

**Student  
Planning  
Guide**

for the

**Graduate Program  
in Economics and  
Agricultural and  
Applied Economics**

**Virginia Tech  
Blacksburg, Virginia**

(available on the graduate program  
page at

<http://graduate.agecon.vt.edu/>)

## FOREWORD

The purpose of this publication is to explain the procedural rules for entry into the graduate program and completion of degrees in the Department of Economics and the Department of Agricultural and Applied Economics at Virginia Polytechnic Institute and State University. For additional information, inquiries may be directed to:

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## CONTENTS

<b>INTRODUCTION .....</b>	<b>1</b>
<b>ENTERING THE GRADUATE PROGRAM .....</b>	<b>1</b>
<b>THE ADVISING SYSTEM .....</b>	<b>2</b>
Orientation.....	2
Temporary Advisors .....	2
The Student’s Advisory Committee and Program of Study.....	3
<b>MASTER’S DEGREE PROGRAMS .....</b>	<b>4</b>
M.A. and M.S. with Applied Economics Focus .....	5
<i>Required Core Courses</i> .....	5
<i>Additional Coursework</i> .....	5
<i>Typical Master's Program</i> .....	6
M.S. with Agribusiness Focus .....	6
<i>Required Core Courses</i> .....	6
<i>Additional Coursework</i> .....	6
<i>Case Study</i> .....	7
Final Master’s Degree Examination.....	8
<i>Thesis Exam</i> .....	8
<i>Non-Thesis Exam</i> .....	8
<i>Case Study Exam</i> .....	8
Humboldt University Exchange .....	8
Earning a Master’s Degree While Enrolled in the Ph.D. Program.....	8
<b>THE PH.D. PROGRAM .....</b>	<b>9</b>
Ph.D. Course Requirements .....	9
Ph.D. Course Requirement Exceptions .....	12
Typical Ph.D. Program.....	13
The Ph.D. Examinations .....	13
<i>Written Qualifying Examination</i> .....	13
<i>Preliminary Examination</i> .....	15
<i>Final Oral Examination</i> .....	16
<b>PROGRESS OF GRADUATE STUDENTS .....</b>	<b>16</b>
Progress Reports .....	16
Minimum Grade Performance.....	17
Graduate Seminar .....	17
Termination Interview.....	17

<b>FINANCIAL MATTERS.....</b>	<b>17</b>
Graduate Teaching and Research Assistantships.....	17
Duration of Assistantships.....	19
Stipends and Tuition.....	19
Special Fellowships (Kline, Driscoll and Cunningham) .....	20
Graduate Co-op .....	20
<b>WORK ENVIRONMENT.....</b>	<b>20</b>
Office Space and Budget Support .....	20
Computer Facilities .....	20
Thesis and Dissertation Preparation and Distribution.....	21
<b>DRISCOLL MEMORIAL OUTSTANDING GRADUATE RESEARCH AWARD ..</b>	<b>21</b>
<b>GRADUATE STUDENT ORGANIZATIONS .....</b>	<b>21</b>

#### **APPENDICES**

<b>APPENDIX A: PROGRAM OF STUDY FORM.....</b>	<b>23</b>
<b>APPENDIX B: AGRIBUSINESS COURSE OPTIONS .....</b>	<b>25</b>
<b>APPENDIX C: GRADUATE COURSES, AAEC AND ECON .....</b>	<b>27</b>
<b>APPENDIX D: FACULTY, AAEC AND ECON.....</b>	<b>35</b>
<b>APPENDIX E: RECENT MASTER'S AND PH.D. GRADUATES .....</b>	<b>40</b>

## INTRODUCTION

The departments of Economics and Agricultural and Applied Economics at Virginia Tech in Blacksburg, Virginia offer a unified graduate program leading to advanced degrees at the master's and Ph.D. levels. Administration of the graduate economics program is the responsibility of a Graduate Program Committee (GPC) composed of faculty from the two departments. Prospective students are admitted to the Graduate School for study in either the Department of Economics or the Department of Agricultural and Applied Economics. Students entering the graduate economics program, in cooperation with their advisors, are then responsible for planning of individual curriculum, subject to the core requirements and other criteria described herein.

Planning by a student should address three objectives. First, personal educational goals should be determined. Second, coursework and research activities to achieve appropriate training should be identified. Third, a schedule should be devised to achieve the student's goals and meet degree requirements. This Planning Guide is designed to help student achieve the second and third planning objectives. Additional guidance is available in the University's *Graduate Catalog* and *Graduate School Policies and Procedures*, from members of the GPC, and from the student's advisory committee.

## ENTERING THE GRADUATE PROGRAM

Before beginning work toward either a master's or Ph.D. degree, a prospective student must be admitted to the Graduate School. The basic requirements for admission are stated in the University's *Graduate Catalog*.<sup>1</sup> The specific entry requirements for the graduate economics program are:

1. a bachelor's degree from an accredited college or university;
2. presentation of evidence of potential to pursue graduate work, normally a cumulative grade point average of 3.0 or higher (on a 4.0 base) for the last two years (60 semester credit hours) of undergraduate studies or satisfactory performance at the graduate level;
3. GRE verbal and quantitative scores of over 500;
4. timely submission of the required application forms, transcripts, and letters of recommendation; and,

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<sup>1</sup> Virginia Tech does not discriminate against employees, students, or applicants on the basis of race, color, sex, sexual orientation, disability, age, veteran status, national origin, religion, or political affiliation. The university is subject to titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, the Age Discrimination in Employment Act, the Vietnam Era Veteran Readjustment Assistance Act of 1974, Federal Executive Order 11246, Governor Allen's State Executive Order Number Two, and all other rules and regulations that are applicable. Anyone having questions concerning any of those regulations should contact the Equal Opportunity/Affirmative Action Office.

5. for international students whose primary language is other than English, a TOEFL score of 620 or higher on the written examination, or 260 or higher on the computer-based examination, unless the student has received an undergraduate or graduate degree in a country for which English is the primary language, in which case the TOEFL is not required.

There are no specific undergraduate course prerequisites for the graduate economics program, but almost all graduate economics courses call for an initial understanding of microeconomic and macroeconomic theory equivalent to 3 semester hours (at a minimum) beyond basic principles. Graduate students are assumed to have a working knowledge of basic statistics, differential and integral calculus, analytic geometry, and matrix algebra. Specific fields of study may require additional prior knowledge equivalent to that obtained in relevant undergraduate courses.

Each applicant's record will be evaluated in the department to which they apply to determine his/her eligibility for admission to the graduate program and to evaluate whether they need to further develop proficiency in certain areas. Students who are admitted with any deficiencies are expected to take remedial steps prior to arrival or early in their residence. Deficiencies may be made up by taking a designated undergraduate course, independent self study, serving as a teaching assistant, or by demonstrating that some course or set of courses taken as an undergraduate or graduate student provide equivalent knowledge in the subject area in question.

Students meeting the entrance requirements outlined above may be admitted to the graduate economics program to pursue either a master's degree or a Ph.D.<sup>2</sup> Those students admitted for a master's degree must reapply for admission to the Ph.D. program should they eventually choose to pursue the higher degree.

## **THE ADVISING SYSTEM**

### **Orientation**

Prior to each fall semester, a half-day orientation session is held for students who have entered the graduate economics program since the fall of the previous year. During this orientation, presentations are made about various aspects of the program. Requirements for timely progress by students toward the master's and Ph.D. degrees are reviewed. New students are introduced to faculty members and become familiar with faculty teaching, research, and public service activities. Incoming students are expected to attend this orientation. An evening picnic for old and new students and faculty is usually held at the end of the first week of classes.

### **Temporary Advisors**

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<sup>2</sup> As described in the *Graduate Catalog*, some students not meeting the minimum grade point requirement may be admitted as provisional students for up to 12 hours of coursework. After completion of 12 hours, provisional students are either admitted as "regular" students or dropped from the program.

The GPC has the responsibility of informing all new students of the requirements and procedures under which they enter the graduate program. Entering students are assigned to a temporary advisor by the co-chairs of the GPC. The temporary advisor will be a member of the GPC or an individual designated by the GPC. The duties of the temporary advisor will be to inform the new student about all academic aspects of the graduate program. Specifically, the temporary advisor will discuss the core requirements with the student; determine the interests of the student; inform the student of relevant courses offered in Economics, Agricultural and Applied Economics and other departments of the University; and direct the student to faculty members who teach courses and conduct research or public service activities in areas that are of interest.

### **The Student's Advisory Committee and Program of Study**

Before the end of two semesters, each student must choose an advisory committee to replace the temporary advisor and a *Program of Study* must be submitted to the Graduate School. The program of study includes a list of courses the student intends to take to satisfy the core requirements for the degree sought, and the signatures of members who will serve on the student's graduate advisory committee (see Appendix A for the form used by the departments; submission to the Graduate School is done electronically).

Students who have enrolled for a Ph.D. without previous graduate work and who intend to earn a master's degree while at Virginia Tech must file at least a preliminary program of study for the master's degree before the end of two semesters. Those eligible Ph.D. students who choose to file a program of study for only a master's degree before the end of two semesters must file a final program of study for the Ph.D. degree by their fifth semester of enrollment.

A program of study to be submitted to the Graduate School must be reviewed and signed by the co-chairs of the GPC and the student's Department Head/Chair. The co-chairs of the GPC will check that the coursework proposed conforms to the requirements of the graduate economics program and the University, and will review the proposed advisory committee structure and discuss its membership with the student, particularly to ensure that the full program of study is consistent with the degree sought by the student.

Advisory committees for a master's degree have a minimum of three members, while Ph.D. committees have a minimum of five members. One member is designated to serve as the committee chair, or co-chairs can be selected. The committee chair, or at least one co-chair, must have a Ph.D. in economics, agricultural economics, or applied economics. In addition to the committee chair, master's degree students eventually are required to identify at least one member of the advisory committee to serve as a thesis "reader." Ph.D. students must identify at least two dissertation readers, but readers are not designated on the program of study.

