

# **GRADUATE STUDENT HANDBOOK 2009-10**

**APPLIED ECONOMICS GRADUATE PROGRAM**

**UNIVERSITY OF MINNESOTA**

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This handbook is intended for students currently enrolled in the M.S. or Ph.D. Applied Economics Graduate Program. The handbook is available online at [www.pecgrad.umn.edu/Handbook.pdf](http://www.pecgrad.umn.edu/Handbook.pdf). A printed version is available by request at the Department of Applied Economics. The handbook does not contain admissions information, which can be found online at [www.pecgrad.umn.edu](http://www.pecgrad.umn.edu).

The information in this handbook is, to the best of our ability, correct and accurate as of its publication date. Nothing in the handbook can supersede the rules and regulations of the Graduate School or other University of Minnesota entities. The Graduate School's rules are contained in the *Graduate School Catalog* and at the Graduate School's website ([www.grad.umn.edu](http://www.grad.umn.edu)).

The information in this handbook and other University catalogs, publications, or announcements is subject to change without notice. University offices can provide current information about possible changes.

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	i
WELCOME AND INTRODUCTION .....	1
Advisors .....	1
Registration .....	2
Program administration.....	2
THE M.S. DEGREE .....	2
Steps toward the M.S. degree .....	3
The Coursework Phase .....	4
The Plan A Thesis or Plan B Project Phase .....	6
The Final Examination.....	7
Registration.....	7
THE PH.D. DEGREE.....	8
Steps Toward the Ph.D. Degree.....	9
Coursework Phase.....	11
The Examination Phase.....	15
The Dissertation Phase.....	18
The Graduation Phase .....	19
FINANCIAL SUPPORT .....	20
ANNUAL STUDENT REVIEWS .....	21
INTERPRETATIONS AND EXCEPTIONS .....	21
APPENDIX A. SAMPLE PROGRAMS.....	22
APPENDIX B. APPLIED ECONOMICS GRADUATE PROGRAM FACULTY .....	24
APPENDIX C. APPROVED MINORS IN CONSERVATION BIOLOGY AND STATISTICS...27	
APPENDIX D. ANNUAL STUDENT REVIEW FORM .....	28

## WELCOME AND INTRODUCTION

Welcome to the Applied Economics Graduate Program at the University of Minnesota. The program is an inter-departmental program that includes faculty from four academic units (a current list of graduate faculty can be found in Appendix B):

- The Department of Applied Economics (ApEc) in the College of Food, Agricultural, and Natural Resource Sciences (CFANS);
- The Division of Health Policy and Management (HPM) in the School of Public Health (SPH);
- The Hubert H. Humphrey Institute of Public Affairs (HHH); and
- The Department of Human Resources and Industrial Relations (HRIR) in the Carlson School of Management (CSOM).

Though they share the same name, it is helpful to understand how the Applied Economics Graduate Program is distinct from the Applied Economics Department. Each of the four academic units offers courses that contribute to the program. Financial support for students is available through all four academic units. A student's office is typically located in the unit of his or her advisor or assistantship supervisor. Faculty from all four academic units can hold appointments on the Applied Economics Graduate Program's faculty.

The goal of the graduate program is to provide excellent training in both theoretical and applied economic topics. In the Ph.D. program, theory courses are offered by the Department of Economics. Courses in econometrics and topical field areas are offered by the four partner units. Many students also diversify their programs beyond these areas, including coursework in minor or related fields. For more information, see the program sections below.

**Advisors.** Upon entering the program, each new student will be assigned an “intake” advisor who will help with initial registration and in navigating the University's various offices. As soon as possible, but within the first year for M.S. students and the first two years for Ph.D. students, a permanent advisor should be selected. Soon after your arrival, you should begin searching for an advisor whose interests are aligned with yours, with whom you can enjoy a close working relationship, and who holds the faculty membership required to serve as your advisor given your degree objectives. The Graduate School has a variety of faculty membership categories: Member, Member/Advising, Affiliate Member, Affiliate Member/Advising, Senior Member, and Senior Affiliate Member. Advisors for M.S. students must be a Member/Advising, Affiliate Member/Advising, Senior Member, or Senior Affiliate Member of the graduate faculty. Advisors for Ph.D. students must be a Senior Member or Senior Affiliate Member of the graduate faculty, though a Member/Advising or Affiliate Member/Advising of the faculty can serve as a co-advisor. More information on membership categories and associated responsibilities can be found at the Graduate School's website ([www.grad.umn.edu](http://www.grad.umn.edu)). Designating a new advisor is accomplished by

telling the Program Assistant that you want to make a change. S/he will contact the Graduate School and make the change for you.

In addition to an intake advisor, each incoming student is assigned a student mentor. The advice of current students is often very helpful as you make important decisions regarding the program.

**Registration.** Unless you decide to withdraw from the program, you need to register officially each semester. There are various types of registration. Which of them is appropriate for you in a given semester depends on your degree objective, your progress in the program, whether you are a graduate assistant, and your visa status. Details of the registration options are explained below; it is important to read them carefully.

**Program Administration.** Members, Members/Advising, and Senior Members of the Applied Economics Graduate Program's faculty meet at least once a semester and are responsible for the governance of the program.

The director of graduate studies (DGS) is responsible for the day-to-day administration of the program. The DGS also chairs the Graduate Committee, which meets more frequently and makes recommendations to the graduate faculty regarding program changes. The Graduate Committee also serves as the program's admissions committee. Four graduate students belong to the graduate committee at any given time. A full-time program assistant coordinates the admissions process and helps students with a variety of program-related matters.

## **THE M.S. DEGREE**

The M.S. program in Applied Economics is designed to provide students with outstanding training in both theoretical and applied economics. The emphasis is on quantitative techniques, including econometrics and the management of large datasets. The primary goal is to prepare students for employment opportunities in the public and private sector or for further graduate study. A set of four first-year courses (of which three are required) provides the basic foundation for the program. The remainder is very flexible. Students are free to complete coursework in almost any department in the university. There are certain requirements, though, regarding such things as total credits, courses in the Applied Economics Department, and minors or related fields. The program is typically completed by full-time students in three to four semesters. The maximum time allowed to complete the degree is 7 years beginning with the earliest coursework included on the official degree program form (including transfer work). A minimum of 30 credits is required, including Plan A thesis credits or Plan B project credits.

Our M.S. is a research degree. Students decide whether to complete a Master's thesis (Plan A) or a possibly more modest research project (Plan B). Beyond coursework, this is the primary degree requirement.

### **Steps toward the M.S. degree.**

There are three phases to the M.S. program: the coursework phase, the thesis or project phase, and graduation. Before turning to the details, the following outline sketches the steps in the program and the academic and administrative measures that must be taken in each.

#### *Coursework phase.*

1. Plan your program with your advisor. If you hope to transfer credit from another university, discuss this with your advisor. You may transfer up to 12 credits (40% of your program course credits) from outside the university. You will need the approval of the DGS for transfer credits. Your program may include up to 8 credits that have been used previously toward another Master's degree at the University. Show your program to the DGS early on, to learn whether your plan for a related field (if you choose that option) meets with the approval of the DGS.
2. By the end of your first year, select a permanent advisor and, if necessary, ask the Program Assistant to submit the change to the Graduate School.
3. At the end of your first year (and each year thereafter), meet with your advisor to discuss and complete the "Annual Student Review Form" (see Appendix D). Submit this document to the DGS.

