

Graduate Program in Agricultural and Resource Economics M.S., Joint M.S./M.B.A., and Ph.D. Degree Requirements

Revised: 1995, 2003, 2012, 2016, 2019, 2020

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M.S. DEGREE REQUIREMENTS

1. Admission Requirements

Consideration for program admission requires a Bachelor's degree, three letters of recommendation, official transcripts, GRE scores, TOEFL or IELTS score (if applicable), and Office of Graduate Studies online application with fee. Applications received by January 15 will be given priority consideration. Applications will not be considered after April 15.

An undergraduate degree in Economics, Applied Economics, or Agricultural and Resource Economics is typical for ARE graduate students, but is not required. A minimum cumulative GPA of 3.0 (on a 4.0 scale) is required for admission. While admission does not formally require exceeding minimum GRE scores, priority will be given to applicants with GRE quantitative scores above the 70th percentile and verbal GRE scores above the 60th percentile (30th percentile for non-native speakers of English). Graduate Studies requires the Test of English as a Foreign Language (TOEFL) or the IELTS if a student has not obtained an undergraduate or graduate degree at an approved English-medium institution. The minimum score required for admission to graduate study at UC Davis is 80 for the TOEFL Internet-based test and 7.0 on a 9-point scale for the IELTS.

Meeting some or all of these criteria does not guarantee admission, but merely eligibility. The decision to recommend admission to the Dean of Graduate Studies will be made by the Graduate Program Admissions Committee on the basis of available space and the competitiveness of applicants compared to the eligible pool.

1.1. Prerequisites

Students, including those who did not major in Economics, Applied Economics, or Agricultural and Resource Economics, are expected to have completed the equivalent of the following UC Davis courses:

- Calculus-based Intermediate Microeconomics: ARE 100A & 100B (8 units)
- Statistics: STA 103 (4 units)
- Econometrics: ARE 106 (4 units)
- One year of Calculus, including the study of partial derivatives: MAT 16A, 16B, 16C or 21A, 21B, 21C (12 units)
- Undergraduate-level coursework in Linear Algebra is strongly encouraged, though not required.
- Additional upper-division courses in Economics, Applied Economics, or Agricultural and Resource Economics are strongly encouraged.

1.2. Deficiencies

Deficiencies in the above coursework requirements must be corrected prior to enrollment in the Master's program. If taken at UC Davis, these courses cannot be taken with the Satisfactory/Unsatisfactory (S/U) grading option. No minimum grade is required, however applicants should strive for a grade of B+ or above.

2. Programs of Study

The ARE Graduate Program offers both M.S. Plan I (thesis) and M.S. Plan II (comprehensive examination) options to complete the Master's degree.

2.1. Plan I

This plan requires a minimum of 32 graduate units in Agricultural and Resource Economics, which is more than the UC Davis minimum of 30 units of graduate and upper division courses (the 100 and 200 series only). As described below, 20 of these units are graduate units corresponding to required core courses and at least 12 units correspond to required graduate field courses. Neither 299 nor 396 units can be counted towards the required unit total. This plan requires a thesis.

Admission to the ARE Plan I option is not guaranteed upon admission to the M.S. program. In order to be considered for Plan I, students must submit to the Graduate Administrative Committee (GAC, see Section 5.1), by the end of instruction of the Winter quarter of their coursework year, a thesis plan and a proposed three-member Thesis Committee. The proposed committee must meet the requirements set forth in Section 5.5. The thesis plan must be approved by the chair of the proposed committee. The GAC reviews the thesis proposal and makes a recommendation to the Thesis Committee, taking into account the scientific merit of the proposal, coursework performance during the Fall and Winter quarters, and other information deemed relevant to the decision to proceed with the thesis. The recommendation is non-binding. However, if the student's cumulative GPA across the Fall and Winter quarters is below 3.3, entry into Plan I will be denied and the student will be directed to Plan II. By the 10th day of instruction of the Spring quarter, students wishing to pursue the Plan I option must notify the GAC that they have obtained formal approval from all three members of their proposed committee. Failure to do so will result in the student being directed to Plan II. This requirement ensures that students will have time to adjust their Spring schedule in accordance with the outcome of the thesis proposal.

2.2. Plan II

The ARE Plan II requires a minimum of 36 units of graduate or upper-division undergraduate courses. Out of the 36 required units, 32 units correspond to required courses, with 20 units corresponding to required graduate core courses and at least 12 units to required field courses. The remaining 4 units may come from other graduate courses or upper-division undergraduate courses that meet the general program objectives of the student and do not duplicate available M.S. courses offered by the ARE Graduate Program. Students must also pass a comprehensive written examination. No thesis is required.

3. Course Requirements

Minimum Requirements: M.S. Plan I - 32 units, M.S. Plan II - 36 units

Core Courses	Microeconomic Theory (8)
	Econometrics (8)
	Research Methods (4)
Field Courses	Students complete three of the following five field courses (12) <ol style="list-style-type: none"> 1. Development 2. Economics of Agriculture 3. Economic Analysis of Resource and Environmental Policies 4. Financial Economics 5. Optimization with Economic Applications
Elective Courses	Plan I - (0)
	Plan II - Graduate or upper division undergraduate course (4)

3.1. Core Courses (5 courses, 20 units)

Students must complete all of the following core courses under both Plan I and Plan II:

- *Microeconomic Theory* (8 units)
 - ARE 204A: Microeconomic Analysis I (4 units)
 - ARE 204B: Microeconomic Analysis II (4 units)
- *Econometrics* (8 units)
 - ARE 256A: Applied Econometrics I (4 units)
 - ARE 256B: Applied Econometrics II (4 units)
- *Research Methods* (4 units)
 - ARE 258: Demand and Market Analysis (4 units)

3.2. Field Courses (3 courses, minimum of 12 units)

Students must complete three of the following five field courses under both Plan I and Plan II:

- ARE 214: Development Economics (4 units)
- ARE 223: Economics of Agriculture (4 units)
- ARE 275: Economic Analysis of Resource and Environmental Policies (4 units)
- ARE 271: Financial Economics (4 units)
- ARE 252: Optimization with Economic Applications (4 units)

3.3. Elective Courses (Plan I: 0 courses, 0 units; Plan II: 1 course, 4 units)

Under Plan I, students are not required to complete any elective courses.

Under Plan II, students must complete elective coursework totaling at least 4 units. Students may choose from other graduate courses or upper division undergraduate courses that meet the general program objectives of the student. Allowable upper division courses do not include core undergraduate courses in Economics and Managerial Economics such as ARE 100A-B, 106, 155 and their prerequisites. Neither 299 nor 396 units can be counted towards the required unit total.

3.4. English Language Requirement

Students who have neither obtained an undergraduate or graduate degree at an approved English-medium institution nor demonstrated strong English language proficiency through the TOEFL or IELTS exam are required to take appropriate English language

courses, as described in Graduate Student Course Requirements – English as Second Language (GC-2018-02). Courses taken in satisfaction of this requirement do not count towards the total units required for graduation.

3.5. Summary

Consistent with the policies of the Office of Graduate Studies, students must receive a grade of C or better in any course to receive credit towards the degree. Students must register for a minimum of 12 units per quarter. Courses that fulfill any of the program course requirements may not be taken S/U unless the course is normally graded S/U. Once course requirements are completed, students can take additional classes as needed, although the 12 units per quarter are generally fulfilled with a research class (299). Per UC regulations students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter.

Under Plan I: Students complete 20 units of graduate core courses, at least 12 units of graduate field courses, and a thesis.

Under Plan II: Students complete 20 units of graduate core courses; at least 12 units of graduate field courses; and additional elective courses. Students who complete 12 units of field courses must complete at least 4 units of elective courses.

4. Special Requirements

None.

5. Committees

5.1. Graduate Administrative Committee

The Graduate Administrative Committee (GAC) consists of the five Graduate Advisors in the program. The ARE Department Chair appoints one of these advisors as GAC Chair.