Each student is encouraged to visit with faculty members concerning his/her interests prior to forming an advisory committee. In selecting the committee and committee chair, students may choose members from the faculty in Economics and Agricultural and Applied Economics. Master's degree students may

include one person from other departments. Ph.D. students are encouraged to have at least one member of the committee from Economics and at least one from Agricultural and Applied Economics, and may also include member(s) from other departments. Inclusion of a committee member from outside of Virginia Tech is allowed if he or she holds a degree equivalent to the degree the student is pursuing. An outside individual is not allowed to chair the committee.

Once selected, it is the responsibility of the advisory committee to review the student's proposed coursework, and to assess the likelihood of the student successfully completing his/her program. As a student progresses with their program, research plans should be discussed with and approved by their advisory committee. It is the responsibility of the advisory committee chair and the readers to evaluate drafts of the thesis or dissertation and provide continuous reviews. The readers are required to concur with the chair of the committee in the scheduling of a final oral examination defense of the thesis or dissertation. Students can anticipate receiving timely feedback on their performance, including the Ph.D. preliminary examination (described below) and drafts of the thesis or dissertation.

Students may request changes in the coursework on their program of study or the membership of their advisory committee at any time. Such changes are normal and appropriate as research interests are refined, working relationships are established, new faculty join the departments, and for other reasons. Requests for changes in coursework or advisory committee are routinely accepted by the Graduate School when signed by all members of a committee, including those being replaced and those being added when a change in membership is made.

## **MASTER'S DEGREE PROGRAMS**

The graduate economics program offers an M.A. in Economics and an M.S. in Agricultural Economics, the latter with either an applied economics or agribusiness management and marketing (hereafter, agribusiness) focus. **The MA degree in Economics is not a free standing program; it is intended to serve advanced Virginia Tech undergraduate students who participate in the 5<sup>th</sup> year B.S./M.A. program and those Ph.D. students who begin their studies, but are unable to complete the program.** For the M.A. or M.S. with applied economics focus, a student may select courses that build upon a broad-based undergraduate economics curriculum or may specialize in a specific field of interest. By their choices among core courses and use of various electives, students may develop specialties in diverse areas including, but not limited to, General Economics, Econometrics and Quantitative Methods, Natural Resource and Environmental Economics, Management and Finance, Marketing and Price Analysis, Policy and International Trade, and Economic Growth and Development. The M.A. and M.S. with applied economics focus offer both thesis and non-thesis options.

For the M.S. with agribusiness focus, students pursue specializations in management science, management, finance, or marketing. The M.S. with agribusiness focus is a non-thesis degree.

The degree being sought by the individual student (M.A. or M.S., focus, and thesis or non-thesis option) must be indicated at the time an advisory committee is selected and the program of study is submitted to the Graduate School. Students choosing a thesis option, the M.S. with agribusiness focus,

or enrolled concurrently in the Ph.D. program are eligible for financial support from a graduate research or teaching assistantship (See FINANCIAL MATTERS, below). Students enrolled concurrently in the Ph.D. program may use their Ph.D. coursework to simultaneously earn a master's degree (see Earning a Master's Degree while Enrolled in the Ph.D. Program, below).

### **M.A. and M.S. with Applied Economics Focus**

The general requirements for the master's degree thesis option (M.A. or M.S.) are: (1) a minimum of 30 semester hours, including 24 hours of coursework and 6 hours of research and thesis (AAEC/ECON 5994), (2) completion of a thesis acceptable to the student's advisory committee, and (3) satisfactory performance on a final oral examination.

The general requirement for a M.A. degree or M.S. degree with applied economics focus non-thesis option is a minimum of 30 semester hours of coursework of which at least 21 hours must be at the 5000 level or above. For the M.S. degree, a student must also pass a final oral or written examination.

### ***Required Core Courses***

The thesis and non-thesis options for an M.A. or M.S. with applied economics focus build upon a common core of required coursework. The core requirements are shown in Table 1. The applied microeconomics and econometrics courses in the core requirements are designed specifically for students pursuing a master's degree. Courses at the Ph.D. level may be substituted for these core requirements. Other exceptions to the core coursework requirements must be indicated on the program of study submitted to the Graduate School, and can be granted to an individual student only with permission from the co-chair of the GPC from the student's department. Such exceptions, when granted, are based on substitution of equivalent or more advanced coursework that meets specific objectives of the student, on recommendations by a student's advisory committee chair, and on outstanding performance of the individual.

As shown in Table 1, the core requirements include one semester of applied microeconomic (theory), one semester of econometrics, one semester from two of the three areas: mathematical programming, applied microeconomics (second course in sequence, emphasizing general equilibrium), and macroeconomics. Courses satisfying the core requirement in applied economics for the master's degree include Agricultural Marketing (AAEC 5134), Resource and Environmental Economics (AAEC 5144), International Agricultural Development and Trade (AAEC 5154), Rural Development (AAEC 5244), Experimental Economics (ECON 5964) and Advanced Natural Resource Economics (FOR 5415). Mathematical Programming (AAEC 5024) can also be used to fulfill the applied economics core requirement if both macroeconomics (ECON 5015) and the second semester of Applied Microeconomics (AAEC 5026) are included in the program.

### ***Additional Coursework***

Beyond the core requirements, students pursuing an M.A. or M.S. with applied economics focus complete their coursework program with electives from 4000 and higher-level courses in economics

and agricultural and applied economics, as well as forestry, statistics, mathematics, and other disciplines.<sup>3</sup> Up to three credit hours of AAEC/ECON 5904 (Project and Report) may

**Table 1. Required Courses for M.A. and M.S. with Applied Economics Focus**

Course		Credits
AAEC 5025	Applied Microeconomics	3
AAEC/STAT 4804	Econometrics	3
AAEC 5024, AAEC 5026 and ECON 5015	Choose 2 from Math Programming, Applied Microeconomics, and Macroeconomics	6
Applied Economics Courses: Choose 2 from among AAEC 5134, 5144, 5154, 5244, ECON 5964 (Experimental Economics) and FOR 5415 (AAEC 5024 may substitute for one of the applied economics courses if AAEC 5026 and ECON 5015 are taken)		<u>6</u>
<b>Total Core Required</b>		18

be substituted for other courses if the student and his/her advisory committee decide to include a research paper as part of a non-thesis program. No more than 5 semester hours of independent and special studies (numbered 4984, 5974, 5984) may be used to satisfy the course requirements.

### ***Typical Master's Program***

A typical program for a thesis-option M.A. or M.S. degree is shown in Table 2. Students who would otherwise register for 9 hours in any semester, instead are required to register for 12 hours by adding research or thesis hours. The additional 3 hours do not increase the instructional fees.

### **M.S. with Agribusiness Focus**

The general requirements for the M.S. with agribusiness focus are (1) a minimum of 36 semester hours, including 30 hours of coursework and 6 hours associated with developing and conducting a case study (AAEC/ECON 5904), and (2) satisfactory performance on a final oral examination.

### ***Required Core Courses***

The core course requirements for the M.S. with agribusiness focus are shown in Table 3. These core requirements are designed to provide the student with basic knowledge of economic theory and empirical methods, together with a business field of specialization. Courses drawn upon to fulfill the

<sup>3</sup> A maximum of 9 hours of 4000 level courses approved for graduate credit may be included in fulfilling the M.S. non-thesis coursework requirements.

requirements in the business concentration, restricted business electives, and international economics are listed in Appendix B.

***Additional Coursework***

In addition to the core, students taking the M.S. agribusiness focus complete at least 6 credits of graduate courses or advanced undergraduate courses approved by their committee and for graduate credit in an area of business (see Appendix B), agricultural and applied economics, or economics.

**Table 2. Typical Master’s Degree Program (Thesis Option)**

<b>First Year</b>	
<b>Fall Semester</b>	<b>Spring Semester</b>
Applied Microeconomics (AAEC 5025) Mathematical Programming (AAEC 5024) or Applied Economics Applied Economics or Elective	Applied Microeconomics (AAEC 5026) or Macroeconomics (ECON 5015) Applied Economics or Elective Econometrics (AAEC/STAT 4804)
<b>Second Year</b>	
<b>Fall Semester</b>	<b>Spring Semester</b>
Applied Economics or Elective Applied Economics or Elective Thesis Research	Thesis Research

**Table 3. Required Courses for M.S. with Agribusiness Focus**

<b>Course</b>	<b>Credits</b>
AAEC 5025 Applied Microeconomics	3
AAEC 5024 <u>or</u> AAEC/STAT 4804 Math Programming <u>or</u> Econometrics	3
Applied Economics	Choose 1 from among AAEC 5134, 5144, 5154, 5244
Business Concentration	Two-course core from Appendix B
Restricted Business Electives	Two additional courses in concentration from Appendix B

International Economics	Choose 1 from Appendix B if no other course has an international focus	<u>3</u>
<b>Total Core Required</b>		21-24

### *Case Study*

Candidates for the M.S. with agribusiness focus must produce a case study (see, for example Harling, K. and E. Misser, 1998, "Case Writing: an Art and Science," *International Food and Agribusiness Management Review* 1(1): 119-138). Six credits are earned through enrollment in AAEC 5904 (Project and Report).

### **Final Master's Degree Examination**

All M.S. degree students and thesis-option M.A. students must pass a final examination. If it is an oral examination, it must be scheduled with the Graduate School at least two weeks in advance of being held. Once scheduled, a final oral examination is open to any faculty member, and the Dean of the Graduate School may appoint a representative to take part in the examination.

### *Thesis Exam*

A final oral examination for a master's degree candidate pursuing the thesis-option M.A. or M.S. degree is administered by the student's advisory committee. This examination includes a defense of the thesis, and may also include examination on coursework and its application. The final oral examination can not be scheduled until the student's committee chair and designated reader(s) agree that the thesis is suitable for defense.

### *Non-Thesis Exam (M.S. with Applied Economics Focus)*

For a non-thesis M.S. with applied economics focus, a student may elect either to take a final oral exam, or if they are earning a masters degree while enrolled in the Ph.D. program, to take the Ph.D. Qualifying Examination instead of a final oral examination (see Ph.D. Examinations, Written Qualifying Examination, below). A student must pass one exam or the other to complete the requirements for the M.S. degree.