#### *Thesis or Plan B Project phase.*

4. Meet with your advisor (or the DGS) to create a committee for your thesis or project. By the end of your first year, complete the Graduate School's "Degree Program Transmittal" and "Degree Program" forms.
5. Once the Graduate School has approved your "Degree Program," you can request a "Graduation Packet" from the Graduate School.
6. Working with your advisor, develop an idea for your research project and write a proposal. Your advisor will be able to help you decide when to show the proposal to other members of your committee.
7. Submit an "Application for Degree Form" (included in the "Graduation Packet") to the Registrar's office.
8. After your advisor has approved your thesis or project, distribute copies to your other committee members. For a thesis only, when your other committee members are ready, obtain their signatures on the "Thesis Reviewers' Report Form" (included in the "Graduation Packet"). Submit this form to the Graduate School. You will then be issued a "Final Examination Report Form."

9. Schedule your final oral examination. Plan this ahead of time in order to coordinate the schedules of your committee members. Don't forget to reserve a room for the presentation.
10. Check with your advisor about his or her expectations for the exam, including the length of your presentation, what questions to expect, and so on. Bring the "Final Examination Report Form" with you to the final exam. Assuming you pass, return the form to the Graduate School by the last working day of the month in which you would like to graduate (typically, successful students return the form immediately after the exam).
11. Plan A students should submit two copies of their thesis to the Graduate School and one to the Waite Library. The copies should be signed by the advisor. Plan B students should submit two copies of their project paper to the Waite Library; the copies should also be signed by the advisor. All students should submit an electronic copy of their thesis or project paper to the Waite Library for archiving.

#### *Graduation phase.*

12. Complete the "Application for Graduation" and submit the form and the fee to 150 Williamson Hall on or before the first day of the month in which you wish to graduate.
13. To attend the commencement ceremony, submit a "Commencement Approval" form on or before the deadline published on the Graduate School's website (the deadlines are typically in early October and early March for Fall and Spring commencement ceremonies respectively).

### **The Coursework Phase.**

*Basic requirements.* A number of overall requirements are placed upon all M.S. students' programs. These include:

- The M.S. degree requires a minimum of 30 credits. The Plan A requires 10 thesis credits (ApEc 8777); the minimum number of course credits is thus 20. The Plan B requires between 4 and 6 project credits (ApEc 8793); the minimum number of course credits is thus between 24 and 26. *Plan A thesis credits and Plan B credits may be taken at any time during the program.*
- Students must complete at least 9 credits of coursework in the Applied Economics Department, excluding seminar, thesis, special-topics, and independent-study credits.
- Students must complete at least 14 credits in the major, excluding thesis and project credits. Major courses include those in the Applied Economics, Economics, and Statistics Departments. Other courses may be included as major credits at the discretion of the DGS.
- Students must complete at least 6 credits in a related field or minor. If you complete a minor, the specific requirements are determined by the minor program and your "Degree Program" form must be signed by that program's DGS. If you

complete a related field, the Applied Economics DGS will determine whether your plans meet with our program's requirements.

- All core courses in Applied Economics, Economics and Statistics are to be completed on the A-F grade base. At least two-thirds of the course credits included on your "Degree Program" form must be taken on the A-F grade base.
- A minimum GPA of 3.0 for all program coursework is preferred.
- No 4xxx-level courses are allowed to count toward the M.S. degree.

In addition, there are some specific course requirements. All M.S. students are required to take the following core courses, or their equivalent:

- ApEc 5151: Applied Microeconomics, 3 credits;
- ApEc 5152: Applied Macroeconomics: Income & Employment, 3 credits;
- ApEc 5031: Methods of Economic Data Analysis, 3 credits, or Stat 5302: Applied Regression Analysis, 4 credits; and
- ApEc 8901: M.S. Seminar, 1 credit.

Students are also encouraged to complete ApEc 5032: Economic Data Analysis for Managerial and Policy Decisions, 3 credits. This course is not required for the degree.

*Substitution of 8xxx-level courses.* The following Ph.D.-level courses may be substituted for those listed above: Econ 8001-02 or 8101-02 (4 credits) for ApEc 5151; Econ 8105-06 (4 credits) for ApEc 5152; ApEc 8211 (4 credits) for ApEc 5031 or Stat 5302; and APEC 8902 (1 credit) for APEC 8901 (1 credit).

*Submission of "Degree Program" form.* The Graduate School will frequently tell you, as will the DGS and others, to submit your "Degree Program" form early. Some sources (including this handbook) will tell you to do so before the end of your first year in the program. Others will tell you to do so at least one semester before you plan to graduate. Many students put this step off, often for good reason. You may be unsure of exactly which courses you plan to take toward the end of your program, and you want to get the form right. You may even be unsure until late in the program whether to take a formal minor rather than a related field. It is possible, but not always easy, to make changes to the form after it has been submitted and approved, which is another reason to delay.

In practice, you can wait until late in your program to submit the "Degree Program" form without any negative consequences. *But not too late!* The latest that you can submit the form without risking real problems is about six weeks before you plan to take your final oral exam. If, like some students before you, you submit your program form the week before your final oral, you will learn that the Graduate School needs at least a month (sometimes six weeks) to process and approve the form. And you will not be allowed to take your final oral until the form has been approved. Avoid this disappointing complication by submitting the form at least two months before the earliest date on which you believe you could take your final oral.

## **The Plan A Thesis or Plan B Project Phase.**

*M.S. Seminar.* The required M.S. seminar (ApEc 8901) is offered in the spring semester. The seminar has two purposes. The first is to help students understand the research process, including how to find a topic, how to refine your research question, how to conduct a literature review, how to find data, research ethics, and so on. The second is to require students to develop and present a thesis or project proposal.

*Plan A Option.* Ours is a research degree, and therefore the research component is considered to be an essential part of the educational experience. A thesis should demonstrate familiarity with the theoretical and/or empirical tools of applied economics. Though significant input may be expected from your advisor and your committee members, the thesis should also represent independent scholarly work. Communicating your research by writing the thesis is an important component of the project. Many students find it useful, as they begin their project, to peruse some recent M.S. theses. The collection is maintained by the Waite Library. Manuscript preparation guidelines for the Plan A thesis are available on the Graduate School's website.

The Plan A option requires registration for 10 thesis credits (ApEc 8777), which may be taken at any time during the program. Upon completion, two unbound copies of your thesis must be submitted to the graduate school for archiving. The copies must be signed by your advisor and submitted by the last working day of the month in which you intend to graduate. Another unbound copy must be submitted to Waite Library in the Applied Economics Department, and an electronic copy is to be submitted at the same time. A sample program for the Plan A M.S. degree is found in Appendix A.

*Plan B Option.* As with the Plan A thesis, students who complete a Plan B project are to demonstrate familiarity with the theoretical and empirical tools of economics. They are to perform independent scholarly work and write up their research. Students often wish to know how a Plan A and a Plan B research project differ; the answer is not easy. In principle, the Plan A should be somewhat more ambitious, polished, and sophisticated. In practice, this is not always true. In the end, the standard to which you will be held is determined entirely by your committee and their judgment about the required level of research quality. You may wish to adhere to the Graduate School's Plan A manuscript preparation guidelines (see above), but this is not necessary. Still, Plan B project papers should include a cover page that lists the title of the paper, the author, and advisor. The paper should be signature-approved by the student's advisor.

The Plan B option requires registration for 4 to 6 project credits (ApEc 8793), which may be taken at any time during the program. Upon completion, two copies of your project paper must be submitted to Waite Library in the Department of Applied Economics (one will be sent on to the Magrath Library for their collection). An electronic copy is to be submitted to the Waite Library at the same time. A sample program for the Plan B M.S. degree is found in Appendix A.