The GAC is charged with the following responsibilities:

- to review and make recommendations to Graduate Studies regarding applications for admission and fellowships, and various graduate student petitions;
- to serve as Graduate Advisors as described in Section 5.3;
- to evaluate and make recommendations to the Graduate Program faculty regarding policy, curriculum, and administration of the program;
- to appoint ad hoc committees, as needed.

In addition to the above duties, the GAC Chair provides academic leadership for the program, making recommendations to the Department Chair regarding departmentally funded student employment and fellowships, overseeing student employment and fellowships funded by other sources including the Graduate Program Fellowship Allocation (GPFA) and other funds allocated specifically to the Graduate Program, appointing the Master's Comprehensive Examination Committee, and coordinating administrative matters with the Office of Graduate Studies.

5.2. Admissions Committee

The Admissions Committee consists of the five faculty members of the Graduate

Administrative Committee (GAC). Once the completed application, all supporting material, and the application fee have been received, the application is submitted to the Admissions Committee. Based on a review of the entire application, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval. Notification of admissions decisions will be sent to the applicant by Graduate Studies. Applications are accepted through April 15 for the class entering the following Fall. Priority is given to applications received by January 15.

5.3. Course Guidance and Advising Committee

The five faculty members of the GAC serve as Graduate Advisors. Graduate Advisors are responsible for ensuring that their advisees complete appropriate preparative coursework; interpreting requirements; providing advice and guidance to their advisees about required coursework, elective courses, and graduate research options and requirements; identifying members for the thesis committee (in the case of Plan I students); and overseeing students' progress. Prior to the end of the first week of each Fall quarter, students are required to meet with their assigned advisor and complete a study plan. The study plan lays out the courses and other academic activities for the remainder of the year. Students are also required to meet with their Graduate Advisor in the Spring quarter to complete a progress report. In the case of Plan I students, the balance of responsibility for overseeing students' progress shifts from the Graduate Advisor to the Major Professor (see Section 5.5) after the student advances to candidacy.

5.4. Master's Comprehensive Examination Committee

The Chair of the Graduate Administrative Committee appoints an examination committee responsible for preparing, administering and grading the Master's comprehensive examination. This committee, composed of three Graduate Program faculty members, informs the Graduate Administrative Committee of the outcome of the examination.

5.5. Thesis Committee

A student pursuing a Master's degree under Plan I, in consultation with their Graduate Advisor, nominates three faculty to serve on the Thesis Committee, including a Major Professor. Following the procedure set forth in Section 2.1, these nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy. The Major Professor serves as chair of the Thesis Committee. At least two of the members of the Thesis Committee must be members of the Graduate Program in Agricultural and Resource Economics. Cooperative Extension Specialists with primary appointments in the Department of Agricultural and Resource Economics who hold an appropriate instructional title, such as Lecturer without Salary, may serve as co-chair or member of the Thesis Committee. Senate faculty who are not members of the Graduate Program in Agricultural and Resource Economics may serve as a member of the Thesis Committee subject to approval from the Graduate Administrative Committee and may serve as the sole chair of the Thesis Committee subject to approval from the Graduate Administrative Committee and the Department Chair of ARE for nomination to the Dean of Graduate Studies.

6. Advising Structure and Mentoring

Students completing the Master's degree under Plan I have both a Graduate Advisor and a

Major Professor. The Graduate Advisor, who is appointed by Graduate Studies, is a resource for information on academic requirements, policies and procedures, and registration information. The Major Professor is the faculty member who supervises the student's research and thesis and serves as the chair of the Thesis Committee. The student identifies the Major Professor in consultation with their Graduate Advisor.

Students completing the Master's degree under Plan II have a Graduate Advisor as described in Section 5.3.

The Graduate Program Coordinator assists students with general university policies.

Graduate Council's Mentoring Guidelines are available online at:

<https://grad.ucdavis.edu/sites/default/files/upload/files/grad-council/mentoring.pdf>.

ARE's Mentoring Guidelines are available online at:

https://arefiles.ucdavis.edu/uploads/filer_public/42/1c/421c29b7-9b63-4cc6-b198-57660cb96bf2/are_graduate_program_mentoring_guidelines_june_2016_v4.pdf.

7. Advancement to Candidacy

Plan I and Plan II students must file an official application for Candidacy for the Degree of Master of Science, which is available online at: <https://grad.ucdavis.edu/current-students/forms-information> in the quarter in which they complete all required core and field courses. This is typically the Spring quarter. Plan I students must have obtained formal approval of all three members of their proposed Thesis Committee according to the procedure set forth in Section 2.1. Plan II students must complete all core, field and elective courses before taking the comprehensive exam. A completed Candidacy for the Degree of Master of Science form includes a list of courses the student has taken to complete degree requirements. The student's Graduate Advisor and, for Plan I students, Thesis Committee Chair must sign the candidacy form before it can be submitted to Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to the Graduate Program Coordinator and the student; the Thesis Committee Chair will also receive a copy, if applicable. If the Office of Graduate Studies determines that a student is not eligible for advancement, the Graduate Program and the student will be told the reasons for the application's deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding "I" grades in required courses, or insufficient units.

8. Comprehensive Examination and Thesis Requirements

8.1. Thesis Requirements (Plan I)

Thesis Committee meetings: The candidate and Major Professor should meet at least once per quarter with the other members of the Thesis Committee to discuss progress and any changes in research objectives.

Thesis: Research for the Master's thesis is to be carried out under the supervision of a faculty member of the program and must represent an original contribution to knowledge in the field. The thesis research must be conducted while the student is enrolled in the program. The thesis is submitted to the Thesis Committee at least one month before the student plans to make requested revisions. All committee members must approve the thesis and sign the title page before the thesis is submitted to Graduate Studies for final approval. Should the committee determine that the thesis is unacceptable, even with

substantial revisions, the program may recommend the student for disqualification from the program to the Dean of Graduate Studies.

The thesis must be filed in a quarter in which the student is registered or on Filing Fee. Instructions on preparation of the thesis and a schedule of dates for filing the thesis in final form are available from Graduate Studies. A student must have a GPA of 3.0 for the M.S. degree to be awarded.

8.2. Master's Comprehensive Examination (Plan II)

Exam: The Master's comprehensive examination is a written exam that covers the material from the core courses. Students have four hours to complete the exam. The questions on this exam are written and graded by the three faculty members on the Master's Comprehensive Examination Committee.

Timing: The Master's comprehensive examination is given several weeks after completion of the Spring quarter, typically in the last week of June or first week of July. Students may only take the comprehensive examination once they have advanced to candidacy.

Outcome and Retake: The Master's Comprehensive Examination Committee's unanimous vote is required to pass a student on the exam. A student who does not pass the exam on the first try may retake the exam. The retake is offered at the end of the summer. The format of the second exam is the same as that of the first exam. The examination may not be repeated more than once. A student who does not pass on the second attempt will be recommended for disqualification from further graduate work in the program to the Dean of Graduate Studies. Once the exam has been passed, the Master's Report Form is signed by the chair of the Master's Comprehensive Examination Committee and the student's Graduate Advisor and then forwarded to the Office of Graduate Studies. A candidate must be a registered student or in Filing Fee status at the time the program submits the form, with the exception of the summer period between the end of the Spring quarter and the beginning of Fall quarter. The program must file the report with Graduate Studies within one week of the end of the quarter in which the student's degree will be conferred.

9. Normative Time to Degree

The Normative Time to Degree for the ARE Master's program is three quarters under Plan II and between four and six quarters under Plan I.

10. Typical Time Line and Sequence of Events

Course requirements are typically completed by the end of the first year of study for students under both Plan I and Plan II. Plan II students then take the Master's comprehensive examination at the end of June. Plan I students typically carry out and complete their thesis by the end of their second year.

