

November 27, 2017

KATE SCOW, CHAIR

International Agricultural Development Graduate Group

RE: International Agricultural Development Degree Requirements

Enclosed is a copy of the International Agricultural Development graduate degree requirements as approved by Graduate Council on November 16, 2017. These degree requirements are now the official requirements for the International Agricultural Development Graduate Group and will be posted on the Office of Graduate Studies program webpage:

<https://grad.ucdavis.edu/programs/giad>

Thank you for your efforts on behalf of graduate education.

Sincerely,

A handwritten signature in black ink, appearing to read "N. Baumgarth". The signature is fluid and cursive, with a large loop at the end.

Nicole Baumgarth, Chair
Graduate Council

c: Amanda Kimball, Graduate Studies Analyst
Angie Nguyen, Graduate Group Coordinator

INTERNATIONAL AGRICULTURAL DEVELOPMENT MS DEGREE REQUIREMENTS

Revised: May 10, 2017

Graduate Council Approval: November 16, 2017

1. Admissions Requirements

Admission to the M.S. program in International Agricultural Development requires a Bachelor's degree or a Bachelor's degree equivalent, as well as demonstrated commitment to international development. This could include study abroad, work in a developing country, or work on a community development project in a local community. A completed university application that includes GRE scores and three letters of recommendation is required. Priority deadline for admission is January 5 and the final admission deadline is April 15.

A minimum GPA of 3.0 is required. Admissions decisions are made on a case-by case basis. Meeting some or all of the admissions criteria does not guarantee admission, but merely eligibility.

a. Prerequisites

In addition, applicants are expected to have passed the equivalent of the following UC Davis courses:

ARE 100A Intermediate Microeconomics 4 units

PLS 120 Applied Statistics in Agricultural Science 4 units

One of the following:

PLS 111 Principles of Agronomic Crop Production
in Temperate and Tropical Systems 4 units

or

PLS 110 or 110C Crop Management Systems for Vegetable Production 4 units

b. Deficiencies

Course work deficiencies should be made up by the end of the first academic year following initial enrollment by earning a letter grade of "B" or better.

2. Master of Science, Plan I (Thesis) and Plan II (Comprehensive Examination)

Plan I. This plan requires 30 units of graduate and upper division courses (i.e., from the 100 and 200 series only) and, in addition, a thesis. No units of 299 or 396 may be used toward satisfying this 30-unit requirement. Courses not taken for a letter grade may not be counted, with the exception of up to 3 units of IAD 290.

Plan II. This plan requires 36 units of graduate and upper division courses, (i.e., from the 100 and 200 series only), of which at least 21 units must be graduate courses in the major field. Courses taken S/U may not be counted, with the exception of up to 3 units of IAD 290 and up to 6 units of 299, which may be counted toward the 36 required units, but not toward the 21 units of required graduate courses in the major field. A comprehensive final examination in the major subject is required of each candidate. No thesis is required.

3. Course Requirements – Core and Electives (30 or 36 units)

a. Core Courses (18 units)

Required Courses:

IAD 200N Philosophy and Practice of Agricultural Development 5 units

IAD 201 The Economics of Small Farms and Farming Systems 4 units

IAD 202N	Analysis and Determinants of Farming Systems	4 units
IAD 203N	Project Planning and Evaluation	4 units
IAD 290	Seminar in International Agricultural Development	1 unit

b. Elective Courses – at least 12 units (Plan I) or at least 18 units (Plan II)

Classes in Field of Specialization as approved by the student’s Graduate Program Advisor must include at least 3 units of graduate-level coursework. See Appendix for examples of courses that might be used to satisfy course requirements for the specialization.

- c. Summary:** Plan I students must complete 30 units and Plan II students must complete 36 units; 18 units are in the core coursework and the rest are selected in consultation with the Graduate Adviser (Plan II) or the Graduate Adviser and Major Professor (Plan I). In addition to the 18 units of core coursework, students must take at least 3 additional units of graduate-level coursework related to their field of study. 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.

A summary of coursework requirements is contained in the table below:

	Plan I	Plan II
Core courses	18	18
Elective courses (3 units must be grad level)*	12	18
TOTAL Minimum Units Required	30	36

* See Appendix for examples of courses that might be used to satisfy course requirements for the specialization

4. Special requirements

None.

