

# AGRICULTURE + RESRCE ECON-AREC (AREC)

## Courses

**AREC 192 Orientation to Agricultural and Resource Econ Credit: 1 (0-0-1)**

**Course Description:** First year course in agricultural and resource economics and agricultural education. Information and skills necessary to succeed in majors and build an inclusive community in the Department of Agricultural and Resource Economics.

**Prerequisite:** None.

**Restriction:** Must be a: Undergraduate.

**Registration Information:** This is a partial semester course. Sections may be offered: Online. Credit not allowed for both AREC 180A1 and AREC 192.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 202 Agricultural and Resource Economics (GT-SS1) Credits: 3 (3-0-0)**

**Course Description:** Introduction to decision-making by consumers, firms, and government and the resulting allocation of resources through markets.

**Prerequisite:** MATH 117, may be taken concurrently or MATH 118, may be taken concurrently or MATH 120, may be taken concurrently or MATH 124 or MATH 125 or MATH 126 or MATH 127, may be taken concurrently or MATH 141 or MATH 155 or MATH 159 or MATH 160.

**Registration Information:** Sections may be offered: Online. Credit not allowed for both AREC 202 and ECON 202.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**Additional Information:** Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

**AREC 222 Economics of Food Systems (GT-SS1) Credits: 3 (3-0-0)**

**Course Description:** Examine the food system using an economic lens to understand and compare polarized viewpoints in food production methods and consumption choices. Review the physical, political, and structural context in which the US agricultural system and its actors are embedded. Use economic tools and concepts to analyze different components of the food system, as well as potential tradeoffs associated with different policies and ways to produce and consume food.

**Prerequisite:** None.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**Additional Information:** 1C, Economic or Political Systems (GT-SS1).

**AREC 224 Introduction to Agribusiness Entrepreneurship Credit: 1 (0-0-1)**

**Course Description:** Introductory exposure to entrepreneurship for agribusinesses through presentations by industry professionals.

**Prerequisite:** AREC 202, may be taken concurrently or ECON 202, may be taken concurrently.

**Registration Information:** Required field trips. Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 230 Agricultural Data Management and Analysis Credits: 3 (2-2-0)**

**Course Description:** A survey of methods and tools to facilitate data gathering, analysis and visualization in a spreadsheet environment. Emphasis on data used in agricultural business and natural resource management.

**Prerequisite:** None.

**Registration Information:** Must register for lecture and laboratory.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 240 Economics of Environmental Sustainability (GT-SS1) Credits: 3 (3-0-0)**

**Also Offered As:** ECON 240.

**Course Description:** Explore why environmental degradation occurs and how to make economies more sustainable and inclusive. Learn and apply economic concepts and tools to better manage land and biodiversity loss, water scarcity, minerals and energy, fish and oceans, forests and wildlife, air pollution, and climate change.

**Prerequisite:** None.

**Registration Information:** Sections may be offered: Online. Credit not allowed for both AREC 240 and ECON 240.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**Additional Information:** Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

**AREC 305 Agricultural and Resource Enterprise Analysis Credits: 3 (2-2-0)**

**Course Description:** Use of records in agricultural and resource enterprise management; analytical methods, budgets, and planning techniques for improved decision making.

**Prerequisite:** (AREC 230 or BUS 150 or CS 110) and (AREC 202 or ECON 202).

**Registration Information:** Sections may be offered: Online. Must register for lecture and laboratory.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 307 Agricultural and Food Managerial Economics Credits: 3 (3-0-0)**

**Course Description:** Examines optimal management decision-making in agricultural and food businesses through the application of economic principles and analytical methods. Explores concepts such as marginal analysis of consumption, production, and food and agricultural market characteristics.

**Prerequisite:** (AREC 202 or ECON 202) and (MATH 118).

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 310 Food and Agricultural Markets Credits: 3 (3-0-0)**

**Course Description:** Structure, performance, and current drivers of US food and agricultural markets, including the importance of place, time, and different products in market dynamics.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 311 Agricultural and Resource Product Marketing Credits: 3 (3-0-0)**

**Course Description:** Theory and practice of marketing-differentiated agricultural products and natural resource amenities with focus on strategies and market trends.

