

AGRICULTURE (AGR)

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Chairperson: Robert Rhykerd.

Graduate Program Director: Aslihan Spaulding.

Graduate Faculty: Kopsell, Rhykerd, Rickard, Smiciklas, Spaulding, Steffen.

Programs Offered

M.S. degree in Agriculture with sequences in Agribusiness, Agriscience, and Agriculture Education and Leadership.

Program Requirements

Full-time students should expect to take at least two years to complete the master's program once they have completed any deficiency coursework.

Each sequence has a thesis and non-thesis option. Required core courses for the degree program are: AGR 403, 445, and 497. **All master's degree programs require a minimum of 50 percent of the non-thesis credit hours applied to the degree to be 400-level courses or above.**

Agribusiness Sequence:

This 37 hour sequence requires:

- 7 hour required core: AGR 403, 445, and 497
- 6 hours: MBA 430 and MBA 421;
- 3 hours of business courses selected from MBA 411, 412, 416, 427, 440, 450; MKT 431
- 9 hours of advanced agribusiness courses selected from AGR 418, 420, 422 or 424
- Plus Option 1 or 2
- Students who completed a limited number of business courses as undergraduates may be required to take some or all of the following Pre-MBA courses in accounting, statistics, economics, management, marketing, finance, and business law. Foundation courses cannot be presented for use in the Agriculture degree program.

Students with non-business undergraduate degrees may have to complete Pre-MBA Program courses before enrolling in MBA core courses. The responsibility for demonstrating prior academic coverage of the material at the appropriate level rests with the student, and should be completed at least one month prior to the beginning of the first semester of course work. Proficiency exams are available for the Pre-MBA Program

courses. A person may take each proficiency exam only once.

Option I—Thesis:

- the degree requirements listed above
- 6 hours of Master's Thesis (AGR 499)
- 6 hours of electives

Option II—Non-thesis:

- the degree requirements listed above
- a synthesizing experience consisting of three hours of Independent Study (AGR 400) under the direction of a major advisor and with the approval of an advisory committee.
- 9 hours of electives
- pass a comprehensive written/oral examination

Elective Courses: The following Department of Agriculture courses are acceptable to satisfy the elective courses requirement of the Agribusiness Sequence: AGR 304, 305, 306, 312, 313, 314, 315, 317, 318, 319, 320, 324, 352, 353, 355, 357, 363, 372, 375, 380, 381, 383, 386, 400, 418, 420, 422, 424, 489 or coursework of interest from pertinent departments approved by the student's committee.

Additional 300-level graduate electives may come from the Departments of Accounting; Finance, Insurance and Law; Management and Quantitative Methods; and Marketing. (Agribusiness students may earn no more than 12 credits from 400-level courses in the College of Business.) 300- and 400-level graduate electives may come from the Department of Economics (excluding ECO 401).

Agriscience Sequence:

This 36 hour sequence requires:

- 7 hour required core: AGR 403, 445, and 497
- 3 hours: BSC 490
- plus Option I or II

Option I—Thesis:

- the degree requirements listed above
- 6 hours of Master's Thesis (AGR 499)
- 20 hours of electives selected from the list below

Option II—Non-thesis:

- the degree requirements listed above

- a synthesizing experience consisting of three hours of Independent Study (AGR 400) under the direction of a major advisor and with the approval of an advisory committee
- pass a comprehensive written/oral examination

Elective courses: The following courses are acceptable to satisfy the elective courses requirement of the Agriscience Sequence: AGR 304, 305, 306, 317, 352, 353, 355, 356, 357, 363, 372, 375, 380, 381, 489; BSC 301, 321, 335, 336, 415, 425; CHE 344, 444; GEO 303, 304, 305, 360, 380, 386 or coursework of interest from pertinent departments approved by the student's committee.

Concentrations: Students selecting the Agriscience Sequence may elect an Animal Science, Agronomy, or Horticulture concentration. Students may choose courses from the following lists for each concentration.