When you register earlier for Plan B credits, you are issued a grade of incomplete. Immediately after your successful completion of the final oral exam, your advisor should change the grade to “S”. He or she may need to be reminded of this. You will not be allowed to graduate if you have any incomplete grades for courses that appear on your “Degree Program” form.

### **The Final Examination.**

There is no written comprehensive examination for the M.S. degree. For both Plan A and B options, you will be required to complete an oral examination in which you defend your research and demonstrate competence in your chosen field of study. The exam may be based on coursework and the research component of your program. The exam is administered by your three-member examining committee consisting of your advisor as chair, one other member of the Applied Economics Graduate Program’s faculty, and one member of the Graduate School’s faculty from outside the Applied Economics Graduate Program. For a Plan A thesis, in order to permit faculty to allocate sufficient time to read the thesis and decide whether it is ready for defense, the graduate school requires you to notify your advisor and other committee members at least two weeks in advance that the thesis will be delivered on a particular date. All members of the examining committee must then have at least two weeks to read the thesis after it has been delivered. For Plan B projects, you should make your project paper available to the examining committee for its review well in advance of the final examination.

The exam usually begins with a 30 to 40 minute presentation by the candidate. Plan to describe the problem you have addressed, your research objectives, the methods you used, your data, and your results. In most cases, your committee members will ask some questions during your presentation. With these interruptions, a talk that is expected to last 30 minutes often takes an hour. After all questions from your committee members have been answered, you will be asked to leave the room while the committee deliberates. When they have their decision, you will be invited back into the room and notified of the outcome.

If you pass the exam, you should bring the “Final Examination Report Form” to the Graduate School by the last working day of the month you wish to graduate. Most students take the form to the Graduate School immediately or soon after required revisions have been completed.

### **Registration.**

The University considers any graduate student registered for 6 or more credits in a semester a full-time student. You must remain a full-time student in order to be eligible for assistantship support. After you have completed your coursework, thesis or project credits, and are working on your research, you will probably not wish to remain registered for 6 credits. The University has developed a procedure for remaining a full-time student while registering for only one credit. If you are in this situation, you may

be able to register for ApEc 8333: FTE Master's (The FTE stands for "full-time equivalent"). You will need to submit an "Application for Advanced Master's Status" form, available from the Graduate School. This procedure is designed to certify students as "full-time" for teaching or research assistants. It also reduces the benefits that the hiring department must pay. It may also allow you to defer a student loan.

Students who are not working on an assistantship and therefore do not need to maintain "full-time" status, but wish to maintain "active" status in the program, may register for Grad 999. This is a zero-credit, zero-tuition registration. If, for example, you choose to begin employment before you have graduated, be sure to continue registering each semester for Grad 999 until graduation. Failure to do so will mean that, before you take your final oral exam, you must pay a fee to re-activate your status with the graduate school. Do not register for Grad 999 if you must be registered to maintain legal visa status, defer loans, receive financial aid, or for any reason other than to meet the Graduate School's registration requirement. Be sure to check the official guidelines for registering for Grad 999 at

[http://www.grad.umn.edu/current\\_students/registration/special-categories.html](http://www.grad.umn.edu/current_students/registration/special-categories.html)

## **THE PH.D. DEGREE**

The Ph.D. in applied economics is designed to prepare students for careers in academia, government, and the private sector. Positions of the kind that we expect you to take require a particular set of skills and expertise. It may be useful to consider a series of layers that make up the coursework required for the degree.

Economic analysis at the Ph.D. level is quite technical. It relies upon a sound foundation of training in both microeconomic and macroeconomic theory. The mathematical style of analysis that is encouraged in theoretical economics permeates applied work in fundamental ways, providing the framework within which economic problems may be analyzed. This is the first layer. On this foundation rests another set of skills and expertise. Applied work requires advanced training in econometrics, or statistics applied to economic problems, as well as various quantitative techniques. The quantitative tools are, one hopes, applied in ways that are informed by theoretical considerations about how the economy works and how people behave. This is the second layer. The third layer, which draws from both the theory and quantitative elements of the program, consists of specialized study in one or more given fields within economics.

Ph.D. students are required to complete a set of core courses in micro and macro theory and econometrics. You are also required to complete two additional "methods" courses from a list of alternatives that includes additional econometrics, game theory, dynamic optimization, and mathematical programming. In most cases, students complete at least some additional electives, typically in mathematics, statistics, and economics. The

Graduate School's requirement of a supporting program or minor must also be satisfied; most students do so by completing the required 12 credits of coursework in Economics. You must also complete a 1-credit Ph.D. seminar (ApEc 8902) and, after completion of the preliminary oral exam, you must register for 24 thesis credits (ApEc 8888).

In addition to the required coursework, most students also complete two fields of specialization (one field may be replaced by an approved minor in another graduate program). A field is defined by a set of two or more related Ph.D. courses, together with a comprehensive examination based on the courses.

## **Steps Toward the Ph.D. Degree.**

The Ph.D. program may usefully be divided into four phases: the coursework phase, the examination phase, the dissertation phase, and the graduation phase. These are explained in more detail below, but the following outline sketches the steps in the program and the academic and administrative measures that must be taken in each.

### *Coursework Phase.*

1. Plan your program with your advisor. If you hope to transfer credits from another university, discuss this with your advisor. You may transfer up to 40% of your total program course credits. Note that because there is no minimum credit requirement for the Ph.D., transferring credits is not always helpful. If you have taken courses elsewhere, though, perhaps in your M.S. program, that you feel are equivalent to required courses in our program, you should explore this possibility. You will need the approval of the DGS for transfer credits. Show your program to the DGS early on, to learn whether your plan for a supporting field meets with the approval of the DGS.
2. By the end of your first year, select a permanent advisor and contact the Program Assistant to have the change submitted to the Graduate School.
3. At the end of your first year (and each year thereafter), meet with your advisor to discuss and complete the "Annual Student Review Form" (see Appendix D). Submit this document to the DGS.

### *Examination phase.*

4. Begin discussions with your advisor regarding your thesis research. Begin work on a thesis proposal as early as possible. Also talk with your advisor about who should be on your examining committee. Your advisor will be able to help you decide when to show your proposal to other members of your committee.
5. By the end of your fourth semester, after you have identified your examining committee, complete the Graduate School's "Degree Program Transmittal" and "Degree Program" forms.
6. Complete your written preliminary exams (prelims) as you feel that you are prepared for them. Most students take the prelim in microeconomic theory in

- May after their first year. Most students take two additional written preliminary exams in two of our seven fields (these are called “field exams”). If you complete an “approved minor,” you will take only one field exam. When you have completed the last of your written prelims, file the “Preliminary Written Examination Report” with the graduate school. This form must be submitted to the graduate school at least one week before you take your preliminary oral exam.
7. Take the Ph.D. seminar, ApEc 8902, as soon as you feel that you are prepared.
  8. When your advisor and the other members of your committee feel that you are ready, schedule your preliminary oral exam.
  9. No later than one week before the preliminary oral exam, file the “Preliminary Oral Examination Schedule Form” with the Graduate School.
  10. Assuming that you pass the preliminary oral exam, file the “Preliminary Oral Examination Report,” which your advisor will bring to the exam.