5. Committees:

a. Admission Committee

Once the completed application, all supporting material, and the application fee have been received, the application will be submitted to the Admissions Committee. The Admissions Committee consists of five graduate group faculty and two graduate group students. 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 by Graduate Studies. Applications are accepted through April 15 for the next Fall entering.

b. Course Guidance or Advising Committee

The Graduate Adviser works directly with Plan II students to develop the study plan. For Plan I students, both the Graduate Adviser and the major professor assist the student in developing the study plan. The study plan must incorporate a minimum of 12 units per quarter for full-time students. These 12 units can be made up of required courses, electives, 299s, and other courses.

c. Thesis Committee or Comprehensive Examination Committee

For the MS Plan I Thesis Committee, the committee will consist of the student’s Major Professor and two other faculty members nominated to Graduate Studies in consultation with his/her major professor and graduate program advisor. For Plan I students, nominations are submitted to the

Office of Graduate Studies for formal appointment in accordance with Graduate Council policy (DDB 80, Graduate Council B.1.).

For Plan II students, the student in consultation with the graduate program advisor, nominates three faculty members to serve on the comprehensive exam committee. The MS committee membership must conform to Graduate Council guidelines. Students must submit the Comprehensive Exam Committee Approval Form to the IAD Advising Office no later than 60 days prior the proposed date of the exam. Final approval of examination topics and committee members rests with the Chair of the graduate group.

6. Advising structure and Mentoring

For Plan I students, the Major Professor is the faculty member who supervises the student's research and thesis; this person serves as the Chair of the Thesis Committee. The Graduate Advisor, who is appointed by the Chair of the program, is a resource for information on academic requirements, policies and procedures, and registration information. The Graduate Advisor has primary responsibility for supervision of Plan II students. The Mentoring Guidelines can be found in the Program description located at <https://gradstudies.ucdavis.edu/sites/default/files/upload/files/grad-council/mentoring.pdf>

7. Advancement to Candidacy

Every student must file an official application for Candidacy for the Degree of Master of Science in International Agricultural Development and pay the Candidacy Fee after completing one-half of their course requirements and at least one quarter before completing all degree requirements. The Candidacy for the Degree of Master form can be found online at: <http://www.gradstudies.ucdavis.edu/forms/>. A completed form includes a list of courses the student will take to complete degree requirements. If changes must be made to the student's course plan after s/he has advanced to candidacy, the Graduate Adviser must recommend these changes to Graduate Studies. Plan I students must have their Graduate Adviser and thesis committee Chair sign the candidacy form before it can be submitted to Graduate Studies; Plan II students only need their Graduate Adviser's signature on the candidacy form as Graduate Studies does not appoint comprehensive exam committees. If the candidacy is approved, the Office of Graduate Studies will send a copy to the Thesis Committee Chair, the appropriate graduate staff person, and the student. If the Office of Graduate Studies determines that a student is not eligible for advancement, the department 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.

Students must complete the Candidacy application prior to the quarter in which they will file a thesis or take the comprehensive exam, normally in the 6th quarter. For Plan I (thesis option), students will list their three committee members for Office of Graduate Studies approval. For Plan II (exam option), students do not need to provide names of the exam committee members.

8. Comprehensive Examination and Thesis Requirements

a. Thesis Requirements (Plan I)

A written outline of the research project shall be submitted to the thesis committee by the end of the fourth quarter. This outline will include critical evaluation of the methods and their limitations plus a full description of the study design, protocols, and data analysis. Consultations should occur at least once a year between the candidate and the thesis committee. The M.S. thesis should be:

- A scholarly piece of research.
- Rigorous in approach (design, methodology, and analysis), but not as extensive as a Ph.D. dissertation.

It is expected that the student submit the draft thesis to his or her committee by the end of the spring quarter of the second year (6th quarter).

Thesis committee members will have one month to review the thesis. Failure to return comments after one month will be considered implicit approval. Students must submit a revised thesis to the committee within one month of receiving comments. Approval of the thesis by the committee must be unanimous. In cases where there is disagreement over the approval of the thesis, the final decision will be made by the Graduate Group Chair, in consultation with the major professor. Students whose thesis fails to gain approval will be recommended for disqualification from the program to the Dean of Graduate Studies.