**Prerequisite:** AREC 202 or ECON 202.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 325 Personnel Management in Agriculture Credits: 3 (3-0-0)**

**Course Description:** Human resource issues for agribusiness firms. Managing employees, legal issues, negotiation methods, and benefits packages. Workplace professionalism.

**Prerequisite:** AREC 202 or ECON 202.

**Restriction:** .

**Registration Information:** Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 328 Small Agribusiness Management Credits: 3 (3-0-0)**

**Course Description:** Apply business principles to small food enterprises, agribusinesses and cooperatives.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sections may be offered: Online.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 330 Data-Driven Ag and Res Econ Decision Making Credits: 3 (2-2-0)**

**Course Description:** Examine data used to inform decisions in many agribusiness and natural resource organizations. Preparation to use software (e.g., R and Tableau) to acquire, organize, and visualize data with a specific focus on informing business and policy decisions.

Organized around real-world problems informed by industry partners and research projects.

**Prerequisite:** (AREC 230 or BUS 150 or CIS 120 or CS 110) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315).

**Registration Information:** Must register for lecture and laboratory.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 335 Introduction to Econometrics Credits: 3 (3-0-0)**

**Also Offered As:** ECON 335.

**Course Description:** Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.

**Prerequisite:** (ECON 204) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315) and (MATH 141 or MATH 155 or MATH 160).

**Registration Information:** Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.

**Terms Offered:** Fall, Spring.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 340 Introduction-Economics of Natural Resources Credits: 3 (3-0-0)**

**Also Offered As:** ECON 340.

**Course Description:** Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sections may be offered: Online. Credit not allowed for both AREC 340 and ECON 340.

**Term Offered:** Spring.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 341 Environmental Economics Credits: 3 (3-0-0)**

**Course Description:** Economic theories and analytic frameworks are developed and applied to contemporary problems of the use and protection of the natural environment.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 342 Water Law, Policy, and Institutions Credits: 3 (3-0-0)**

**Course Description:** Legal water issues within the context of historical, social and economic development with emphasis on the southwestern United States.

**Prerequisite:** None.

**Registration Information:** Sections may be offered: Online.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 346 Economics of Outdoor Recreation Credits: 3 (3-0-0)**

**Also Offered As:** ECON 346.

**Course Description:** Application of benefit-cost framework to public planning for outdoor recreation. Topics include non-market valuation, projecting demand, cost of supplying recreation, and regional economic development.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sections may be offered: Online. Credit not allowed for both AREC 346 and ECON 346.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 375 Agricultural Law Credits: 3 (3-0-0)**

**Course Description:** Laws, regulations, case decisions affecting ranching and farming in the Rocky Mountain area.

**Prerequisite:** None.

**Restriction:** Must be a: Junior.

**Registration Information:** Junior standing. Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 405 Agricultural Production Management Credits: 3 (2-2-0)**  
**Course Description:** Economic principles of agricultural production decisions with linear programming analysis of production choices and farm planning.  
**Prerequisite:** AREC 305.  
**Registration Information:** Must register for lecture and laboratory.  
**Term Offered:** Spring.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.

**AREC 408 Agricultural Finance Credits: 3 (3-0-0)**  
**Course Description:** Monetary affairs of agribusiness and agricultural production emphasizing credit institutions and procurement, investment, and management.  
**Prerequisite:** AREC 305.  
**Registration Information:** Sections may be offered: Online.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

**AREC 412 Agricultural Commodities Marketing Credits: 3 (3-0-0)**  
**Course Description:** Agricultural marketing and agribusiness principles applied to current marketing problems relating to livestock and field and horticultural crops.  
**Prerequisite:** AREC 310.  
**Registration Information:** Sections may be offered: Online.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** Yes.

**AREC 415 International Agricultural Trade Credits: 3 (3-0-0)**  
**Course Description:** Agricultural trade patterns and institutions; trade theory with applications to agriculture. Current issues in agricultural trade.  
**Prerequisite:** AREC 310.  
**Registration Information:** Sections may be offered: Online.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.