- Animal Science: AGR 317, 363, 372, 375, 380, 381, 386, 489; BSC 321, 416; CHE 344, 444; FCS 332.
- Agronomy: AGR 304, 305, 306, 355, 356, 357, 363, 489; BSC 301, 335, 336; GEO 303, 304, 305, 360, 380.
- Horticulture: AGR 352, 353, 355, 356, 357, 358, 363, 489; BSC 301, 335, 336.

Agricultural Education and Leadership Sequence:

Students who completed a limited number of Agricultural Education or education courses as undergraduates may be required to take undergraduate foundation courses as a prerequisite. Foundation courses cannot be presented for use in the Agricultural Education and Leadership degree program.

This 36 hour sequence requires:

- 7 hour required core: AGR 403, 445, and 497
- 14 hours of agriculture electives
- 9 hours from Teaching and Learning, Technology, or other coursework identified by the students' graduate committee as relevant to the area of interest
- plus Option I or II

Option I—Thesis:

- the degree requirements listed above
- 6 hours of Master's Thesis (AGR 499)

Option II—Non-thesis:

- the degree requirements listed above
- a synthesizing experience consisting of three hours of Independent Study (AGR 400) under the direction of a major advisor and with the approval of an advisory committee.
- 3 hours of electives from the list below
- pass a comprehensive written/oral examination

Students selecting this option must also pass a comprehensive written/oral examination.

Elective Courses: The following Department of Agriculture courses are acceptable to satisfy the elective courses requirements of this sequence: AGR 304, 305, 306, 312, 313, 314, 315, 317, 318, 319, 320, 340, 352, 353, 355, 356, 357, 363, 372, 375, 380, 381, 383, 418, 420, 422, 424. Additional graduate electives may come from Teaching and Learning (TCH 401, 402, 407, 409, 411, 430, 432, 434, 441, 450, 453, 473, 478) and/or Technology (TEC 301, 302, 306, 406, 407, 408, 420, 421, 422) or coursework of interest from pertinent departments approved by the student's committee.

Agriculture Courses

302 SPECIAL PROBLEMS IN AGRICULTURE

1-3 sem. hrs.

Special work in research interests of student and staff. Projects must be approved by the staff member and the chairperson of the Department. Multiple enrollments allowed for a maximum of 6 hours. Prerequisite: Comprehensive major or minor in Agriculture or Agribusiness.

303 SEMINAR IN AGRICULTURE

1 sem. hr.

Prerequisite: Senior or graduate standing.

304 GEOSPATIAL TECHNOLOGIES IN AGRICULTURE

3 sem. hrs.

To understand the acquisition and analysis of geographically referenced data for the management of crop production systems.

305 CROP GROWTH AND DEVELOPMENT

4 sem. hrs.

Crop management and plant growth as influenced by the environment, plant species, cropping systems, and principles of integrated crop management (ICM). Lecture and lab.

306 WEED SCIENCE

3 sem. hrs.

Principles and practices of weed management systems, including chemical and non-chemical controls. Identification and biology of common weed species. Lecture and lab.

312 MANAGERIAL ACCOUNTING FOR AGRICULTURAL PRODUCERS**3 sem. hrs.**

Advanced farm business records and analysis with emphasis on computer applications. Formerly ADVANCED FARM ACCOUNTING. Prerequisites: AGR 213 and 216.

313 ADVANCED FARM MANAGEMENT**3 sem. hrs.**

Farm business decisions and their interrelationships. Examination of statics, dynamics and uncertainty in agricultural decision-making. Prerequisites: AGR 213 and 216.

314 MARKETING GRAIN AND LIVESTOCK**3 sem. hrs.**

Economic principles applied to marketing grain and livestock. Consideration given to producers and distributors of grain, livestock, and their products. Prerequisite: AGR 214 or consent of the instructor.

