

**REQUIREMENTS FOR THE 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 in addition to the M.S. degree. Transfer credits are only allowable if recommended by the student's major advisor and if the grades earned were at least B's (3.0 grade points), in accordance with the substitution policy.
 - At least 9 credits must be earned at Colorado State University at the 700 level in AREC or ECON classes, not including AREC 784, 795V, and 799.
- ❑ No student-option pass-fail grading is permitted in the program of study (i.e., GS Form 6).
- ❑ 300-level courses in ECON and AREC are not allowed, but undergraduate courses from other disciplines in support of fields may be approved, on a course by course basis, by the student's graduate committee.
- ❑ Students must maintain an overall GPA of 3.0 or above to remain in good academic standing.

Required Courses:

- ❑ Students must complete the following core classes by the end of the second year after full admission to the Ph.D. program:
 - AREC 635: Econometric Theory I, usually in Fall of Year 1
 - AREC 735: Econometric Theory II, usually Spring of Year 1
 - ECON 506 Microeconomic Analysis I, usually in Spring of Year 1
 - ECON 706: Microeconomic Analysis II, usually in Fall of Year 2
- ❑ The following classes must be completed with a minimum grade of B (3.0 grade points) during the program of study:
 - AREC 570: Methodology of Economic Research
 - One Capstone Field Course (AREC 705, AREC 710, or AREC 740)
 - If student has not taken ECON 504: Macroeconomic Analysis I (or an equivalent course at another University) as part of the MS degree, it is required for the Ph.D.
- ❑ ECON 501: Quantitative Methods for Economists, is not strictly required, but provides the mathematical background sufficient for completion of the Microeconomic Analysis sequence.
- ❑ Students wishing to enhance their understanding of producer and welfare theory, which are important topics in the Microeconomic Core Examination, are encouraged to take AREC 505: Agricultural Production Economics, AREC 572: Social Benefit Cost Analysis, and/or AREC 678: Agricultural Policy.

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:
 - Any course counted toward a Master's degree conferred at CSU
 - AREC 335: Introduction to Econometrics

- ECON 304: Intermediate Macroeconomics
- ECON 306: Intermediate Microeconomics
- STAT 301: Introduction to Statistical Methods
- STAT 304: Multiple Regression Analysis
- All 100 and 200 level courses and all Continuing Education courses

Substitution Policy:

- ❑ The student may work with his/her advisor to identify appropriate substitution or transfer course(s), up to a maximum of 10 credits (not including the required courses listed above). No further approval is needed if courses and program adhere to all other requirements.
- ❑ If the student develops a program with his/her advisor which exceeds the maximum of 10 credits, or wishes to transfer or waive one of the required courses listed above, they must submit a proposal in writing to the Graduate Curriculum Committee for consideration, preferably with guidance from the student's academic advisor.
- ❑ All additional proposed exceptions to the policies listed herein must be submitted in writing to the Graduate Curriculum Committee for consideration, including requests to transfer courses from international universities or online programs.

Examinations:

- ❑ Students pursuing the Ph.D. are required to pass two written core examinations (one in microeconomics and one in quantitative methods), one written field examination, one oral preliminary examination (or "proposal defense"), and one oral dissertation defense.

Core Examinations:

- ❑ Students pursuing the Ph.D. are required to pass two core examinations, one in microeconomics and one in quantitative methods (e.g., econometrics). The intent of the examinations 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.*
- ❑ Each core examination will be administered as a closed-book, in-classroom written examination lasting several hours.
- ❑ Students who do not pass each core examination on the first attempt must retake the examination at its next offering.
- ❑ In rare situations where there are extenuating circumstances beyond a student's control, students who did not pass the exam on the second attempt may petition the Graduate Curriculum Committee for a third attempt.

Quantitative Core Exam

- The quantitative core exam is offered twice each summer (early summer and late summer).
- The quantitative core exam will cover topics discussed in AREC 635 (offered in Fall) and AREC 735 (offered in Spring).
- Students will be automatically signed up to take the quantitative core exam following successful completion of AREC 735, usually in Spring of Year 1. This implies that the student's first sitting for the quantitative core exam will usually be early summer following the first academic year of classes.
- Failure to take the exam in the absence of a formal exemption (granted by the Graduate Curriculum Committee) will be treated as a failed exam.
- Students who do not make satisfactory progress will lose departmental funding.

Microeconomic Core Exam

- The microeconomic core exam is offered in June and January of each year.
- The microeconomic core exam will cover topics discussed in ECON 501 (offered in Fall), ECON 506 (offered in Spring), and ECON 706 (offered in Fall).
- Students will be automatically signed up to take the microeconomic core exam following successful completion of ECON 706, usually in Fall of Year 2. This implies that the student's first sitting for the microeconomic core exam will usually be in January of Year 2.
- Failure to take the exam in the absence of a formal exemption (granted by the Graduate Curriculum Committee) will be treated as a failed exam.
- Students who do not make satisfactory progress will lose departmental funding.

Field Examinations:

- In addition to successful completion of each core examination, all Ph.D. students in the Department of Agricultural and Resource Economics must complete one written field exam and a course 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).

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 735 and ECON 706, respectively. There will be required questions from two core classes and a choice of questions from 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
- The Ph.D. capstone course for the resource and environmental field is AREC 740. Either of the two courses, AREC 710 or AREC 705 is sufficient for the agricultural economics field. While mastery of content from the Ph.D. course in the chosen field is not a prerequisite for the exam, students are encouraged to take relevant courses prior to sitting for the exam, if possible.
- Students not passing the tested field examination on the first attempt must retake the examination at its next offering.
- In rare situations where there are extenuating circumstances beyond a student's control, students who do not pass the exam on the second attempt can petition for a third and final attempt.
- All students intending to sit for the examination must sign-up no fewer than 30 days in advance.
- The schedule for the test is as follows:
 - The week before each semester starts you will take a 4-hour written exam. 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.

- Later in the exam week you will pick up a take-home exam from the main office, between 10:00 and 12:00pm. Your answers will be due the following day 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 about 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, 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, etc) 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 citing relevant literature in contrast to that which is your own.
- It is up to the discretion of the grading committee, with concurrence from the Graduate Coordinator, whether students who 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 articles integrated around a central theme.
- The Preliminary Exam over the dissertation proposal (also known as 'Proposal Defense') is the final step to candidacy (also known as A.B.D., all but dissertation, status), and only may be completed after passing the tested field exam. The Ph.D. dissertation proposal usually consists of: (a) a problem statement; (b) literature review related to the problem; (c) proposed empirical and theoretical models; (c) anticipated hypotheses to be evaluated; (d) identification of data sources and plan for data collection; (e) plan/timeline for conducting the analysis and writing the first draft of the dissertation. If a three paper option is chosen, these components would be identified for each paper, but repetition is not needed if they share common elements (e.g., data sources).
- The final dissertation defense must occur at least 6 months (and no more than 10 years by CSU requirements) after the preliminary exam of the dissertation proposal.
- The Ph.D. degree is completed when the student's advisory committee and the department chair has approved the dissertation, the dissertation is filed with the Graduate School, all appropriate forms have been submitted and approved, and a bound copy is submitted to the Department of Agricultural & Resource Economics.