**AREC 419 Commodity Market Trading Experience Credits: 3 (3-0-0)**  
**Course Description:** Firsthand experience engaging in futures and options trading in support of business activities. Analyze and trade in commodity markets as investment and risk management tools using economic information to develop trading plans and make use of fundamental and technical analysis to manage trades (real or synthetic). Work in teams, conduct independent research, communicate and justify decision making to other teams, instructors, and industry professionals.  
**Prerequisite:** AREC 310.  
**Registration Information:** May be taken up to two times for credit. A maximum of 6 credits may be taken from AREC 419 and AREC 480A2.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

**AREC 422 Food Supply Chain Management Credits: 3 (3-0-0)**  
**Course Description:** Economic analysis of food supply chains studied through industry case studies.  
**Prerequisite:** AREC 310 or AREC 311.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

**AREC 428 Agricultural Business Management Credits: 3 (3-0-0)**  
**Course Description:** Economic analysis, organization, and management practices of agriculture and food industries studied through simulation, case study, computer labs.  
**Prerequisite:** (AREC 305) and (AREC 310 or AREC 311).  
**Restriction:** Must not be a: Freshman, Sophomore, Junior.  
**Registration Information:** Senior standing. Sections may be offered: Online.  
**Terms Offered:** Fall, Spring.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.

**AREC 440 Advanced Environmental and Resource Economics Credits: 3 (3-0-0)**  
**Course Description:** Microeconomic techniques to rigorously explore economic decision-making and policy as they apply to environmental and natural resource problems.  
**Prerequisite:** (AREC 340 or ECON 340) and (AREC 341 and ECON 306).  
**Registration Information:** Sections may be offered: Online.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

**AREC 442 Water Resource Economics Credits: 3 (3-0-0)**  
**Course Description:** An in-depth exploration of the role of economics in water resource planning.  
**Prerequisite:** AREC 342 and ECON 306, may be taken concurrently.  
**Registration Information:** Credit not allowed for both AREC 442 and AREC 542.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

**AREC 444 Economics of Energy Resources Credits: 3 (3-0-0)**  
**Also Offered As:** ECON 444.  
**Course Description:** Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.  
**Prerequisite:** ECON 306.  
**Registration Information:** Junior standing. Sections may be offered: Online. Credit allowed for only one of the following: AREC 444, ECON 344, or ECON 444.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

**AREC 454 Real Estate Appraisal Credits: 3 (3-0-0)**  
**Also Offered As:** REL 454.  
**Course Description:** Theoretical principles that underlie real estate appraisal methods. Procedures and practices used in real estate appraisal.  
**Prerequisite:** (AREC 202 or ECON 202) and (AREC 305 or REL 360).  
**Registration Information:** Sections may be offered: Online. Credit allowed for only one of the following: AREC 453, AREC 454, REL 453, or REL 454.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.

**AREC 460 Ag- and Resource-Based Economic Development Credits: 3 (3-0-0)**

**Course Description:** Indicators, tools and approaches for agriculture- and natural resource-based economic development in resource dependent countries and communities.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sections may be offered: Online.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 461A Study Abroad--Italy: Economics of the Renaissance in Modern Italy Credits: 3 (0-0-3)**

**Course Description:** The historical and current economics of agriculture and natural resources in Florence, Tuscany and Italy. Focus on (1) The role of culture, creativity and place in economic development; (2) Italian culture in general; (3) the economic and political history of Florence; and (4) the production, markets and economic importance of culture and natural resource-based industries in central Italy.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sophomore standing. This is a partial semester course. Required field trips. Credit not allowed for both AREC 461A and AREC 482B.

**Term Offered:** Fall (even years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 461B Study Abroad--Italy: Food and Resource Economics Credits: 3 (0-0-3)**

**Course Description:** In-depth investigation of the food and natural resource-based economy of Italy through an applied economics lens. Economics and policy are used to provide insight into the integration of Italian culture and its principal food and natural resource industries. A theoretical basis for different resource management systems are presented including various methods of cost-benefit analysis, utility theory, property rights structures, government institutions, and cultural and ethical considerations.