The following would be a typical program for a Plan II M.S. student:

Fall Quarter	Winter Quarter	Spring Quarter	June/July
ARE 204A	ARE 204B	ARE 258	M.S.
ARE 256A	ARE 256B	ARE 271	Comprehensive
ARE 223	ARE 214	ARE 275	Exam

The following would be a typical program for a Plan I M.S. student:

YEAR ONE			
Fall Quarter	Winter Quarter	Spring Quarter	Summer
ARE 204A	ARE 204B	ARE 258	Research
ARE 256A	ARE 256B	ARE 271/275	
ARE 223	ARE 214	ARE 299	

YEAR TWO		
Fall Quarter	Winter Quarter	Spring Quarter
Research	Research	Research

11. Sources of Funding

Students may receive financial support in the form of employment as Reader, Teaching Assistant or Graduate Student Researcher. However, *a priori* there is no guarantee for such support unless stated explicitly in the offer letter sent to the students.

12. PELP, In Absentia and Filing Fee status

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found on the Graduate Studies website:

<https://grad.ucdavis.edu/policies>

<https://grad.ucdavis.edu/current-students/forms-information>.

JOINT M.S./M.B.A. PROGRAM DEGREE REQUIREMENTS

This joint program enables students to obtain both an M.B.A. in the Graduate School of Management and an M.S. in Agricultural and Resource Economics (ARE) in three years. Students complete the full requirements of the M.B.A. and of the Plan II M.S. degree in ARE. A maximum of 12 units may be counted towards both degrees. Since the Plan II M.S. degree in ARE requires 36 units and the M.B.A. requires 72 units, the total number of units required by the joint degree ranges from 96 to 108.

ARE Master's Degree Requirements for Joint Degree Program

1. Admission Requirements

Consideration for program admission requires a Bachelor's degree, three letters of recommendation, official transcripts, GRE scores, TOEFL or IELTS score (if applicable) and Office of Graduate Studies online application with fee. Applications received by January 15 will be given priority consideration. Applications will not be considered after April 15.

An undergraduate degree in Economics, Applied Economics, or Agricultural and Resource Economics is recommended for ARE graduate students, but is not required. A minimum cumulative GPA of 3.0 (on a 4.0 scale) is required for admission. While admission does not formally require exceeding minimum GRE scores, priority will be given to applicants with GRE quantitative scores above the 70th percentile and verbal GRE scores above the 60th percentile (30th percentile for non-native speakers of English). Graduate Studies requires the Test of English as a Foreign Language (TOEFL) or the IELTS if a student has not obtained an undergraduate or graduate degree at an approved English-medium institution. The minimum score required for admission to graduate study at UC Davis is 80 for the TOEFL Internet-based test and 7.0 on a 9-point scale for the IELTS.

Meeting some or all of these criteria does not guarantee admission, but merely eligibility. The decision to recommend admission to the Dean of Graduate Studies will be made by the Graduate Program Admissions Committee on the basis of available space and the competitiveness of applicants compared to the eligible pool.

1.1. Prerequisites

Students, including those who did not major in Economics, Applied Economics, or Agricultural and Resource Economics, are expected to have completed the equivalent of the following UC Davis courses:

- Calculus-based Intermediate Microeconomics: ARE 100A & 100B (8 units)
- Statistics: STA 103 (4 units)
- Econometrics: ARE 106 (4 units)
- One year of Calculus, including the study of partial derivatives: MAT 16A, 16B, 16C or 21A, 21B, 21C (12 units)
- Undergraduate-level coursework in Linear Algebra is strongly encouraged, though not required.
- Additional upper-division courses in Economics, Applied Economics, or Agricultural and Resource Economics are strongly encouraged.

1.2. Deficiencies

Deficiencies in the above coursework requirements must be corrected prior to enrollment in the Master's program. If taken at UC Davis, these courses cannot be taken with a Satisfactory/Unsatisfactory (S/U) grading option. No minimum grade is required, however applicants should strive for a grade of B+ or above.

2. Program of Study

Under the joint M.S./M.B.A. degree, the student must complete the ARE Plan II (comprehensive examination) option.

The ARE Plan II requires a minimum of 36 units of graduate or upper-division undergraduate courses. Out of the 36 required units, 32 units correspond to required courses, with 20 units corresponding to required core courses and at least 12 units to required field courses. The remaining 4 units may come from other graduate courses or upper-division undergraduate courses that meet the general program objectives of the student and do not duplicate available M.S. courses offered by the ARE Graduate Program. The student must also pass a comprehensive written examination. No thesis is required.

As part of the M.B.A. requirements, the student must take additional coursework and complete a capstone project (see Section 4).

3. Course Requirements

Minimum Requirements: M.S. Plan II – 36 units

Core Courses	Microeconomic Theory (8)
	Econometrics (8)
	Research Methods (4)
Field Courses	Students complete three of the following five field courses (12) 1. Development 2. Economics of Agriculture 3. Economic Analysis of Resource and Environmental Policies 4. Financial Economics 5. Optimization with Economic Applications
Elective Courses	Graduate or upper division undergraduate course (4)

3.1. Core Courses (5 courses, 20 units)

Students must complete all of the following core courses:

- *Microeconomic Theory* (8 units)
 - ARE 204A: Microeconomic Analysis I (4 units)
 - ARE 204B: Microeconomic Analysis II (4 units)
- *Econometrics* (8 units)
 - ARE 256A: Applied Econometrics I (4 units)
 - ARE 256B: Applied Econometrics II (4 units)
- *Research Methods* (4 units)
 - ARE 258: Demand and Market Analysis (4 units)

3.2. Field Courses (3 courses, minimum of 12 units)

Students must complete three of the following five field courses:

- ARE 214: Development Economics (4 units)
- ARE 223: Economics of Agriculture (4 units)
- ARE 275: Economic Analysis of Resource and Environmental Policies (4 units)
- ARE 271: Financial Economics (4 units)
- ARE 252: Optimization with Economic Applications (4 units)

3.3. Elective Courses (1 course, 4 units)

Students must complete elective coursework totaling at least 4 units. Students may choose from other graduate courses or upper division undergraduate courses that meet the general program objectives of the student. Allowable upper division courses do not include core undergraduate courses in Economics and Managerial Economics such as ARE 100A-B, 106, 155 and their prerequisites. Neither 299 nor 396 units can be counted towards the required unit total.

3.4. English Language Requirement

Students who have neither obtained an undergraduate or graduate degree at an approved English-medium institution nor demonstrated strong English language proficiency through the TOEFL or IELTS exam are required to take appropriate English language courses, as described in Graduate Student Course Requirements – English as Second Language (GC-2018-02). Courses taken in satisfaction of this requirement do not count towards the total units required for graduation.

3.5. Summary

Consistent with the policies of the Office Graduate Studies, students must receive a grade of C or better in any course to receive credit towards the degree. Students must register for a minimum of 12 units per quarter. Courses that fulfill any of the program course requirements may not be taken S/U unless the course is normally graded S/U. Once course requirements are completed, students can take additional classes as needed, although the 12 units per quarter are generally fulfilled with a research class (299). Per UC regulations students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter.

Students complete 20 units of core courses; at least 12 units of field courses; and additional elective courses. Students who complete 12 units of field courses must complete at least 4 units of elective courses.

