

MASTER'S DEGREE PROGRAM

The Department of Agricultural and Applied Economics offers an M.S. in Agricultural Economics, with either an applied economics or agribusiness management and marketing (hereafter, agribusiness) focus. For the M.S. with applied economics focus, a student may select courses from a broad-based economics curriculum or may specialize in a specific field of interest. Students may develop specialties in diverse areas including, but not limited to, Econometrics and Quantitative Methods, Natural Resource and Environmental Economics, Management and Finance, Marketing and Price Analysis, International Development and Trade, and Rural and Regional Development. For the M.S. with agribusiness focus, students pursue specializations in management science, management, finance, or marketing.

The M.S. with applied economics focus offers both thesis and non-thesis options. The M.S. with agribusiness focus is a non-thesis degree. The thesis or nonthesis 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. 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.S. with Applied Economics Focus

The general requirements for the master's degree thesis option 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.S. degree with applied economics focus nonthesis option is a minimum of 30 semester hours of coursework of which at least 21 hours must be at the 5000 level or above. A student must also pass a final oral or written examination.

Required Core Courses

The thesis and non-thesis options for an M.S. with applied economics focus build upon a common core of required coursework 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 AAEC Graduate Program Director. 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.S. with applied economics focus complete their coursework program with electives in economics and agricultural and applied economics, as well as forestry, statistics, mathematics, and other disciplines. 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 5974, 5984) and 6 hours of 4000 level courses may be used to satisfy the course requirements.

[Click here to see all AAEC graduate course offerings.](#)

Table 1. Required Courses for 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>
Total Core Required		18

Typical Master's Program

A typical program for a thesis-option 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.

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

First Year	
Fall Semester	Spring Semester
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)
Second Year	
Fall Semester	Spring Semester
Applied Economics or Elective Applied Economics or Elective Thesis Research	Thesis Research

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 requirements in the business concentration, restricted business electives, and international economics are listed in Table 4.

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

Course		Credits
AAEC 5025	Applied Microeconomics	3
AAEC 5024 or AAEC/STAT 4804	Math Programming or Econometrics	3
Applied Economics	Choose 1 from among AAEC 5134, 5144, 5154, 5244	3
Business Concentration	Two-course core from Appendix B	6
Restricted Business Electives	Two additional courses in concentration from Appendix B	6
International Economics	Choose 1 from Appendix B if no other course has an international focus	3
Total Core Required		21-24

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 table 4), agricultural and applied economics, or economics.

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 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.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. 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.

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.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 Graduate Program Director. 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.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.

Table 4: 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.¹

Concentration	Courses
<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.

Concentration	Courses
<i>Management Science</i>	<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>

Management	<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>
Finance	<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>
Marketing	<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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