**Prerequisite:** AREC 202 or ECON 202.

**Registration Information:** Sophomore standing. This is a partial semester course. Credit not allowed for both AREC 461B and AREC 482A.

**Term Offered:** Fall (even years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 478 Agricultural Policy Credits: 3 (3-0-0)**

**Course Description:** Formulation, evaluation, and administration of public policies affecting the agricultural and natural resource industries in the United States.

**Prerequisite:** AREC 202 or ECON 202 or AREC 240 or ECON 240.

**Registration Information:** Sections may be offered: Online.

**Terms Offered:** Fall, Spring.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 484 Supervised College Teaching Credits: Var[1-5] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Registration Information:** Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 487 Internship Credits: Var[1-6] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Registration Information:** May be taken for a maximum of 6 credits. Sections may be offered: Online.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 492 Senior Seminar in Ag and Resource Economics Credit: 1 (0-0-1)**

**Course Description:** Designed to reflect on experiences within the Department of Agricultural and Resource Economics (DARE) Outcomes: professional development, technical competence, problem-solving skills, communication skills, and leadership.

**Prerequisite:** AREC 192.

**Restriction:** Must not be a: Freshman, Sophomore, Junior.

**Registration Information:** Senior standing. This is a partial semester course.

**Terms Offered:** Fall, Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 495 Independent Study Credits: Var[1-6] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Registration Information:** May be taken for a maximum of 6 credits. Sections may be offered: Online.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 496 Group Study Credits: Var[1-18] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 505 Agricultural Production Economics Credits: 3 (3-0-0)**

**Course Description:** Empirical applications of production economic theory for use of imputs and allocation of resources in agricultural, natural resource sectors.

**Prerequisite:** (MATH 141) and (AREC 405 or ECON 306).

**Term Offered:** Fall.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 506 Applied Microeconomic Theory Credits: 3 (3-0-0)**

**Also Offered As:** ECON 506.

**Course Description:** Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.

**Prerequisite:** ECON 306.

**Registration Information:** Credit not allowed for both AREC 506 and ECON 506.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 507 Applied Welfare and Policy Analysis Credits: 3 (3-0-0)**

**Course Description:** How policies are crafted to effectively address social issues, especially for agriculture and the environment, and how they impact society.

**Prerequisite:** ECON 306.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 508 Financial Management in Agriculture Credits: 2 (2-0-0)**

**Course Description:** Systematic approach to understanding and applying financial management in farm businesses.

**Prerequisite:** (AREC 408 or FIN 305) and (ECON 306).

**Term Offered:** Fall (odd years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 510 Agricultural Product Marketing Credits: 3 (3-0-0)**

**Course Description:** Marketing techniques, industrial organization/competition for agricultural products in US domestic, international trade, and developing country markets.

**Prerequisite:** (AREC 310) and (AREC 335 or ECON 335).

**Term Offered:** Fall.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 511 Opportunities in the Agricultural Value Chain Credits: 2 (2-0-0)**

**Course Description:** Explores the economics and business structure of operations within the food and agribusiness system, using readings, field trips and guest speakers.

**Prerequisite:** None.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Required field trips.

Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 512 Innovation in Agribusinesses Credits: 2 (2-0-0)**

**Course Description:** Core concepts of entrepreneurship within both private and social enterprises. General applications of innovation and entrepreneurship with particular emphasis on the industries that make up the agricultural and food system.

**Prerequisite:** None.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered:

Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 513 Idea Evaluation in Agricultural Value Chains Credits: 2 (2-0-0)**

**Course Description:** Processes of identifying and evaluating a new idea, applying strategic and design-thinking principles and tools to explore pathways by which it could grow into a viable agribusiness.

**Prerequisite:** None.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered:

Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 514 Entrepreneurial Accounting and Finance Credits: 2 (2-0-0)**

**Course Description:** Foundational background in accounting and financial concepts and mastery of financial tools needed to start a new agribusiness.