4. Special Graduate School of Management-M.B.A. Requirements

4.1. Core Courses (10 courses, 32 units)

The M.B.A. core requires 32 units of coursework (9 courses, each 3 units and one capstone, 5 units). In the first year of the M.B.A. program, students take the first nine courses listed below. In the Fall quarter of the second year, students complete the Integrated Management Project capstone (MGT 440). The full list of core courses is as follows:

- MGT 200A: Financial Accounting (3 units)
- MGT 201A: The Individual and Group Dynamics (3 units)

- MGT 201B: Organizational Strategy and Structure (3 units)
- MGT 202A: Markets and the Firm (3 units)
- MGT 203A: Data Analysis for Managers (3 units)
- MGT 204: Marketing Management (3 units)
- MGT 205: Financial Theory and Policy (3 units)
- MGT 252: Managing for Operational Excellence (3 units)
- MGT 268: Articulation and Critical Thinking (3 units)
- MGT 440: Integrated Management Project (5 units)

4.2. Elective Courses (40 units)

In addition to the required core courses, students must complete a total of 40 units of approved elective courses. The number of courses required to complete these units will depend on the number of ARE units counted towards both degrees. If no ARE units are counted towards the MBA degree, then students must complete 40 units of approved courses. If the maximum of 12 units from ARE are counted towards the MBA degree, then students must complete 28 units of approved courses. Approved courses include electives (200s), 100s by approval of the GSM Graduate Advisor, directed group/individual study (298/299), and directed group/individual practicum (498/499) courses offered by the GSM.

A full listing of the GSM elective courses may be found on the GSM website: <https://gsm.ucdavis.edu/full-time-mba-course-offerings>.

5. Committees

5.1. Graduate Administrative Committee

The Graduate Administrative Committee (GAC) consists of the five Graduate Advisors in the program. The ARE Department Chair appoints one of these advisors as GAC Chair.

The GAC is charged with the following responsibilities:

- to review and make recommendations to Graduate Studies regarding applications for admission and fellowships, and various graduate student petitions;
- to serve as Graduate Advisors as described in Section 5.3;
- to evaluate and make recommendations to the Graduate Program faculty regarding policy, curriculum, and administration of the program;
- to appoint ad hoc committees, as needed.

In addition to the above duties, the GAC Chair provides academic leadership for the program, making recommendations to the Department Chair regarding departmentally funded student employment and fellowships, overseeing student employment and fellowships funded by other sources including the Graduate Program Fellowship Allocation (GPFA) and other funds allocated specifically to the Graduate Program, appointing the Comprehensive Examination Committee, and coordinating administrative matters with the Office of Graduate Studies.

5.2. Admissions Committee

The Admissions Committee consists of the five faculty members of the Graduate Administrative Committee. Once the completed application, all supporting material, and the application fee have been received, the application is submitted to the Admissions Committee. Based on a review of the entire application, a recommendation is made to

accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval. Notification of admissions decisions will be sent to the applicant by Graduate Studies. Applications are accepted through April 15 for the class entering the following Fall. Priority is given to those applications received by January 15.

5.3. Course Guidance and Advising Committee

The five faculty members of the GAC serve as Graduate Advisors. Graduate Advisors are responsible for ensuring that their advisees complete appropriate preparative coursework; interpreting requirements; providing advice and guidance to their advisees about required coursework, elective courses, and graduate research options and requirements and overseeing students' progress. Prior to the end of the first week of each Fall quarter, students are required to meet with their assigned advisor and complete a study plan. The study plan lays out the courses and other academic activities for the remainder of the year. Students are also required to meet with their Graduate Advisor in the Spring quarter to complete a progress report.

5.4. Master's Comprehensive Examination Committee

The Chair of the Graduate Administrative Committee appoints an examination committee responsible for preparing, administering and grading the Master's comprehensive examination. This committee, composed of three Graduate Program faculty members, informs the Graduate Administrative Committee of the outcome of the examination.

6. Advising Structure and Mentoring

Students completing the joint M.S./M.B.A. degree have a Graduate Advisor in ARE as described in Section 5.3.

The Graduate Program Coordinator assists students with general university policies.

Graduate Council's Mentoring Guidelines are available online at:

<https://grad.ucdavis.edu/sites/default/files/upload/files/grad-council/mentoring.pdf>.

ARE's Mentoring Guidelines are available online at:

https://arefiles.ucdavis.edu/uploads/filer_public/42/1c/421c29b7-9b63-4cc6-b198-57660cb96bf2/are_graduate_program_mentoring_guidelines_june_2016_v4.pdf.

7. Advancement to Candidacy

Students must file an official application for Candidacy for the Degree of Master of Science, which is available online at: <https://grad.ucdavis.edu/current-students/forms-information> in the quarter in which they complete all required core and field courses. This is typically in the Spring quarter. Students must complete all core, field and elective courses before taking the comprehensive exam. A completed Candidacy for the Degree of Master of Science form includes a list of courses the student has taken to complete degree requirements. The student's Graduate Advisor must sign the candidacy form before it can be submitted to Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to the Graduate Program Coordinator and the student. If the Office of Graduate Studies determines that a student is not eligible for advancement, the Graduate Program and the student will be told the reasons for the application's deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding "I" grades in required courses, or

insufficient units.

8. Comprehensive Examination

Exam: The comprehensive examination is a written exam that covers the material from the ARE core courses. Students have four hours to complete the exam. The exam questions are written and graded by the three faculty members on the Master's Comprehensive Exam Committee.

Timing: The comprehensive examination is given several weeks after completion of the Spring quarter, typically in the last week of June or first week of July. Students may take the comprehensive examination once they have advanced to candidacy.

Outcome and Retake: The Master's Comprehensive Examination Committee's unanimous vote is required to pass a student on the exam. A student who does not pass the exam on the first try may retake the exam. The retake is offered at the end of the summer. The format of the second exam is the same as that of the first exam. The examination may not be repeated more than once. A student who does not pass on the second attempt will be recommended for disqualification from further graduate work in the program to the Dean of Graduate Studies. Once the exam has been passed, the Master's Report Form is signed by the chair of the Master's Comprehensive Examination Committee and the student's Graduate Advisor and then forwarded to the Office of Graduate Studies. A candidate must be a registered student or in Filing Fee status at the time the program submits the form, with the exception of the summer period between the end of the Spring quarter and the beginning of Fall quarter. The program must file the report with Graduate Studies within one week of the end of the quarter in which the student's degree will be conferred.

9. Normative Time to Degree

The Normative Time to Degree for the ARE Plan II Master's program is three quarters. The Normative Time to Degree for the Graduate School of Management M.B.A program is 6 quarters.

10. Typical Time Line and Sequence of Events

The total time required to complete the joint program is three years. Students typically complete the two programs sequentially with the order being chosen by the student in consultation with their academic advisors. Thus, a student either completes all ARE requirements in year one and the M.B.A. requirements in years two and three or reverses the order and completes the M.B.A. requirements in years one and two and the ARE requirements in year three.

The table below presents a typical program for a student completing the ARE requirements in year one and the M.B.A. requirements in years two and three. In this example, the student takes 11 three-unit electives in the GSM, for a total of 33 units. The student would thus need to count at least 7 units of ARE courses towards both degrees. This could be accomplished, for example, by counting ARE 223 (4 units) and ARE 275 (4 units) towards both degrees.

Typical Timeline for a Joint M.S./M.B.A student:

YEAR ONE (Plan II M.S. in ARE)			
Fall Quarter	Winter Quarter	Spring Quarter	June/July
ARE 204A	ARE 204B	ARE 258	M.S.
ARE 256A	ARE 256B	ARE 271	Comprehensive
ARE 223	ARE 214	ARE 275	Exam

YEAR TWO (first year of M.B.A.)			
Fall Quarter	Winter Quarter	Spring Quarter	Summer
MGT 200A	MGT 201B	MGT 201A	Internship
MGT 202A	MGT 204	MGT 252	
MGT 203A	MGT 205	MGT Elective	
MGT 268	MGT Elective	MGT Elective	

YEAR THREE (second year of M.B.A.)			
Fall Quarter	Winter Quarter	Spring Quarter	Summer
MGT Capstone	MGT Elective	MGT Elective	
MGT Elective	MGT Elective	MGT Elective	
MGT Elective	MGT Elective	MGT Elective	
Other Course	Other Course	Other Course	

11. Sources of Funding

While completing the joint M.S./M.B.A. program, students may receive financial support in the form of employment as a Reader, Teaching Assistant or Graduate Student Researcher. However, *a priori* there is no guarantee for such support unless stated explicitly in the offer letter sent to the students.

