



Student Planning Guide for Graduate Programs in Agricultural and Applied Economics

Virginia Tech
Updated August 2020

FOREWORD

This guide serves as general reference for both prospective and current students.

The document explains the procedural rules for entry into our graduate programs (MS or PhD), the requirements of the programs, and additional academic opportunities while enrolled at VT.

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Contents

INTRODUCTION.....	5
ENTERING THE GRADUATE PROGRAM.....	6
THE ADVISING SYSTEM	8
Orientation	8
Temporary Advisors.....	8
The Student’s Advisory Committee and Plan of Study	8
THE M.S. PROGRAM.....	10
Required Core Courses	10
M.S. Areas of Specialization	11
Additional Coursework.....	11
Example: Master’s Program Thesis Option	13
Final Master’s Degree Examination.....	13
Non-Thesis Exam	14
Preparing to Enter the Ph.D. Program While Still a Master’s Student	14
Combined B.S. and M.S. Program	14
THE PH.D. PROGRAM	16
Ph.D. Course Requirements.....	16
Ph.D. Course Requirement Exceptions	20
The Ph.D. Examinations	22
Written Qualifying Examination	22
Preliminary Examination	23
Final Oral Examination.....	25
CONCURRENT ACADEMIC OPPORTUNITIES	26
Academic Employment Track for Ph.D. Students	26
Degree in Data Analytics and Applied Statistics	27
Interdisciplinary Graduate Education Programs (IGEPs) at Virginia Tech	30
Graduate Exchange Programs with the University of Innsbruck, Austria	31
PROGRESS OF GRADUATE STUDENTS	32
Progress Reports.....	32
Minimum Grade Performance	32

Graduate Seminar	32
Termination Interview	32
FINANCIAL MATTERS	33
Graduate Teaching and Research Assistantships	33
Types of Funding For internal accounting purposes, and to generate incentives for students to procure external funding, the department distinguishes between two general types of funding sources: Departmental Funds ("DFs"), and Non-Departmental Funds ("NDFs").....	35
Duration of Assistantships	36
Stipends and Tuition.....	37
CAREER OPPORTUNITIES.....	38
WORK ENVIRONMENT	39
Office Space and Budget Support	39
Computing Facilities.....	39
Thesis and Dissertation Preparation and Distribution.....	39
GRADUATE STUDENT ORGANIZATIONS.....	41
Link to Graduate Course Descriptions in AAEC and ECON	41
https://secure.graduateschool.vt.edu/graduate_catalog/	41
Link to Faculty Profiles	41
https://aaec.vt.edu/people/faculty.html	41
Link to Plan of Study Form:	41

INTRODUCTION

The Department of Agricultural and Applied Economics (AAEC) at Virginia Tech in Blacksburg, Virginia offers a unified graduate program leading to advanced degrees at the Master's and Ph.D. levels. The Master of Science (M.S.) degree in AAEC is administered entirely by the Department of AAEC. The Ph.D. degree is an economics degree (officially labeled "*Ph.D. in Economics*"), and is a joint degree program with the Department of Economics at Virginia Tech.

The PhD program has recently received "STEM" designation, which allows international students to apply for an *additional two years of optional practical training* after graduation, for a total of three years.

Administration of these programs is the responsibility of the Graduate Program Committee (GPC). Each department has its own GPC committee. Issues related to the joint aspects of the PhD program are handled by both GPCs. Prospective students apply and are admitted separately through the Graduate School for study in either the Department of Economics or the Department of Agricultural and Applied Economics.

Success in these programs requires careful planning by students and advisors. First, personal educational goals should be determined. Second, coursework and research activities necessary to achieve appropriate training should be identified. Third, a course and research schedule should be devised to achieve the student's goals and meet degree requirements. This Planning Guide is designed to help students 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

In general, we only admit students for a given fall semester. In some rare exceptions, spring semester entry may be permitted. This should be determined upfront in discussions with the AAEC graduate program director.

Before beginning work toward either a master's or Ph.D. degree, a prospective student must be admitted to the Graduate School. The student must apply online through the Graduate School at Virginia Tech at <http://graduateschool.vt.edu/admissions/applying>. The basic requirements for admission are stated in the University's *Graduate Catalog*.¹ The specific minimum entry requirements for the graduate program in AAEC 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. For the PhD: GRE verbal scores that are at least in the 30th percentile and quantitative scores in the 60th percentile, with preference given to those that are higher; Note that GRE scores are not required for the MS program for students with a target starting semester of fall 2021.
4. timely submission of the required application forms, transcripts, and reference letters, usually before January 5; and
5. for international students whose primary language is not English, and who have not recently received a graduate degree from another U.S. institution, a minimum TOEFL score of 550 paper-based (PBT), 213 computer-based (CBT) or 90 internet-based test (iBT) is required for consideration of the application. On the iBT, subscores of at least 20 on each subtest (Listening, Speaking, Reading, and Writing) are required for admission.

¹ 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.¹

Actual admission by the Department consists of evaluating the student's GPA, GRE (required only for the PhD), reference letters, personal statement letter, fit with the program based on research background and interests, and TOEFL scores, if needed, in a comprehensive fashion and not just based on a single criterion. 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 by the AAEC Department 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 program to pursue either a Master's degree or a Ph.D.² 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.

² 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 ADVISING SYSTEM

Orientation

Prior to each fall semester, several orientation sessions are held for students who have entered the graduate 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. Some social events for current and incoming students and faculty are usually held near the beginning of the Fall semester.

Temporary Advisors

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 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 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 relevant areas.