**Prerequisite:** None.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 515 Assessing Agricultural and Food Markets Credits: 2 (2-0-0)**

**Course Description:** Foundational background regarding marketing concepts needed to evaluate the potential market for an agricultural or food product or service, using an economics framework.

**Prerequisite:** None.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 516 Business Economics for the Entrepreneur Credits: 2 (2-0-0)**

**Course Description:** Microeconomic framework that a potential entrepreneur can use to analyze business opportunities. Topics include components of cost and revenue and their relevance for new business ventures, determinants and measurement of consumer demand, and alternate forms of business organization and interaction.

**Prerequisite:** AREC 202 or ECON 202.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 517 Entrepreneurial Identity and Team Formation Credits: 2 (1-2-0)**

**Course Description:** Students explore their emergent identity as "entrepreneur", including their necessary interdependence on other members of a team when engaged in creative endeavors such as innovation or new business development in the agricultural space.

**Prerequisite:** AREC 513.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Must register for lecture and laboratory. Sections may be offered: Online.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 518 Raising Capital in the Agricultural Sector Credits: 2 (2-0-0)**

**Course Description:** Methods to value a startup business and approaches to identifying sources of capital needed to launch and sustain the startup. Emphasis on unique challenges in and sources of raising capital in the agricultural sector.

**Prerequisite:** AREC 512 and AREC 514.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered: Online.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 519A New Venture Communication: Interpersonal Interactions Credit: 1 (0-2-0)**

**Course Description:** Communicating in the workplace, both orally and in written form. Development of a succinct business proposal.

**Prerequisite:** AREC 517, may be taken concurrently.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. This is a partial semester course. Sections may be offered: Online.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 519B New Venture Communication: Making the Pitch Credit: 1 (0-2-0)**

**Course Description:** Emphasis on oral communication when trying to sell a business idea to potential investors. Development of tailored presentations to target audience within moments of opportunity.

**Prerequisite:** AREC 519A.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered: Online.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 520 Intellectual Property in Food and Agriculture Credits: 2 (2-0-0)**

**Course Description:** Explores the critical role that intellectual property plays in commercial activities within the knowledge economy. Emphasis on strategic management of technology through patents and other control mechanisms, thereby allowing startups to survive and thrive in the knowledge economy with special attention to property developed in the agricultural and food systems.

**Prerequisite:** AREC 518 and BUS 660.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered: Online.

**Term Offered:** Summer.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 521 New Food Product Development Credits: 2 (2-0-0)**

**Course Description:** An overview of the food product development process. Topics include strategies, marketing perspectives, quality controls and supply chains in the food system.

**Prerequisite:** AREC 515.

**Restriction:** Must be a: Graduate.

**Registration Information:** Graduate standing. Sections may be offered: Online.

**Term Offered:** Summer.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 528 Applied Agribusiness Decision Tools Credits: 2 (2-0-0)**

**Course Description:** Applications of quantitative tools for managerial decision-making in the context of an agribusiness.

**Prerequisite:** (AREC 305 or AREC 408 or FIN 305) and (ECON 306).

**Term Offered:** Fall (even years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 530 Agricultural Price Analysis Credits: 3 (3-0-0)**

**Course Description:** Agricultural commodity prices related to neoclassical economics; current literature emphasizing management problems.

**Prerequisite:** None.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 535 Applied Econometrics Credits: 3 (3-0-0)**

**Also Offered As:** ECON 535.

**Course Description:** Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.

**Prerequisite:** (AREC 335 or ECON 335) and (ECON 304 or ECON 306).

**Registration Information:** Credit not allowed for both AREC 535 and ECON 535.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 540 Environmental and Natural Resource Economics Credits: 3 (3-0-0)**

**Also Offered As:** ECON 540.

**Course Description:** Theory, methods, and policy in environmental and natural resource economics.

**Prerequisite:** AREC 506 or ECON 506.

**Registration Information:** Credit not allowed for both AREC 540 and ECON 540.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 541 Environmental Economics Credits: 3 (3-0-0)**