12. PELP, In Absentia and Filing Fee status

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found on the Graduate Studies website:

<https://grad.ucdavis.edu/policies>

<https://grad.ucdavis.edu/current-students/forms-information>.

PH.D. DEGREE REQUIREMENTS

1. Admission Requirements

Consideration for program admission requires a Bachelor's degree, three letters of recommendation, official transcripts, GRE scores, TOEFL or IELTS score (if applicable), and Office of Graduate Studies online application with fee. Applications received by January 15 will be given priority consideration. Applications will not be considered after April 15.

Given the quantitative nature of the first-year course sequences, either an undergraduate degree stressing quantitative analysis – such as Economics, Applied Economics, Agricultural and Resource Economics, Mathematics, or Statistics – or an M.S. degree in similar fields is recommended for ARE Ph.D. students, but is not required. While rigorous, the Ph.D. program is also flexible. Students with more advanced quantitative training can follow the “full core” option described below and complete the required coursework in two years, while those with less quantitative training can follow the “core splitting” option described in Section 9 below and complete the required coursework in three years.

A minimum GPA of 3.3 (on a 4.0 scale) is required for admission. While admission does not formally require exceeding minimum GRE scores, priority will be given to applicants with GRE quantitative scores above the 80th percentile and verbal GRE scores above the 60th percentile (30th percentile for non-native speakers of English). Graduate Studies requires the Test of English as a Foreign Language (TOEFL) or the IELTS if a student has not obtained an undergraduate or graduate degree at an English-medium approved institution. The minimum score required for admission to graduate study at UC Davis is 80 for the TOEFL Internet-based test and 7.0 on a 9-point scale for the IELTS.

Meeting some or all of these criteria does not guarantee admission. The decision to recommend admission to the Dean of Graduate Studies will be made by the Graduate Program Admissions Committee on the basis of available space and the competitiveness of applicants compared to the eligible pool.

1.1. Prerequisites

Students, including those who did not major in Economics, Applied Economics, or Agricultural and Resource Economics, are expected to have completed the equivalent of the following UC Davis courses:

- Calculus-based Intermediate Microeconomics: ARE 100A & 100B (8 units)
- Statistics: STA 103 STA 103A or STA 103B (4 units)
- Econometrics: ARE 106 (4 units)
- One year of Calculus, including the study of partial derivatives: MAT 21A, 21B, 21C (12 units)
- One course in Linear Algebra: MAT 22A (4 units)
- Additional upper-division courses in Economics, Applied Economics, or Agricultural and Resource Economics, as well as Mathematics and Statistics are strongly encouraged.

1.2. Deficiencies

Because of the quantitative nature of the Ph.D. courses, any deficiencies in the above coursework requirements must be corrected prior to enrollment into the Ph.D. program.

If taken at UC Davis, these courses cannot be taken with a Satisfactory/Unsatisfactory (S/U) grading option. No minimum grade is required, however applicants should strive for a grade of A- or above.

2. Dissertation Plan

The Agricultural and Resource Economics Graduate Program uses “Plan B” for the Dissertation Committee and exit requirements. This plan specifies a three-member (minimum) Dissertation Committee and an optional final oral examination (at the discretion of the Dissertation Committee for each individual student). No exit seminar is required. Additional details regarding “Plan B” are given at:

<https://gradstudies.ucdavis.edu/sites/default/files/upload/files/grad-council/c.4.davis-division-reg-520c-2008.pdf>.

3. Course Requirements

Core Courses	Microeconomic Theory (12)
	Econometrics (12)
	Applied Microeconomics (12)
Major Field Courses	Students complete two major field sequences. At least one sequence is chosen among the following three: <ol style="list-style-type: none"> 1. Development Economics (12) 2. Natural Resource & Environmental Economics (16) 3. Agricultural Economics (12)
Elective Courses	Ph.D. Courses (8-12)

3.1. Core Courses (9 courses, 36 units)

All students are required to take the following courses:

- *Microeconomic Theory*
 - ARE/ECN 200A: Microeconomic Theory (4 units; Fall quarter)
 - ARE/ECN 200B: Microeconomic Theory (4 units; Winter quarter)
 - ARE/ECN 200C: Microeconomic Theory (4 units; Spring quarter)
- *Econometrics*
 - ARE/ECN 239: Econometric Foundations (4 units; Fall quarter)
 - ARE/ECN 240A: Econometric Methods (4 units; Winter quarter)
 - ARE/ECN 240B: Econometric Methods (4 units; Spring quarter)
- *Applied Microeconomics*
 - ARE 202A: Applied Research Methods (4 units; Fall quarter)
 - ARE 202B: Applied Microeconomics 1: Consumer and Producer Behavior (4 units; Winter quarter)
 - ARE 202C: Applied Microeconomics 2: Research Design for Applied Microeconomics (4 units; Spring quarter)

3.2. Major Field Courses (6-7 courses, 24-28 units)

All students are required to complete specialized coursework in two major fields. Each major field consists of a three- or four-course sequence.

One of the student's major fields must be chosen from the following three ARE major fields:

- *Development Economics*
 - ARE 215A: Microdevelopment Theory and Methods I (4 units)
 - ARE 215B: Open Macroeconomics of Development (4 units)
 - ARE 215C: Microdevelopment Theory and Methods II (4 units)
- *Natural Resource and Environmental Economics*
 - ARE 254: Dynamic Optimization Techniques with Economic Applications (4 units)
 - ARE 276A: Environmental Economics: Externalities (4 units)
 - ARE 276B: Environmental Economics: Non-Market Valuation (4 units)
 - ARE 277: Natural Resource Economics (4 units)
- *Agricultural Economics*
 - ARE 231: Supply and Demand for Agricultural Products (4 units)
 - ARE 232: Agricultural Commodity Markets (4 units)
 - ARE 233: Agricultural Policy (4 units)

The second can be one of the above three, any three-course field in the Department of Economics, or the Econometrics major field which is jointly taught with the Department of Economics. To complete the Econometrics major field, students must complete three of the following four courses:

- *Econometrics*
 - ARE/ECN 240C: Time Series Econometrics (4 units)
 - ARE/ECN 240D: Cross Section Econometrics (4 units)
 - ARE/ECN 240E: Topics in Time Series Econometrics (4 units)
 - ARE/ECN 240F: Topics in Cross Section Econometrics (4 units)

Descriptions of the major fields available in the Department of Economics can be found in the Economics Graduate Handbook, which is available online at:

<http://www.econ.ucdavis.edu/graduate-program/current-students/graduate-handbook>.

3.3. Elective Courses (2-3 courses; 8-12 units)

Students with two three-course field sequences must complete an additional three Ph.D.-level courses in Agricultural and Resource Economics or Economics. Students who complete the four-course Natural Resource and Environmental Economics field sequence must complete an additional two Ph.D.-level courses in Agricultural and Resource Economics or Economics. In addition to the major field courses listed above, additional elective courses offered within the Department of Agricultural and Resource Economics include:

- ARE 215D: Environmental and Economic Development
- ARE 255: Applied Dynamic Structural Econometric Modeling
- ARE 298: Advanced Topics in Agricultural, Resource, and Development Economics

Students may take one of their elective courses outside of Agricultural and Resource Economics and Economics if the course clearly contributes to the student's academic development. Students must acquire permission from their Graduate Advisor to count a

non-ARE/ECN course towards their degree requirement.

3.4. Coursework Beyond Program Requirements

The formal coursework requirements set forth in sections 3.1- 3.3 have been judged by the graduate faculty to represent sufficient formal preparation for Ph.D. students to undertake their dissertation research and launch successful careers upon completion of the dissertation. Nonetheless, some students may seek to continue taking formal coursework beyond these program requirements. Any formal coursework beyond the program requirements should be approved in advance by the student's Graduate Advisor.