The Student's Advisory Committee and Plan of Study

MS students must choose an advisory committee to replace the temporary advisor and a *Plan of Study* must be submitted to the Graduate School before the end of their second semester. PhD students must do so before the end of their third semesters. The plan of study includes a list of courses the student has taken and 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. The Plan of Study Form can be downloaded here: [Plan of Study](#)

A plan of study to be submitted to the Graduate School must be reviewed and signed by the Graduate Program Director (GPD). The GPD and Graduate Program Coordinator, Normand Adams, will check that the coursework proposed conforms to the requirements of the graduate 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 plan 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 four 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 and be a faculty member of the Department. 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 his/her program, research plans should be discussed with and approved by the student's advisory committee. It is the responsibility of the advisory committee chair and committee members to evaluate drafts of the thesis or dissertation and provide continuous reviews. The committee members 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 plan 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. [Plan of Study Change Form](#)

THE M.S. PROGRAM

The Master of Science (M.S.) degree focuses on applied economics. 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 Econometrics and Quantitative Methods, Food and Health Economics, Natural Resource and Environmental Economics, International Trade and Development, and Rural and Regional Development. The M.S. degree offers both thesis and non-thesis options.

The degree being sought by the individual student (thesis or non-thesis option) must be indicated at the time an advisory committee is selected and the plan of study is submitted to the Graduate School. Only students choosing a thesis option are eligible for financial support from a graduate research or teaching assistantship (See FINANCIAL MATTERS, below).

The general requirements for the master's degree thesis option are: (1) a minimum of 32 semester hours, including 26 hours of coursework, of which at least 20 hours must be at the 5000 level or above, 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.S. degree non-thesis option is a minimum of 30 semester hours of coursework of which at least 23 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 the M.S. 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 plan of study submitted to the Graduate School, and can be granted to an individual student only with permission from the GPD in consultation with the student's major advisor. 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.

M.S. Areas of Specialization

Students have the option of choosing among four areas of specialization (Table 2), which encompass the areas of research and graduate study within the Department. By selecting courses from one of these areas, the student can better position him/herself for a career in the indicated field. Students are not required to designate an area of specialization on their Plan of Study. Table 2 should be considered as an example – there may be other courses within or outside AAEC that will fit a specific area of specialization. This can be determined and approved in discussion with the advisory committee and the GPD.

Additional Coursework

Beyond the core requirements, students complete their coursework program with additional electives from 5000 and higher-level courses in economics and agricultural and applied economics unless otherwise approved by the Graduate Program Coordinator, as well as forestry, statistics, mathematics, and other disciplines.³ Up to three credit hours of AAEC/ECON 5904 (Project and Report) may 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.

Table 1. Required Courses for the M.S. Degree

Courses		Credits
AAEC 5025	Applied Microeconomics	3
AAEC/STAT 5804	Econometrics	3
AAEC 5024, AAEC 5026, ECON 5015	Choose 2: Math Progr., Applied Microeconomics, Macroeconomics	6
Applied Economics Courses: ("AAEC electives")	Choose 2 from among AAEC's 5000 or 6000 level courses, such as 5134 , 6524, 5154, 5244, 5984 (Time series econometrics)	6
AAEC 5004	Seminar in Professional Ethics and Expectations	1

³ A maximum of 6 hours of 4000 level courses approved for graduate credit may be included in fulfilling the M.S. coursework requirements.

AAEC 6004	Seminar in Professional Engagement and Communication	1
Total Core Required		20

Table 2. Examples of Some Common Areas of Specialization and Some Suggested Courses for the M.S. Degree⁴

Area of Specialization	Sample of suitable Courses
Quantitative Methods	Mathematical Programming for Agricultural Economists (AAEC 5024)
	Fundamentals of Econometrics (AAEC 5804G)
	Time Series Econometrics (AAEC 5984)
	GIS Applications in Natural Resource Management (FOR 5264) or Geographic Information Systems for Engineers (BSE 4344)
	Empirical Economics (AAEC 5126)
	ECON 4994 (Big Data Economics)
(Environmental and Natural Resource Economics	Advanced Natural Resource Economics (FOR 5884)
	FREC 5416 - Advanced Forest Resource Management and Economics (if special interest in forestry)
	GIS Applications in Natural Resource Management (FOR 5264) or Geographic Information Systems for Engineers (BSE 4344)
	Environmental Economic Theory and Policy (AAEC 6524)
Food and Health Economics	Food and Health Economics (AAEC 5814)
	Agricultural Marketing (AAEC 5134)
	International Agricultural Development and Trade (AAEC 5154)

⁴ Many other options are available depending on a student's background and interests. In addition to any of the required M.S. courses (from Table 1) included in Table 2 students would typically take 1 or 2 additional courses in the area of specialization.

International Development and Trade / Rural and Regional Development	Rural Development (AAEC 5244)
	GIS Applications in Natural Resource Management (FOR 5264) or Geographic Information Systems for Engineers (BSE 4344)
	Development Economics (ECON 6054)
	International Trade and Finance (AAEC 6304)

Example: Master's Program Thesis Option

A sample program for a thesis-option M.S. degree is shown in Table 3. Students who would otherwise register for 9-10 hours in any semester, instead are required to register for 12 hours by adding research or thesis hours. The additional 2-3 hours do not increase the instructional fees.