#### *Dissertation Phase.*

11. Meet with your advisor or the DGS to create a dissertation committee. This committee is often the same as your examining committee, but it does not need to be. To avoid potential for conflict of interest, the Graduate School does not allow your advisor to be the chair of your dissertation committee. Three members of the committee will be designated as “reviewers,” including your advisor and an outside member of the committee.
12. After identifying your dissertation committee, register your dissertation by title with the Graduate School by completing and submitting the “Thesis/Project Proposal Transmittal,” “Thesis/Project Proposal Title” and “Thesis/Project Proposal” forms.
13. Get thesis formatting instructions from the Graduate School.
14. Get a “Graduation Packet” from the Graduate School. The Packet should include the following: “Thesis Reviewers’ Report,” “Graduation Instructions,” “Application for Degree,” “Commencement Attendance Approval,” “Microfilm Agreement,” and “Survey of Earned Doctorates.”
15. After your advisor approves your dissertation, give a copy to each member of your committee. Allow at least 2 weeks for reviewing.
16. Ask the three reviewers to sign the “Thesis Reviewer’s Report.”
17. Select a suitable date and time for your final oral examination. Reserve a room for the exam. Ask for an announcement of your final oral to be placed in *Marginal Memos*.
18. At least one week before the final defense, submit the “Thesis Reviewer’s Report” to the Graduate School.
19. Assuming you pass the final defense, walk the “Final Exam Report Form” to the Graduate School within twenty-four hours after the exam.

#### *Graduation Phase.*

20. Submit one unbound copy of your dissertation and one copy of your official abstract, both signed by your advisor, plus the “Microfilm Agreement” and the “Survey of Earned Doctorates,” on or before the last working day of the month in which you intend to graduate.
21. Complete the “Application for Graduation” and submit the form and the fee to 150 Williamson Hall on or before the first day of the month in which you wish to graduate.
22. To attend the commencement ceremony, submit a “Commencement Approval” form on or before the deadline published on the Graduate School’s website (the deadlines are typically in early October and early March for Fall and Spring commencement ceremonies respectively).

## **The Coursework Phase.**

The coursework that makes up your Ph.D. program includes a set of required courses, at least 12 credits in a related field or minor, and, for most students, the coursework associated with two field areas.

**Required Coursework.** The following courses are required. At the discretion of the DGS, a student may be excused from required courses if equivalent coursework has been completed at another university. Note that all courses in Economics are offered in the “mini-semester” format, with two two-credit courses offered in each semester. If you plan to take both courses, you should register for both at the beginning of the semester to avoid late fees.

1. *Microeconomic Theory*. Complete either

Econ 8001-2-3-4: Microeconomic Analysis, 8 cr., two-semester sequence, or  
Econ 8101-2-3-4: Microeconomic Theory, 8 cr., two-semester sequence

*Note that Econ 8101-2-3-4 is more abstract and challenging than Econ 8001-2-3-4. It requires a stronger math background. The consent of the instructor is also required to enroll in Econ 8101-2-3-4 to ensure your math preparation is adequate.*

2. *Macroeconomic Theory*. Complete

Econ 8105-6: Macroeconomic Theory, 4 cr., one semester

3. *Econometrics*. Complete

ApEc 8211-12: Econometric Analysis, 8 cr., two-semester sequence

4. *Welfare Economics*. Complete

ApEc 8203: Applied Welfare Economics and Public Policy, 3 cr.

5. *Applied Economics Methods*. Students must take at least two of the following courses.

ApEc 8202: Mathematical Optimization in Applied Economics, 3 cr.

ApEc 8205: Applied Game Theory, 3 cr.

ApEc 8206: Dynamic Optimization: Application in Economics and Management, 3 cr.

Econ 8117-18: Non-cooperative Game Theory, 4 cr., one semester

HRIR 8811: Advanced Quantitative Research Methods in HRIR, 4 cr.

MATH 8441: Numerical Analysis & Scientific Computing I, 3 cr.

Students may propose taking other graduate courses to fulfill the *Applied Economics Methods* requirement. Proposals to take unlisted courses must be submitted to the DGS in writing. At a minimum, a proposal should specify the motivation for the request and include a course syllabus. The DGS will determine whether to approve a student's proposal in consultation with the Graduate Committee. The entire graduate faculty must approve (by a two-thirds majority vote) any permanent additions to the list or deletions from the list.

6. *Ph.D. Seminar*. This seminar course contains treatment of research methodology and research ethics and should help the student begin to develop their dissertation prospectus.

ApEc 8902: Ph.D. Seminar, 1 cr.

**Fields of Study.** The field requirement may be satisfied in one of two ways. The first, which most students follow, consists of completing all requirements for two of the fields described below. The second consists of completing requirements for one field and an "approved minor" in another Ph.D. program. The requirements for an approved minor are typically similar to those for a Ph.D. minor in a given program, but with additional requirements crafted so as to make the workload comparable in difficulty and rigor to an Applied Economics field. Approved minors require the approval of the DGS for the Applied Economics Graduate Program and, if the student chooses also to obtain an official minor, the DGS in the minor program. A student's committee, for both the preliminary oral and the final oral exams, must include at least one member of the graduate faculty from the program on which the approved minor is based. Students who choose the approved-minor option will typically complete more credits of coursework than those who instead complete two fields in the program. They will also typically complete one fewer written preliminary examination.

Each field consists of at least two semester courses (or four "mini-semester" courses), typically at the Ph.D. level, and an associated closed-book preliminary or field exam. Field exams are four hours in length and cover all of the material in the associated coursework (students whose primary language of instruction for their secondary school and undergraduate degree programs was not English are eligible to apply in advance for an extra one half hour of writing time for each four-hour exam). Field exams are offered

twice yearly, during the last two weeks of January and the last two weeks of June. Together with the preliminary exam in microeconomic theory offered by the Department of Economics, the field exams (either one or two) constitute the Graduate School's requirement of a written preliminary examination. Though it is expected that few students will find it possible to complete a field exam successfully without first completing the associated coursework, only the preliminary examinations are required; the field courses themselves are not.

The following seven fields, with the associated coursework listed, are available.

#### *Consumer Behavior & Household Economics*

- ApEc 8401. Consumer Behavior and Policy. 2 cr., mini-semester.
- ApEc 8402. Consumption Economics. 2 cr., mini-semester.
- ApEc 8403. Demand Analysis and Household Economics. 2 cr., mini-semester.
- ApEc 8404. Labor Economics and Human Capital. 2 cr., mini-semester.

Students should expect to complete all four courses in preparation for the examination.

#### *Health Economics*

- PubH 6832. Economics of the Health Care System. 3 cr.
- PubH 8811. Research Studies in Healthcare. 3 cr.
- PubH 8821. Health Economics II. 3 cr.

Students should expect to complete all three courses in preparation for the examination.

#### *Labor Economics*

- ApEc 8404. Labor Economics and Human Capital. 2 cr., mini-semester.
- HRIR 8860. Seminar. Anal. of Curr. Labor Mrkt Theory and Emp. Rsrch. 4 cr.
- HRIR 8870. Seminar: Labor Relations and Collective Bargaining. 4 cr.

Students should expect to complete any two of these three courses, for at least 6 credits, in preparation for the examination.

#### *Policy Analysis*

- ApEc 8991. Advanced Topics in Applied Economics: Applied Public Finance. 3 cr.
- PA 8302. Policy Analysis. 3 cr.
- PA 8312. Analysis of Discrimination. 3 cr.

Students should expect to complete any two of these three courses, for at least 6 credits, in preparation for the examination.

#### *Production & Marketing Economics*

ApEc 8801. Applied Production Theory. 3 cr.  
ApEc 8802. Financial Economics. 2 cr.  
ApEc 8803. Marketing Economics. 2 cr.  
ApEc 8804. Managerial Economics. 2 cr.

Students should expect to complete any three of these four courses, for at least 6 credits, in preparation for the examination.

#### *Resource and Environmental Economics*

ApEc 8601. Natural Resource Economics. 3 cr.  
ApEc 8602. Economics of the Environment. 3 cr.

