Agricultural Sciences
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kjones@siu.edu

COLLEGE OF AGRICULTURAL SCIENCES

Graduate Faculty:
AbuGhazaleh, Amer A., Professor, Ph.D., South Dakota State University, 2002; 2004.
Altman, Ira J., Associate Professor and Chair, Ph.D., University of Missouri, 2005; 2006.
Apgar, Gary A., Associate Professor, Ph.D., Virginia Polytechnic Institute and State University, 1994; 1998.
Arthur, Robert, Professor, Emeritus, Ph.D., University of Missouri, 1970; 1977.
Ashraf, Hea-Ran L., Professor, Emerita, Ph.D., Iowa State University, 1979; 1980.
Atkinson, Rebecca L., Associate Professor, Ph.D., University of Wyoming, 2006; 2006.
Banz, William J., Professor and Chair, Ph.D., University of Tennessee, 1995; 1995
Beaulieu, Jeffrey R., Associate Professor, Emeritus, Ph.D., Iowa State University, 1984; 1983.
Beck, Roger J., Associate Professor, Emeritus, Ph.D., Pennsylvania State University, 1977; 1984.
Bond, Jason P., Professor, Ph.D., Louisiana State University, 1999; 2000.
Carver, Andrew, Professor, Ph.D., Purdue University, 1998; 1998.
Choudhary, Rupal, Associate Professor, Ph.D., Oklahoma State University, 2009, 2009.
Chong, She-Kong, Professor, Emeritus, Ph.D., University of Hawaii, 1979; 1979.
Cook, Rachel, Assistant Professor, University of North Carolina, 2012.
Davis, Jeremy, Assistant Professor, Ph.D., Iowa State, 2008; 2008.
Diesburg, Kenneth L., Assistant Professor, Ph.D., Iowa State University, 1987; 1989.
Eberle, Phillip R., Associate Professor, Emeritus, Ph.D., Iowa State University, 1983; 1983.
Endres, Jeanette M., Professor, Emerita, Ph.D., St. Louis University, 1972; 1980.
Fakhoury, Ahmad M., Associate Professor, Ph.D., Purdue University, 2001; 2003.
Gastal, Eduardo L., Associate Professor, Ph.D., University of Wisconsin-Madison, 1999, 2009.
Groninger, John W., Professor, Ph.D., Virginia Polytechnic Institute and State University, 1995; 1997.
Harris, Kim S., Associate Professor, Emeritus, Ph.D., University of Illinois, 1985, 1984.
Hausler, Carl L., Associate Professor, Emeritus, Ph.D., Purdue University, 1970; 1970.
Henry, Paul H., Associate Professor, Ph.D., North Carolina State University, 1991, 1992.
Holzmueller, Eric J., Associate Professor, Ph.D., University of Florida, 2006; 2007.
Kammade, W. G., Jr., Associate Professor, Emeritus, Ph.D., University of Illinois, 1951; 1954.
Kannan, Srimathi, Assistant Professor, Ph.D., University of Tennessee Knoxville, 1995.
Kantarzi, Stella, Associate Professor, Ph.D., Aristotle University of Thessaloniki, 2006; 2008. Soybean breeding and genetics.
King, Sheryl S., Professor, Emerita, Ph.D., University of California, Davis, 1983; 1983.
Klubek, Brian P., Professor, Emeritus, Utah State University, 1977; 1978.
Kraft, Steven E., Professor, Emeritus, Ph.D., Cornell University, 1976; 1980.
Kroening, Gilbert H., Professor, Emeritus, Ph.D., Cornell University, 1965; 1969.
Latour, Mickey, Professor and Dean, Ph.D. Mississippi State University.
Legacy, James, Professor, Emeritus, Ph.D., Cornell University, 1976; 1977.
Lightfoot, David A., Professor, Ph.D., University of Leeds, 1984; 1991.
Long, Sara, Professor, Ph.D., Southern Illinois University Carbondale, 1991; 1991
McGuire, James M., Professor, Emeritus, Ph.D., North Carolina State University, 1961; 1993.
Meksem, Khalid, Professor, Ph.D., University of Cologne, Germany, 1995; 2000.
Minish, Gary L., Professor, Emeritus, Ph.D., Michigan State University, 1966; 2004.
Moon, Wanki, Professor, Ph.D., University of Florida, 1995; 2000.
Nielsen, Clayton, Professor, Ph.D., Southern Illinois University Carbondale, 2001; 2009.
Olsen, Farrel J., Professor, Emeritus, Ph.D., Rutgers University, 1961; 1971.
Park, Logan, Assistant Professor, Ph.D., Virginia Polytechnic Institute and State University, 2009; 2009
Pense, Seburn L., Associate Professor, Ph.D., Oklahoma State University, 2002; 2003.
Preece, John E., Professor, Emeritus Ph.D., University of Minnesota, 1980; 1980.
Rendleman, C. Matthew, Associate Professor, Ph.D., Purdue University, 1989; 1994.
Sanders, Dwight R., Professor, Ph.D., University of Illinois, 1999; 2000.
Schmidt, Michael, Associate Professor, Emeritus, Ph.D., Southern Illinois University Carbondale, 1994; 1979.
Schoonover, Jon E., Associate Professor, Ph.D., Auburn University, 2005; 2006
Secchi, Silvia, Associate Professor, Ph.D., Iowa State, 2000; 2008
Shoup, W. David, Professor, Emeritus, Ph.D., Purdue University, 1980; 1999.
Small, Brian C., Associate Professor, Ph.D., University of Maryland, 1998; 2009.
**Doctor of Philosophy in Agricultural Sciences**