**Also Offered As:** ECON 541.

**Course Description:** Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.

**Prerequisite:** ECON 306.

**Registration Information:** Credit not allowed for both AREC 541 and ECON 541.

**Term Offered:** Spring.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 542 Applied Advanced Water Resource Economics Credits: 3 (3-0-0)**

**Course Description:** Theory and application of economics in water resource planning.

**Prerequisite:** (ECON 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).

**Registration Information:** Credit not allowed for both AREC 542 and AREC 442.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 547 Public Lands Planning and Management Credits: 3 (3-0-0)**

**Course Description:** Principles and techniques used by federal land management agencies including Forest Service, Park Service, Fish and Wildlife Service, and BLM.

**Prerequisite:** AREC 202 or ECON 202.

**Term Offered:** Spring (odd years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 563 Regional Economics-Theory, Methods, and Issues Credits: 3 (3-0-0)****Also Offered As:** ECON 563.**Course Description:** Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.**Prerequisite:** ECON 306 and ECON 501, may be taken concurrently.**Registration Information:** Credit not allowed for both AREC 563 and ECON 563.**Term Offered:** Fall.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 566 Contemporary Issues in Developing Countries Credits: 3 (3-0-0)****Also Offered As:** SOC 566.**Course Description:** Social, economic, and technological factors in developing countries.**Prerequisite:** None.**Registration Information:** Two or more courses in AREC or ECON or SOC. Credit not allowed for both AREC 566 and SOC 566.**Term Offered:** Spring (odd years).**Grade Modes:** S/U within Student Option, Trad within Student Option.**Special Course Fee:** No.**AREC 570 Methodology of Economic Research Credits: 3 (3-0-0)****Also Offered As:** ECON 530.**Course Description:** Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.**Prerequisite:** ECON 304 and ECON 306.**Registration Information:** Credit not allowed for both AREC 570 and ECON 530.**Term Offered:** Fall (even years).**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 572 Social Benefit Cost Analysis Credits: 3 (3-0-0)****Course Description:** Theory, application of concepts relating to social benefit cost analysis of public projects, policies intended to promote social welfare, and economic growth.**Prerequisite:** AREC 202 or ECON 202.**Registration Information:** Sections may be offered: Online.**Term Offered:** Spring (odd years).**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 586A New Venture Launch Practicum: Explore and Validate Value Proposition Credits: 2 (0-0-4)****Course Description:** Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.**Prerequisite:** AREC 517, may be taken concurrently.**Restriction:** Must be a: Graduate.**Registration Information:** Graduate standing.**Term Offered:** Spring.**Grade Mode:** S/U Sat/Unsat Only.**Special Course Fee:** No.**AREC 586B New Venture Launch Practicum: Communicate, Design, and Iterate Credits: 2 (0-0-4)****Course Description:** Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.**Prerequisite:** AREC 586A, may be taken concurrently.**Restriction:** Must be a: Graduate.**Registration Information:** Graduate standing.**Term Offered:** Summer.**Grade Mode:** S/U Sat/Unsat Only.**Special Course Fee:** No.**AREC 586C New Venture Launch Practicum: Final Evaluation, Presentation, and Launch Credits: Var[1-6] (0-0-0)****Course Description:** Team-based development of a new venture or innovation focusing on co-creation of value. Four main areas of competency--(1) entrepreneurial mindset and teamwork; (2) technology and product development; (3) communication and substantiation of value; and (4) business strategy and execution--are developed and demonstrated in the process of preparing to launch a new venture or innovation in the agricultural, food, or related industries.**Prerequisite:** AREC 586B, may be taken concurrently.**Restriction:** Must be a: Graduate.**Registration Information:** Graduate standing. Course may be taken multiple times for maximum of 12 credits total.**Term Offered:** Fall.**Grade Mode:** S/U Sat/Unsat Only.**Special Course Fee:** No.**AREC 605 Agricultural Production and Cost Analysis Credits: 3 (3-0-0)****Course Description:** Empirical application and analysis of production and cost issues in the agricultural and natural resource sectors.**Prerequisite:** (AREC 506) and (AREC 535 or ECON 535).**Restriction:** Must be a: Graduate, Professional.**Term Offered:** Spring.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 606 Microeconomic Analysis I Credits: 3 (3-0-0)****Also Offered As:** ECON 606.**Course Description:** Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.**Prerequisite:** ECON 306 and ECON 501.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** Credit not allowed for both AREC 606 and ECON 606.**Term Offered:** Spring.**Grade Mode:** Traditional.**Special Course Fee:** No.