Students should expect to complete both courses in preparation for the examination.

#### *Trade and Development Economics*

ApEc 8701. International Economic Development, Growth, and Trade. 3 cr.  
ApEc 8702. Economic and Trade Policy: Sectoral and Institutional Issues. 3 cr.  
ApEc 8703. Microeconomic Analysis of Economic Development. 3 cr.

Students should expect to complete any two of these three courses in preparation for the examination.

**Supporting Field or Minor.** The Graduate School requires that all Ph.D. students complete a supporting field or minor. A supporting field is simply a collection of related courses for 12 or more credits. The DGS must approve the set of courses. The definition of a supporting field is quite flexible. Courses in Economics and Statistics are always allowed to count toward this requirement.

You may choose to fulfill the requirements laid out by another program to complete their formal Ph.D. minor. If you do, you must follow that program's rules. Some, including Economics, require a preliminary exam in addition to the coursework. You will need to obtain the signature of the DGS from the minor program on your degree program form, and your graduate committee will need to include one member from that program.

**Approved Minors.** An approved minor may be used to substitute for one field exam in the Applied Economics Graduate Program. A minor in Economics, as defined by that program, automatically qualifies as an approved minor. Two other approved minors, in Statistics and Conservation Biology, are sufficiently popular that their requirements have been defined formally (see Appendix D). Other approved minors may be proposed by a student, who should submit to the DGS a memo describing the courses (and exam if applicable) they wish to complete as part of the approved minor. The Graduate Committee will consider the request. If it is approved, the student will be required to complete only one field exam in the Applied Economics Graduate Program.

**Sample Programs.** Appendix B contains several sample Ph.D. programs, including one in which the student completes an approved minor.

## **The Examination Phase.**

**Written preliminary exams.** At least two and usually three written preliminary examinations must be completed: the microeconomic theory exam administered by the Department of Economics; and two field exams administered by the Applied Economics Graduate Program. You may choose when to take the exams, but typically the microeconomic theory exam will be taken after the first year and the field exam or exams after the second year. You may also decide whether to take the microeconomic theory exam for minors or for majors.

Students must satisfactorily complete all parts of one of the following alternatives:

1. Applied Economics major with two fields:
  - a) At least 12 credits in a supporting field or minor;
  - b) Two field examinations in the major administered by the Applied Economics Graduate Program; and
  - c) The minor or major examination in microeconomic theory in the Economics Department.
  
2. Applied Economics major with an “Approved Minor” (this option requires the approval of the DGS in the Applied Economics Graduate Program and possibly, the DGS for the Minor Program):
  - a) At least 12 credits in a supporting field or minor;
  - b) One field examination in the major administered by the Applied Economics Graduate Program;
  - c) The minor or major examination in microeconomic theory in the Economics Department; and
  - d) All approved minor requirements.

The preliminary examinations in microeconomic theory are conducted by the Economics Department. Members of the Applied Economics Graduate Program faculty also serve on the examining committee for the microeconomic theory prelim for minors. Students are allowed to take the exam up to three times. The Graduate Committee considers requests for a fourth attempt. Before writing your economic theory exam, you must choose whether to take the exam for minors based on Econ 8001-2-3-4 or the exam for majors based on Econ 8101-2-3-4. If you have to retake the exam because you did not pass, you will be allowed to again choose either the minors or majors exam regardless of previously taken exam.

Each field examination is written and graded by a committee of at least three faculty in the Applied Economics Graduate Program. This committee reports the results for each student to the DGS, who then reports exam results to individual students and their advisor. There is no requirement that all field exams be taken in the same round; a student may take one in January and the other in June, for example. They are passed or failed separately. A student is allowed two attempts for each field exam. The Graduate Committee considers requests for a third attempt. A new field may not be substituted for a field in which an exam was failed.

The preliminary exam in microeconomic theory, together with the field exams (either one or two), constitute the Graduate School's requirement for a written preliminary examination. After you have completed the last of your written preliminary and field exams, complete and submit the "Preliminary Written Examination Report" to the graduate school. Note that you can continue taking courses after you have submitted the written exam report.

**The Preliminary Oral Exam.** After passing your written preliminary exams, you must take a preliminary oral exam. The exam can be based on your coursework, your thesis proposal, or some combination. The exam is administered by your four-member examining committee consisting of your advisor as chair, two other members of the Applied Economics Graduate Program faculty, and one member of the Graduate School's graduate faculty from outside the Applied Economics Graduate Program. It is important to remember that your advisor (or at least one of your co-advisors) must be a Senior Member or Affiliate Senior Member of the graduate faculty, while all other committee members must be Members/Advising, Affiliate Members/Advising, Senior Members, or Affiliate Senior Members of the graduate faculty. If you have declared a minor on your "Degree Program" form, one committee member must be from that program's graduate faculty. Your advisor will help you decide who will be on your committee.

Expect to complete a written thesis proposal before your committee gives you permission to schedule your preliminary oral exam. You will work closely with your advisor in preparing the proposal; be sure to keep other members of your committee apprised of the state of your work as you develop your ideas.

Many administrative steps need to be taken before you can take the preliminary oral exam. You must have already filed your "Degree Program" form; this form should be filed long before the date of your oral exam. The Graduate School requires at least one week to process the "Preliminary Written Examination Report." It also requires that you file the "Doctoral Preliminary Oral Examination Scheduling" form. This form must be filed at least one week prior to the exam date. You should give your committee at least a week to read the final version of your thesis proposal.

The typical preliminary oral exam begins with a 30 to 45-minute presentation of the research proposal by the student. Your committee members will each ask some questions, possibly interrupting you before you have completed your prepared remarks.

They will look especially at your knowledge of economics, the quality of your proposed research, and the feasibility of the research.

Three outcomes of the preliminary oral exam are possible. One is “Pass,” another is “Fail,” and a third is “Pass with Reservations.” A result of “Pass with Reservations” means that the committee will prepare a memo, addressed to you, containing further work that you must do before a passing grade is submitted to the Graduate School. If you “Fail” the exam, your committee will decide whether you will be given an opportunity to retake the exam at a later date or be asked to leave the program. If you “Pass” the exam, return the “Preliminary Oral Examination Report,” which your advisor will bring to the exam, to the Graduate School. Please submit a copy to the Applied Economics Graduate Programs DGS or the DGS’s assistant before doing so. You may want to retain a copy for your records as well. Congratulations! You are now a candidate for the degree.

Students should expect to take their preliminary oral exam within 6 months of passing their last written preliminary exam. If more than 3 years elapse between passing the last written exam and the oral exam, all written exams must be retaken and passed before the oral exam can be scheduled.

**Registration.** During the time you are taking courses, you should register for at least 6 credits each semester. This is required if you have an assistantship. It may also be a requirement for your visa. If you have finished your coursework but have not yet passed your preliminary exams, you should register for ApEc 8666: Doctoral Pre-Thesis Credits. Once you have passed your written and oral exams, you should register for ApEc 8888: Thesis Credit: Doctoral. You may not register for ApEc 8888 until the semester after you complete your preliminary oral exam. You may register for up to 14 credits in a semester at the fixed tuition rate, so two semesters of registration will be required in order to complete the required 24 thesis credits.

After you have completed all of your coursework and 24 thesis credits, you may qualify to register for ApEc 8444: FTE Doctoral (The FTE stands for “full-time equivalent”). This single credit is designed by the University to allow you to be considered a full-time student while registering for only one credit. You will need to submit an “Application for Advanced Doctoral Status” form, available on the Graduate School’s website. This designation reduces the benefits that the hiring department must pay. It may also allow you to defer a student loan.