The College of Agricultural Sciences offers a graduate program leading to the Doctor of Philosophy degree. This degree is designed to provide students with an interdisciplinary doctoral education in the physical, biological and social sciences that enhances, regulates and sustains agriculture, food and forestry producers, industries and agencies. This degree will prepare Ph.D. graduates to teach and conduct research and outreach at universities and community colleges, and for careers in the corporate, private and government sectors.

**Admission**

All applications to the program must include a Graduate School On-Line Application available at gradschool.siu.edu, a statement of interest, college transcripts, three letters of recommendation, GRE scores including verbal and quantitative, and may include a financial assistance form. In addition, this Program requires a non-refundable $50 application fee. Criteria for admission include an official transcript, letters of recommendation, grade point average (must meet the SIU Graduate School minimum 3.25 GPA in graduate work), and GRE scores. The Graduate Committee of the College must approve admission to the Ph.D. in Agricultural Sciences program. Ph.D. students will be selected on a national and international competitive basis.

Students may be admitted to the doctoral program with a Bachelor’s, a Master of Science or a Master of Arts degree in Agriculture, a discipline within the SIUC College of Agriculture Sciences, or a closely related field (such as Biology, Botany, Natural Science, Rural Sociology, Economics, or Environmental Science). Upon nomination of the master’s committee and upon approval by the College of Agricultural Sciences doctoral program committee. Exceptional M.S. students may be allowed accelerated entry to the Ph.D.

Students admitted under direct or accelerated entry to the Ph.D. program are subject to all existing requirements for the doctoral degree; the admission/advisory committee for the student may add extra requirements based on the student’s background.

**Doctor of Philosophy Degree Program**

Each doctoral student in the College of Agricultural Sciences must successfully complete a common core of research methodology courses, including a two semester sequence of graduate level statistics courses for 4-5 credit hours each, followed by a 3-4 credit hour graduate level experimental design course. Students also will be required to take a three-credit course in Research and Teaching Communications, two semesters of graduate seminar, and 24 hours of dissertation credits. There will be an additional minimum of 20 hours of structured courses appropriate for each student’s area of emphasis. The student’s graduate advisory committee must approve these courses. Emphasis areas include Agricultural Economics, Agricultural Systems Technology, Agricultural Education, Animal Science, Crop Science and Environmental Management, Food and Nutrition, Forestry, and Horticulture.

All Ph.D. students in the program will be required to teach or assist in teaching at least two courses within the College of Agricultural Sciences while in the program. This requirement is regardless of the form of stipend of the student, i.e. if a student is on a research assistantship throughout their tenure in the program, they will still be required to teach or assist in teaching courses.