315 FINANCIAL MANAGEMENT AND ANALYSIS OF THE AGRIBUSINESS FIRM**3 sem. hrs.**

Application of quantitative concepts and methods to the analysis and financial management of proprietary and cooperative agribusiness firms. Prerequisites: AGR 215; MAT 120; and AGR 216 or ACC 131, or consent of the instructor.

317 FOOD INDUSTRY MARKETING AND STRATEGIC MANAGEMENT**3 sem. hrs.**

Marketing management and decision-making as they relate to corporate and cooperative marketing and strategic problem solving in the food industry. Prerequisite: AGR 215 or consent of the instructor.

318 AGRICULTURAL FINANCE**3 sem. hrs.**

The principles of agriculture finance including the capital requirements, the sources of credit, and the optimum uses of capital. Prerequisite: AGR 216 or ACC 131.

319 AGRICULTURAL POLICIES AND PROGRAMS**3 sem. hrs.**

History and impact of government intervention in agriculture. Examination of major agricultural programs, past and present. Prerequisite: AGR 110.

320 FARM COMMODITY PRICING**3 sem. hrs.**

Theory and mechanics of price determination for agricultural commodities. Prerequisite: AGR 214.

324 COMMODITY FUTURES AND OPTIONS**3 sem. hrs.**

Examines the evolution of futures and markets and use

of futures and options contracts as price risk management tools. Prerequisite: AGR 214 or consent of the instructor.

352 RESIDENTIAL AND SPORTS TURF MANAGEMENT**3 sem. hrs.**

Principles and practices used in management of residential and recreational turfgrasses. Lecture, lab, and field trips. Materials charge optional. Formerly TURF MANAGEMENT. Prerequisites: AGR 120 and 150 or consent of the instructor.

353 LANDSCAPE DESIGN**3 sem. hrs.**

Problem solving approach to landscape design. Topics include design principles, site measurement, and base map preparation, functional diagrams, form composition, plant selection and preparation of preliminary and master plans. Lectures and drafting laboratories. Materials charge optional. Prerequisites: AGR 252 and 255.

355 PLANT BIOTECHNOLOGY AND BREEDING**3 sem. hrs.**

Breeding procedures and techniques used in developing new varieties of field crops.

357 SOIL FERTILITY AND FERTILIZERS**4 sem. hrs.**

Fundamental concepts of soil fertility and fertilizer manufacturing. Plant nutrition, factors affecting plant growth, soil-plant relationships, and macro- and micro-nutrients. Lecture and laboratory; field trips. Prerequisite: AGR 157.

363 AGRICULTURAL STATISTICS**3 sem. hrs.**

Principles of agricultural research for plant and animal sciences; includes design, data collection, interpretation, and presentation of results. Formerly AGRICULTURAL EXPERIMENTATION. Prerequisite: MAT 120 or 144.

372 LIVESTOCK BREEDING**3 sem. hrs.**

Reproduction and principles of heredity and their application to livestock breeding; population genetics, inbreeding, relationship, outbreeding, and selection. Prerequisite: AGR 272 or BSC 219.

375 ANIMAL NUTRITION**3 sem. hrs.**

Science of animal nutrition; special attention to recent discoveries pertaining to the protein, mineral and vitamin requirements of livestock. Field trips. Offered odd numbered years. Prerequisites: AGR 170 and 171.

380 CURRENT ISSUES IN THE LIVESTOCK INDUSTRY**3 sem. hrs.**

Study of the history and evolution of livestock industry as impacted by internal and external factors. Lecture. Formerly CURRENT ISSUES IN THE BEEF CATTLE INDUSTRY. Prerequisites: AGR 170, 173, 272, 275, 282, 283, 286 or consent of the instructor. A minimum of 75 hours completed or in progress.

