses

MS students are required to take two economics courses, one data analysis course, and the MS seminar to complete degree requirements. These requirements are outlined below:

(1) Economics

MS students must take two economics courses to complete their degree requirements: APEC 5151 (microeconomics) and APEC 5152 (macroeconomics). Students with an undergraduate background in economics will find the topics covered in these courses familiar. However, these classes are not intended to be a continuation of undergraduate economic theory. Instead, they teach the mathematical approach to the fundamental concepts learned in previous economics courses.

Students should be familiar with partial derivatives, optimization techniques (including the Lagrange Multiplier), and determinants. Knowledge of multi-variable calculus is recommended.

APEC 5151 Applied Microeconomics: Firm and Household

Professor Jay Coggins teaches this course. This class focuses on how firms and households make decisions, and touches on welfare economics. Topics covered include profit maximization along with cost minimization, utility maximization and expenditure minimization, partial and general equilibrium, competitive markets, and measures of consumer surplus.

Previously, the text was *Microeconomic Theory* by Nicholson, which last-year's students found to be a helpful supplement. However, the primary source of class information comes from Professor Coggins' lecture notes, which were provided before each section.

A "math vaccination" is provided at the beginning of Coggins' course, which is a short, intensive, math-review most students find helpful. The review covers most of the math

required in his course, as well as that needed for APEC 5031.

Professor Coggins also supplements the lecture with problem sets that require students to apply the theory to real-world data using regression analysis. Most students use Excel or SAS to complete assignments, although other statistical software can be used. Programs, such as SAS, are helpful to learn, as they will likely be used for other courses, and is available in the computer lab along with helpful reference books. Problem sets are included in course grading, along with a mid-term and a take-home final.

APEC 5152 Applied Macroeconomics: Income and Employment

The macroeconomics course is usually taught jointly by Professor Terry Roe and Professor Rodney Smith. Like the micro course, this course uses mathematics to develop and expand the concepts learned in undergraduate economics courses. The first part of the semester focuses on trade models, such as the Heckscher-Ohlin Model, the fixed-factor model, and the sector-specific factor model. In addition, students are exposed to a financial crises model. The second part of the course focuses on growth models, including growth accounting, the Solow model, and the Ramsey model.

Course grading is based primarily on midterm and final exams, however assigned problem sets also play a small role in determining your course grade. Problem sets are provided for each section. Sets tend to focus on mathematical proofs for the concepts/theories mentioned in class and are essential to work through to fully grasp course concepts. Students tend to complete these problem sets in groups.

Last year, exam questions were provided before the mid-term and final exams and exams closely followed these handouts. Review sessions were held before each exam. No text is utilized, but lecture notes are provided. Notes consist mostly of math proofs. Students wishing for a greater understanding of theories should read reference materials on reserve in the Waite Library.

(2) Data Analysis

M.S. students are required to take either APEC 5031 (Methods of Economic Data Analysis) or Stat 5302 (Applied Regression Analysis). Many students tend to choose APEC 5031, likely due to its focus on problems relating to economics, while Stat 5302 is more general in content.

APEC 5031: Methods of Economic Data Analysis

Professor Caroline Carlin teaches this class since last year using *The Little SAS Book* by Delwiche and *Introductory Econometrics* by Wooldridge. *Fundamental Methods Of Mathematical Economics* by Chiang is also suggested to read.

Professor Carlin's course is an intensive introduction to methods of economic data analysis, primarily delivered in lecture format. A good understanding of linear algebra and a familiarity with statistics is needed to fully grasp the theoretical aspect of the class.

Assignments, mid-term exams, and final exam all contribute to the final grade of this course. The assignments were given weekly throughout the semester. These assignments were taken from the textbook and used real-world data. Students in previous years used SAS to complete assignments. The SAS programs were given so that the students could use them directly and only focused on statistical and econometrical analysis. For the fall semester in 2007, Prof. Carlin's syllabus is also available online on her webpage.