There is no minimal credit-hour requirement beyond the core, the area of emphasis, and the Graduate School’s residency and dissertation requirements. A student in consultation with their major professor will prepare a program of study, including courses in the student’s area of emphasis, by the end of the second semester of residency. This plan of study, when approved by the student’s advisory committee, will be filed with the Director of Graduate Studies for the College.

**Ph.D. Candidacy**

By the end of the second semester in residence, students must have chosen an area of emphasis and formed a graduate advisory committee to approve their coursework and oversee their dissertation research. The graduate advisory committee will consist of at least five graduate faculty members, with the majority from within the College of Agricultural Sciences and no more than three members from one department. The committee chair will be the student’s major professor and must be a member of the College of Agricultural Sciences faculty.

To be admitted to candidacy, the student must have completed the Graduate School’s 24 credit hours residency requirement within four calendar years, plus the core and emphasis area coursework that was approved by their graduate advisory committee. This should take the student three to four semesters, depending on whether they had any graduate-level research methodology courses during their Master’s degree. At this time, they will take both written and oral preliminary examinations designed and administered by the student’s graduate advisory committee. These exams will each have two parts. One will focus on the student’s knowledge of the research methodology core and the second part will focus on the student’s chosen area of emphasis. If the preliminary examinations are not passed, a
student must wait a minimum of three months for the second and final attempt to pass the exam.

After passing the written and oral preliminary exams and with an approved dissertation proposal, the student will be admitted to candidacy. The Graduate School requires that Ph.D. students fulfill all degree requirements within five years of admission to candidacy or they may have to retake their preliminary exams.

**Dissertation and Dissertation Examination**

By the beginning of the fifth semester of residence, the students will present to their graduate committee a dissertation research proposal. The student’s committee must approve the proposal by the end of their fifth semester of residence. At this time, students must present their dissertation proposal verbally in the form of a graduate seminar. All faculty members in the College of Agricultural Sciences, the student’s graduate advisory committee, all other graduate students in the College, and appropriate individuals from industry groups in southern Illinois will be invited to these seminars. Following the seminar, the student will meet with their graduate advisory committee and will be asked to defend the substance and methods of the proposed research.

The student’s graduate advisory committee will monitor the student’s progress on the dissertation. When the dissertation is completed to the satisfaction of the graduate advisory committee, the committee will administer a final oral exam that will focus on defense of the dissertation. When the dissertation and final oral exam are successfully completed, the student will be recommended to the Graduate School for the doctoral degree.

**Courses (AGSC)**

**550-3 Research and Teaching Communications.** This course in designed to teach graduate students how to communicate successfully their proposed and completed research and to teach college-level courses in the Agricultural Sciences.

**581-1 to 4 (1,1,1) Seminar.** Oral presentations by individual graduate students. Each Ph.D. student in Agricultural Sciences is required to present their proposed dissertation research project as a seminar and the findings of their dissertation as a seminar. All Agricultural Sciences Ph.D. students must register for at least two credits of seminar.

**582-A-C (1-3, 1-3, 1-3) Colloquium in Agricultural Science.** Recent developments in Agricultural Sciences will be discussed in a classroom setting; (a) Biological Science, (b) Social Sciences, and (c) Physical Sciences.

**590-1 to 4 Graduate Readings in Agricultural Science.** Journal articles, chapters and books relevant to a Ph.D. student’s research will be read and discussed with their major professor.

**591-1 to 4 Individual Research in Agricultural Science.** Directed research in approved specialized topic areas in Agricultural Sciences.

**592-1 to 4 Special Problems in Agricultural Science.** Directed study of specialized areas of Agricultural Science, depending on the program of the student.

**595-1 to 6 Instruction in Agricultural Sciences.** Acquaints the student with different teaching environments and styles. Students will be expected to participate in instructing agricultural sciences courses. Special approval needed by the instructor.

**600-1 to 36 (1 to 12 per semester) Dissertation.** This course is to be taken during the research and writing of the dissertation. A minimum of 24 hours must be earned for the Doctor of Philosophy degree.