### *Case Study Exam (M.S. with Agribusiness Focus)*

A final oral examination for a master's degree candidate pursuing the M.S. with agribusiness focus is administered by the student's advisory committee. It is an oral examination that includes a defense of the case study as well as examination on coursework and the application of coursework to practical problems. The final oral examination can not be scheduled until the committee chair and designated reader(s) agree that the case study is suitable for defense.

### **Humboldt University Exchange**

Master's degree students may participate in an exchange program with the International Agriculture Program of Humboldt University of Berlin. Exchange students spend 9-12 weeks in Europe at the end of their first spring semester at Virginia Tech. Required field courses (taught in English) can be completed at Humboldt, leaving only writing of a thesis to complete the master's degree upon return to Virginia Tech. Information on the Humboldt program is available at <http://www.agrar.hu-berlin.de/iags>.

### **Earning a Master's Degree While Enrolled in the Ph.D. Program**

Students who are admitted to the Ph.D. program without having completed a master's degree at another institution often earn an M.A. or M.S. degree at Virginia Tech as an integral part of their Ph.D. program. These students, who are simultaneously pursuing graduate study at the Ph.D. level, can substitute courses in theory and econometrics from the Ph.D. program for the master's degree courses shown in Table 1. Substitution of equivalent or more advanced courses from the Ph.D. program does not require approval from the co-chairs of the GPC (see discussion of the Ph.D. Course Requirements, below). However, an approved program of study must be submitted to the Graduate School for each degree sought.

In some cases, students who initially enter the Ph.D. program complete only an M.A. or M.S. degree in lieu of their doctorate. In these cases, credit can also be given for Ph.D. courses that substitute for requirements of the master's degree program. Non-thesis M.A. students are not required to pass a final examination.

## **THE PH.D. PROGRAM**

The two departments offer a single Ph.D. in Economics. Ph.D. students take a common first-year written qualifying examination. Each student must also pass a field-based preliminary examination, write a dissertation, and present a final defense of his/her dissertation. Graduate students pursuing a Ph.D. degree are eligible for graduate teaching assistantships and graduate research assistantships (see FINANCIAL MATTERS, below).<sup>4</sup>

### **Ph.D. Course Requirements**

The Graduate School requirements for a Ph.D. degree include a minimum of 90 semester hours of graduate credit beyond the baccalaureate, with at least 30 hours of coursework and 30 hours of Research and Dissertation (AAEC/ECON 7994). For the Ph.D. degree in Economics, there are additional core coursework requirements. These core requirements are summarized in Table 4.

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<sup>4</sup> For internal university accounting purposes, students are recorded either as ECAG: Economics, Agriculture and Life Sciences or ECAS: Economics, Arts and Sciences, depending on the department through which they are admitted to the Ph.D. program. Graduates are also listed under these designations in the Commencement Program.

The first-year core requirements include two-semester sequences in microeconomics and econometrics and one semester of macroeconomics (a second course in macroeconomics is taken in the fall semester of a student's second year). Also required in the first year are a course in mathematical economics and two semesters of applied economics. The principal courses satisfying the first-year core requirement in applied economics for the Ph.D. degree are two courses titled "Applied Economics" (AAEC/ECON 5984) that provide applications of general interest to develop empirical skills and complement the courses in microeconomic and macroeconomic theory. Other courses that can be used to fulfill the first-year applied economics core requirement are Mathematical Programming (AAEC 5024), Agricultural Marketing (AAEC 5134), Resource and Environmental Economics (AAEC 5144), International Agricultural Development and Trade (AAEC 5154), and Rural Development (AAEC 5244).

**Table 4. Required Courses for the Ph.D. Degree**

Course		Credits
ECON 5005 and 5006	Microeconomic Theory	6
ECON 5015 and 5016	Macroeconomic Theory	6
AAEC/ECON 5125 and 5126	Econometrics	6
ECON 5124	Mathematical Economics	3
First-year Applied Economics Courses: Choose 2 from AAEC/ECON 5984 (Applied Economics) or AAEC 5024, 5134, 5144, 5154, 5244		6
Field Courses (see text and Table 5 for details)		<u>21</u>
<b>Total Core Required</b>		48

After the first year, Ph.D. students are required to complete 7 three-credit field courses in chosen areas of study plus the second semester of macroeconomics. Selections among field courses allow students to tailor their graduate program to particular interests and to interact with faculty working in these areas.

A listing of the fields of study offered and the courses available for each field is given in Table 5, and it is the policy of the departments to try to offer at least 2 courses for each field during each academic year, and at least 3 courses for each field over any two academic years. Ph.D. students mostly complete their required field courses during the second year of their studies, but it is not unusual for individual Ph.D. students to take some required or elective courses during the third year of their program.

Each student must have one major field for which they complete 3 courses, one minor field for which they complete 2 other courses (not counted toward his/her major field), and may choose among the other courses in Table 5 to complete the required 7 field courses. Students with an applied orientation are strongly encouraged to include at least one course in the Econometrics Field in their program of study. At most one field course to fulfill the Ph.D. core requirements can be at the 5000 level, except that a student who completes a major or minor field in Resource and Environmental Economics can use two 5000-level courses toward the field course requirement.

In addition to the regularly scheduled courses shown in Table 5, a three-credit seminar course is used to offer various special topics in which a group of faculty and students have an interest at a particular time.

The co-chairs of the GPC will sometimes approve these special topic courses (AAEC/ECON 6984) to be counted as part of the field-course requirements, as described below.

**Table 5. Ph.D. Fields of Study and Second-Year Courses**

<b>Theory: Macroeconomics and Microeconomics</b>		<b>Markets and Industrial Organization</b>	
Advanced Macroeconomics (ECON 6015)		Industrial Organization (ECON 6404)	
Contemporary Allocation Theory (ECON 6005)		Markets and Regulation (AAEC 6434)	
Collective Choice (ECON 6044)		Strategic Behavior (ECON 6005)	
Strategic Behavior (ECON 6004)			
<b>Econometrics</b>		<b>Resource and Environmental Economics</b>	
Advanced Econometrics (Time Series) (ECON 6474)		Resource and Env. Econ. (AAEC 5144)	
Advanced Topics in Econometrics (ECON 6024)		Advanced Natural Resource Economics	
Demand and Production Analysis (AAEC 6464)		Dynamic Analysis (AAEC 6454)	
		Risk Analysis (AAEC 6424)	
<b>Public and Regional/Urban Economics</b>		<b>Development and International Economics</b>	
Applied General Equilibrium Analysis (AAEC/ECON 6474)		Applied General Equilibrium Analysis (AAEC/ECON 6474)	
Collective Choice (ECON 6044)		Development Economics (ECON 6054)	
Public Economics (ECON 6204)		International Trade and Finance (ECON 6304)	
Regional and Urban Economics (AAEC/ECON 6444)		Regional and Urban Economics (AAEC/ECON 6444)	
Rural Development (AAEC 5244)			

Beyond the core coursework requirements, individual programs of study are determined jointly by the student and his/her advisory committee chair. At the discretion of the student's advisory committee, a maximum of 6 hours of courses numbered 4000 that are not approved in general for graduate credit by the University and/or up to 9 hours of special study (courses numbered 5974, 5984, and 6984) may also be used to fulfill the total 90 credit University requirement. (Special Study Courses which are subsequently approved as regular courses do not count towards the maximum permitted special study credits.)

As noted above, students who are admitted to the Ph.D. program without having completed a master's degree at another institution often earn an M.A. or M.S. at Virginia Tech as part of their Ph.D. program. The credit hours applied to the master's degree can also be counted toward the Ph.D. coursework requirements. A similar rule applies for students who are initially in a master's degree program and are subsequently admitted to the Ph.D. program. In all cases, a separate program of study must be filed

with the Graduate School for each degree. As noted above, Ph.D. students who have filed a preliminary program of study for only a master's degree at the end of their first year must file a final program of study for their Ph.D. degree by their fifth semester of enrollment.

### **Ph.D. Course Requirement Exceptions**

Individual students enter the Ph.D. program with various educational backgrounds. In particular, some students enter directly from a B.A. or B.S. program while others have previously earned an M.A. or M.S. degree. In addition, depending on their background, some students are assigned substantial teaching or research responsibilities during their first year in the Ph.D. program. In recognition of these differences, students may seek exceptions on an individual basis from some parts of the core coursework requirements.

In the first-year core, a student may waive out of either Applied Economics course and/or the Mathematical Economics course by demonstrating competence in equivalent material or by taking a more advanced course. Both co-chairs of the GPC must approve such exceptions. Waiving out of Applied Economics is recommended only for students with previous empirical training. Waiving out of Mathematical Economics is recommended only for those students who already have substantial training in calculus, algebra, analysis, and the theory of static optimization.

A student may waive out of any of the remaining core courses (two semesters of Microeconomics, two semesters of Macroeconomics, and two semesters of Econometrics) only by demonstrating completion of equivalent material in a previous program of graduate study. Both co-chairs of the GPC must approve such exceptions, which will be granted only to students having outstanding records.

Beyond the first-year core, with the approval of both co-chairs of the GPC, a special topics course (AAEC/ECON 5984 or 6984) may be used as one of the courses required for a major field. Substitutions within the major field or for the remaining four field courses (the two courses for a minor field and the two elective field courses) also may be permitted to allow qualified individual students to tailor their program toward specialized fields of study or to enhance the overall quality of their graduate education. For example, a student pursuing a major field in macroeconomics might substitute International Trade and Finance for one of the courses in Theory: Macroeconomics and Microeconomics. Such substitutions must be approved by both co-chairs of the GPC (on the student's program of study submitted to the Graduate School). Exceptions will be based on the specific background and objectives of the student, on recommendations by a student's advisory committee chair, and on outstanding performance of the individual.

Even with permitted substitutions, only one second-year field course in Economics or Agricultural and Applied Economics at the 5000 level, or its equivalent at another institution, can be included among the seven required field courses (except in the field of Resource and Environmental Economics, as noted above).

To request that previous graduate coursework at another institution substitute for part of either the Ph.D. core coursework requirements, a student must fill out a “Graduate Credit Transfer Evaluation Form” giving a detailed description of the specified courses. The co-chairs of the GPC will work with the student to evaluate his/her transfer credits in terms of substitutions for courses offered at Virginia Tech.

