

**REQUIREMENTS FOR Ph.D.
AGRICULTURAL & RESOURCE ECONOMICS
COLORADO STATE UNIVERSITY**

Credits:

- A minimum of 72 semester credits are required, including:
 - A minimum of 42 credits earned in 500-level or above courses beyond the B.S. degree, with a minimum of 30 of these credits earned in regular graduate courses (not special studies or research credits).
 - A maximum of 30 credits from a M.S. degree, not counting courses excluded below.
 - A maximum of 12 dissertation credits.
 - At least 32 credits earned at Colorado State University after admission to the Ph.D. program.
 - A maximum of 10 transfer credits from formal course work at a U.S. university after the M.S. degree, if recommended by the student's graduate committee and if the grades earned were at least B's (3.0 grade points).
- No student-option pass-fail grading is permitted in the program of study (i.e., GS Form 6).
- 300-level courses are allowed only if approved by the student's graduate committee.

Required Courses:

- The following courses must be completed with at least a B letter grade (3.0 grade points) by the end of the second year after full admission to the Ph.D. program. Students must retake courses that they receive a B- or below in.
 - ECON 704: Macroeconomic Analysis II
 - ECON 706: Microeconomic Analysis II
 - AREC 570: Methodology of Economic Research
 - AREC 635: Applied Econometrics II
 - Capstone Field Course (AREC 705, AREC 710, AREC 740)

Courses Not Counted:

- The following courses should be completed before starting your Ph.D. program and may not be counted towards the Ph.D. degree:
 - AREC 335: Introduction to Econometrics
 - ECON 304: Intermediate Macroeconomics
 - ECON 306: Intermediate Microeconomics
 - ECON 504: Macroeconomic Analysis I
 - ECON 506: Microeconomic Analysis I
 - STAT 301: Introduction to Statistical Methods
 - STAT 304: Multiple Regression Analysis
 - All 100 and 200 level courses and all Continuing Education courses

Preliminary Examination:

- ❑ Full time students are required to pass a preliminary examination at the end of the first year after full admission to the Ph.D. program. The intent of the examination is to *test and certify that a student has the basic skills and abilities to succeed in Ph.D. coursework and chosen field of study in the Department of Agricultural and Resource Economics*. Skills and abilities are tested in three areas: microeconomic theory, quantitative methods, and policy or welfare analysis.
- ❑ The preliminary examination will be given in a 4-hour written format. You must have a working knowledge in microeconomic theory, econometrics, and policy or welfare analysis. The typical format for the exam is four equally weighted questions in three areas:
 - 1) Policy and Welfare (AREC 572 and AREC 678) Choose one from two questions
 - 2) Quantitative Methods (AREC 535)
 - 3) Microeconomic Theory
 - Applied Production Economics (AREC 505)
 - Applied Consumer Theory (ECON 506)
- ❑ The preliminary examination is offered on Monday the week before classes start in the fall and spring.
- ❑ Students that do not pass the preliminary examination on the first attempt must take the examination again at its next offering.
- ❑ In rare situations where there are extenuating circumstances beyond a student's control, students that did not pass the exam on the second attempt can petition for a third attempt.

Field Examinations:

- ❑ The Department of Agricultural and Resource Economics requires two field exams, a course field and a tested field:

Course Field

A course field in an area outside your tested field is required of all Ph.D. students. A course field consists of a B (3.0 grade points) or higher in two courses approved as a field by the graduate coordinator (approved on GS-6-DARE).

Tested Field

The tested field is given the week before courses begin in the fall and spring. You are expected to have econometric and microeconomic skills equivalent to AREC 635 and ECON 706, respectively. There will be questions from two core classes and a choice among supporting classes in the following two fields:

- 1) Resource and Environmental Economics
 - Core Courses: AREC 540 and AREC 541
 - Supporting Courses: AREC 542 and AREC 547
 - 2) Agricultural Economics in: Production, Marketing or Agribusiness
 - Core Courses: AREC 505 and AREC 510
 - Supporting Courses: AREC 508, AREC 624
- ❑ The Ph.D. course for the resource and environmental field is AREC 740. Either of the two courses, AREC 710 or AREC 705 are sufficient for the agricultural economics field. While mastery of content from the Ph.D. course in the chosen field is not requisite for the exam, students are expected to take this course prior to taking the exam if possible.
 - ❑ Students not passing the tested field examination on the first attempt must take the examination again at its next offering.
 - ❑ In rare situations where there are extenuating circumstances beyond a student's control, students that did not pass the exam on the second attempt can petition for a third and final attempt.