The student must be registered or on filing fee status for the quarter the thesis is submitted. Instructions on preparation of the thesis and a schedule of dates for filing the thesis in final form are available from Graduate Studies; the dates are also printed in the UC Davis General Catalog and on Graduate Studies' website. A student must have a GPA of 3.0 for the M.S. degree to be awarded.

b. Comprehensive Examination (Plan II)

Every M.S. Plan II student must pass a comprehensive exam in addition to completing a capstone project. The M.S. Comprehensive Examination is an oral examination, administered by a committee of three faculty members; the duration of the exam takes about 2 hours. It is expected that the student take the exam in spring quarter of their second year (6th quarter). Capstone projects are focused on development practice and demonstrate the student's ability to take an idea from conception to final presentation. A capstone project needs to include academic knowledge, research, and professional skills into a coherent final product. The capstone report must be 15-20 pages (not including references, tables, and figures), and must include an executive summary (limited to 300 words), and references. Details of the capstone project and Comprehensive Examination guidelines are available at http://iad.ucdavis.edu/files/6614/5280/8111/Plan_II_Guidelines.pdf

The chair of the Graduate Group will appoint an examination committee that will be responsible for preparing, administering, and grading the examination. This committee will forward its recommendation to the chair of the Graduate Group, who will make the final decision on each student. Should a student not pass the oral comprehensive exam, he or she will be offered a second opportunity. The second exam must be completed by the end of the academic quarter immediately following that in which the first exam was taken or by the time specified at the end of the first exam by the examining committee, whichever is later. The student must be registered or on filing fee status for the quarter the exam is re-taken. If a student does not attempt the second oral exam, it will be counted as a failure. Students who fail on the second attempt will be recommended for disqualification from the program to the Dean of Graduate Studies.

The student will prepare a report of the capstone project and the first portion of the oral exam (at least 30 minutes) will consist of an oral presentation of this project. The student will present a written report describing the project to the exam committee at least two weeks prior to the exam. The project usually applies to a real problem in international agricultural development and will utilize concepts learned in the course of the student's study for the MS. Further description of the project is given in the Guidelines for IAD Plan II Exam. Following the presentation, examiners

will question the student on his or her knowledge of the material. Questions will not be limited to the student's presentation topic but may also cover any aspect of the students' coursework in completion of the degree requirements.

9. Normative Time to Degree

The normative time to the degree for the M.S. program is six quarters (two years).

10. Typical Time Line and Sequence of Events

Year 1:

Fall	Winter	Spring
IAD 200N	IAD 201	IAD 202N
PLS 110C	IAD 203N	Elective
ARE 100A	Elective	Elective
IAD 290		

Year 2:

Fall	Winter	Spring
Elective	Elective	Elective
Elective	Elective	Elective
IAD 299	<i>Advance to candidacy</i>	<i>Thesis submitted (Plan I)</i>
<i>Thesis outline submitted (Plan I)</i>		<i>Comprehensive Exam (Plan II)</i>

Electives include both courses taken to satisfy the area of specialization for the degree requirement and those taken outside of the degree requirement.

Full time students are required to maintain a total unit load of 12 units per quarter. These may include units of 292, 299, and other non-graded courses or courses outside the major. Such units will not; however, be counted toward the degree requirements.

11. Sources of Funding

Students are typically funded through a combination of Graduate Student Researcher positions, Teaching Assistantships, fellowships, and self-support.