### Typical Ph.D. Program

An outline of the sequencing of courses in a “typical” Ph.D. program is shown in Table 6. During the third and fourth years, Ph.D. students may choose to take optional courses, but the primary concentration after the second year is on dissertation research. Students who are supported by graduate teaching or research assistantships must register for 12 hours of coursework and/or research and dissertation hours (AAEC/ECON 7994) during each fall and spring semester.

**Table 6. Typical Ph.D. Program (for students entering with a B.A. or B.S.)**

<b>First Year</b>	
<b>Fall Semester</b>	<b>Spring Semester</b>
Microeconomics (ECON 5005)	Microeconomics (ECON 5006)
Mathematical Economics (ECON 5124)	Macroeconomics (ECON 5015)
Econometrics (AAEC/ECON 5125)	Econometrics (AAEC/ECON 5126)
Applied Economics	Applied Economics
<b>Second Year</b>	
<b>Fall Semester</b>	<b>Spring Semester</b>
Macroeconomics (ECON 5016)	Field Course
Field Course	Field Course
Field Course	Field Course
Field Course	Field Course

### The Ph.D. Examinations

In addition to coursework, Ph.D. students are required to pass three examinations: (1) a written qualifying examination, (2) a written and oral preliminary examination, and (3) a final oral dissertation defense.

#### *Written Qualifying Examination*

1. Students are required to take the written qualifying examination during the summer following their first two semesters of coursework. Exceptions to the summer rule, while unusual, may be obtained on an individual basis. To be considered for an exception, a student must petition the co-chairs of the GPC in writing as early as possible and not later than four weeks prior to the examination date. Students who fail to take the written qualifying examination without the required permission will be considered to fail, unless there are extraordinary extenuating circumstances.
2. Prior to taking the written qualifying examination, students must have an approved program of study on file at the Graduate School. Exceptions to this rule, while unusual, may be considered if the student petitions the co-chairs of the GPC in writing not later than four weeks prior to the examination date. As noted above, students who have not previously earned a master's degree may file a program of study just for a master's degree at this time, if they so choose.
3. The qualifying examination will be administered by a written Qualifying Examination Committee comprised of six members, three from each department, two of whom serve as co-chairs. The summer examination will be at least four weeks after the end of spring semester.
4. The Qualifying Examination Committee maintains an outline of topical areas for students to study in preparing for the examination. A file of previous exams is maintained on the web.
5. A student has two attempts to pass the written qualifying examination. Failure to pass the qualifying examination after two attempts will preclude a student continuing in the Ph.D. program. Under extenuating circumstances, the chair of a student's advisory committee may petition the student's Department Head/Chair to allow a third attempt.
6. The determination of whether a student fails or passes the qualifying examination rests with the written Qualifying Examination Committee.
7. Students who do not pass the summer offering of the qualifying examination are required to take the examination at the next sitting. Typically, this reexamination will be scheduled during the following fall semester. Exceptions to this rule may be considered if the student petitions a chair of the GPC not less than four weeks prior to the examination date.
8. If the qualifying examination is given during a period other than summer, any eligible student may take the examination. However, the qualifying examination will not be scheduled at times other than summer only for first attempts.
9. A student cannot advance to the preliminary examination process until the qualifying examination has been passed.

### *Preliminary Examination*

Each student must pass a preliminary examination consisting of a written and an oral component. The preliminary examination is required by the Graduate School. A student and his/her advisory committee can choose from two approaches to the preliminary examination: either a three-hour written examination followed by an oral examination, or preparation of a dissertation proposal with the oral examination a defense of that proposal. In either case, a student must attempt the preliminary examination before entering a seventh semester of full-time enrollment in the Ph.D. program unless approval for extension is given by the co-chairs of the GPC. The determination of whether a student fails or passes the preliminary examination rests solely with the student's advisory committee.

Under the written examination approach, the examination covers material relevant to the student's declared fields of study. The oral part of the exam will cover all of the student's coursework and material that the student's advisory committee deems relevant for a Ph.D. candidate. The preliminary examination proceeds as follows:

1. The written preliminary examination is designed by the student's advisory committee, which may enlist the help of other faculty in preparing and grading individual questions.
2. A successful attempt at passing the written examination is followed within two months by the oral examination. The oral examination must be scheduled with the Graduate School at least two weeks prior to taking the examination and a card obtained for recording the grade on the day of the exam. The results of the oral examination (pass or fail) are recorded with the Graduate School by filing the card upon completion of the oral examination.
3. If a student is unsuccessful on the written examination, it is considered a failure of the preliminary examination and recorded with the Graduate School. A failure on the written examination is recorded by the chair of the student's advisory committee who writes a letter to the student, with copies to the Dean of the Graduate School and the co-chair of the GPC in their department, indicating that the student has failed the written portion of the examination, which constitutes failure of the preliminary examination.

Under the dissertation proposal approach, the written component consists of a preliminary investigation of a certain field of research. The proposal should contain evidence that the student has a thorough and broad understanding of the field of investigation, evidence of sufficient innovations within this field of investigation to constitute at least one paper, and an outline of a research agenda beyond the proposed innovations leading to the completion of a dissertation. The proposal should be accompanied by a bibliography of the field of investigation. The preliminary examination proceeds as follows:

1. The student must submit a draft of the written dissertation research proposal at least six weeks prior to the proposed date of the oral examination to his or her advisor and the designated readers. The student is required to have at least one meeting with his/her advisor and the designated readers regarding the dissertation research proposal prior to the submission of the

proposal to the advisory committee as a whole. If necessary the student will have the opportunity to modify his/her proposal to respond to the remarks from the advisor and the designated readers.

2. The student has to submit the final version of the written dissertation research proposal at least two weeks prior to the defense date to all members of his/her advisory committee. The oral examination must be scheduled with the Graduate School at least two weeks prior to taking the examination and a card obtained for recording the grade on the day of the exam. The results of the oral examination (pass or fail) are recorded with the Graduate School by filing the card upon completion of the oral examination.

If a student fails the first attempt of the preliminary examination, the student's Department Head/Chair may grant a second attempt. If a second attempt is granted, the preliminary examination process must be retaken between fifteen weeks and six months after the first attempt. A maximum of two attempts to pass the preliminary examination will be allowed. There will be no opportunity to repeat the preliminary examination process after two attempts.

### ***Final Oral Examination***

1. The final oral examination is a defense of the student's dissertation. The Graduate School requires that the final oral exam not be scheduled less than nine months after the student has successfully passed the preliminary examination, and that at least 24 hours of research or coursework (including any hours for which the student is enrolled during a semester in which the preliminary exam is taken) be completed between the exams. Before scheduling the final oral examination, the chair of the student's advisory committee and the two dissertation readers must concur that the dissertation is suitable for the final defense.
2. The determination of whether a student fails or passes the final oral defense rests solely with the student's advisory committee.

### **Ph. D. Dissertation**

Students who choose to use the "paper" option for their dissertation may write at most one jointly authored paper with another student as part of their PhD dissertation provided that it has no more than two co-authors, it is included in one dissertation only, and the dissertation has at least one single authored paper.

## **PROGRESS OF GRADUATE STUDENTS**

### **Progress Reports**

Each department sets requirements for submission of graduate student progress reports. The reports are submitted to the co-chair of the GPC from the student's department, and may require being reviewed and signed by the chair of the student's advisory committee or temporary advisor. For students with

assistantship financial support, the progress reports may be used to help determine the student's stipend level for the following year. The progress reports will be filed with the student's permanent record and may be reviewed or copied by the student upon request.

## **Minimum Grade Performance**

In order to remain in good standing and receive a degree, a graduate student must obtain a 3.0 Q.C.A. overall and on all courses completed from his/her program of study, including prerequisite (supporting) courses. Satisfactory overall performance toward the degree is determined based upon both coursework and research, and requires passing the examinations specified above. Students who fail to meet the minimum performance criteria will be placed on probation for one semester and may subsequently be asked to leave the program.

## **Graduate Seminar**

All master's degree and Ph.D. students writing a thesis or dissertation are expected to present a seminar on their research proposal or results. In order to schedule a final thesis or dissertation defense, the student may need to complete a short form, which is signed by the chair of his/her advisory committee, indicating that the seminar was given. A copy of the form is obtained from a co-chair of the GPC. Students are encouraged to participate actively in the research seminars within the departments, particularly during the latter part of their Ph.D. program.

## **Termination Interview**

Upon completion of their degree, graduate students are expected to meet with their Department Head/Chair for a termination interview. At that time suggestions for improvements in any facet of the graduate program will be received. Such suggestions can also be made at any time in the student's program and to any faculty member. At the completion of their degree, students are also expected to provide the GPC with their forwarding address, date of degree, title of thesis or dissertation, and position of employment or further educational plans

## **FINANCIAL MATTERS**

### **Graduate Teaching and Research Assistantships**

Most graduate students in the departments of Economics and Agricultural and Applied Economics receive some form of financial support, subject to resource availability within the departments. Graduate students enrolled in degree programs for the M.A. or M.S. thesis-option, for the M.S. with agribusiness focus, and for the Ph.D. are eligible for support by a graduate teaching assistantship (GTA), graduate research assistantship (GRA), or senior graduate research assistantship (SGRA). Assistantships may be offered to any of these graduate students, except those entering on provisional status. A graduate student who does not initially receive an assistantship may qualify for assistantship support as early as the second semester of his/her program depending upon performance in the classroom. Assistantship assignments may be for the academic year (9-months) or calendar year (12-months). Some students are supported for shorter periods on an hourly-wage basis, and all students enrolled in the graduate degree programs are eligible for hourly-wage employment.

Graduate teaching assistants participate with faculty in conducting undergraduate and graduate courses. Assignments include grading and classroom presentations. Experienced GTAs may be assigned responsibility for a section of a course or a whole course. GTAs are normally appointed by the semester or academic year.

Research within the departments of Economics and Agricultural and Applied Economics is conducted by both faculty members and graduate students working under their direction. Funding for some of this research is provided from state and federal appropriations channeled through the University's Research Division, or from specific project grants and contracts from governmental agencies, associations, and private organizations, channeled through the University's Office of Sponsored Programs.