3.5. English Language Requirement

Students who have neither obtained an undergraduate or graduate degree at an approved English-medium institution nor demonstrated strong English language proficiency through the TOEFL or IELTS exam are required to take appropriate English language courses, as described in Graduate Student Course Requirements – English as Second Language (GC-2018-02). Courses taken in satisfaction of this requirement do not count towards the total units required for graduation.

3.6. Summary

36 units of core coursework, 24-28 units of major field coursework, and 8-12 units of elective coursework are required for a total of 72 units. Consistent with the policies of the Office Graduate Studies, students must receive a grade of C or better in any course to receive credit towards the degree. Full-time students must enroll for 12 units per quarter including research, academic and seminar units. Courses that fulfill any of the program course requirements may not be taken S/U unless the course is normally graded S/U. Once course requirements are completed, students can take additional classes as needed, although the 12 units per quarter are generally fulfilled with a research class (299). Per UC regulations students cannot enroll in more than 12 units of graduate level courses (200) or more than 16 units of combined undergraduate and graduate level (100, 200, 300) courses per quarter.

4. Special Requirements

Students are strongly encouraged to regularly attend departmental research seminars, particularly once required coursework has been completed. Seminar, workshop and brown-bag attendance is critical to obtaining thesis ideas, maintaining contact with faculty members, and seeing how research presentations are made. Seminar and workshop series are offered throughout the year in Agricultural Economics, Environmental and Resource Economics, and Development Economics.

After passing the oral qualifying examination (see Section 8.3), students are encouraged, and may be required by their Dissertation Committee, to give a seminar presentation on their dissertation progress.

5. Committees

5.1. Graduate Administrative Committee

The Graduate Administrative Committee (GAC) consists of the five Graduate Advisors in the program. The ARE Department Chair appoints one of these advisors as GAC Chair.

The GAC is charged with the following responsibilities:

- to review and make recommendations to Graduate Studies regarding applications for admission and fellowships, and various graduate student petitions;
- to serve as Graduate Advisors as described in Section 5.3;
- to evaluate and make recommendations to the Graduate Program faculty regarding policy, curriculum, and administration of the program;
- to appoint ad hoc committees, as needed.

In addition to the above duties, the GAC Chair provides academic leadership for the program, making recommendations to the Department Chair regarding departmentally funded student employment and fellowships, overseeing student employment and fellowships funded by other sources including the Graduate Program Fellowship Allocation (GPFA) and other funds allocated specifically to the Graduate Program, appointing preliminary and qualifying examination committees, and coordinating administrative matters with the Office of Graduate Studies.

5.2. Admissions Committee

The Admissions Committee consists of the five faculty members of the Graduate Administrative Committee. Once the completed application, all supporting material, and the application fee have been received, the application is submitted to the Admissions Committee. Based on a review of the entire application, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent to the applicant by Graduate Studies. Applications are accepted through April 15 for the class entering the following Fall. Priority is given to applications received by January 15.

5.3. Course Guidance and Advising Committee

The five faculty members of the GAC serve as Graduate Advisors. Graduate Advisors are responsible for ensuring that their advisees complete appropriate preparative coursework; interpreting requirements; providing advice and guidance to their advisees about required coursework, elective courses, and graduate research options and requirements; identifying members for the Prospectus Committee and the Dissertation Committee; and overseeing students' progress. Prior to the end of the first week of each Fall quarter, students are required to meet with their assigned advisor and complete a study plan. The study plan lays out the courses and other academic activities for the remainder of the year. Students are also required to meet with their Graduate Advisor or Major Professor in the Spring quarter to complete a progress report. Advising on research and dissertation begins with the two Prospectus Advisors selected by the student at the end of the field coursework year (see Section 5.5). However, the balance of responsibility for overseeing students' progress does not shift from the Graduate Advisor to the Major Professor until the student has advanced to candidacy.

5.4. Preliminary Examination Committee

The Chair of the Graduate Administrative Committee appoints an examination committee of three members that is responsible for preparing, administering and grading the Econometrics preliminary exam and appoints one examination committee member for the Microeconomics preliminary examination who is responsible for reviewing the exam

administered through the Economics Department.

5.5. Prospectus Committee

At the end of the field coursework year, each student chooses a Prospectus Committee. The Prospectus Committee consists of two Prospectus Advisors chosen among members of the Graduate Program. Cooperative Extension Specialists with primary appointments in the Department of Agricultural and Resource Economics who hold an appropriate instructional title, such as Lecturer without Salary, may serve as Prospectus Advisors. Senate faculty who are not members of the Graduate Program in Agricultural and Resource Economics may serve as a Prospectus Advisor subject to approval from the Graduate Administrative Committee. Prospectus Advisors assist the student in formulating the dissertation proposal and the dissertation prospectus (see Section 8.3).

5.6. Oral Qualifying Examination Committee

A student's Oral Qualifying Examination Committee is appointed by the Dean of Graduate Studies, acting on behalf of Graduate Council, upon the recommendation of the chair of the Graduate Administrative Committee. A student's Oral Qualifying Examination Committee consists of five members. Both members of the Prospectus Committee (see Section 5.5) must participate in the Oral Qualifying Examination Committee. Other members are proposed by the chair of the Graduate Administrative Committee. At least one member of the Oral Qualifying Examination Committee must be a faculty member from outside the Agricultural and Resource Economics Graduate Program. Prospectus Advisors cannot serve as chair of the Oral Qualifying Examination Committee. All members of the Oral Qualifying Examination Committee must hold Ph.D. degrees and be professors at a UC campus unless an External Committee Membership Application is completed and approved by the Dean of Graduate Studies.

5.7. Dissertation Committee

Upon advancement to candidacy, the student assembles a Dissertation Committee consisting of at least three faculty members, including a chair (or two co-chairs), to direct the research. The chair of the Dissertation Committee becomes the student's Major Professor and assumes responsibility for overseeing the student's progress. It is expected that Prospectus Advisors will be selected to be part of the Dissertation Committee, although there is no obligation. At least two of the members of the Dissertation Committee must be members of the Graduate Program in Agricultural and Resource Economics. Cooperative Extension Specialists with primary appointments in the Department of Agricultural and Resource Economics who hold an appropriate instructional title, such as Lecturer without Salary, may serve as co-chair or member of the Dissertation Committee. Senate faculty who are not members of the Graduate Program in Agricultural and Resource Economics may serve as a member on the Dissertation Committee subject to approval from the Graduate Administrative Committee and may serve as the sole Dissertation Committee Chair subject to approval from the Graduate Administrative Committee and the Department Chair of ARE for nomination to the Dean of Graduate Studies.

6. Advising Structure and Mentoring

Students are assigned a Graduate Advisor upon entry into the program. In addition, first-year students can consult with the GAC Chair for questions concerning their first-year courses and

exams.

After completing coursework, the student identifies a two-member Prospectus Committee (Prospectus Advisors) to advise on the student's research proposal, research prospectus, and serve on their Oral Qualifying Examination Committee (see Section 8.3). Students should select the two Prospectus Advisors and obtain their approval to serve on the Prospectus Committee no later than the June 30 following completion of their field course sequences. Students should consult with faculty teaching the second-year field courses most closely related to their expected field of research for assistance with selecting Prospectus Advisors and a Dissertation Committee. Students who still find it difficult to select these advisors should consult with their designated Graduate Advisor for assistance. The Dissertation Committee is formalized upon completion of the oral qualifying examination and may be re-organized at any point if the direction of the student's research changes.

Graduate Council's Mentoring Guidelines are available online at:

<https://gradstudies.ucdavis.edu/sites/default/files/upload/files/grad-council/mentoring.pdf>.

ARE's Mentoring Guidelines are available online at:

https://arefiles.ucdavis.edu/uploads/filer_public/42/1c/421c29b7-9b63-4cc6-b198-57660cb96bf2/are_graduate_program_mentoring_guidelines_june_2016_v4.pdf.