**601-1 Continuing Enrollment.** For those Doctoral students who have not finished their degree programs and who are in the process of working on their dissertation. The student must have completed a minimum of 24 hours of dissertation research before being eligible to register for this course. Concurrent enrollment in any course is not permitted.

The following is a list of structured courses from which Ph.D. students in Agricultural Sciences may select in each of the emphasis areas. Students will not be limited to these courses, however, the majority of the courses that they may take are included.

**Common Among Disciplines**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EPSY 506-4</td>
<td>Inferential Statistics</td>
</tr>
<tr>
<td>EPSY 507-4</td>
<td>Multiple Regression</td>
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<td>EPSY 508-4</td>
<td>Experimental Design in Educational</td>
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<tr>
<td>PSAS 560-5</td>
<td>Field Plot Technique</td>
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<tr>
<td>ZOOL 557-4</td>
<td>Biostatistics</td>
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<tr>
<td>ZOOL 558-4</td>
<td>Advanced Biostatistics</td>
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</tbody>
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**Agribusiness Economics**

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>ABE 401-3</td>
<td>Agricultural Law</td>
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<tr>
<td>ABE 402-1 to 6</td>
<td>Problems in Agribusiness Economics</td>
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<tr>
<td>ABE 440-3</td>
<td>Natural and Environmental Resource Economics and Policy</td>
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<tr>
<td>ABE 444-3</td>
<td>Agricultural Development</td>
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<td>ABE 450-3</td>
<td>Advanced Farm Management</td>
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<tr>
<td>ABE 451-3</td>
<td>Appraisal of Rural Property</td>
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<tr>
<td>ABE 453-3</td>
<td>Agribusiness Planning Techniques</td>
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<tr>
<td>ABE 460-3</td>
<td>Agricultural Price Analysis and Forecasting</td>
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<tr>
<td>ABE 461-3</td>
<td>Agriculture Business Management</td>
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<tr>
<td>ABE 462-3</td>
<td>Advanced Agricultural Marketing</td>
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<tr>
<td>ABE 463-3</td>
<td>Managerial Strategies for Agribusiness</td>
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<tr>
<td>ABE 500A,B-6(3,3)</td>
<td>Agribusiness Economics Research Methodology</td>
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<td>ABE 551-3</td>
<td>Resource Allocation in the Agribusiness Firm</td>
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<td>ABE 552-3</td>
<td>Problems and Policies of the Agricultural Sector</td>
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<td>ABE 581-1 to 4</td>
<td>Seminar in Agribusiness Economics</td>
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<tr>
<td>ABE 585-1 to 6</td>
<td>Practicum/Internship</td>
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<tr>
<td>BA 505</td>