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 in the Graduate Student Guide:

<http://www.gradstudies.ucdavis.edu/publications/>

Appendix: Sample List of Courses for Specializations

Agricultural and Resource Economics

ARE 100B Intermediate Microeconomics II (4)
ARE 106 Quantitative Methods in Agricultural Economics (Econometrics) (4)
ARE 155 Quantitative Analysis for Business Decisions (4)
ARE 156 Introduction to Mathematical Economics (4)
ARE 175 Natural Resource Economics (3)
ARE 176 Environmental Economics (3)
ARE 204A Microeconomic Analysis I (4)
ARE 204B Microeconomic Analysis II (4)
ARE 214 Economic Development (4)
ARE 215A Microdevelopment Theory and Methods I (4) (Ph. D. course)
ARE 215B Open Macroeconomics of Development (4) (Ph. D. course)
ARE 215C Microdevelopment Theory and Methods II (4) (Ph. D. course)
ARE 215D Environment and Economic Development (4) (Ph. D. course)
ARE 222 International Agricultural Trade and Policy (3)
ARE 252 Applied Linear Programming (4)
ARE 256A Applied Econometrics (4)
ARE 256B Applied Econometrics (4)
ARE 258 Supply and Demand Analysis
ARE 275 Economic Analysis of Resource and Environmental Policies (4)
ARE 276 Environmental Economics (4)
ARE 277 Natural Resource Economics (4)

Animal Science

ANG 206 Advanced Domestic Animal Breeding (3)
ANG 211 Genetic Engineering of Animals (2)
ANS 115 Advanced Horse Production (4)
ANS 118 Fish Production (4)
ANS 119 Invertebrate Aquaculture (4)
ANS 123 Animal Growth and Development (4)
ANS 124 Lactation (4)
ANS 128 Agricultural Applications of Linear Programming (3)
ANS 143 Pig and Poultry Care and Management (4)
ANS 144 Beef Cattle and Sheep Production (4)
ANS 145 Meat Processing and Marketing (4)
ANS 146 Dairy Cattle Production (4)
ANS 147 Dairy Processing and Marketing (3)
ANS 148 Enterprise Analysis in Animal Industries (4)
NPB 121 Physiology of Reproduction (5)
NUT 110 Principles of Nutrition (5)
NUT 115 Animal Feed and Nutrition (4)
NUT 122 Ruminant Nutrition and Digestive Physiology (4)
NUT 124 Nutrition and Feeding of Finfishes (3)
NUT 202 Advanced Nutritional Energetics (2)
NUT 254 Applications of Systems Analysis in Nutrition (3)

Aquaculture

ABI 102 Animal Biochemistry and Metabolism (4)
ABI 103 Animal Biochemistry and Metabolism (4)
ABT 161 Water Quality Management for Aquaculture (3)
ABT 163 Aquaculture Systems Engineering (3)
ANS 118 Fish Production (4)
ANS 131 Reproduction and Early Development in Aquatic Animals (4)
ANS 136A Aquatic Animal Growth Laboratory (2)
EBS 220 Pilot Plant Operations in Aquaculture Engineering (3)
EBS 245 Waste Management for Biological Production Systems (3)
ECI 243A Water and Waste Treatment (4)
EVE 112 Invertebrate Zoology (4)
EVE 112L Laboratory for Invertebrate Zoology (3)
NUT 124 Nutrition & Feeding of Finfishes (3)
WFC 120 Biology and Conservation of Fishes (3)

Community Development

CRD 152 Community Development (4)
CRD 154 Social Theory and Community Change (4)
CRD 156 Community Economic Development (4)
CRD 157 Politics and Community Development (4)
CRD 240 Community Development Theory (4)
CRD 241 The Economics of Community Development (4)
SOC 145A Sociology of Third World Development (4)
SOC 206 Quantitative Analysis in Sociology (4)
WMS 182 Globalization, Gender and Identity (4)

Crop Systems/Science

Students may choose a sub-focus in Production, Breeding & Genetics, or Physiology

Recommended Prerequisites:

(Some of the upper-division courses in this list may be applied to the area of concentration unit requirement, if approved by the academic advisor)

BIS 2C Introductory Biology (5) or PLS 2 Botany and Physiology of Cultivated Plants
BIS 101 Genes and Gene Expression (4)
BIS 102 Structure and Function of Biomolecules (3)
CHE 2A,B General Chemistry (10)
CHE 8A,B Organic Chemistry (4)
ENT 110 Arthropod Pest Management (5)
HYD 110 Irrigation Principles and Practices (3)
HYD 124 Plant-Water-Soil Relationships (4)
MAT 16A,B Short Calculus (3)
PLB 111 Plant Physiology (4) or PLS 100A Metabolic Processes of Cultivated Plants (3)
PLP 120 Introduction to Plant Pathology (4)
PLS 110A/L Principle of Agronomic Crop Production in Temperate and Tropical Systems (4)
PLS 110C Crop Management Systems for Vegetable Production (4)
PLS 120 Applied Statistics in Agricultural Science (4)
PLS 152 Plant Genetics (4)