7. Advancement to Candidacy

Students are eligible for advancement to candidacy after completing all course requirements as described above, passing preliminary examinations (see Section 8.1), completing and submitting a dissertation prospectus, and passing their oral qualifying examination as described in Section 8.3 and according to Graduate Studies policy (see <http://gradstudies.ucdavis.edu/gradcouncil/policiesall.html>). The student must file the appropriate paperwork with the Office of Graduate Studies and pay the candidacy fee in order to be officially promoted to Ph.D. candidacy. This paperwork includes the Report on Qualifying Examination for Admission to Candidacy and the Ph.D. Candidacy – Plan B form that officially designates the student's Dissertation Committee. Ideally, the two Prospectus Advisors will continue to serve on the Dissertation Committee, but it is possible to alter the structure of the committee.

Students must advance to candidacy prior to June 30 of their prospectus year, that is, the third year for "full core" students and the fourth year for "core splitting" students. The "full core" and "core splitting" options are described in Section 9.

8. Preliminary Examination, Oral Qualifying Examination, and Dissertation Requirements

8.1. Preliminary Examinations

All students must pass written preliminary examinations ("prelims") in Microeconomic Theory (covering ARE/ECN 200A, 200B, 200C), and Econometrics (covering ARE/ECN 239, 240A, 240B). Prelims should be taken at the earliest opportunity following completion of the course sequence. "Full core" students should take them at the beginning of the summer following their first year. "Core splitting" students should take the Econometrics prelim at the beginning of the summer following their first year and should take the Microeconomic Theory prelim at the beginning of the summer following their second year.

Prelims are “closed book” and are graded on a 0–4 numerical scale. In order to continue on to the Ph.D. program, students must either

- (a) pass both prelims with a score of 2.0 or above or
- (b) pass one prelim with a score of 2.0 or above and the other with a score of 1.8 or above, provided that their GPA across courses in the field in which they obtain a score below 2.0 is at 3.3 or above.

Under (b), the field-level GPA is calculated over the courses ARE/ECN 239, 240A, and 240B for the prelim in Econometrics and ARE/ECN 200A, 200B, 200C, ARE 202A, 202B, 202C for the prelim in Microeconomic Theory.

Prelims are graded by two or three faculty members. Students may read the examiners’ comments by contacting the Graduate Program Coordinator.

A student who does not pass a prelim exam may retake the exam at the end of the summer. Students may re-take each exam no more than once, that is, a maximum of two attempts are allowed for each exam.

A “full core” student who, before beginning the second year or a “core splitting” student who, before beginning the third year, fails to meet the requirements listed in this section will be recommended for disqualification to the Dean of Graduate Studies. Students recommended for disqualification may petition the Chair of the Graduate Administrative Committee to retake a prelim exam if they provide adequate grounds. Adequate grounds may include unforeseen circumstances beyond the student’s control that could reasonably have affected their performance during a prelim exam.

8.2. Major Field and Elective Coursework

By the summer of the year following completion of preliminary examinations, students should have completed all remaining required coursework. This includes the six or seven courses comprising their two major fields and the two or three elective courses.

8.3. Dissertation Prospectus and Qualifying Examination

Three specific requirements are associated with the identification of a dissertation topic and Dissertation Committee. Only after satisfying these requirements does the student “advance to Ph.D. candidacy.”

- The student selects a research topic, proposes a two-member Prospectus Committee and prepares a dissertation proposal (≤ 5 pages) prior to the start of Fall quarter after completing coursework.
- The student prepares a dissertation prospectus (≤ 30 pages) under the guidance of the Prospectus Committee. The prospectus must be approved by the committee to serve as the basis of the student’s oral qualifying examination no later than May 31 of the prospectus year.
- The student schedules an oral qualifying examination based on the dissertation prospectus prior to May 31 of the prospectus year.

Each of the three requirements has a deadline. A failure to meet a deadline is a failure to make normal progress. If a student does not make normal progress, the ARE Department is no longer obligated to provide employment to the student or to pay their tuition and fees.

8.3.1. Dissertation Proposal

The dissertation proposal and prospectus are written under the supervision of the Prospectus Committee. Both Prospectus Advisors are ultimately responsible for approving the prospectus as the basis of the oral qualifying examination. The Prospectus Committee may only be formalized by Graduate Studies as the student's official Dissertation Committee once the student has passed the oral qualifying examination and a third member has been added.

Deadlines: (1) Students must submit a tentative title of their dissertation proposal along with their two-member Prospectus Committee to the Graduate Program Coordinator by the end of their final quarter of coursework, typically Spring quarter of their second year in the Ph.D. program (third year for "core splitting" students). (2) Students must submit a completed dissertation proposal approved by the Prospectus Committee to the Graduate Program Coordinator prior to the start of the subsequent Fall quarter.

8.3.2. Dissertation Prospectus

The dissertation prospectus describes in detail the student's research plans for the dissertation. It should:

- provide a compelling motivation for the topic and a clear statement of the scope and objectives of the research;
- discuss in detail the precedent literature to which the study aims to contribute and the nature of this contribution;
- describe the structure and expected content of the dissertation, including potential sources of funding, theoretical models, research methods and data, anticipated obstacles, and preliminary analysis and results, if available;
- include a specific timeline for completing and filing the dissertation.

The prospectus must be no more than 30 pages (double-spaced, one-inch margins). Appendices, if any, references, figures, tables, and maps do not count as part of the page restrictions. Prospectuses must conform to these limits in order to serve as the basis for an oral qualifying examination.

The prospectus often disproportionately describes research that is furthest along – including relevant portions of a fully drafted paper with results in many cases – but it should nonetheless include details of the other expected components of the dissertation.

When submitting a prospectus approved by their Prospectus Committee, students propose a third member to participate in the oral qualifying examination.

Deadline: The dissertation prospectus is completed after students have completed their coursework. Students should, however, strive to make progress on their prospectus as they are taking their field courses. Some students may be in a position to complete their prospectus early in the Fall quarter of their prospectus year, i.e., their third year (or fourth year for "core splitting" students). All students should strive to complete their prospectus by Winter quarter of their prospectus year. Students must complete and submit a prospectus with the approval of their Prospectus Committee by May 31 of their prospectus year.

8.3.3. Oral Qualifying Examination

The comprehensive oral qualifying examination is convened after satisfactory completion of all coursework and submission of an approved dissertation prospectus. The objectives of the oral qualifying examination are to determine the feasibility and research merits of the dissertation prospectus and to evaluate the student's qualifications and preparedness to undertake the proposed research.

Every oral examination committee has five members, two of whom are the advisors serving on the student's Prospectus Committee. At least one member is a faculty member from outside the ARE Graduate Program. Prospectus advisors cannot serve as chair of the committee.

Deadline: The oral qualifying examination may be scheduled no sooner than four weeks after the approved dissertation prospectus has been submitted to the Graduate Program Coordinator. These four weeks will provide examiners enough time to review the materials and the Dean of Graduate Studies with sufficient time to appoint the examination committee. All students should strive to pass their oral qualifying examination by Winter quarter of their prospectus year. Students must pass their oral qualifying examination and advance to candidacy prior to the end of Spring quarter of that year.

8.3.4. Outcome of the Examination

The committee will reach a decision on the student's performance immediately after the oral qualifying examination. The committee, having reached a unanimous decision, shall inform the student of its decision to:

- "Pass" (no conditions may be appended to this decision),
- "Not Pass" (the chair's report should specify whether the student is required to retake all or part of the examination, list any additional requirements, and state the exact timeline for completion of requirements to achieve a "Pass"), or
- "Fail."