Table 3. Sample Master's Degree Program Thesis Option

First Year	
Fall Semester	Spring Semester
Applied Microeconomics (AAEC 5025) Mathematical Programming (AAEC 5024) Applied Economics Course (See above) Math for Economists (AAEC 5004) Seminar (AAEC 5004)	Applied Microeconomics (AAEC 5026) or Macroeconomics (ECON 5015) Applied Economics or Elective Econometrics (AAEC/STAT 5804) Seminar (AAEC 6004)
Second Year	
Fall Semester	Spring Semester
Applied Economics or Elective Thesis Research	Thesis Research

Final Master's Degree Examination

All M.S. degree students must pass a final oral and/or written examination. The examination must be scheduled with the Graduate School at least two weeks in advance of being held. Once scheduled, a final examination is open to any faculty member, and the Dean of the Graduate School may

appoint a representative to take part in the examination. The exam is administered by the student's advisory committee. For the thesis M.S., this examination includes a defense of the thesis, and may also include examination on coursework and its application. The final examination cannot be scheduled until the student's committee chair and members agree that the thesis is suitable for defense.

Non-Thesis Exam

For a non-thesis M.S., a student may elect either to take a final oral and/or written exam

Preparing to Enter the Ph.D. Program While Still a Master's Student

Regardless of a student's undergraduate academic performance or courses he/she has taken, it is the philosophy of the Department of AAEC that few students are prepared to make the leap directly from undergraduate level courses to Ph.D. level courses and there is a low probability of success at the Ph.D. level if the M.S. level courses are skipped. However, it is recognized that many students may know that their ultimate goal is a Ph.D. In this case, students in the M.S. program may apply to the Ph.D. program in their second year and start taking Ph.D. courses in their second year while they are waiting on news of their acceptance into the Ph.D. program. These students, 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 GPD (see discussion of the Ph.D. Course Requirements, below).

However, an approved plan 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. In theory, any 5000 level course could be used toward the PhD subject to approval by Graduate Program Director.

Combined B.S. and M.S. Program

An undergraduate student admitted to the combined B.S. and M.S. program may take up to 12 hours of graduate credit to be applied toward an M.S. degree in Agricultural and Applied Economics while also counting toward their B.S. degree. A maximum of 6 of the double-counted credits may be at the 4000 level; all others must be offered for graduate credit. The student must receive a grade of B or higher in courses to be applied for graduate credit that are taken while an undergraduate. To qualify, students must apply for and be accepted into the joint B.S. and M.S. program. To apply, students should complete an online application to the graduate school <https://applyto.graduateschool.vt.edu/pages/login.php> including applications forms, transcripts, and reference letters by March 1 of the student's junior year. Admission minimum requirements are a cumulative GPA of 3.5 or higher in their undergraduate program and the completion of a

course in intermediate microeconomics (AAEC 3004 Production and Consumption Economics or ECON 3104 Microeconomic Theory). All B.S.-M.S. applicants will be evaluated along with all other applicants for the AAEC graduate program. If accepted, the student will be matriculated into the M.S. program upon completion of the undergraduate program.

Students in the five-year BS/MS program are undergraduates until they complete the requirements for their BS degree. Students cannot be placed on assistantship until they have completed their undergraduate degrees and matriculate into the graduate program. However, BS/MS students are encouraged to visit with faculty early in their programs in order to identify potential research opportunities that could lead to a Graduate Research Assistantship. The Graduate Program Committee will review the progress of BS/MS students to decide whether to award an assistantship or fellowship when they matriculate into the graduate program.

THE PH.D. PROGRAM

The Departments of Economics and Agricultural and Applied Economics offer a single Ph.D. in Economics. Ph.D. students take a common written qualifying examination prior to starting their second year. Each student must also pass a 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).⁵

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 27 hours of coursework and 30 hours of Research and Dissertation (AAEC/ECON 7994). A more detailed discussion of Graduate School requirements is found in the Graduate Catalog

http://graduateschool.vt.edu/graduate_catalog/

For the Ph.D. degree in Economics, core requirements are summarized in Table 3.

Table 3: Core and Field Courses for the Ph.D. Degree

	Description	Credits
<i>Core Courses</i>		
ECON 5005 and 5006	Microeconomic Theory	6
ECON 5015 and 5016	Macroeconomic Theory	6
AAEC/ECON 5125, 5126, and 5946	Econometrics	9
ECON 5124 ⁶	Mathematical Economics	3
AAEC 5004	Seminar in Professional Ethics and Expectations	1

⁵ 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.

⁶ ECON 5124 can be replaced by higher level course

AAEC 6004	Seminar in Professional Engagement and Communication	1
Sub-total core courses		<u>26</u>
Field Courses*		
AAEC Field 1 Course 1		3
AAEC Field 1 Course 2		3
AAEC Field 2 Course 1		3
AAEC Field 2 Course 2		3
AAEC 5114	Applied Microeconomic Theory	3
Elective		3
Sub-total beyond core		<u>18</u>
Total Required		44

* See sample field course in next table.

In the first year of the program, the core requirements include one semester of mathematical economics, one semester of macroeconomics, and two semesters of microeconomic theory and econometric theory. Ph.D. students must also take the AAEC 5004 seminar course in professional ethics and expectations their first Fall semester. In the Fall of the second year of the program the core requirements include one semester of macroeconomic theory and one semester of microeconometrics (Econometric Theory & Practice, AAEC 5946).

Beginning in the second year of the program, Ph.D. students are required to complete, at the minimum, two field courses in each of their two fields, and two elective courses that support their fields and areas of research specialization. In their second year in the program, in the Spring semester, the Ph.D. student must take the AAEC 6004 seminar course. Selections among field courses and electives should be made in discussion with advisors and the GPD. In general, the department's policy is to allow students maximum flexibility to tailor their graduate program to particular interests, and to interact with faculty working in these areas. AAEC 5114, Applied Microeconomic Theory, is a useful elective all-around for students seeking to solidify their theoretical skills and understanding.