- All students taking the examination must sign-up 30 days in advance.
- The schedule for the test is as follows:
 - On Tuesday the week before each semester starts you will take a 4-hour written exam from 8:30 a.m. to 12:30 p.m. It will have three sections: (i) analytical, (ii) applied, and (iii) subfield specialization (water, land, regional, finance, agribusiness, etc). There will be two or three questions provided in each section. You will be required to answer one question in each section. The only resources allowed will be paper, writing instruments, and a scientific calculator.
 - On Thursday you will pick up a take-home exam from the main office between 10:00 a.m. and 12:00 p.m. Your answers will be due the following day, Friday, by 4:00 p.m. In this exam you will be asked to perform integrated economic analysis on an applied topic in your field using the comprehensive set of tools in your field for theoretical and empirical analysis, synthesis, and writing. The general topic area for this analysis will be provided one week before the exam. Once the topic has been announced, you will not be allowed to discuss the exam or related topics with ANYONE other than the exam proctor. If there is any doubt what this means, discuss it with the exam proctor. You will be responsible to arrange access to all necessary facilities and analysis tools such as computers and software.
 - Your response to the take-home exam will consist of (1) the final written answer which may be up to 15 pages TYPED, 12 point font, double spaced, 1 inch margins, not including figures, tables, references, appendices and other information typically required for a professional paper and (2) all supporting data and analysis (including computer programs, data, xx) that serves as the basis of your final work. The written response will be submitted in BOTH printed and electronic format. The supporting documentation will be submitted only in electronic form. Results are expected to be presented consistent with the standards required in professional papers (e.g. t-statistics, formats for equations, and citations), referencing your work sufficiently to document that which is your own.
 - It is up to the discretion of the grading committee, with concurrence from the Graduate Coordinator, whether students that fail part of the exam must retake the failed portion of the exam or the entire exam

Dissertation:

- Students take primary responsibility for identifying a dissertation topic, developing the dissertation content, and preparing the presentation and format of the dissertation. The dissertation is supervised by the student's advisor and committee and must be approved by them. As an alternative to the standard dissertation format, the advisor and committee may approve a dissertation constructed around the presentation of three publishable journal article integrated around a central theme.

Field Courses and Specializations
Department of Agricultural and Resource Economics
Colorado State University

The Department of Agricultural and Resource Economics at Colorado State University has developed several specialization options for our students. A specialization requires two courses. Ph.D. students may take any of these pairings fully offered in the Department of Agricultural and Resource Economics to satisfy their course field requirement. Students that choose resource and environmental economics for their tested field may not take any specialization with a * for their course field and students taking the agricultural economics tested field may not take courses with a #.

Program Requirement Summary

Specialization	Courses
Environmental & Resources*	AREC 540/AREC 541
Water*	AREC 540/AREC 542
Land Use*	AREC 540/547
Agribusiness#	AREC 510/ 624 (new)
Marketing#	AREC 510/ 710 (new)
Production and Finance#	AREC 505/AREC 508
Production and Marketing#	AREC 505/510
Regional and Community Development	AREC 563/ AREC 566
Welfare and Policy (not available as a field option for Ph.D)	AREC 572/AREC 678
Econometrics	AREC 635/AREC 735
Supporting Specializations (Not counted by the Department)	
<i>Quantitative Methods/Statistics</i>	<i>STAT 420/ STAT 430</i>
<i>Quantitative Methods/Optimization</i>	<i>Non-linear programming Multiobjective programming</i>
<i>Natural Resources</i>	<i>GIS, Watershed Science, etc.</i>
<i>Agricultural Sciences</i>	<i>Animal, Crop, Soil, Pest, etc</i>
<i>Business</i>	Varies by interest

Steps and Timing for a Doctorate of Philosophy Degree

Requirement	Timing
CORE (AREC 570, AREC 635, ECON 704 and ECON 706)	Before tested field
Prelim (AREC 505, AREC 535, AREC 572 or AREC 678)	Before the end of the third semester
Tested Field	3 ^d or 4 th semester
Course Field	Any time
Preliminary Oral Defense	4 th to 6 th semester (at least 1 semester before your final oral defense)
Write Dissertation	
Final Oral Defense	