<td>Brand Management</td>
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<td>BA 510</td>
<td>Managerial Accounting &amp; Control Concepts</td>
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<tr>
<td>BA 514</td>
<td>Ethics of Business</td>
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<tr>
<td>BA 530</td>
<td>Financial Management</td>
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<tr>
<td>BA 531</td>
<td>Advanced Financial Management</td>
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<tr>
<td>BA 532</td>
<td>Financial Institutions and Markets</td>
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<td>BA 533</td>
<td>Investment Concepts</td>
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<tr>
<td>BA 540</td>
<td>Managerial and Organization Behavior</td>
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<tr>
<td>BA 541</td>
<td>Operations Research II</td>
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<tr>
<td>BA 544</td>
<td>Advanced Production Planning and Inventory Management</td>
</tr>
<tr>
<td>BA 545D</td>
<td>Advances in Strategic Management</td>
</tr>
</tbody>
</table>
BA 550  Marketing Management
BA 551  Product Strategy and Management
BA 558  Promotional Strategy and Management
BA 560  Management of Information Systems
BA 561  Database Design and Applications
BA 562  Information Systems and Design
BA 564  Management of Marketing Information
BA 580  International Dimensions of Business and Management
BA 581  Global Marketing
BA 582  International Finance
BA 583  Global Operations Management
BA 584  Global Business Strategies
ECON 429-3  International Trade and Finance
ECON 431-3  Public Finance II
ECON 436-3  Government and Labor
ECON 440-3  Price, Output and Allocation Theories
ECON 441-3  Contemporary Macroeconomic Theory
ECON 463-3  Introduction to Applied Econometrics
ECON 474-3  Antitrust and Regulation
ECON 520-6  Economic Development Theory and Policy
ECON 522-3  Microeconomic Foundations of Labor Markets
ECON 530-3  Foreign Trade
ECON 531-3  International Finance
ECON 532-3  Economics of Human Resources
ECON 534-3  Economics of Taxation
ECON 540A-3  Microeconomic Theory I
ECON 540B-3  Microeconomic Theory II
ECON 540C-3  Microeconomic Theory III
ECON 541A-3  Macroeconomic Theory I
ECON 541B-3  Macroeconomic Theory II
ECON 541C-3  Macroeconomic Theory III
ECON 545-3  Resource Economics
ECON 567A-3  Econometrics I
ECON 567B-3  Econometrics II
ECON 567C-3  Econometrics III
ECON 580A-3  Performance Measurement
GEOG 401-3  Introduction to Geographic Information Systems
GEOG 406-3  Introduction to Remote Sensing
GEOG 408-3  Advanced Remote Sensing
GEOG 420-3  Advanced Geographic Information Systems (GIS) Studies
GEOG 422-4  Economics in Environmental Management
GEOG 424-4  Natural Resources Planning
GEOG 425-4  Integrated Water Management
GEOG 426-4  Administration of Environmental Quality and Natural Resources
GEOG 428-3  Spatial Decision Support Systems
GEOG 429-3  Geography and Organic Farming
GEOG 430-3  Environmental Systems Analysis
GEOG 431-3  Climate
GEOG 433-4  Field Methods in Weather and Water Resources
GEOG 434-4  Water Resources Hydrology
GEOG 435-3  Energy Planning
GEOG 436-3  Environmental Disaster Planning
GEOG 438-3  Applied Meteorology
GEOG 439-3  Climatic Change
GEOG 458-3  Analysis of Risk and Bioterrorism Using GIS
GEOG 471-3  Environmental Impact Analysis