AAEC fields and associated course offerings that will be available to students entering the Ph.D. program are listed in table 4. A list of suggested elective courses is provided, by field, in table 5. The list is not exhaustive and the student's final choice of elective courses should be made in consultation with their advisory committee chair.

Table 4: AAEC Ph.D. Fields of Study and Courses

Field	Courses
Applied Econometrics	Panel Data Econometrics (AAEC 6554) Bayesian Econometric Methods (AAEC6564)Time Series Economics (AAEC 5444)
Environmental and Natural Resource Economics	Environmental Economic Theory and Policy (AAEC 6524) Advanced Forest Resource Management and Economics (FOR 5884) (note: both are mandatory to satisfy this fields' requirements)
Food and Health Economics	Micro Food and Health Economics (AAEC 6214) Macro Food and Health Economics (AAEC 6224)
International Development and Trade	Topics in Applied Development Economics (AAEC 6314) International Trade and Finance (AAEC 6304)
Rural and Regional Development	Regional and Urban Economics (AAEC 6444) Rural Development (AAEC 5244)

Ph.D. students complete many of their required field and elective courses during the second year of their studies. However, since some courses are taught in alternate years, it is not unusual for Ph.D. students to take some courses during the third year of their program. Students with an applied orientation are strongly encouraged to include at least one course in the Econometrics Field in their program of study. Excluding AAEC 5114, at most two courses at the 5000 level can be used to fulfill the Ph.D. field and elective requirements without permission of the Graduate Program Director. In addition, the AAEC and ECON Graduate Program Directors will sometimes approve special topic courses (carrying the generic label "AAEC/ECON 6984") to be counted as part of the field-course requirements.

Table 5: Sample of suitable Elective Courses

Field	Courses
Applied Econometrics	Econometric Theory & Practice (ECON 5945)

	Philosophical Foundations of Econometrics (ECON 6614) Adv. Methods in Applied Microeconomics (ECON 6604) Several courses offered by the Statistics and Computer Science Departments ⁶
Environmental and Natural Resource Economics	Advanced Forest Resource Management and Economics (FOR/AAEC 5416)
Food and Health Economics	Public Health Administration (HNFE 5694) Res. Methods for Behavioral Interventions (HNFE 5984)
International Development and Trade	Development Economics (ECON 6054) Regional and Urban Economics (AAEC 6444)
Rural and Regional Development	Public Economics (ECON 6204) Topics in Applied Development Economics (AAEC 6314)

Students who are admitted to the Ph.D. program without having completed a master's degree at another institution can earn an M.S. at Virginia Tech as part of their Ph.D. program.

For students who complete the MS program with AAEC prior to starting the PhD program, or students who transition from the MS to the PhD without completing the MS, some credit hours earned during the master's degree can generally be counted toward the Ph.D. coursework requirements subject to approval by the Graduate Program Director. In all cases, a separate program of study must be filed with the Graduate School for each degree. Specifically, Ph.D. students who have filed a preliminary program of study for only a master's degree at the end of their first year

⁶ Examples include: STAT 5544 (Spatial Statistics); STAT 5444 (Bayesian Statistics); STAT 6474 (Advanced Topics in Bayesian Statistics); STAT 5414 (Time Series Analysis I); STAT 6414 (Time Series Analysis II); STAT 5664 (Applied Time Series Analysis); STAT 5984 (Monte Carlo Methods in Statistics); STAT 5334 (Exploratory and Robust Data Analysis); STAT 5404 (Nonparametric Statistics); STAT 6404 (Advanced Topics in Nonparametric Statistics); STAT 5304 (Statistical Computing); STAT/CS 5525 (Data Analytics I); STST/CS 5526 (Data Analytics II); CS 5644 (Machine Learning with Big Data); CS 5664 (Social Media Analytics); CS 5824 (Advanced Machine Learning); CS 5984 (Deep Learning) etc.

must still file a final program of study for their Ph.D. degree by their fifth semester of enrollment (third semester of their PhD enrollment).

Ph.D. Course Requirement Exceptions

Individual students enter the Ph.D. program with various educational backgrounds. 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 be exempted from the Mathematical Economics course (ECON 5124) by demonstrating competence in equivalent material or by taking a more advanced course. Both the AAEC and Department of Economics Graduate Program Directors must approve such exceptions. Not taking 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 be exempted from any of the remaining core courses (two semesters of microeconomics and macroeconomics and three semesters of econometrics) only by demonstrating completion of equivalent material in a previous program of graduate study. Both the AAEC and Department of Economics Graduate Program Directors must approve such exceptions, which will be granted only to students having outstanding records. With the approval of the AAEC and Department of Economics Graduate Program Directors, a special topics course (AAEC/ECON 5984 or 6984) may be used as one of the courses required for a field. Substitutions within fields 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. Such substitutions must be approved by the Graduate Program Director (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 two field or elective courses at the 5000 level, or its equivalent at another institution, can be included without permission from the Graduate Program Director. As noted, AAEC 5114 does not count towards this restriction.

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 Graduate Program Director will work with the student to evaluate his/her transfer credits in terms of substitutions for courses offered at Virginia Tech.