Stat 5302: Applied Regression Analysis

This is a great hands-on course for learning and understanding regression analysis. Even if you have taken the Ph.D. level econometrics course, this class will solidify the concepts without being mathematical (no proofs, no matrix algebra, and no calculus). The course begins with the basics of regression — studying the mean function and progresses into simple linear and multiple linear regressions. Other interesting topics include using weighted least squares for data with non-constant variance and using variance-stabilizing transformations. You will also learn how to handle influential and outlier data. You finish up the course with logistic regression and generalized linear models (GLM) — although there wasn't too much emphasis on GLM due to the lack of time.

The statistical package that is used in this course is ARC. While ARC does not have the level of sophistication of STATA, SAS, or SPSS, it is a great graphics tool for analyzing data. The text and software were co-authored by Dennis Cook who is a Professor of Statistics at the U of MN. If you have the opportunity to take this class with Professor Cook, it is highly recommended. The weekly homework should not take more than 1-2 hours.

(3) Seminar

MS students are also required to take APEC 8901, the M.S. Seminar. Taught in the spring semester the purpose of this seminar is to prepare M.S. students to write their thesis. Issues related to the design of research and research ethics are discussed, including such topics as plagiarism and academic dishonesty. Short reading assignments are given each week and used for class discussion. The issues of advisors and committees are also addressed, and students are required to find an advisor during the semester. Within the first few weeks of the seminar, students will identify a potential topic and submit a two-page summary of their research idea. By the end of the semester, students will have developed their idea into a formal thesis proposal.

Each student is also required to give 20-30 minute presentation and to critique a classmate's presentation. This is a helpful class in forcing MS students to identify and develop their research interests.

The list for all the courses by APEC Department in the current academic year is provided by the following link: http://www.APEC.umn.edu/Course_Offerings.html

(4) Elective Courses

M.S. students are required to have at least seven credits earned in elective courses offered by the Applied Economics Department. A description of these courses can be found in the course catalog, on-line, and in your orientation packet. Courses can vary from fairly mathematical to more literature-based. Students are encouraged to ask the professors or other students if you are having trouble deciding.

M.S. students can also choose classes from outside the department to meet the requirement of 6 credits from a related field or designated minor. Many students choose to take classes from the Humphrey Institute, the Carlson School of Management, the School of Public Health, and the Statistics Department.

SCHEDULING

Class scheduling depends on the student's goals, interests, and previous course experience. However, the usual course load for MS students is three classes for 9-10 course credits per semester. The student then enrolls for 4-5 thesis or plan B credits to reach the 14 credit limit paid for in the regular tuition. A "typical" class schedule of a first-year M.S. student is shown below.

This "typical" schedule allows M.S. students to complete their core courses during the first year, leaving the second year for thesis work or Ph.D. classes, if the students intend to pursue a Ph.D. degree after finish their M.S. degree.

Some students may find that they need their first year for additional courses in calculus, statistics, economics, or other subjects in order to prepare for the advanced courses. Specifically, if you are considering transferring to the Ph.D. program, it is advisable to take an Advanced Calculus class (Math 4606) or/and Stat 5101/5102. Math 4606 will no longer be counted towards your credit requirements in M.S. program, but it will be helpful for further understandings in the economics studies.

CREDITS REQUIREMENT

In planning your program, you should take whatever courses interest you, fit into your schedule, or might help you with your thesis. Even though the department does not currently offer concentrations for master's students, a cohesive set of classes is a good idea. Both Plan A and B require at least 30 credits, of which at least 14 credits must be in the major field and at least 6 credits must be in a related field or minor. The major field must include a minimum of 7 credits in applied economics (excluding thesis and special topics, independent study, and the M.S. seminar).

THESIS

M.S. Thesis

Each M.S. candidate has two thesis options, a Plan A thesis or a Plan B thesis. The difference: a Plan A does not require as many course credits to be taken compared to a Plan B. Unofficially, the results of both are fairly indistinguishable. You should decide fairly early on what thesis option you are going to pursue so you can plan your course scheduling appropriately. The length and requirements on the paper depend highly on your advisor - keep this in mind when choosing one. Don't necessarily count on a Plan B being faster or easier.