Research carried on by graduate students that contributes to the purposes of the Research Division or specific funding agencies is often supported financially through research assistantships. GRAs and SGRAs are usually appointed by calendar year. The research responsibilities assigned to students on GRAs and SGRAs may or may not be related to their thesis or dissertation research, but most students with research assistantships eventually complete a thesis or dissertation related to a funded project. Their assignments may also include some assistance with classroom instruction.

Graduate research assistants on Research Division or external grant funds are usually assigned to the faculty member to whom the grant was awarded, unless another arrangement is agreed to by the student and faculty involved.

One-half time graduate research assistants enroll for 12 credit hours per semester. Students with a "one-half-time" assistantship are required to work *an average* of 20 hours per week on assignments not related to the coursework for their degree. A student on any type of assistantship is not allowed to hold other employment.

The timing of work on an assistantship is subject to negotiation between the student and his/her supervisor. While an average of 20 hours of assistantship work is required per week, students may work less than 20 hours some weeks and make up the time by working more or even full time during other periods. Students on assistantship receive leave for the official University holidays (for example Christmas Day, New Year's Day, Fourth of July, Thanksgiving). Students holding calendar-year assistantships are eligible for up to two weeks (10 working days) of vacation per year. Approval by the student's supervisor is required before a vacation is taken.

At the beginning of each semester, students holding teaching assistantships, and students holding research assistantships who have not initiated a thesis or dissertation, will be assigned by the co-chair of the GPC in their department to work with specific faculty members. The purpose of these assignments is to effectively utilize the resources of the departments in fulfilling their missions of research, teaching, and public service. Teaching assistantship assignments continue to be made on the basis of department requirements. Initial research assistantship assignments continue until a student's advisory committee has been chosen. Research assistantships will then be supervised in most cases by the chair of the advisory committee.

Students on assistantship must maintain a cumulative Q.C.A. of at least 3.0 on all work taken including grades on supporting courses and other courses that may or may not be on the student's program of study. If a student's cumulative Q.C.A. drops below 3.0, the student is given notification and may be allowed one semester in which to bring his/her cumulative Q.C.A. back up to 3.0. If a cumulative Q.C.A. of 3.0 is not achieved after this one semester, the student's financial assistance will be discontinued. To be eligible for reappointment, a student on assistantship must maintain a 3.0 Q.C.A. on all work taken and must earn a minimum of 12 credit hours per semester. The student also must make satisfactory progress on his/her research, and perform satisfactorily on his/her assistantship assignments. Assistantship appointments may be terminated at any time for unsatisfactory progress in a student's program.

### **Duration of Assistantships**

The following guidelines govern the length of time students may earn assistantship support:

1. Master's degree students may be carried for a maximum of twenty-two (22) months on a research assistantship.
2. Ph.D. students may be carried for a maximum of twenty-two (22) months on a teaching or research assistantship prior to obtaining a master's degree, and for a maximum of thirty-nine (39) months beyond a master's degree.
3. No extensions of the duration of assistantships will be made unless prior approval is obtained from a student's Department Head/Chair. Extension will not be the normal case. If an extension is to be sought, a request should be made in writing by the student's advisory committee chair as early in the program as possible.

### **Stipends and Tuition**

As of August 2003, monthly stipends for a student on a full (one-half time) graduate research or teaching assistantship in Agricultural and Applied Economics range from \$1,300 to \$1,480. Outstanding students may qualify for senior graduate research assistantships with stipends up to \$2,000 per month. Academic-year tuition is waived for students on assistantships.

For 2003-2004, tuition per semester is \$3,019.50 for in-state and \$4,854.00 for out-of-state students. Students also pay a comprehensive fee of about \$452.50 for in-state and \$477.50 for out-of-state students per semester, which covers athletic events, student health service, bus fee, and other services. Students receiving assistantships receive a waiver of academic-year tuition but must pay tuition for summer courses. Normally, students do not register for summer courses.

Because of limited funds, and in order to give a financial support opportunity to more students, a department may offer an individual student less than one-half time assistantship support. Students on less

than one-half time assistantships are expected to work a pro-rated share of the 20 hours per week required of holders of one-half time assistantships.

### **Special Fellowships (Kline, Driscoll and Cunningham)**

Two permanent special fellowships are available that provide additional support to outstanding students. These are the Kline and Driscoll Fellowships, which are provided from endowed funds of the Department of Agricultural and Applied Economics that honor former members of the department faculty. The Kline and Driscoll Fellowships are offered to one or more entering students for their first year of study in the areas of microeconomics/production economics and resource economics/quantitative methods, respectively.

During 2002-2005, the departments will also have available two university-supported Cunningham Fellowships. These Fellowships will be offered for three years of support to two outstanding entering Ph.D. students in any area of study.

### **Graduate Co-op**

The departments participate in the University Co-op program. Master's and Ph.D. students who choose to use the co-op program work a minimum of two and a maximum of four semesters at a job relevant to their academic interests and gain academic credit for that work experience.

## **WORK ENVIRONMENT**

### **Office Space and Budget Support**

Students on assistantship are allotted office space in the department in which they are employed. Offices are made available to those students not on assistantship as space allows.

Expenses incurred by students on GRAs and SGRAs working on a funded research project will be reimbursed. Expenses incurred for their own classroom assignments are the students' responsibility.

### **Computer Facilities**

Upon arrival on campus, students will be assigned a PID (personal ID), which will give them access to the Internet, email, the electronic library system, selected software, course add/drop services, and other parts of the Virginia Tech System. Both the departments of Economics and Agricultural and Applied Economics have microcomputer facilities with scanners and laser printers for use exclusively by graduate students, faculty, and staff. These computers are connected to a server that provides access to a wide variety of word processor, statistical, spreadsheet, graphic, mathematical, and other software packages. In addition to the graduate computer labs, and computers located in many of the graduate student offices in the departments, students have access to various well-equipped University microcomputer

labs. Off campus high speed modem access is available, and dormitories and many Blacksburg apartment complexes have Ethernet lines available.

## **Thesis and Dissertation Preparation and Distribution**

Thesis and dissertation typing and distribution are subject to the following policies.

1. Students are responsible for producing the first, subsequent, and final drafts, including charts and tables, using personal computer word processing, as approved by the chair of the student's advisory committee.
2. The student must give all advisory committee members a paper copy of the draft of the thesis or dissertation on which they will base his/her final oral defense.
3. The student must make all data sets and analytical procedures available to the chair of his/her advisory committee in a fully documented form. The thesis or dissertation must be submitted electronically to the Graduate School. A copy of the final thesis or dissertation must be given to the chair of the advisory committee electronically and on paper, and a hardbound copy must be made available to the student's department.

## **DRISCOLL MEMORIAL OUTSTANDING GRADUATE RESEARCH AWARD**

Each winter since 2000, the faculty have selected the best master's thesis or Ph.D. dissertation completed in the two departments during the preceding calendar year to receive the annual Driscoll Memorial Outstanding Graduate Research Award. This award is given to honor the contributions of former faculty member Paul Driscoll, and to recognize the achievement of a recent graduate. The recipient receives an award certificate and two-hundred and fifty dollars. Winners of the Research Award have been:

- 2002: Lire Ersado. Ph.D. dissertation "Three Essays in Development Economics: Savings Behavior and Risk; Health and Public Investments; and Sequential Technology Adpption," Drs. Gregory S. Amacher and Jeffrey Alwang, co-advisors.
- 2001: Cathleen Johnson. Ph.D. dissertation "Social Capital and Conventions: A Social Network Perspective," Dr. Robert Gilles, advisor.
- 2000: Sarah Chinnis Bosley. M.S. thesis "The Differential Impact of Welfare Reform in Non-Metropolitan and Metropolitan Virginia," Dr. Brad Mills, advisor.

## **GRADUATE STUDENT ORGANIZATIONS**

Graduate students are encouraged to participate fully in the professional and social activities of the departments. The economics program Graduate Student Association is an informal organization designed to serve the needs of graduate students and represent their interests. The Association has representation on various departmental committees. The Association also helps to sponsor the

orientation for new students and various social activities. Membership in the Association is open to all graduate students in the departments of Economics and Agricultural and Applied Economics.

A larger organization, The Graduate Assembly, is a University organization to which graduate students of all departments may send delegates. The Graduate Assembly provides a forum for discussion of issues affecting graduate students at Virginia Polytechnic Institute and State University. Members of the Graduate Assembly serve on University-wide committees to insure adequate graduate student input in University activities.



**APPENDIX A: PROGRAM OF STUDY FORM**  
**Proposed Graduate Program of Study**

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**Name**

**Social Security No.**

**Date**

**For the Degree of:**

	Ph.D.		M.A. (ECON)		Thesis
	Fields of Study		M.S. (AAEC)		Non-Thesis
Major:			Applied Econ		Case Study
Minor:			Agribusiness		

Dept. & Course No.	Course Title	Academic Year (20__-__)	Total Credits
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**First-Year Courses**


**Total First-Year Credits:**

**Field Courses (Second-Year, 5000 and 6000 Level)**


<b>Total Field Courses Credits:</b>			
<b>Supporting Courses (4000 Level and Other Special Courses)</b>			
<b>Total Supporting Courses:</b>			
<b>Research and Thesis or Dissertation</b>			
<b>Total Research Credits:</b>			
<b>Total Hours for Program of Study:</b>			
<b>Student's Signature</b>		<b>Date</b>	
<b>Student's Advisory Committee (*indicates Chairperson)</b>			
<b>Signature</b>	<b>Name</b>	<b>Social Security Number</b>	
<b>Graduate Program Committee Approval</b>			
<b>Signature</b>	<b>AAEC Co-Chair</b>	<b>Date</b>	
<b>Signature</b>	<b>Econ Co-Chair</b>	<b>Date</b>	
<b>Signature</b>	<b>Pamplin College (Agribusiness M.S. only)</b>	<b>Date</b>	

<b>Signature</b>	<b>Department Head/Chair</b>	<b>Date</b>

## APPENDIX B: Agribusiness Course Options

As summarized in Table 2, for the M.S. with agribusiness focus, students fulfill requirements in a business concentration, restricted business electives related to that concentration, and international economics. These are chosen among the following. A maximum of 9 hours of 4000 level courses approved for graduate credit may be included in fulfilling the requirements for the M.S. with agribusiness focus.