**AREC 610 Agricultural Marketing and Demand Analysis Credits: 3 (3-0-0)**

**Course Description:** Empirical application and analysis of agricultural marketing and demand issues in the agricultural and natural resource sectors.

**Prerequisite:** (AREC 506) and (AREC 535 or AREC 635 or ECON 535 or ECON 635).

**Restriction:** Must be a: Graduate, Professional.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 615 Optimization Methods for Applied Economics Credits: 3 (3-0-0)**

**Course Description:** Theory and practice of optimization techniques used in economic applications with emphasis on linear and nonlinear programming.

**Prerequisite:** AREC 506.

**Restriction:** Must be a: Graduate, Professional.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 635 Econometric Theory I Credits: 3 (3-0-0)**

**Also Offered As:** ECON 635.

**Course Description:** Theory of mathematical statistics and classical linear regression model in context of economic application.

**Prerequisite:** (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).

**Restriction:** Must be a: Graduate, Professional.

**Registration Information:** Credit not allowed for both AREC 635 and ECON 635.

**Term Offered:** Fall.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 647 Land Use Economics and Spatial Modeling Credits: 3 (3-0-0)**

**Course Description:** Use of spatial data in economic analysis of land use focusing on development patterns, land conservation, spatial externalities and agricultural land.

**Prerequisite:** (AREC 506 or ECON 506) and (AREC 535 or ECON 535).

**Restriction:** Must be a: Graduate, Professional.

**Term Offered:** Fall (even years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 660 Development of Rural Resource-Based Economies Credits: 3 (3-0-0)**

**Course Description:** Economic literature-based exploration of human welfare measures and implications of approaches to agriculture and resource-based economic development.

**Prerequisite:** AREC 506.

**Restriction:** Must be a: Graduate, Professional.

**Term Offered:** Spring.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 678 Agricultural and Resource Policy Credits: 3 (3-0-0)**

**Course Description:** Evaluate and analyze economic theory, applications and public incentives related to government policies for agriculture and natural resources.

**Prerequisite:** ECON 306 and MATH 141.

**Restriction:** Must be a: Graduate, Professional.

**Term Offered:** Fall.

**Grade Modes:** S/U within Student Option, Trad within Student Option.

**Special Course Fee:** No.

**AREC 695 Independent Study Credits: Var[1-6] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 699 Thesis Credits: Var[1-18] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 705 Advanced Production and Technological Change Credits: 3 (3-0-0)**

**Course Description:** Modern theoretical and empirical approaches are applied to understand producer decision-making under uncertainty, technology adoption and effects of innovation, measurements of technical efficiency and productivity, and advanced models of agricultural markets.

**Prerequisite:** (AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).

**Restriction:** Must be a: Graduate, Professional.

**Term Offered:** Spring (even years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 706 Microeconomic Analysis II Credits: 3 (3-0-0)**

**Also Offered As:** ECON 706.

**Course Description:** Advanced topics in microtheory: game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.

**Prerequisite:** ECON 606.

**Restriction:** Must be a: Graduate, Professional.

**Registration Information:** Credit not allowed for both AREC 706 and ECON 706.

**Term Offered:** Fall.

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 710 Advanced Agricultural Marketing Issues Credits: 3 (3-0-0)**

**Course Description:** Theoretical and modeling issues of consumer demand, market structure, product differentiation and market behavior.