Plan to take the appropriate thesis credits (10 credits for Plan A and 4-6 credits for Plan B) within the first two years of your stay in the Department in order to avoid registering for additional courses while you are finishing your thesis. This will save you money and allow you to concentrate on your thesis at the end of your degree program.

You will need two people from the Department of Applied Economics and one from your related field to be on your thesis/project committee, it is never too early to start meeting professors and finding out the areas that they are interested in. You are responsible for initiating contact with professors you want on your committee and forming your committee. Graduate club events are an excellent opportunity to meet professors. Always be on the lookout for good thesis topics. Finding a thesis topic is challenging, be sure to think about your interests early on and make contact with professors in that field.

Degree Program Time Frame

Normally, the coursework for M.S. students will take a little over two semesters to complete with the third and likely the fourth semester reserved for thesis work and a course or two. The thesis is usually the hardest part to complete. If you want to stay here longer, don't feel pressured to finish fast. You can take courses that interest you from other departments too. It is good to sketch out a degree program at the beginning of your first year that includes a roster of courses that both interest you and fulfill your degree requirements. At the end of the second semester of your first year, you will file a form with the graduate school that outlines your degree program. Talk to your mentor, your advisor, and the DGS (Director of Graduate Studies – Professor Apland) as soon as you have an idea of what you would like your degree program to look like.

TRANSFERRING INTO THE PH.D. PROGRAM

Most M.S. students who want to continue on to the Ph.D. program switch over after their second year, although it is possible to switch after the first year. In the past, some students who have gone on to the Ph.D. program had difficulty finishing their master's thesis once they started the Ph.D. program. Therefore, it is recommended that students schedule time to complete the thesis before proceeding further into the Ph.D. program. Students who pursue both the MS. and Ph.D. degrees usually enter the Ph.D. program after their second year, which leaves three full years (30 months) for the remainder of their Ph.D. coursework and dissertation writing.

M.S. students are also allowed to transfer into the Ph.D. program after their first year. This option is for students who either have a Master's degree from somewhere else and need an extra year of course work to get themselves ready for the Ph.D. program, or for students who just want a Ph.D. and have no intention of completing a Master's thesis. Beginning in the fall of their second year, these students are then treated as first year Ph.D. students, thus reducing their total eligibility for funding if you officially switch programs. For M.S. and Ph.D. programs together, the students who have been awarded funding are entitled to 18 months for the M.S. and 36 months for the Ph.D. It might be a good idea if you intend to finish your M.S. to start taking Ph.D. classes in your second year (although fewer than regular Ph.D. students to leave time for your thesis) but remain in the M.S. program until the following year.

The 8xxx level economics courses are meant for Ph.D. students. If you are considering switching into the Ph.D. program you may want to sample some of these classes to make sure that you are adequately prepared for that level of rigor. Talk to your student mentor or other students who have taken these courses. Also, it is important to note that as a Ph.D. candidate, you are encouraged to take the preliminary exam for microeconomics in the summer following the year that you took the microeconomic series.

MASTER'S MINORS

Economics Minor

A master's minor in Economics consists of 6 credits in 4xxx, 5xxx, or 8xxx economics courses, all taken A-F and completed with grades of B or better (one course at the 5xxx level may carry a grade of C). The 6 credits include Econ 5151 and Econ 5152, or more advanced courses in economic theory. The economic theory requirement may be waived if, in the judgment of the DGS, the student's previous work in economics has included courses equivalent to Econ 5151 and 5152, though the requirement to complete 6 credits would still stand.

Statistics Minor

A master's minor in Statistics consists of at least 9 credits in 5xxx or 8xxx level statistics courses all taken A-F and completed with grades of B or better.

Other Minors

M.S. students can graduate with minors in many other fields, including Public or Environmental Health, Conservation Biology, Forestry, and Fisheries. With any minor, it is important to meet with the DGS of the appropriate Department and the DGS of the Department of Applied Economics (Professor Apland) to get all aspects of the minor approved.

The most-updated information of degree requirements for Master's degree in Applied Economics and Minor's degree in other departments are also available from the Graduate School's online catalog.