Students who are not working on an assistantship and therefore do not need to maintain “full-time” status, but wish to maintain “active” status in the program, may register for Grad 999. This is a zero-credit, zero-tuition registration. If, for example, you choose to begin employment before you have graduated, be sure to continue registering each semester with Grad 999. Failure to do so will mean that, before you take your final oral exam, you must pay a fee to re-activate your status with the graduate school. Do not register for Grad 999 if you must be registered to maintain legal visa status, defer loans,

receive financial aid, or for any reason other than to meet the Graduate School's registration requirement.

## **The Dissertation Phase.**

According to the Graduate School, a Ph.D. dissertation must demonstrate your originality and ability for independent research. It must contain results that amount to a contribution to knowledge and it must be presented in a satisfactory manner. Some dissertations in the program are primarily theoretical or analytical in nature; others are primarily empirical. Most are a combination of the two. It should be on a significant topic, but it must be sufficiently narrow in scope to be feasible. Dissertations are typically between 150 and 200 pages, but this is not a firm limit. Many students find it useful, as they begin their project, to peruse some recent Ph.D. theses. The collection is maintained by the Waite Library.

No later than the first semester after passing your preliminary oral exam, you should file the “Thesis/Project Proposal Transmittal,” “Thesis/Project Proposal Title,” and “Thesis/Project Proposal” forms with the Graduate School. On these forms you will include the proposed thesis title and a thesis proposal, about 250 words in length, describing the research to be undertaken and the methods to be employed in carrying it out. You are also asked to list the members of your thesis committee. Your advisor cannot chair this committee, which must include at least four members, three from the Applied Economics Graduate Program’s faculty and one member of the Graduate School’s faculty from outside the Applied Economics Graduate Program. It is important to remember that the chair of your committee and your advisor (or at least one of your co-advisors) must be a Senior Member or Affiliate Senior Member of the graduate faculty, while all other committee members must be Members/Advising, Affiliate Members/Advising, Senior Members, or Affiliate Senior Members of the graduate faculty. If you have declared a minor on your “Degree Program” form, you must include an outside member from the minor program. Three members, including your advisor and an outside member, must be listed as “reviewers.” When you have submitted this form, you will receive a “Graduation Packet.”

**Format of the Dissertation.** The Graduate School will not accept a dissertation that does not follow its specifications. These are available on the Graduate School website.

**Time Limit.** Under the rules of the Graduate School, you must complete your final oral exam within five years of passing your preliminary oral exam. If you are unable to complete your final oral in this time, you may petition the graduate school for up to one additional year. Extensions beyond an additional year are considered only in extraordinary circumstances. If you do not complete the final oral exam within the time limit, you will be terminated from doctoral candidacy.

**The Thesis Committee.** In most cases, the thesis committee is composed of the same people who sat on the preliminary oral examining committee. This is not required, though. Most committee members will want to see drafts of your thesis, or even individual chapters, as you complete them. Some will not. It is important for you to stay in contact with all committee members, giving them the chance to provide input and feedback along the way. Faculty are busy people, so do not be offended if

someone tells you they don't want to see anything until the final version. Still, the most risky practice is to not show your early work to a committee member who expects to see it. If the final product is far different from what he or she expects, gaining approval for the defense can be complicated.

**Setting Up Your Thesis Defense.** After your advisor has approved your dissertation for defense, you should provide a copy of the final draft to all members of your committee. The Graduate School requires you to tell your committee members the date you will deliver your thesis for review at least two weeks in advance. Committee members must then be given at least two weeks to review your thesis before your defense. At or about the same time, you should contact all of the committee members and begin to find a date and time for the defense on which everyone can attend. Before your defense can be held, the members who were named as "reviewers" on the "Thesis/Project Proposal Transmittal" form must sign the "Thesis Reviewers' Report," which certifies that they agree the dissertation is ready for defense (the reviewers report is part of the "Graduation Packet" provided by the Graduate School.) When you have obtained all of the reviewers' signatures, finalize the date for your defense and bring the "Thesis Reviewers Report" to the Graduate School. If you haven't done so already, but at least a week before your defense, submit the "Final Oral Examination Scheduling" form to the Graduate School. Place a notice of the defense, including time, date, and location, in *Marginal Memos*, the e-newsletter of the Department of Applied Economics.

**The Thesis Defense.** If things go as hoped, the word "defense" will not describe what actually happens at the meeting. You will not be under attack. But your committee will want to see that you are able to present your work in a professional manner. The defense is open to the public. As with the preliminary oral examination, you will probably be asked to prepare a presentation of some 30 to 45 minutes. Your committee members and others in the audience may ask questions during your remarks. When all questions from the audience have been completed, all but your committee member's will be asked to leave. Your committee may then ask some more questions. When all your committee's questions are completed, you will be asked to leave the room as your committee reaches a decision. When the committee's deliberations are completed, you will be invited back into the room to learn the result. Two outcomes are possible: "Pass" and "Fail." Assuming that you pass, take the "Exam Report" to the Graduate School within 24 hours of the exam.

## **The Graduation Phase.**

In order to graduate, the following steps must be taken:

- Fill out the application for graduation and submit the form with a graduation fee to 150 Williamson on or before the first day of the month in which you wish to graduate.

- Turn in one unbound copy of your dissertation and your official dissertation abstract, both signed by your advisor, to the Graduate School by the last working day of the month in which you wish to graduate.
- Turn in one unbound copy of your dissertation to Waite Library, along with an electronic copy.
- In order to attend the commencement ceremony in December or May, you must submit a Commencement Approval Form, signed by your advisor, to the Graduate School by the date published online at the Graduate School's website.

## **FINANCIAL SUPPORT.**

Students in the Applied Economics Graduate Program may be supported with funds from a variety of sources: fellowships, teaching assistantships, and research assistantships. In general, there are two types of funding appointments awarded by the Applied Economics Graduate Program and its participating departments: service appointments and non-service appointments.

Teaching and research assistantships are examples of service appointments. Service appointments require a student to do work for an assigned faculty member. Most commonly, these appointments are quarter- or half-time. Students with a quarter-time appointment are expected to work on average 10 hours per week under the supervision of the assigned faculty member. Students with a half-time appointment are expected to work on average 20 hours per week under the supervision of the assigned faculty member. In addition to a stipend, the typical teaching and research assistantship also offers a health insurance and tuition benefit.

Fellowships are typically non-service appointments. Non-service appointments do not carry the same work responsibilities as a service appointment. However, some fellowships may require a student to fulfill other responsibilities, such as attending special seminars and workshops.

Before accepting any funding appointment, you should carefully review the terms and conditions of the award, so you will know precisely what is expected of you.

The following procedures will be used to allocate funds for student support in the Applied Economics Graduate Program.

1. Fellowship nominations requested from the Applied Economics Graduate Program by the Graduate School or other programs will be made by the Graduate Committee.
2. Block grant and other funds awarded to the Applied Economics Graduate Program by the Graduate School will be allocated by the DGS in consultation with the Graduate Committee.

3. Research and teaching assistantship appointments will be awarded by individual departments within or outside of the Applied Economics Graduate Program. The DGS will serve to coordinate appointments for departments that participate in the Applied Economics Graduate Program.

### **ANNUAL STUDENT REVIEWS.**

Each year, toward the end of the spring semester, all students will receive an annual-review form (see Appendix D). This form is to be filled out with your advisor and the supervisor of your teaching or research assistantship if you have one. This form is designed to help you, your advisor, and the DGS track your progress in the program. Your annual completion of this form is instrumental in ensuring the timely completion of your degree.