SSC 100 Principles of Soil Science (4)
 ECL 216 Ecology and Agriculture (3)
 ENT 110 Arthropod Pest Management (5)
 EVE 102 Population and Quantitative Genetics (4)
 GGG 201A Transmission Genetics (3)
 GGG 291 Seminar in History of Genetics (2)
 HYD 124 Plant-Water-Soil Relationships (4)
 MCB 121 Advanced Molecular Biology (3)
 PBI 210 Plant Ecophysiology (3)
 PLB 105 Developmental Plant Anatomy (5)
 PLB 117 Plant Ecology (4)
 PLB 143 Evolution of Crop Plants (3)
 PLP 120 Introduction to Plant Pathology (4)
 PLS 100A Metabolic Processes of Cultivated Plants (3)
 PLS 110A/L Principles of Agronomic Crop Production in Temperate and Tropical Systems (4)
 PLS 110C Crop Management Systems for Vegetable Production (4)
 PLS 150 Sustainability and Agroecosystem Management (4)
 PLS 154 Introduction to Plant Breeding (4)
 PLS 158 Mineral Nutrition of Plants (4)
 PLS 171 Plant Propagation (4)
 PLS 172 Postharvest Physiology and Technology (4)
 PLS 176 Introduction to Weed Science (4)
 PLS 205 Experimental Design and Analysis (4)
 PLS 206 Multivariate Systems and Modeling (4)
 PLS 213 Postharvest Physiology of Vegetables (3)
 PLS 220 Biotechnology and Genetics of Crop Improvement (3)
 PLS 222 Advanced Plant Breeding (4)
 SSC 109 Nutrient Cycling and Management (5)
 SSC 120 Soil Genesis, Morphology, and Classification (5)
 ENT Entomology-Additional upper division and/or graduate courses
 PLP Plant Pathology-Additional upper division and/or graduate courses
 PBI/PLB Plant Biology-Additional upper division and/or graduate courses
 PLS Plant Sciences – Additional upper division and/or graduate courses

Ecology

Students may choose a sub-focus in Crop Ecology, Range Ecology, or Forest Ecology

BIS 101 Gene and Gene Expression (4)
 BIS 102 Structure and Function of Biomolecules (3)
 ECL 200 A,B Principles and Application of Ecological Theory (4,4)
 ECL 206 Concepts and Methods in Plant Community Ecology (4)
 ECL 216 Ecology and Agriculture (3)
 ENT 110 Arthropod Pest Management (5)
 EVE 100 Introduction to Evolution (4)
 EVE 101 Introduction to Ecology (4)
 EVE 102 Population and Quantitative Genetics (4)
 IAD 160 Agroforestry: Global and Local Perspectives (3)
 PLB 111 Plant Physiology (3)
 PLB 112 Plant Growth and Development (3)
 PLB 117 Plant Ecology (4)
 PLS 100A Metabolic Processes of Cultivated Plants (3)

PLS 100C Environmental Interactions of Cultivated Plants (3)
PLS 120 Applied Statistics in Agriculture Science (4)
PLS 130 Rangelands: Ecology, Conservation and Restoration (3)
PLS 131 Identification and Ecology of Grasses (2)
PLS 135 Ecology and Community Structure of Grassland and Savannah Herbivores (3)
PLS 144 Trees and Forests (3)
PLS 150 Sustainability and Agroecosystem Management (4)
PLS 152 Plant Genetics (4)
SSC 100 Principles of Soil Science (5)

Gender

CRD 153 International Community Development (4)
ECL 210 Advanced Topics in Human Ecology (4)
SOC 132 Sociology of Gender (4)
SOC 145A Sociology of Third World Development (4)
SOC 181 Social Change Organizations (4)
SOC 206 Quantitative Analysis in Sociology (4)
SOC 233 Gender, Culture, and Local/Global Transformation (4)
SOC 234 Gender, Family, and Society (4)
WMS 182 Globalization, Gender and Identity (4)
WMS 187 Gender and Social Policy (4)