Sample Ph.D. Program

An example of the sequencing of suitable courses in a “typical” Ph.D. program is shown in Table 6. During the third and fourth years, Ph.D. students may take field courses or electives that are only offered in alternate years, 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

First Year	
Fall Semester	Spring Semester
Microeconomics (ECON 5005)	Microeconomics (ECON 5006)
Econometrics (AAEC/ECON 5125)	Econometrics (AAEC 5126)
Mathematical Economics (ECON 5124)	Macroeconomics (ECON 5015)
Seminar Professional Ethics and Expectations (AAEC 5004)	Research Credit
Second Year	
Fall Semester	Spring Semester
Macroeconomics (ECON 5016)	AAEC Field Course
Econometric Theory & Practice (AAEC 5946)	Applied Microeconomic Theory (AAEC 5114)
AAEC Field Course or Elective	Elective
AAEC Field Course	Seminar (AAEC 6004)
	Research
Third Year	
Fall Semester	Spring Semester
AAEC Field Course or Elective	AAEC Field Course/Elective (if needed)
Research Credit	Research Credit
Research Seminar	

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. Starting with the Fall 2020 entering cohort, students are required to take the written qualifying examination in June following their first year in the program. A second attempt, if needed, can be made in August prior to the start of the second year (see below for details). Exceptions, while unusual, may be obtained on an individual basis. To be considered for an exception, a student must petition the AAEC Graduate Program Director in writing as early as possible given individual circumstances. Students who fail to take the written qualifying examination without the required permission will be considered to fail, unless there are extraordinary extenuating circumstances (e.g. "last-minute emergencies").
2. The qualifying examination will be administered by a written Qualifying Examination Committee comprised of at least six members, three from each department, two of whom serve as co-chairs. 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 and can be found at <https://aaec.vt.edu/academics/graduate/current/graduate-exams.html>.
3. 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.
4. The determination of whether a student fails or passes the qualifying examination rests with the Qualifying Examination Committee.
5. Students who do not pass the June offering of the qualifying examination are required to take the examination at the next sitting, which is in August shortly before the start of the second Fall semester. Exceptions to this rule may be considered if the student petitions a chair of the GPC as early as possible, given individual circumstances.
6. Note that all qualifying exams, regardless if delayed (after petition or emergencies) need to be taken at the June or August offerings. There will not be any special dates made available to individual students. Any implications this may have on continuation of student funding (if applicable) is at the discretion of each home department.

7. A student cannot advance to the preliminary examination process until the qualifying examination has been passed.

In the last five years, of the students who have used all of their allotted attempts to take the exam, approximately 80 percent have passed.

Occasionally a PhD student who has taken 1st year economic theory and econometric courses and done well in those courses and/or passed the qualifying exam elsewhere wishes to transfer to VT as a 2nd year PhD student (receive waiver of 1st year theory and econometric courses). In such a case, the Department has the option to offer the student the opportunity to take the Qualifier here in summer before beginning classes. If the student passes, he/she is considered a 2nd year student (receives waiver of 1st year micro, macro, and econometrics courses). If the student fails one or more sections, he/she has two options: 1) start over with a clean slate. Take the first year classes and qualifier in the following summer with two tries as a normal PhD student. 2) retake the parts of the exam that were failed at the next offering. If the student fails again, he/she is out of the program (unless an exceptional appeal for a third try is granted). If the student passes on the second try, he/she is considered a 2nd year student.

Similarly, PhD students who have failed part of their qualifying exam elsewhere are encouraged to contact the GPD to discuss options for partial waiver of the Qualifying Exam requirements, and transfer of PhD-level course credits.

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 (AAEC and ECON). 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 must be 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 Graduate Program Director, indicating that the student has failed the written portion of the examination, which constitutes failure of the preliminary examination.

Under the dissertation proposal approach (by far the most popular option selected in recent years), the written component consists of a preliminary investigation of a certain field of research related to the overall dissertation objectives, usually draft dissertation chapters in various stages of completion. 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, and an outline of a research leading to the completion of a dissertation.

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 committee. The student is required to have at least one meeting with his/her advisor and the designated committee 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 committee.
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. The results of the oral examination (pass or fail) are recorded electronically with the Graduate School 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 sooner than six months after the student has successfully passed the preliminary examination. Before scheduling the final oral examination, the chair of the student's advisory committee and the committee members 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. If a student fails an examination, one full semester (a minimum of 15 weeks) must elapse before the second examination is scheduled. Not more than two opportunities to pass the final examination are allowed.

CONCURRENT ACADEMIC OPPORTUNITIES

Academic Employment Track for Ph.D. Students

Many Ph.D. students are interested in obtaining an academic position after graduation. While most academic appointments have a teaching component, most Ph.D. programs give students no training in teaching and instead focus almost exclusively on training in disciplinary research skills (i.e., theory and quantitative methods). Disciplinary research skills are necessary for success in academia but they are not sufficient. There are other important skills that are needed if one wants to be successful in academia, especially in terms of teaching. Virginia Tech and the Department of Agricultural and Applied Economics recognize that our students can be set apart from other students and programs by not only receiving the necessary training in theory and quantitative methods, but also by providing the student training in teaching. Our academic employment track is designed to give students training and skills related to teaching and academic positions that will make them more competitive in the academic job market, in addition to the normal research training. Our academic employment track goes beyond just giving the student teaching experience via being a graduate teaching assistant or teaching a course. Our academic employment track also gives the student training via courses in becoming a future professoriate.

What are the requirements for the academic employment track?

Students should make known their interest in pursuing the academic employment track within the first year of their Ph.D. program to help facilitate optimal timing of courses and activities.

The academic employment track in AAEC consists of three components or levels.