If a unanimous decision takes the form of "Not Pass" or "Fail", the chair of the Oral Qualifying Examination Committee must include in the report a specific statement, agreed to by all members of the committee, explaining the decision and inform the student of the decision. Students that receive a "Fail" will be recommended for disqualification from the program to the Dean of Graduate Studies. Students that receive a "Not Pass" may attempt the oral qualifying examination one additional time; the Report on Qualifying Examination for Admission to Candidacy must list the specific conditions and expected timing for the second examination. After a second examination, a vote of "Not Pass" is unacceptable; only "Pass" or "Fail" is recognized. Only one retake of the oral qualifying examination is allowed. Should the student receive a "Fail" on the second attempt at the examination, the student will be recommended for disqualification from the program to the Dean of Graduate Studies.

8.4. Dissertation Requirements

The dissertation is the means by which the candidate demonstrates research proficiency. The Department of Agricultural and Resource Economics follows Dissertation Plan B and does not require an exit seminar upon completion of the dissertation. However, a final oral examination may be required at the discretion of the Dissertation Committee.

After advancing to candidacy, the student may be required to demonstrate evidence of progress on an annual basis. This evidence may take the form of an updated written research proposal, a research presentation in a departmental workshop or seminar, an article submitted for publication, or a research presentation at a professional conference.

Consistent with Graduate Council's Policy on Service on Advanced Degree Committees (section IV. *Reading Committee Timelines*), the dissertation must be submitted to the Dissertation Committee at least one month before the student plans to make requested revisions. All committee members must approve the dissertation and sign the title page before the dissertation is submitted to Graduate Studies for final approval. (See <https://grad.ucdavis.edu/current-students/academic-services-information/filing-thesis-or-dissertation> for other details regarding filing dissertations.)

9. Normative Time to Degree

9.1. Full Core versus Core Splitting

While all students are subject to the same program requirements, students may select from two options for the timing of coursework completion. The option selected is a function of the student's prior preparation in Economics and quantitative methods. The student decides upon the option in consultation with their Graduate Advisor in the summer prior to the first year. The two options are as follows:

- *Full Core*: Under this option, students complete the three required Ph.D. core sequences in Microeconomics Theory, Econometrics and Applied Microeconomics in their first year. They take the two preliminary examinations, Microeconomics Theory and Econometrics, in the summer after their first year.

Students with a M.S. in Economics, Applied Economics, Agricultural and Resource Economics, or Statistics are expected to select the Full Core option. Students without a Master's degree, but whose undergraduate degree was strong in both Economic Theory and quantitative methods (for example students with an Economics B.A. and a minor in Mathematics) are also expected to select this option.

- *Core Splitting*: Under this option, students complete the required Ph.D. core sequence in Econometrics in the first year and take the Econometrics preliminary examination in the summer after their first year. They postpone the core sequences in Microeconomic Theory and Applied Microeconomics until their second year and will take the Microeconomics Theory preliminary examination in the summer of their second year. During their first year, these students typically take the Master's courses in Microeconomic Theory, as well as additional coursework in Mathematics or Statistics in order to prepare for the remaining two core sequences. Students with only an undergraduate degree or students who have been away from school for several years may select this option.

9.2. Advancement to Candidacy and Completion of the Dissertation

The expected time to advancement to candidacy depends on whether the student chooses the "full core" or the "core splitting" option. The expectations are as follows:

- *Full Core* students are expected to advance to candidacy prior to May 31 of their third year. The typical time line for advancing to candidacy is as follows:
 - Year 1: Complete the three core course sequences and pass preliminary exams in

- Econometrics and Microeconomic Theory in the summer after Year 1.
 - Year 2: Complete two major field course sequences and elective field courses. By the Spring quarter of Year 2, the student should have identified their two Prospectus Advisors and begun working under their supervision on the dissertation prospectus.
 - Year 3: Begin developing dissertation research and write prospectus.
 - Year 3 Winter: Students should strive to complete the prospectus and pass their oral qualifying examination by Winter quarter of that year.
 - Year 3 Spring: Students must pass their oral qualifying examination and advance to candidacy prior to the end of Spring quarter of that year.
 - Year 4: Continue with dissertation research.
 - Year 5: Complete dissertation.
- Core Splitting students are expected to advance to candidacy prior to May 31 of their fourth year. The typical time line for advancing to candidacy is as follows:
 - Year 1: Complete the Econometrics core sequence, M.S. level courses in Microeconomic Theory, and undergraduate courses in Mathematics and Statistics. Pass the Econometrics preliminary examination in the summer after the first year.
 - Year 2: Complete the Microeconomic Theory and Applied Microeconomics core sequences. As students enroll in a third course each quarter, they may also complete coursework towards a first major field or to satisfy the Ph.D. elective course requirements. Pass the preliminary examination in Microeconomic Theory in the summer after Year 2.
 - Year 3: Complete two major field course sequences and additional electives. By the Spring quarter of Year 3, the student should have identified the two Prospectus Advisors and begun working under their supervision on the dissertation prospectus.
 - Year 4: Begin developing dissertation research and write prospectus.
 - Year 4 Winter: Students should strive to complete the prospectus and pass their oral qualifying examination by Winter quarter of that year.
 - Year 4 Spring: Students must pass their oral qualifying examination and advance to candidacy prior to the end of Spring quarter of that year.
 - Year 5: Continue with dissertation research.
 - Year 6: Complete dissertation.

10. Typical Time Line and Sequence of Events

10.1. Full Core

Full Core: YEAR ONE			
Fall Quarter	Winter Quarter	Spring Quarter	Summer
ARE 200A	ARE 200B	ARE 200C	Micro and Econometrics Prelims
ARE 239	ARE 240A	ARE 240B	
ARE 202A	ARE 202B	ARE 202C	

Full Core: YEAR TWO			
Fall Quarter	Winter Quarter	Spring Quarter	Summer
Elective Field A	Elective Field A	Elective Field A	

Elective Field B	Elective Field B	Elective Field B	Prospectus Title & Committee
Elective	Elective	Elective	

Full Core: YEAR THREE

Fall Quarter	Winter Quarter	Spring Quarter	Summer
Dissertation Proposal	Dissertation Prospectus & Oral Exam		

10.2. Core Splitting

Core Splitting: YEAR ONE

Fall Quarter	Winter Quarter	Spring Quarter	Summer
ARE 204A	ARE 204B	ARE 258	Econometrics Prelim
ARE 239	ARE 240A	ARE 240B	
Elective	Elective	Elective	

Core Splitting: YEAR TWO

Fall Quarter	Winter Quarter	Spring Quarter	Summer
ARE 200A	ARE 200B	ARE 200C	Micro Theory Prelim
ARE 202A	ARE 202B	ARE 202C	
Elective Field A	Elective Field A	Elective Field A	

Core Splitting: YEAR THREE

Fall Quarter	Winter Quarter	Spring Quarter	Summer
Elective Field B	Elective Field B	Elective Field B	Prospectus Title & Committee
Elective	Elective	Elective	
Elective	Elective	Elective	

Core Splitting: YEAR FOUR

Fall Quarter	Winter Quarter	Spring Quarter	Summer
Dissertation Proposal	Dissertation Prospectus & Oral Exam		

11. Sources of Funding

Students in the Agricultural and Resource Economics Ph.D. program may apply for funding as Teaching Assistants or Graduate Student Researcher. Students are also strongly encouraged to apply for fellowships and write grant proposals to secure independent funding.

12. PELP, In Absentia and Filing Fee status

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when

researching out of state), and Filing Fee status can be found on the Graduate Studies website:
<https://grad.ucdavis.edu/policies>
<https://grad.ucdavis.edu/current-students/forms-information>.

13. Leaving the Program Prior to Completion of the Ph.D. Requirements

Should a student leave the program prior to completing the requirements for the Ph.D. degree, they may still be eligible to receive the Master's degree provided that they have completed at least 36 units of graduate or upper-division undergraduate coursework and obtained a grade of 1.8 or above on one of the Ph.D. preliminary examinations. Students can use the Petition for Change of Graduate Major, Degree Objective, or for Double Graduate Major form available on the Graduate Studies website:

<https://grad.ucdavis.edu/current-students/forms-information>.