381A01 LIVESTOCK INDUSTRY: BEEF CATTLE**2 sem. hrs.**

Basic principles and commercial practices involved in feedlot and cow-calf management. Lecture and lab. Not for credit if had AGR 378, 381 BEEF CATTLE INDUSTRY. Prerequisites: AGR 170, 173, 272, 275, 282, 283, 286, 380 or concurrent registration, or consent of the instructor.

381A03 LIVESTOCK INDUSTRY: SWINE**2 sem. hrs.**

Basic principles and commercial practices involved in swine management. Lecture and lab. Not for credit if had AGR 276. Prerequisites: AGR 170, 173, 272, 275, 282, 283, 286, 380 or concurrent registration, or consent of the instructor.

383 AGRICULTURE SAFETY AND HEALTH**3 sem. hrs.**

Major problems of accident causation and prevention applicable to agriculture and the need for farm safety education, engineering, and enforcement countermeasures. Half-day field trip. Saturday field trip at end of semester required. Also offered as HSC 383.

386 ANIMAL WELFARE**2 sem. hrs.**

Examination of the multidisciplinary tools used to study and assess animal welfare. Prerequisites: AGR 170 and 286 or consent of the instructor.

394 METHODS AND PROCEDURES IN AGRICULTURAL EDUCATION**5 sem. hrs.**

Procedures in planning, conducting, and evaluating an agricultural education program; pragmatic interfacing of learning theories, philosophy and guidance with instructional programs in agriculture. Includes Clinical Experience: 10 hours. Prerequisite: Admission to Professional Studies.

400 INDEPENDENT STUDY**1-4 sem. hrs.**

Refer to Index for General Courses.

403 GRADUATE SEMINAR IN AGRICULTURE**1 sem. hr.**

Development of research; composition of abstract; oral presentation of literature review, methodology, and data. Multiple enrollments allowed for total of two semester hours. Prerequisite: AGR 497 or consent of the instructor.

418 ADVANCED AGRICULTURAL FINANCE**3 sem. hrs.**

Advanced principles of agricultural finance, including investment analysis, resource control, legal aspects of lending, and sources of capital. Prerequisite: AGR 315 or 318 or consent of the instructor.

420 MANAGEMENT OF MARKET RISK IN AGRIBUSINESS**3 sem. hrs.**

An examination and analysis of the techniques used by agribusinesses for managing the risk associated with variable and unknown commodity prices. Prerequisites: AGR 314 and 320 or consent of the instructor.

422 INTERNATIONAL TRADE OF AGRICULTURAL PRODUCTS**3 sem. hrs.**

Examination of the gains from trade and the impact of agricultural trade policies on the welfare of trading nations. Prerequisites: ECO 240 and 241 or consent of the instructor.

424 AGRIBUSINESS STRATEGY AND ANALYSIS**3 sem. hrs.**

Advanced application of quantitative and qualitative analysis in the development and implementation of Agribusiness firm strategy and policy. Prerequisite: Admission to Agribusiness graduate program or consent of the instructor.

445 STATISTICS IN APPLIED SCIENCE AND TECHNOLOGY**3 sem. hrs.**

Descriptive and inferential statistics in the applied sciences; statistical analysis using current technology. Also offered as FCS/KNR/TEC 445.

492 AGRICULTURAL LEADERSHIP**3 sem. hrs.**

This course is a critical exploration of the theory, research and best practices of leadership applied in the agricultural field. Not for credit if had AGR 392.

497 RESEARCH METHODOLOGY IN AGRICULTURE**3 sem. hrs.**

The procedure, techniques, and application of research methods in agriculture. Problem identification and analysis, experimental design and report presentation. Formerly RESEARCH METHODOLOGY IN AGRIBUSINESS. Prerequisite: Admission to Agriculture graduate program or consent of the instructor.

499 MASTER'S THESIS**1-6 sem. hrs.**

Refer to index for General Courses.

499A90 INDEPENDENT RESEARCH FOR THE MASTER'S THESIS FINAL TERM**1-6 sem. hrs.**

Refer to Index for General Courses.