Courses

1. The Graduate School at Virginia Tech offers a “Future Professoriate Graduate Certificate” that can be obtained by taking a sequence of 9 additional credit hours in course work (beyond those required for a Ph.D.) that focus on teaching and scholarly activities beyond normal research. Students interested in the academic employment track would be allowed to start taking the courses in their 4th semester in the Ph.D. program. There are two required courses:
 - [GRAD 5104](#) Preparing the Future Professoriate (3 hours/3 credits. Taught Fall and Spring)
 - [GRAD 5114](#) Pedagogical Practices in Contemporary Contexts (3 hours/3 credits. Taught Fall and Spring)

and then 3 hours of electives from a list of courses provided by the Graduate School.

Further details are given at this link:

<https://graduateschool.vt.edu/transformational-graduate-education-experience/future-professoriate/future-professoriate-certificate.html>

Required Teaching

2. The student will be considered for teaching at least one section of an undergraduate class under the supervision of a teaching mentor.

Students must take GRAD 5114 before they will be allowed to teach. Students wishing to teach must submit an application to the GAC (Graduate Advisory Committee) for review. The application will consist of an application letter explaining why they want to teach and their teaching philosophy, their transcript, their vitae, and a letter of support from their academic advisor. Students must have passed the Qualifier exam and have approval for teaching by their academic advisor before they will be considered for teaching. The undergraduate program director will consult with the GAC to determine what courses and sections are available for teaching. The GAC, in consultation with the undergraduate program director, will make a recommendation to the department head regarding teaching assignments.

Teaching Mentor on Dissertation Committee

3. The student must have a teaching mentor on the dissertation committee.

The student must place the teaching mentor on their dissertation committee and is encouraged to engage in scholarly activity related to teaching with their committee. The teaching mentor will either be an additional member added to the minimum committee number requirement, or an existing member with relevant interests and qualifications.

Upon completion of all components, the student will be designated an “Applied Economics Teaching Scholar.”

Degree in Data Analytics and Applied Statistics

The Statistics (STAT) department at Virginia Tech offers an MA degree in Data Analytics and Applied Statistics (DAAS).

We have an agreement with STAT that allows our PhD students to replace some of the required core courses for DAAS with upper-level STAT courses (to avoid duplication / redundancy with our own courses or courses taken by AAEC PhD students prior to coming to VT), and to count upper level econometrics courses taken within the AAEC PhD program towards DAAS electives – though final approval always rests with the DAAS admissions committee.

In turn, AAEC would count two of the STAT courses taken within DAAS towards the PhD in economics.

Overall, DAAS requires 21 core credits, and 12 electives credits, for a total of 33 credits. For DAAS to count as a second, separate degree, at least 50% of these credits must not overlap with the primary degree, in this case the PhD in Economics. *Rounding up, this implies that at least 18 DAAS credits must be taken that cannot count towards the PhD in Economics.*

In a nutshell, our PhD students can earn a concurrent MA degree in DAAS with an additional 18 credits of coursework beyond the courses taken for the PhD.

Courses:

Mandatory DAAS core courses that must be taken by AAEC PhD students (3 credits each):

STAT 5204G Experimental Design: Concepts and Applications
 STAT 5616 Statistics in Research II
 STAT 5024 Communication in Statistical Collaborations
 STAT 5904 Project and Report

Mandatory DAAS core courses than can be substituted with upper level STAT courses by AAEC PhD students (3 credits each):

STAT 5105G Theoretical Statistics
 STAT 5214G Advanced Methods of Regression Analysis
 STAT 5615 Statistics in Research I

Recommended replacement courses (choose three; others might count, please discuss with DAAS as applicable)

STAT 5544 Spatial Statistics
 STAT 5444 Bayesian Statistics
 STAT 6474 Advanced Topics in Bayesian Statistics
 STAT 5414 Time Series Analysis I
 STAT 6414 Time Series Analysis II
 STAT 5664 Applied Time Series Analysis
 STAT 5984 Monte Carlo Methods in Statistics
 STAT 5334 Exploratory and Robust Data Analysis

STAT 5404	Nonparametric Statistics
STAT 6404	Advanced Topics in Nonparametric Statistics
STAT 5304	Statistical Computing

Suggested electives (3 credits each):

AAEC/ECON 5946	Econometric Theory and Practice (see below for more info)
AAEC/ECON 6554	Panel Data Econometrics (see below for more info)
AAEC/ECON/STAT 6564	Bayesian Econometric Analysis (see attached syllabus)

plus 1 additional STAT course, ideally from the set given above. Others might count as well, please discuss with DAAS as applicable.

Sample DAAS curriculum:

Core (21 credits):

STAT 5204G	Experimental Design: Concepts and Applications
STAT 5616	Statistics in Research II
STAT 5024	Communication in Statistical Collaborations
STAT 5904	Project and Report
STAT 5544	Spatial Statistics
STAT 5444	Bayesian Statistics
STAT 5414	Time Series Analysis I

Electives (12 credits):

AAEC/ECON 5946	Econometric Theory and Practice
AAEC/ECON 6554	Panel Data Econometrics
AAEC/ECON/STAT 6564	Bayesian Econometric Analysis
STAT 6414	Time Series Analysis II

Counted towards the PhD in Economics:

AAEC/ECON 5946	Econometric Theory and Practice (see below for more info)
AAEC/ECON 6554	Panel Data Econometrics (see below for more info)
AAEC/ECON/STAT 6564	Bayesian Econometric Analysis (see attached syllabus)
STAT 5414	Time Series Analysis I (for example)
STAT 6414	Time Series Analysis II (for example)

Application process:

Each student who would like to pursue the DAAS degree must send the following to the STAT graduate secretary, Ms. Christina Dillon (chconne1@vt.edu):

1. A personal response stating why they want to pursue a DAAS degree.
2. 3 letters of recommendation
3. Copies of both undergraduate and graduate transcripts.