### **INTERPRETATIONS AND EXCEPTIONS.**

1. The Graduate Committee, with the advice and consent of the Graduate faculty, has the ultimate responsibility for the formulation and interpretation of policy pertaining to graduate student matters. Similarly, special cases which cannot be anticipated are decided by the Graduate Committee.
2. Any procedure or policy matter can be petitioned by a graduate student. Ruling on such petitions is the responsibility of the Graduate Committee.

**APPENDIX A. SAMPLE PROGRAMS**

Example M.S. degree program: Plan A.

<b>Yr</b>	<b>Fall</b>	<b>Cr</b>	<b>Spring</b>	<b>Cr</b>	<b>Summer</b>
<b>1</b>	ApEc 5151. Elements of Econ Analysis: Firm & Household	3	ApEc 5152. Elements of Economic Analysis: Income & Employment	3	
	ApEc 5031. Methods of Economic Data Analysis	3	ApEc 5032. Economic Data Analysis for Managerial & Policy or Other ApEc Elective	3	
	Related Field or ApEc Elective	3-4	Related Field or ApEc Elective	3-4	
	ApEc 8777. M.S. thesis credits	4	ApEc 8901. M.S. Seminar	1	
<b>2</b>	Related Field or ApEc Elective	3-4	Final Oral Exam		
	ApEc 8777. M.S. thesis credits	6			
	<b>Total</b>	<b>22-24</b>	<b>Total</b>	<b>10-11</b>	

Example M.S. degree program: Plan B.

<b>Yr</b>	<b>Fall</b>	<b>Cr</b>	<b>Spring</b>	<b>Cr</b>	<b>Summer</b>
<b>1</b>	ApEc 5151. Elements of Econ Analysis: Firm & Household	3	ApEc 5152. Elements of Economic Analysis: Income & Employment	3	
	ApEc 5031. Methods of Economic Data Analysis	3	ApEc 5032. Economic Data Analysis for Managerial & Policy Or Other ApEc Elective	3	
	Related Field or ApEc Elective	3-4	Related Field or ApEc Elective	3-4	
			ApEc 8901. M.S. Seminar	1	
<b>2</b>	Related Field or ApEc Elective	3-4	Final Oral Exam		
	Related Field or ApEc Elective	3-4			
	ApEc 8793. Plan B Project	4-6			
	<b>Total</b>	<b>20-24</b>	<b>Total</b>	<b>9-10</b>	

Example Ph.D. degree program with two fields.

<b>Yr</b>	<b>Fall</b>	<b>Cr</b>	<b>Spring</b>	<b>Cr</b>	<b>Summer</b>
<b>1</b>	Econ 8001-02. Micro Analysis	4	Econ 8003-04. Micro Analysis	4	Micro
	Applied Economics Methods Elective	2-4	ApEc 8203. Welfare Economics	3	Theory
	ApEc 8211. Econometrics	4	ApEc 8212. Econometrics	4	Prelim
<b>2</b>	Econ 8105-06. Macro Theory	4	Course(s) for First Field	2-6	First
	Course(s) for First Field	2-6	Course(s) for Second Field	2-6	Field
	Applied Economics Methods Elective	2-4	ApEc 8902. Ph.D. Seminar	1	Exam
<b>3</b>	Course(s) for Second Field	2-6	Second Field Exam		Oral
	Elective	2-4	Elective	2-4	Prelim
<b>4</b>	ApEc 8888. Doctoral Thesis Credit	12	ApEc 8888. Doctoral Thesis Credit	12	
			Final Oral		
	<b>Total</b>	<b>34-48</b>	<b>Total</b>	<b>30-40</b>	

Example Ph.D. degree program with one field and an approved minor.

<b>Yr</b>	<b>Fall</b>	<b>Cr</b>	<b>Spring</b>	<b>Cr</b>	<b>Summer</b>
<b>1</b>	Econ 8001-02. Micro Analysis	4	Econ 8003-04. Micro Analysis	4	Micro
	Approved Minor or Other Elective	2-4	Approved Minor or Other Elective	2-4	Theory
	ApEc 8211. Econometrics	4	ApEc 8212. Econometrics	4	Prelim
<b>2</b>	Econ 8105-06. Macro Theory	4	Approved Minor or Other Elective	3-4	Field
	Course(s) for Field	2-6	Course(s) for Field	2-6	Exam
	Applied Economics Methods Elective	2-4	ApEc 8902. Ph.D. Seminar	1	
<b>3</b>	Approved Minor or Other Elective	3-4	ApEc 8203. Welfare Economics	3	Oral
	Applied Economics Methods Elective	2-4	Approved Minor or Other Elective	2-4	Prelim
<b>4</b>	ApEc 8888. Doctoral Thesis Credit	12	ApEc 8888. Doctoral Thesis Credit	12	
			Final Oral		
	<b>Total</b>	<b>35-46</b>	<b>Total</b>	<b>33-42</b>	

## APPENDIX B. APPLIED ECONOMICS PROGRAM FACULTY

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<sup>a</sup> Senior Member of graduate faculty.

<sup>b</sup> Member/Advising of graduate faculty.

<sup>c</sup> Member of graduate faculty.

<sup>d</sup> Affiliate Senior Member of graduate faculty.

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<sup>b</sup> Member/Advising of graduate faculty.

<sup>c</sup> Member of graduate faculty.

<sup>d</sup> Affiliate Senior Member of graduate faculty.

## APPENDIX C. APPROVED MINORS IN CONSERVATION BIOLOGY AND STATISTICS

The graduate faculty has adopted the following language for two approved minors, in Statistics and Conservation Biology. Students who fulfill the requirements for these minors are required to take only one of our PhD field exams.

### Conservation Biology Approved Minor

A student who takes the approved minor in Conservation Biology must satisfy four sets of requirements:

1. The courses required for a minor in Conservation Biology:  
FW 8452, Conservation Biology, 3 cr  
CBio 8004, Economic and Social Aspects of Conservation Biology, 3 cr  
CBio 8001, Conservation Biology Seminar, 1 credit;
2. The following additional Conservation Biology courses:  
CBio 8001, Conservation Biology Seminar, 1 cr  
EEB 5053, Ecology: Theory and Concepts, 4 cr  
ApEc 8991, Special Topics in Conservation Economics, 2 cr, with associated research paper (see 4. below); and
3. At least one other 5xxx- or 8xxx-level course in biological sciences (3 credits minimum). Some suggested courses include:  
EEB 5033, Population and Quantitative Genetics, 4 cr  
EEB 5051, Analysis of Populations, 3 cr  
EEB 5961, Decision Analysis and Modeling in Conservation Biology, 3 cr  
EEB 5321, Evolution of Social Behavior, 3 cr  
EEB 5327, Behavioral Ecology, 3 cr  
EEB 8641 (also MATH 8641), Spatial Ecology Seminar, 3 cr  
ENT 5321, Ecology of Agriculture, 3 cr  
FR 5104, Forest Ecology, 4 cr  
FR 5142, Tropical Forest Ecology, 3--4 cr  
FR 5146, Dynamics of Global Change, 3--4 cr  
FR 5153, Forest Hydrology and Wetlands, 3 cr  
FW 5571, Avian Conservation and Management, 3 cr  
FW 5603W, Habitats and Regulation of Wildlife, 3 cr  
FW 5604W, Fisheries Ecology and Management, 3 cr  
FW 8459, Stream and River Ecology, 3 cr  
FW 8465, Fish Habitats and Restoration, 3 cr  
HORT 5071, Restoration and Reclamation Ecology, 3 cr  
LA 5204, Landscape Ecology, 3 cr  
NRES 5021, Plant Resource Management and the Environment, 3 cr  
NRES 5061, Water Quality: Management of a Natural Resource, 3 cr  
NRES 5575, Wetlands Conservation, 3 cr
4. A required conservation biology paper. A student taking the conservation

biology approved minor will be required to prove mastery of the synthesis of economics and conservation biology by writing a paper that is deemed acceptable by an interdisciplinary committee of professors. The Committee will consist of three professors, with at least one member who belongs to the graduate faculties of both Applied Economics and Conservation Biology, plus at least one other member who belongs to the graduate faculty in Applied Economics and one other member who belongs to the graduate faculty in Conservation Biology. The topic of the research paper must be jointly acceptable to the student and the committee. When it is completed, the committee will evaluate the paper and decide whether to pass the student, allow revisions before making a final determination, or fail the student.