### ***Business Concentration***

Students take two courses from the Pamplin School of Business in one of the following four business concentrations.<sup>5</sup>

<b>Concentration</b>	<b>Courses</b>
<i>Management Science</i>	<i>MSCI 5404: Management Science</i>
<i>Management</i>	<i>MSCI 5414: Production and Operations Management in a Global Environment</i>
	<i>MGT 5304: Social, Legal and Ethical Environment of Business</i>
	<i>MGT 5314: Dynamics of Organizational Behavior</i>
<i>Finance</i>	<i>FIN 5024: Principles of Finance</i>
	<i>FIN 5104: Corporate Finance, or ECON 5984: International Money and Banking</i>
<i>Marketing</i>	<i>MKTG 5104: Marketing Policy and Strategy</i>
	<i>MKTG 5154: Research for Marketing Decisions</i>

### ***Restricted Business Electives***

Students will take at least 6 credits in the business concentration that they selected through their choice of core courses from the Pamplin School of Business from one of the following four business concentrations.

<b>Concentration</b>	<b>Courses</b>
<b><i>Management Science</i></b>	<i>MSCI 5424: Network Simulation Analysis</i>
	<i>MSCI 5434: Computer Simulation in Business</i>
	<i>MSCI 5444: Advanced Management Science</i>
	<i>MSCI 5484: Current Issues in Production and Operations Management</i>
	<i>MSCI 5494: International Operations and Information Technology</i>
	<i>MSCI 5564: Artificial Intelligence Applications in Business</i>
	<i>MSCI 6414: Current Topics in Management Science</i>

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<sup>5</sup> Business concentrations in Accounting and Information Systems are not offered at this time due to the heavy demand for these courses within the Pamplin Business College. Students wishing to incorporate courses from Accounting/Information Systems into their program of study will need to obtain permission from their committee and the course instructor.

<b>Management</b>	<p><i>MGT 5334: Managing Change through Leadership</i>  <i>MGT 5704: Human Resource Management</i>  <i>MGT 5714: Human Resource Staffing Development</i>  <i>MGT 5724: Compensation and Rewards Systems</i>  <i>MGT 5744: Employee Relations</i>  <i>MGT 5784: International Management</i>  <i>MGT 5794: Strategic Management</i>  <i>MGT 5804: Strategies of Leadership in Technology Base Organizations</i>  <i>MGT 5814: Entrepreneurial Leadership</i></p>
<b>Finance</b>	<p><i>FIN 5014: Commercial Law</i>  <i>FIN 5124: Investment Analysis and Portfolio Management</i>  <i>FIN 5134: Investment Banking in a Global Environment</i>  <i>FIN 5144: Financial Institutions, Markets and Money</i>  <i>FIN 5154: Commercial Bank Management</i>  <i>FIN 5164: Advanced Corporate Finance</i>  <i>FIN 5175-5176: Financial Derivatives I, II</i>  <i>FIN 5184: International Finance</i></p>
<b>Marketing</b>	<p><i>MKTG 5204: Buyer Behavior</i>  <i>MKTG 5304: Promotion Strategy</i>  <i>MKTG 5554: Business Marketing Management</i>  <i>MKTG 5704: International Marketing Strategy</i>  <i>MKTG 5754: Development of International Marketing Plans</i></p>

### ***International Economics***

Students choose at least one of the following if no other course in their program has an international focus.

<p><i>ECON 4135: International Trade</i>  <i>AAEC 5154: Agricultural Development and Trade</i>  <i>ECON 6054: Economic Development</i>  <i>MSC 5494: International Operations and Information Technology</i>  <i>FIN 5184: International Finance</i>  <i>MGT 5784: International Management</i>  <i>MKTG 5704: International Marketing Strategy</i>  <i>MKTG 5754: Development of International Market Plans</i></p>
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## APPENDIX C: GRADUATE COURSES\*

### AGRICULTURAL AND APPLIED ECONOMICS (AAEC)

#### **5004 Seminar**

Formal presentation and discussion of current problems, programs, and research studies in agricultural and applied economics. A one-credit math review seminar is also taught each fall semester. (Variable credit)

#### **5024 Mathematical Programming**

Use of mathematical programming models to solve firm-level and society-level optimization problems subject to constraints. Computer project required. (Fall, 3 credits)

#### **5025, 5026 Applied Microeconomics**

A comprehensive treatment of microeconomic theory with emphasis on application to current applied problems. 5025: Topics in firm and consumer theory including production functions, duality, cost functions, profit functions, indirect utility functions, derived demand, and supply. 5026: General equilibrium, welfare economics, and imperfect competition. (5025: Fall; 5026: Spring 3 credits)

#### **5104 Research Project Planning**

Planning and executing a research project with emphasis on problem identification, formulation of hypotheses, choice of appropriate empirical technique, and data sources. (Spring, 1 credit)

#### **5114 Research Methodology**

Modern philosophy of science as applied to an understanding and interpretation of the history of economic thought. Understanding and comparison of contemporary schools of economics is stressed. Pre: 5025, 5125. (Spring, 2 credits)

#### **5125, 5126 (ECON 5125, 5126) Econometrics**

Introduction to the concepts and methods in application of econometric analysis to problems of economic research. Emphasis on the probabilistic and statistical foundations of econometrics and the application of procedures and techniques using actual data. Topics include probability theory, statistical inference, linear regression and related models multivariate linear regression, and simultaneous equation models. Pre: Probability Theory and Statistics. (5125: Fall; 5126: Spring, 3 credits)

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\* Check latest scheduling before including field courses in program plans.

### **5134 Agricultural Marketing**

Concepts of technical and economic efficiency as they are related to the flow of agricultural products. Major topics include market equilibrium over time, space, and form, price discovery under different market structures, and price risk management with futures and options. (Fall, 3 credits)

### **5144 Resource and Environmental Economics**

Economic theory and methods are applied to analysis of the uses of natural resources, environmental problems, and public investment planning. The contribution of economic analysis to public policy formulation is stressed. (Spring, 3 credits)

### **5154 Agricultural Development and Trade**

The role of agriculture in economic development and the effects of alternative trade policies and practices in less developed nations. Topics include agriculture in theories of development, population growth, migration, the economic organization of the peasant-household firm, technological and institutional change, development and the environment, exchange rates, regional economic groupings, food aid, trade negotiations, and project analysis. (Fall, 3 credits)

### **5164 Agricultural and Resource Policy**

An advanced analysis of the role of agriculture in the general economy and of the economic, political, and social forces that affect the development of agricultural and resource policy. (Fall, 3 credits)

### **5244 Rural Development**

Theory and methods related to economic development of rural America. Considers the roles of agriculture, resources, human capital, and federal, state, and local governments in development processes. Outlines the constraints created by resource scarcity, location, and government policy. Quantitative methods in resource development, regional development, and impact analysis are introduced. (Spring, 3 credits)

### **5904 Project and Report**

Case studies and other projects. (Variable credit)

### **5984 (ECON 5984) Applied Economics**

Introduction to modeling economic problems through tools of rational choice. Selected microeconomic and macroeconomic policy issues are addressed and analytic methods developed to provide information on these issues. (Fall, Spring: Two-semester sequence for first-year Ph.D. students, 3 credits).

### **5984 Special Study**

Various topics based on faculty and student interest. (Variable credit)

### **5994 Research and Thesis**

Variable credit course for thesis research.

### **6424 Risk Analysis**

Advanced treatment of the analysis and optimization of risky economic decisions using mathematical tools and analytic concepts. Topics include: structuring risky decision problems, measuring uncertainty, risk preferences, optimal choices under uncertainty, value of information, and communication of uncertainty. Pre: ECON 5006. (Fall, 3 credits, alternate years)

### **6434 Markets and Regulation**

Advanced theoretical and empirical issues relating to the economic analysis of markets. Major topics include assessing economic performance of markets under varying competitive assumptions; quantitative methods of modeling and analyzing markets over multiple dimensions; anti-trust and other market regulations. PRE: ECON 5005, 5006; (Spring, 3 credits, alternate years)

### **6444 (ECON 6444) Regional and Urban Economics**

An advanced study of the theory and application of regional and urban economics, with particular focus on the spatial aspects of economic activity. Topics include: nature of regional and urban areas, models of regional economies, location choice of firms and consumers, local public finance, housing, transportation, and labor markets. Pre: ECON 5005, AAEC/ECON 5126; (Spring, 3 credits)

### **6454 Dynamic Analysis**

Advanced treatment of the analysis and optimization of dynamic economic systems using mathematical tools and analytic concepts. Topics include: optimal control theory; dynamic programming; economics of resource allocation over time; and stochastic optimization models. Pre: Permission of the course instructor. (Fall, 3 credits, alternate years)

### **6464 Demand and Production Analysis**

Issues in microeconomic model development and estimation relating to demand and production systems. Topics include duality, separability, aggregation, flexible functional forms, selecting and estimating appropriate demand/production models. PRE: ECON 5005, 5006, ECON/AAEC 5125, 5126, (Spring, 3 credits)

### **6474 (ECON 6474) Applied General Equilibrium Analysis**

Theoretical and empirical issues in developing and implementing numerical general equilibrium models. Development of basic analytical framework and model properties, and study of selected applications in international trade, public finance, and resource and environmental economics. PRE: ECON 5005, 5006, (Spring, 3 credits, alternate years)

### **6984 Special Topic**

Various advanced topics based on faculty and student interest. (3 credits)

### **7994 Research and Dissertation**

Variable credit course for dissertation research.

### *Advanced Undergraduate Courses*

#### **4304 Environmental and Sustainable Development Economics**

#### **4344 Sustainable Development Economics**

#### **4404 Agricultural Management and Problem Solving**

#### **4504 Agricultural Price and Market Analysis**

#### **4754 Real Estate Law**

#### **4764 Real Estate Appraisal**

#### **4804 (STAT 4804) Elementary Econometrics**

Economic applications of mathematical and statistical techniques: regression estimators, hypothesis testing, lagged variables, discrete variables, violations of assumptions, and simultaneous equations. (Spring, 3 credits; required course for master's degree)

#### **4984 Special Study**

Variable credit course.