At this point, STAT/DAAS will be able to assess their background and determine if they can place out of the DAAS core courses and take the upper level stat courses, as discussed above. After decisions have been made about acceptance into the program, the student will be notified. If they are admitted, then they will need to submit an [Application for Simultaneous Degree Approval](#) to the graduate school.

The form must be signed by both the AAEC Director of Graduate Studies, and the Director of the DAAS program.

After the form is processed, the student's account will be charged \$75.

Interdisciplinary Graduate Education Programs (IGEPs) at Virginia Tech

Interdisciplinary research is greatly encouraged at VT. Any PhD student at VT has the option to apply for participation in an Interdisciplinary Graduate Education Program (IGEP), in addition to completing their primary degree. IGEP students earn an additional Certificate in their chosen area (examples: Remote Sensing, Interfaces of Global Change, Translational Obesity Research). IGEP certification usually requires 9-12 credits of additional coursework, as well as participation in weekly research seminars. Please see <https://graduateschool.vt.edu/academics/programs/interdisciplinary-graduate-education/interdisciplinary-graduate-education-programs.html> for additional information.

Graduate Exchange Programs with the University of Innsbruck, Austria

Graduate students from both the AAEC and ECON department have the opportunity to take courses at the University of Innsbruck, Austria, free of tuition, and with full transfer of credits. Most of UIBK's PhD courses in Economics and Statistics are offered in a compressed (3-week) time frame, which allows earning full course credits without having to spend an entire semester. At times, graduate courses may also be offered online, and the exchange can be taken "virtually."

Additional information can be located at

https://sa.globaleducation.vt.edu/index.cfm?FuseAction=Programs.ViewProgram&Program_ID=12303.

PROGRESS OF GRADUATE STUDENTS

Progress Reports

Each department sets requirements for submission of graduate student progress reports. The reports are submitted to the 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 GPA overall and on all courses completed from his/her plan 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 by the graduate school 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 department. Graduate students enrolled in degree programs for the M.S. thesis option and for the Ph.D. are eligible for support by a graduate teaching assistantship (GTA) or graduate research assistantship (GRA). 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 teaching. 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 Department of 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 is often supported financially through research assistantships. GRAs are usually appointed by calendar year. The research responsibilities assigned to students on GRAs 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. Typically, RAs are on a one-half time graduate research assistantship and 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.

The Graduate School does not prohibit students on one-half-time assistantships from seeking other employment (unless preempted by visa / immigration rules). However, students should consult with their academic advisor and/or assistantship supervisor to be sure that assistantship responsibilities are not compromised by outside employment. Students on one-half-time assistantships cannot hold hourly wage employment paid with Department funds or from projects led by Department faculty⁷.

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. Prior to finalizing vacation plans students must submit a form signed by the faculty supervisor/advisor indicating planned vacation dates to the Graduate Coordinator. In some cases, an absence longer than two weeks may be acceptable, if the faculty supervisor approves and if there is a clear plan of work negotiated with the faculty supervisor that will be accomplished by the student. In such cases, the work expectation must be documented in the vacation approval form. Failure to submit a signed vacation request form covering the student's absence before any vacations are planned and failure to complete work listed on the vacation request form will be noted in the student's performance evaluation and will jeopardize continuation of the student's assistantship.

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.

⁷ Students must notify the Graduate School about any additional employment agreement, including the period of employment, name and contact of employer, and job title or short description of duties .

Students on assistantship must submit a Description of Duties form by the end of the first week of the semester. The form provides an overview of the employment duties and is signed by the student employee and assistantship supervisor.

Students maintain a cumulative GPA 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 plan of study. If a student's cumulative GPA drops below 3.0, the student is given notification by the Graduate School and may be allowed one semester in which to bring his/her cumulative GPA back up to 3.0. If a cumulative GPA 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 GPA on all work taken and must take a minimum of 12 credit hours per semester (including research hours). 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.

Types of Funding

For internal accounting purposes, and to generate incentives for students to procure external funding, the department distinguishes between two general types of funding sources: Departmental Funds ("DFs"), and Non-Departmental Funds ("NDFs").

DFs include the following funding sub-types:

- 1) TA-ships
- 2) Dean's RA-ship (special research funds administered directly by the College)
- 3) Departmental operating funds
- 4) College tuition waiver, if accompanied by one of (1)-(3)

NDFs include all other funding sources, such as:

- 1) external (grant) funding
- 2) Faculty startup funds, faculty salary savings, and other faculty-specific funding sources
- 3) Funding related to independently teaching a course, e.g. through the academic scholar program mentioned above.
- 4) College tuition waiver, if accompanied by one of (1)-(3)

Students will be informed every semester under which type of funding they are being supported, and about their total accumulated months on DF-type funding. This affects the duration of their assistantship, as described next:

Duration of Assistantships

The following guidelines govern the length of time students may earn assistantship support, depending on funding sources:

1. Master's degree students may be carried for a maximum of twenty-four (24) months on a research assistantship, regardless of funding source (DF or NDF).
2. Ph.D. students may be carried for a maximum of twenty-two (22) months on DF-type funding during their program. These 22 months of DF funding do not need to be consecutive. Thus, to be funded for the remaining time in the program, NDF-type funding sources will need to be procured.
3. After five years, students can no longer receive any kind of funding from the department, except by written request of their major advisor and upon approval of the Department Head (see next).
4. 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.
5. Students are strongly encouraged to align with a faculty on an externally funded research project at the latest in their second year, to minimize reliance on DF-type funding.
5. Continuation of any type of funding is always contingent on satisfactory academic progress, satisfactory assistantship performance, and the availability of funds. Students will be evaluated twice a year, once at the end of the spring semester and once before the fall semester, to determine their funding status.
6. Students who go on academic probation in the spring semester (i.e., have a cumulative GPA below 3.0) will not be funded during the summer months, but may be funded the following fall if the graduate advisory committee and department head determine the student should be given a probationary semester for raising her/his GPA.
7. Students who fail the qualifier exam twice will automatically lose all funding by the end of the semester during which the second attempt was taken (usually their second fall semester).