### **Statistics Approved Minor**

A student who takes the approved minor in Statistics must satisfy three sets of requirements:

1. ApEc 8211--12 or Econ 8201-04 or Econ 8205--08;
2. Stat 5101--02 or Stat 8111--12;
3. At least eight additional credits in 5xxx-level or 8xxx-level courses in statistics and math beyond the level of Stat 5101--02 and potentially applicable to applied economic research (Stat 5302, Applied Regression Analysis is not an eligible elective). The list of approved courses includes:

Stat 5201, Sampling Methodology in Finite Populations, 3 cr  
Math 5262, Introduction to Stochastic Processes, 4 cr  
Stat 5401, Applied Multivariate Methods, 3 cr  
Stat 5421, Analysis of Categorical Data, 3 cr  
Stat 5601, Nonparametric Methods, 3 cr  
Stat 8311, Linear Models, 4 cr  
Stat 8312, Linear and Nonlinear Models, 3 cr  
Stat 8321, Regression Graphics, 3 cr  
Stat 8511, Time Series Analysis, 3 cr

**APPENDIX D. ANNUAL STUDENT REVIEW FORMS**

**ANNUAL PhD STUDENT EVALUATION FORM  
APPLIED ECONOMICS GRADUATE PROGRAM**

NAME: \_\_\_\_\_

STARTED PROGRAM (Month/YEAR): \_\_\_\_\_ / \_\_\_\_\_

PLANNED GRADUATION (Month/YEAR): \_\_\_\_\_ / \_\_\_\_\_

ADVISOR: \_\_\_\_\_

Degree Program:       Agricultural & Applied Economics       Applied Economics

Objective (Check all that apply):

- Academic Research       Government       Private Industry  
 Academic Teaching       Non-Profit/NGO

Do you plan to enter the job market next year?       Yes       No

Have you posted your current CV to the departmental student page?       Yes       No

Credits completed (excluding thesis credits): \_\_\_\_\_

Current GPA: \_\_\_\_\_

**PROGRAM REQUIREMENTS COMPLETED**

***COURSES***

- \*ECON 8001-02-03-04: Microeconomic Analysis or  
ECON 8101-02-03-04: Microeconomic Theory
- ECON 8105-06: Macroeconomic Theory
- \*APEC 8211-12: Econometric Analysis
- \*APEC 8203: Applied Welfare Economics & Public Policy
- \*Applied Economic Methods (at least two from HRIR 8811, ECON  
8117-18, APEC 8202, APEC 8205, and APEC 8206, specify):

*Normal Progress  
for Full-Time  
Student  
First Year*

*Second Year  
First Year  
Third Year  
Third Year*

- APEC 8902: PhD Seminar
- Supporting Field or Minor Course Credits (at least 12)
- Thesis Credits (at least 24 APEC 8888)

*Third Year  
Third Year*

***EXAMS***

- Micro Economic Theory Preliminary Exam
- First Field Exam (specify):

*First Year  
Second Year*

- Second Field Exam or Approved Minor (specify):

*Third Year*

- Preliminary Oral Exam

*Third Year*

**\* Not applicable for Agricultural & Applied Economics degree program.**

**GRADUATE SCHOOL FORMS**

- Degree Program Form Filed
- Preliminary Written Examination Form
- Thesis/Project Proposal Transmittal, Proposal Title and Proposal Forms Filed

*Second Year*

*Third Year*

*Third Year*

**DISSERTATION PROGRESS**

What is the title or topic of your dissertation?

**Final Examining Committee:**

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**Outside Member**

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**ADVISOR MEETING**

**Date:** \_\_\_\_\_

Was the student's academic performance over the past year satisfactory?       Yes       No

Was the student's research progress over the past year satisfactory?       Yes       No

**Comments:**

**ASSISTANTSHIP SUPERVISOR MEETING (if applicable)**

**Date:** \_\_\_\_\_

Was the student's assistantship performance over the past year satisfactory?       Yes       No

Do you recommend renewing the student's assistantship (if eligible)?       Yes       No

**Comments:**

**Student Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Advisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Supervisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

***PLEASE ATTACH A CURRENT COPY OF YOUR CV WITH THIS EVALUATION***

**ANNUAL MS STUDENT EVALUATION FORM  
APPLIED ECONOMICS GRADUATE PROGRAM**

NAME: Arimurti, Trinil

STARTED PROGRAM (Month/YEAR): \_\_\_\_\_ / \_\_\_\_\_

PLANNED GRADUATION (Month/YEAR): \_\_\_\_\_ / \_\_\_\_\_

ADVISOR: \_\_\_\_\_

Objective (Check all that apply):

Ph.D. Prep       Government       Non-Profit/NGO       Private Industry

Do you plan to enter the job market next year?       Yes       No

Have you posted your current CV to the departmental student page?       Yes       No

Credits completed (excluding Plan A thesis/Plan B project credits): \_\_\_\_\_

Current GPA: \_\_\_\_\_

**PROGRAM REQUIREMENTS COMPLETED**

<b><i>COURSES</i></b>	<i>Normal Progress for Full-Time Student First Year First Year First Year First Year</i>
<input type="checkbox"/> APEC 5151: Applied Microeconomics	
<input type="checkbox"/> APEC 5152: Applied Macroeconomics	
<input type="checkbox"/> APEC 5031: Methods of Economic Data Analysis or STAT 5302: Applied Regression Analysis	
<input type="checkbox"/> APEC 8901: MS Seminar	
<input type="checkbox"/> APEC Course Credits (at least 9)	
<input type="checkbox"/> Major Course Credits (at least 14 from APEC, ECON, or STAT)	
<input type="checkbox"/> Related or Minor Course Credits (at least 6)	
<input type="checkbox"/> Plan A Thesis/Plan B Project Credits (at least 10 APEC 8777 or at least 4 APEC 8793)	
 <b><i>GRADUATE SCHOOL FORMS</i></b>	
<input type="checkbox"/> Degree Program Form Filed	<i>First Year</i>

**PLAN A THESIS/PLAN B PROJECT PROGRESS**

What option have you chosen to fulfill your research requirement?

Plan A Thesis       Plan B Project

What is the title or topic of your Plan A thesis or Plan B project?

**Final Examining Committee:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Outside Member**

**ADVISOR MEETING**

**Date:** \_\_\_\_\_

Was the student’s academic performance over the past year satisfactory?

Yes  No

Was the student’s research progress over the past year satisfactory?

Yes  No

**Comments:**

**ASSISTANTSHIP SUPERVISOR MEETING (if applicable)**

**Date:** \_\_\_\_\_

Was the student’s assistantship performance over the past year satisfactory?

Yes  No

Do you recommend renewing the student’s assistantship (if eligible)?

Yes  No

**Comments:**

**Student Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Advisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Supervisor Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

***PLEASE ATTACH A CURRENT COPY OF YOUR CV WITH THIS EVALUATION***