Geography

CRD 141 Organization of Economic Space (4)
CRD 142 Rural Change in the Industrialized World (3)
ESM 186 Environmental Remote Sensing with Lab (5)
EVE 138 Ecology of Tropical Latitudes (4)
GEO 200AN Geographical Concepts (4)
GEO 200BN Theory and Practice in Geography (4)
GEO 200DN Socio-Spatial Analysis in Geography (4)
GEO 290 Seminar in Selected Regions (4)
GEO 292 Seminar in Plant Geography (4)
WFC 156 Plant Geography (4)
WFC 157 Coastal Ecosystems (4)

Hydrology

HYD 124 Plant-Water-Soil Relationships (4)
HYD 141 Physical Hydrology (4)
HYD 142 Systems Hydrology (4)
HYD 144 Groundwater Hydrology (3)
HYD 151 Field Methods in Hydrology (3)
HYD 200 Survey of Hydrologic Sciences (1)
HYD 210 Hydrologic Modeling of the Vadose Zone (3)
HYD 264 Modeling of Hydrologic Processes (3)
HYD 290 Selected from seminars offered (1)
SSC 107 Soil Physics (5)

Nutrition

Background or prerequisite coursework in basic chemistry, organic chemistry, physiology, and statistics desirable.

- NUT 111AV Introduction to Nutrition and Metabolism (3)
- NUT 111B Recommendations and Standards for Human Nutrition (2)
- NUT 112 Nutritional Assessment (3)
- NUT 114 Developmental Nutrition (4)
- NUT 117 Experimental Nutrition (5)
- NUT 118 Community Nutrition (4)
- NUT 219A International Nutrition (3)
- NUT 252 Nutrition and Development (3)
- NUT 258 Field Research Methods in International Nutrition (3)

Plant Pathology

- ENT 110 Arthropod Pest Management (5)
- NEM 100 General Plant Nematology (4)
- PLB 148 Introductory Mycology (5)
- PLP 120 Introduction to Plant Pathology (4)
- PLP 205A,B Diseases of Vegetable and Field Crops (4,1)
- PLP 206A,B Diseases of Fruit, Nut and Vine Crops (3,1)
- PLP 290 Seminar (1)
- PLS 158 Mineral Nutrition of Plants (4)
- PLS 172 Postharvest Physiology and Handling of Horticultural Commodities (4)
- PLS 176 Introduction to Weed Science (4)
- SSC 100 Principles of Soil Science (4)

Range Science

- ABT 181N Geographic Information Systems Modeling (5)
- ANS 144 Beef and Sheep Production (4)
- ECL 206 Concepts and Methods in Plant Community Ecology (4)
- NUT 122 Ruminant Nutrition and Digestive Physiology (4)
- PLB 111 Plant Physiology (3)
- PLB 112 Plant Growth and Development (3)
- PLS 100A Metabolic Processes of Cultivated Plants (3)
- PLS 100B Growth and Yield of Cultivated Plants (3)
- PLS 120 Applied Statistics in Agriculture Science (4)
- PLS 130 Rangelands: Ecology, Conservation and Restoration (3)
- PLS 131 Identification and Ecology of Grasses (2)
- PLS 135 Ecology and Community Structure of Grassland and Savannah Herbivores (3)
- PLS 176 Introduction to Weed Science (4)
- PLS 205 Experimental Design and Analysis (4)
- PLS 206 Multivariate Systems and Modeling (4)
- SSC 100 Principles of Soil Science (4)

Soil Science

- SSC 100 Principles of Soil Science (5)
- SSC 102 Soil and Water Chemistry (5)

SSC 107 Soil Physics (5)
SSC 109 Nutrient Cycling and Management (5)
SSC 111 Soil Microbiology (4)
SSC 120 Soil Genesis, Morphology, and Classification (5)
SSC 211 Advanced Soil Microbiology (3)
SSC 219 Ecosystem Biogeochemistry (4)
SSC 290 Selected from seminars offered (1)