**Prerequisite:** (AREC 610) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).

**Restriction:** Must be a: Graduate, Professional.

**Term Offered:** Fall (even years).

**Grade Mode:** Traditional.

**Special Course Fee:** No.

**AREC 735 Econometric Theory II Credits: 2 (2-0-0)****Also Offered As:** ECON 735.**Course Description:** Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.**Prerequisite:** AREC 635 or ECON 635.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** Credit not allowed for both AREC 735 and ECON 735. This is a partial-semester course.**Term Offered:** Spring.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 736A Advanced Econometric Methods: Discrete Choice Models Credit: 1 (1-0-0)****Also Offered As:** ECON 736A.**Course Description:** Econometrics analysis of: Discrete Choice Models.**Prerequisite:** AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.**Term Offered:** Spring.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 736B Advanced Econometric Methods: Panel Data Models Credit: 1 (1-0-0)****Also Offered As:** ECON 736B.**Course Description:** Econometrics analysis of: Panel Data Models.**Prerequisite:** AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.**Term Offered:** Spring.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 736C Advanced Econometric Methods: Time Series Models Credit: 1 (1-0-0)****Also Offered As:** ECON 736C.**Course Description:** Econometrics analysis of: Time Series Models.**Prerequisite:** AREC 735, may be taken concurrently or ECON 735, may be taken concurrently.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** Credit not allowed for both AREC 736A-C and ECON 736A-C. This is a partial-semester course.**Term Offered:** Spring.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 736D Advanced Econometric Methods: Causal Inference Credit: 1 (1-0-0)****Also Offered As:** ECON 736D.**Course Description:** Introduces the notion of identification in econometrics and covers several commonly used methods for addressing endogeneity.**Prerequisite:** AREC 735 or ECON 735.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** This is a partial semester course. Credit not allowed for both AREC 736D or ECON 736D.**Term Offered:** Fall.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 736E Advanced Econometric Methods: Machine Learning for Econometric Analysis Credit: 1 (1-0-0)****Also Offered As:** ECON 736E.**Course Description:** Introduction to machine learning and AI to estimate causal treatment effects and create secondary datasets for use in causal inference. Explore some of the latest algorithms for machine learning and causal inference as well as readings.**Prerequisite:** AREC 735 or ECON 735.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** This is a partial semester course. Credit allowed for only one of the following: AREC 736E, AREC 780A1, ECON 736E or ECON 780A1.**Term Offered:** Fall.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 740 Advanced Natural Resource Economics Credits: 3 (3-0-0)****Also Offered As:** ECON 740.**Course Description:** Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.**Prerequisite:** AREC 706 or ECON 706.**Restriction:** Must be a: Graduate, Professional.**Registration Information:** Credit not allowed for both AREC 740 and ECON 740.**Term Offered:** Fall.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 741 Advanced Environmental Economics Credits: 3 (3-0-0)****Also Offered As:** ECON 741.**Course Description:** Advanced theory, methods, and literature in environmental economics.**Prerequisite:** AREC 706 or ECON 706.**Restriction:** Must be a: Graduate, Professional.**Term Offered:** Spring.**Grade Mode:** Traditional.**Special Course Fee:** No.**AREC 770 Advanced Methods in Applied Economics Credits: 3 (3-0-0)****Course Description:** Advanced research methods in applied economics: lab and field experiments, non-market valuation and discrete choice experiments.**Prerequisite:** (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).**Restriction:** Must be a: Graduate, Professional.**Term Offered:** Fall (odd years).**Grade Mode:** Traditional.**Special Course Fee:** No.

**AREC 784 Supervised College Teaching Credits: Var[1-3] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 792A Seminar: Agricultural Credits: Var[1-18] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 792B Seminar: International Credits: Var[1-18] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 792C Seminar: Resources Credits: Var[1-18] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 795 Independent Study Credits: Var[1-18] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.

**AREC 799 Dissertation Credits: Var[1-18] (0-0-0)**

**Course Description:**

**Prerequisite:** None.

**Restriction:** Must be a: Graduate, Professional.

**Terms Offered:** Fall, Spring, Summer.

**Grade Mode:** Instructor Option.

**Special Course Fee:** No.