## APPENDIX C: GRADUATE COURSES\*

### ECONOMICS (ECON)

#### **5005, 5006 Microeconomic Theory**

An intensive treatment of modern microeconomic theory using mathematical tools and analytic concepts.

5005: consumer theory, theory of the competitive firm, introduction to general competitive market equilibrium, and monopoly effects. 5006: general equilibrium and welfare economics, uncertainty and information economics, theory of games, and oligopoly.

(5005: Fall; 5006: Spring, 3 credits)

#### **5015, 5016 Macroeconomic Theory**

An intensive treatment of modern macroeconomic and monetary theory. 5015: national income accounts, effective demand, neoclassical and Keynesian theories of capital and interest, money and securities markets, and introduction to macroeconomic dynamics and rational expectations. 5016: equilibrium models of prices and employment, disequilibrium analyses, implicit contract models of employment, and search models. (5015: Spring; 5016: Fall, 3 credits)

#### **5124 Mathematical Economics**

Extensive treatment of mathematical techniques for economic modeling. Review of linear algebra and calculus. Static optimization with Lagrangian and Kuhn-Tucker methods: Differential and difference equations; dynamic optimization with calculus of variations, optimal control and dynamic programming. (Fall, 3 credits)

#### **5964 Experimental Economics**

Laboratory Techniques are valuable for answering research questions which defy traditional empirical analysis due to lack of field data. Examples include proposed regulations, new market designs and tests of theory. The goal of this course is two-fold: to develop skills in experimental methods appropriate for economics and related fields and to familiarize students with the results of experimental tests of economic theory. (Spring, 3 credits, alternate years)

#### **5984 (AAEC 5984) Applied Economics**

Introduction to modeling economic problems through tools of rational choice. Selected microeconomic and macroeconomic policy issues are addressed and analytic methods developed to provide information on these issues. (Fall, Spring: Two-semester sequence for first-year Ph.D. students, 3 credits).

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\* Course numbers given here match those listed in the University's *Graduate Catalog*. Conversion of graduate field courses to a common three-credit basis is underway. This will involve changing some course numbers and names:

where appropriate both the “old” and the “new” numbers are given. Check latest scheduling before including field courses in program plans.

### **5984 Special Study**

Various topics based on faculty and student interest. (Variable credit)

### **5994 Research and Thesis**

Variable credit course for thesis research.

### **Old: 6005, 6006 Contemporary Allocation Theory**

### **New: 6005, 6004 Contemporary Allocation Theory, Strategic Behavior**

Recent developments in microeconomics and game theory. Topics in equilibrium analysis, bargaining theory, theory of cooperative and noncooperative games, and the economics of uncertainty. Pre: ECON 5005, 5006 (3 credits)

### **Old: 6015 Aggregate Economic Analysis**

### **New: 6014**

Topics of current importance in theoretical and empirical macroeconomics. Monetary theory, the theory and econometrics of rational expectations, linear projection theory, time series analysis, stochastic growth theory. Pre: ECON 5006, 5016 (3 credits)

### **6024 Advanced Topics in Econometric Theory**

The application of econometrics in different estimation environments. Asymptotic theory, hypothesis testing in nonlinear models, specification testing, and model selection. An advanced course for students wishing to specialize in econometrics. Pre: AAEC/ECON 5127 (3 credits)

### **6044 Collective Choice**

Analysis of decision-making processes in committees, clubs, legislatures, and electorates. Pre: ECON 5005, 5006. (4 credits)

### **6054 Development Economics**

Microeconomic and macroeconomic approaches to economic development. Topics include neoclassical and dualistic growth models, development, resource allocation with imperfect markets for land, labor, and capital, planning techniques and project evaluation, and trade and development. (Fall, 3 credits)

### **6074 Graduate Law and Economics**

Economic analysis of the impact of legal institutions on the economy, and of the impact of economic motives and reasoning on both common law and statute law. (4 credits)



### **6104 Labor Economics**

Labor demand and supply, investment in human capital, discrimination in the labor market and the theory of equalizing wage differentials, search and employment, unions, and income distribution. Pre: ECON 5005. (Fall, 4 credits)

### **6204 Public Economics**

Taxation theory (excess burden and optimal taxation, incidence, and effects of taxation on savings and investment) and expenditure theory (public goods, externalities, public sector pricing, and social insurance). Pre: ECON 5005, 5006. (Fall, 3 credits)

### **6304 International Trade and Finance**

Ricardian and Heckscher-Ohlin-Samuelson trade theories, and extensions of these theories dealing with trade policy, factor mobility, uncertainty, and intra-industry trade. Theories of monetary and fiscal policy in an open economy, exchange rate determination, and balance of payments adjustment. Pre: ECON 5005, 5015. (Fall, 3 credits)

### **6404 Industry Structure**

Effects of industry structure on price and non-price behavior of firms, on market equilibrium, and on economic welfare. Problems of oligopolistic industries and analysis of regulation and anti-trust policies. Pre: ECON 5005. (Fall, 3 credits)

### **6444 (AAEC 6444) Regional and Urban Economics**

An advanced study of the theory and application of regional and urban economics, with particular focus on the spatial aspects of economic activity. Topics include: models of regional economies, location choice of firms and consumers, local public finance, housing, transportation, and labor markets. Pre: ECON 5005, AAEC/ECON 5126; (Spring, 3 credits)

### **6474 (ECON 6474) Applied General Equilibrium Analysis**

Theoretical and empirical issues in developing and implementing numerical general equilibrium models. Development of basic analytical framework, model properties, and applications. PRE: ECON 5005, 5006, (Spring, 3 credits)

### **6984 Special Topic**

Various advanced topics based on faculty and student interest. (3 credits)

### **7994 Research and Dissertation**

Variable credit course for dissertation research.

*Advanced Undergraduate Courses*

**4014 Environmental Economics**

**4024 History of Economic Thought**

**4034 Comparative Economic Systems**

**4044 Public Economics**

**4054 Public Finance**

**4064 Collective Decisions**

**4074 Labor Economics**

**4084 Industry Structure**

**4094 Public Utility and Transportation Economics**

**4124 Growth and Development**

**4135, 4136 International Economics**

**4214 Economics of Health Care**

**4404 Economics of Organizations**

**4414 Economic Forecasting**

**4424 The Theory of Games and Economic Behavior**

**4704 Urban Economy**

**4714 (UAP 4714) Economics and Financing of State and Local Governments**

**4894 Law and Economics**

**4924 Managerial Economics**

## APPENDIX D: FACULTY

### AGRICULTURAL AND APPLIED ECONOMICS

ALWANG, Jeffrey R. Professor. Teaching and Research.

B.A., M.S., The Pennsylvania State University; Ph.D., Cornell University, 1989.

Major areas: Rural Development and International Development.

BOSCH, Darrell J. Professor. Teaching and Research.

B.S., Central College (Pella, Iowa); M.S., University of Tennessee.

Ph.D., University of Minnesota, 1984.

Major areas: Production Economics and Farm Management.

CHANDLER, Michael. Emeritus Professor. Extension.

D.P.A., University of Georgia, 1980.

Major Areas: Land Use and Community Planning.

COALE, Charles W. Jr. Emeritus Professor. Research and Extension.

B.S., M.S., University of Maryland; Ph.D., The Pennsylvania State University, 1969.

Major areas: Marketing and Business Management.

ELLERBROCK, Michael J. Associate Professor and Director of the Center for Economic Education.  
Extension and Teaching.

B.S., Texas A & M University; M.R.P.A., Ph.D., Clemson University, 1980.

Major areas: Resource Economics and Youth Education.

GEYER, L. Leon. Professor and Head.

B.S., Purdue University; J.D., University of Notre Dame; Ph.D., University of Minnesota, 1983.

Major areas: Agricultural Law and Policy, Environmental Law.

GROOVER, Gordon E. Instructor. Extension.

B.S., M.S., Ph.D., Virginia Tech, 2001.

Major area: Farm Management.

HILMER, Christiana E. Assistant Professor. Teaching and Research.

B.A., University of California-Santa Barbara; M.S., North Carolina State University; Ph.D., North Carolina State University, 2001.

Major Areas: Quantitative Methods and Resource Economics.

HILMER, Michael J., Assistant Professor. Extension and Research

B.A., California State University-Northridge; M.A., University of California-Santa Barbara; Ph.D., University of California-Santa Barbara, 1996.

Major Area: Public Finance.

- HOEPNER, Paul. Emeritus Professor. Teaching and Research.  
Ph.D. University of Minnesota, 1960.  
Major Areas: Production Economics and Commodity Marketing.
- KENYON, David E. Emeritus Professor. Teaching, Research, and Extension.  
B.S., Washington State University; M.S., Ph.D., University of California-Davis, 1971.  
Major areas: Marketing and Futures Trading.
- KERNS, Waldon R. Emeritus Professor. Extension and Research.  
B.S., M.S., Virginia Tech; Ph.D., The Pennsylvania State University, 1970.  
Major area: Resource Economics.
- KOHL, David M. Emeritus Professor. Teaching and Extension.  
B.S., State University of New York at Oswego; M.S., Ph.D., Cornell University, 1978.  
Major areas: Agricultural Finance and Credit, and Farm Management.
- McDOWELL, George R. Professor. Teaching and Research.  
B.S., University of Rhode Island; M.S., Cornell University; Ph.D., Michigan State Univ., 1975.  
Major areas: Institutional Economics, Rural Development, and Agricultural Development.
- McGUIRK, Ann M. (Anya). Professor. Teaching and Research.  
B.S., Virginia Tech; M.S., University of Reading (United Kingdom); Ph.D., Cornell Univ., 1988.  
Major areas: Applied Economics and Econometrics.
- MILLS, Bradford F. Associate Professor. Teaching and Research.  
B.A., Hobart College; M.S., University of Connecticut; Ph.D., University of California–  
Berkeley, 1993.  
Major areas: Economic Development.
- MYERS, Lester H. Emeritus Professor.  
B.S., The Pennsylvania State University; M.S., University of Connecticut.  
Ph.D., Purdue University, 1968.  
Major areas: Food and Marketing Policy.
- NORTON, George W. Professor. Teaching and Research.  
B.S., Cornell University; M.S., Ph.D., University of Minnesota, 1979.  
Major areas: Research Evaluation, Farm Management, and Economic Development.
- ORDEN, David R. Professor. Teaching and Research.  
B.S., Cornell University; M.S., Virginia Tech; Ph.D., University of Minnesota, 1984.  
Major areas: International Trade, Agricultural and Trade Policy.
- PEASE, James W. Associate Professor. Extension and Research, and Extension Project Leader.  
B.S., Iowa State University; M.A., University of Wisconsin-Madison.