Stipends and Tuition

As of August 2020, monthly stipends for a student on a full (one-half time) graduate research or teaching assistantship in Agricultural and Applied Economics is \$1,891 for master's students and \$2,101 for Ph.D. students. Academic year tuition is waived for students on full (one-half-time) assistantships.

For 2020-21, tuition and fees per semester are just over \$7,536 for in-state and \$14,405 for out-of-state students. Included fees cover activity fee, athletic events, student health service, bus fee, and other services. Students receiving assistantships receive a waiver of academic-year tuition but must pay the comprehensive fees totaling \$1,600.50 per semester. Normally, students do not register for summer courses however if they do, they are responsible for all fees.

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 with the possibility of a reduction in the amount of tuition that is covered by the department. 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.

CAREER OPPORTUNITIES

There are numerous services available to assist PhD and MS students in finding and preparing for career employment opportunities including the following:

- AAEC 6004 Professional Engagement and Communication—a one-hour seminar taken by MS students in the spring of their first year and by PhD students in their second spring semester. Topics covered include articulating career goals, resume development, job search techniques, and job interview and negotiation skills.
- Career fairs—there are several job fairs held on campus which provide information on employment opportunities. For an up to date listing see <https://career.vt.edu/events/Career-fairs.html> Interested students should consult the fair website to learn more about attending employers and the skills for which they are recruiting as well as pertinent advance requirements.
- Past placements. Graduates of the program are an excellent source of information about opportunities in the firm or organization where they are employed. Recent MS and PhD placements are listed at <https://aaec.vt.edu/academics/graduate/job-placement.html> In addition, graduates can provide advice on specific courses to enhance job success. Classes in GIS, Nonprofit Budgeting, Statistics, R, SAS, Policy, Communications may be especially relevant.
- Virginia Tech Career Services—provides a number of placement services for students including advice on interview skills and resume development <https://career.vt.edu/advising.html>
- Non-traditional employment/volunteer opportunities—a number of volunteer organizations including Peace Corps, Peace Corps Response, Americorps, and others provide volunteer opportunities that can lead to careers in development and other areas. For further information see <https://www.peacecorps.gov/unexpected/?gclid=CKuYx63T3M0CFVNZhgodBIMNLg> <https://www.peacecorps.gov/volunteer/is-peace-corps-right-for-me/peace-corps-response/> <http://www.nationalservice.gov/programs/amicorps>
- Job search engines—job search engines including Indeed (<http://www.indeed.com/jobs>), and Devex (<https://www.devex.com/jobs>) can be used to locate employment opportunities and post resumes.

WORK ENVIRONMENT

Office Space and Budget Support

Students on assistantship are allotted office space in the department in which they are employed. Offices are also made available to those students not on assistantship as space allows. Expenses incurred by students on GRAs working on a funded research project will be reimbursed. Expenses incurred for their own classroom assignments are the students' responsibility.

Computing Facilities

Students are responsible for creating a PID (personal ID) through Computing Services. The PID provides access to VT online services, and serves as the VT email address

All incoming graduate students in AAEC are required to have their own personal computer or laptop. In general, we recommend a laptop with wireless internet and Ethernet capabilities. The campus all-around wireless access and there are numerous Ethernet connections that students can plug into.

In addition, students have the ability to hook up to VT's Advanced Research Computing (ARC) clusters (<https://www.arc.vt.edu/>) once they create an ARC account with the help of their (temporary) advisor. ARC offers high-speed parallel computing and access to Graphics Processing Units (GPUs). Current software available through ARC include Matlab, Stata, RStudio/R, QGIS, and Jupyter Notebook. Additional packages will likely be added in the near future.

Students can also obtain their own personal software installation for free or a low annual fee, as listed at <https://itpals.vt.edu/softwarelicensingcenter/studentsoftware/studentsoftwareproductlist.html>. Furthermore, the department is currently renovating its own computer lab. This work is scheduled to be completed by fall 2020. It will house four 24-core high-powered PCs that allow multiple simultaneous jobs submitted by different users.

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, as approved by the chair of the student's advisory committee.
2. The student must give all advisory committee members an electronic copy of the draft of the thesis or dissertation on which the student 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.

GRADUATE STUDENT ORGANIZATIONS

Graduate students are encouraged to participate fully in the professional and social activities of the departments. The 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 facilitate recruitment and orientation of new students and host various social activities. Membership in the Association is open to all graduate students in the Department of 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.

The CALS (College of Agriculture and Life Sciences) Graduate Student Council addresses graduate issues in CALS. There are 2 student representatives from each CALS department including AAEC.

Link to Graduate Course Descriptions in AAEC and ECON

https://secure.graduateschool.vt.edu/graduate_catalog/

Link to Faculty Profiles

<https://aaec.vt.edu/people/faculty.html>

Link to Plan of Study Form:

<https://aaec.vt.edu/academics/graduate/current.html>