Ph.D., Michigan State University, 1986.  
Major areas: Farm Management and Computer-aided Decision Making.

PETERSON, Everett B. Associate Professor. Teaching and Research.  
B.S., M.S., Iowa State University; Ph.D., Purdue University, 1989.  
Major areas: Agricultural Marketing and Quantitative Methods.

PURCELL, Wayne D. Alumni Distinguished Professor. Teaching and Research.  
B.S., M.S., Virginia Tech; Ph.D., Michigan State University, 1967.  
Major areas: Livestock Marketing, Price Analysis and Outlook, and Futures Market.

REAVES, Dixie Watts. Associate Professor. Teaching and Research.  
B.S., M.S., Virginia Tech; Ph.D., Duke University, 1993.  
Major areas: Agribusiness Management and Marketing.

SHABMAN, Leonard A. Emeritus Professor. Teaching and Research.  
B.S., University of Massachusetts; M.S., Ph.D., Cornell University, 1972.  
Major areas: Resource Economics and Public Policy.

STEPHENSON, S. Kurt. Associate Professor. Teaching and Research.  
B.S., Radford University; M.S., Virginia Tech; Ph.D., University of Nebraska–Lincoln, 1994.  
Major areas: Natural Resources and Environmental Economics.

STOEVENER, Herbert H. Emeritus Professor.  
B.S. Cornell University, M.S., Ph.D. University of Illinois, 1963.  
Major Areas: Resource and Environmental Economics.

TAYLOR, Daniel B. Professor. Teaching and Research. Graduate Program Chairperson and Co-chairperson, Graduate Program Committee.  
B.S., Cornell University; M.S., University of Maine; Ph.D., Washington State University, 1982.  
Major areas: Production and Resource Economics.

## APPENDIX D: FACULTY

### ECONOMICS

ASHLEY, Richard A. Professor.

Ph.D., University of California, 1982.

Major areas: Time Series Econometrics and Macroeconomics.

BALL, Sheryl B. Associate Professor.

Ph.D., Northwestern University, 1991.

Major areas: Game Theory and Individual Choice.

BUCHANAN, James M. Emeritus University Distinguished Professor

Ph.D., University of Chicago, 1948.

**Nobel Laureate in Economics**, 1986.

COTHREN, Richard. Associate Professor.

Ph.D., University of North Carolina, 1981.

Major areas: Financial Intermediation and Growth.

ECKEL, Catherine C. Professor.

Ph.D., University of Virginia, 1983.

Major areas: Experimental Economics and Industrial Organization and Regulation.

GILLES, Robert P. Associate Professor.

Ph.D., Tilburg University, The Netherlands.

Major areas: General Equilibrium, Public Goods, Economics with Costly Trade.

HALLER, Hans H. Professor.

Ph.D., Erlangen-Nürnberg, Germany, 1978.

Major areas: Microeconomic Theory and Game Theory.

KATS, Amoz. Professor.

Ph.D., University of Minnesota, 1974.

Major areas: Microeconomic Theory and Game Theory.

LUTZ, Nancy A. Associate Professor

Ph.D., Stanford University, 1987.

Major areas: Industrial Organization and Economics of Information.

MANDELSTAMM, Allen. Emeritus Professor.

Ph.D., University of Michigan, 1974.

MELLO, Marcello A., Assistant Professor,  
Ph.D., University of Illinois, Urbana-Champaign, 2002.  
Major areas: Macroeconomics, International Economics, Econometrics/Time Series, Economic Growth, Asset Pricing.

MC LEOD, Mark. Instructor  
Ph.D., Virginia Tech, 2003.  
Major areas: Industrial Organization

MURPHY, Russell D., Jr. Assistant Professor.  
Ph.D., Boston University, 1998.  
Major areas: Labor Economics and Applied Microeconomics.

SALEHI-ISFAHANI, Djavad. Professor, Director of Graduate Studies, and Co-chairperson,  
Graduate Program Committee.  
Ph.D., Harvard University, 1977.  
Major areas: Development and Population Economics.

SPANOS, Aris. Wilson Schmidt Professor and Department Chairman.  
Ph.D., London School of Economics, 1982.  
Major areas: Econometrics, History of Economic Thought, Modeling speculative prices.

STEGEMAN, Mark. Associate Professor.  
Ph.D., MIT, 1987.  
Major areas: Game Theory and Auctions.

TIDEMAN, T. Nicolaus. Professor.  
Ph.D., University of Chicago, 1969.  
Major areas: Economic Justice and Land Value Taxation.

YANG, Dennis. Associate Professor.  
Ph.D., University of Chicago, 1994.  
Major areas: Development and Growth, Economics of Transition.

**APPENDIX E: RECENT GRADUATES OF THE THESIS AND AGRIBUSINESS  
MASTER'S PROGRAMS**

**Selected Graduates**

Year	Name and Position	Employer
2003	Arturo Rios, Economist	North Carolina Dept. of Revenue
2002	Jackilne Bonabana-Wabbi, Instructor Lauren Cartwright, Economist Tricia Crouse, Grant Administrator Keith Dickinson, Extension Agent Christine Lensing, Research Associate CB Mamaril, Instructor Micki Young, Economist	Makerere University Institute for Water Resources Virginia Tech VA Cooperative Extension Service Virginia Tech University of the Philippines Krispy Kreme
2001	Jason Bergtold, Ph.D. Student Joydeep Ghosh, Ph.D. Student Guy Hareau, Ph.D. Student Taylor Hudson, Market Analyst Scott Sink, Entrepreneur Widad Soufi, Ph.D. Student	Virginia Tech Washington State University Virginia Tech M&M/Mars Blacksburg, Virginia University of Wisconsin
2000	Jason Beddow, Research Associate Gary Kee, Analyst Mark Landry, Analyst Zhaoyun Shangguan, Graduate Student Cameron Speir, Utility Analyst	Virginia Tech Gordon Foods Abt Associates, Inc. University of Connecticut Oregon Public Utilities Commission
1999	Sara Chinnis Bosley, Senior Analyst Todd Doley, Consultant Ioannis Kaltsas, Ph.D. Student Todd McNew, Planner Joseph Ogradowczyk, Ph.D. Student Beth Pelletier, Research Associate Vandana Shah Plassmann, Ph.D. Student Joseph Sowers, Analyst Edward VanEenoo, Economic Analyst	Economics and Technology Inc. SAIC Consultants Virginia Tech Parsons, Harland, Bartholomew & Assoc., Inc. Univ. of Massachusetts Virginia Tech Near Environments, Virginia Tech WEFA Inc. City of Chula Vista, CA
1998	Ebere Akobundu, Ph.D. Student Altin Kalo, Commodity Price Analyst Sonali Mitra, Marketing Analyst Wei Peng, Ph.D. Student Takayahshi Yamagiwa, Economist Amanda Wilson, Marketing Coordinator	Virginia Tech Steiner and Company Providian Bancorp Virginia Tech Government of El Salvador State Farm Insurance

1997	Mike Hoover, Livestock Analyst Carrie Kennedy, Industry Analyst Sujitra Rodsomboon, Ph.D. Student Paul Trupo, Director	Sparks Commodities Commodity Futures Commission West Virginia University Cooperative Housing, Guatemala
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## APPENDIX E: GRADUATES OF THE PH.D. PROGRAM

Year	Name and Position	Employer
2003	Jeffrey Edwards, Assistant Professor Mark McLeod, Instructor	Texas Tech University Virginia Tech
2002	Julie Frizelle, Economist James Gray, Deputy Director of the Erika McEntarfer, Economist Kazuhiko Mikami, Assistant Professor Even Moore, Assistant Professor	Economic Research Service, USDA American Relief Comm., Sierra Leon Census Bureau Truman State University Auburn University
2001	Xiaofen Chen, Assistant Professor Lire Ersado, Post-Doctorate Fellow Gordon Groover, Instructor Wei Peng, Statistician	Truman State University International Food Policy Res. Inst. Virginia Tech PRA International
2000	Chiara Gratton Lavoie, Lecturer Rushan Halili, Acct Manager/Consultant Cathleen Johnson, Research Economist Ioannis Kaltsas, Analyst Hrachya Kyureghian, Assistant Professor Sudipta Sarangi, Assistant Professor	California State Univ.-Fullerton Reliable Acct. & Consulting, Ontario Soc. Res. and Dem. Corp., Ottawa European Inv. Bank, Luxembourg American University of Armenia Louisiana State University
1999	Robert Bowles, Instructor Leah, Cuyno, Economist Mark Fina, Senior Economist Wai-Hong Ho, Researcher Jeff Mullen, Assistant Professor John Yan, Economist	Radford University Northern Economics, Inc. North Pacific Fisheries Management Academia Sinica Res. Inst., Taiwan University of Georgia William Wecker Associates
1998	Fatma Aksal , Financial Consultant Huei-Ling Chen, Assistant Professor Luke Colavito, Economist Godfrey Gibbison, Lecturer Fu-Sheng Hung, Assistant Professor Alexander Outkin, Scientist Remi Paczkowski, Manager Eduardo Romano, Research Associate Ajay Tandon, Economist Suzanne Thornsburry, Assistant Professor Eduard Zaloshnja, Research Associate	Turkey Tamsui College, Taiwan Winrock International Univ. of the West Indies-Mona Nat. Chung Cheng Univ., China Bios Group L. P. American Security Group Pacific Inst. for Research and Eval. Univ. of Oxford University of Florida Virginia Tech
1997	C. Line Carpentier, Economist Zana Kruja, Senior Research Associate Gladys Mutangadura, Economist Florenz Plassmann, Assistant Professor Joachim Schleich, Economist	International Food Policy Res. Inst. University of Guelph SAFAIDS, Zimbabwe SUNY - Binghamton Fraunhofer Inst., Germany