**Agricultural Operations and Systems**
PSAS 461-3  Programming for Agricultural Systems
PSAS 472-3  Precision Agriculture
PSAS 473-3  Agricultural Automation
PSAS 476-3  Agricultural Safety and Health
PSAS 483-3  Agricultural Processing Systems
PSAS 497-2  Agricultural Operations Management
PSAS 560-5  Field Plot Technique
PSAS 572-3  Current Research in Agricultural Systems
PSAS 575-3  Agricultural Systems

**Forestry**
FOR 401-3  Fundamentals of Environmental Education
FOR 402-3  Wildland Hydrology
FOR 403-3  Agroforestry
FOR 405-2  Forest Management for Wildlife
FOR 408-4  Introduction to Remote Sensing and GIS
FOR 409-3  Forest Resources Decision-Making
FOR 410-3  Forest Resources Administration and Policy
FOR 411-3  Forest Resources Economics
FOR 412-2  Tree Improvement
FOR 414-3  Information Management
FOR 416-3  Forest Resource Management
FOR 417-2  Forest Land-Use Planning
FOR 418-2  Marketing of Forest Products
FOR 420-3  Park and Wildlands Management
FOR 421-3  Recreation Land-Use Planning
FOR 422C-4  Park and Wildlands Management Camp
FOR 423-3  Environmental Interpretation
FOR 428-2  Community Forestry
FOR 429-3  Watershed Management Field Laboratory
FOR 430-3  Wildland Watershed Management
FOR 431-3  Regional Silviculture
FOR 451-2  Natural Resources Inventory
FOR 452-2  Forest Soils
FOR 452L-2  Forest Soils Laboratory
FOR 453-2  Environmental Impact Assessment in Forestry
FOR 454-2  Forest Ecology Field Studies
FOR 460-2  Forest Industries
FOR 470-2  Wilderness Management, Policy, and Ethics
FOR 480-3  Natural Resource Advocacy
FOR 485-3  Social Influences on Forestry
FOR 500-2  Principles of Research
FOR 502-3  Advanced Watershed Hydrology and Management
FOR 504-2  Tree Physiology Concepts and Applications
FOR 508-2  Historical Ecology
FOR 510-2  Advanced Silviculture
FOR 511-2  Advanced Forest Resources Economics
FOR 512-2  Tree Selection and Breeding
FOR 516-2  Advanced Forest Management
FOR 520-2  Advanced Park Planning
FOR 521-2  Recreation Behavior in Wildlands Environments
FOR 523-2  Advanced Resource Interpretation                       PSAS 425A-5  Advanced Plant Pathology
FOR 530-2  Forest Site Evaluation                                (same as PLB 425a)
FOR 531-2  Disturbance Ecology                                   PSAS 425B-5  Advanced Plant Pathology
FOR 585-3  Human Dimensions of Natural Resource Management      (same as PLB 425B)
SOC 544 (3)  Sociology of Gender                                PSAS 426-4  Genomic and Bioinformatics
SOC 555 (3)  Social Movements and Collective Action             PSAS 428-3  Advanced Landscape Design I
SOC 514 (4)  Qualitative Research Methods                       PSAS 429-3  Advanced Landscape Design II
POL S 446 (3)  Museum Administration                           PSAS 430-4  Plant Propagation
POL S 549 (3)  Administration of Nonprofit Organizations        PSAS 432-4  Garden Center and Nursery Management
PSYC 529 (3)  Structural Equation Modeling with LISREL          PSAS 433-4  Introduction to Agricultural Biotechnology
PSYC 563 (3)  Research in Attitude and Persuasion               (same as PLB 433)
REC 500 (3)  Modern Concepts of Leisure                         PSAS 434-3  Woody Plant Maintenance

Human and Animal Systems

ANS 409-4  Equine Science                                       PSAS 436-4  Fruit Production
ANS 415-4  Advanced Animal Nutrition                           PSAS 437-4  Vegetable Production
ANS 419-4  Stable Management                                    PSAS 441-3  Soil Morphology and Classification
ANS 421-2  International Animal Production                     PSAS 442-3  Soil Physics
ANS 430-4  Dairy Cattle Management                              PSAS 443-3  Soil Management
ANS 431-4  Reproductive Physiology                              PSAS 445-3  Irrigation Principles and Practices
ANS 433-4  Introduction to Agricultural Biotechnology          PSAS 446-3  Soil and Water Conservation
ANS 434-4  Physiology of Lactation                              PSAS 447-3  Fertilizers and Soil Fertility
ANS 455-2  Animal Waste Management                              PSAS 448-2  Soil Fertility Evaluation
ANS 465-4  Swine Management                                     PSAS 454-4  Soil Microbiology
ANS 485-4  Beef Cattle Management                                PSAS 455-3  Biology of Plant-Microbe Interactions
ANS 500-3  Research Methods in Agricultural Sciences           PSAS 468-3  Weeds – Their Control
ANS 506-3  Instrumentation M in Agricultural Science            PSAS 470-2  Post Harvest Handling of Horticultural
ANS 515-3  Energy and Protein Utilization                       Commodities
ANS 516-3  Minerals and Vitamins in Animal Nutrition            PSAS 475-4  Golf Course Green Installation and
ANS 531A-2  Advanced Reproductive Physiology                    Maintenance
ANS 531B-2  Developmental Physiology                            PSAS 518-3  Principles of Herbicide Action
ANS 531C-2  Endocrine Physiology                                PSAS 520-3  Plant Growth and Development
HND 410-3  Nutrition Education                                  PSAS 524-2  Advanced Plant Genetics
HND 420-3  Recent Developments in Nutrition                     (same as PLB 524)
HND 425-3  Biochemical Aspects in Nutrition                     PLB 406-4  Plant Anatomy
HND 470-4  Medical Nutrition                                    PLB 407-3  Field Mycology
HND 475-3  Nutrition Through the Life Cycle                     PLB 415-5  Morphology of Vascular Plants
HND 480-3  Community Nutrition                                  PLB 418-3  Plant Molecular Biology
HND 485-3  Advanced Nutrition                                   PLB 420-3  Techniques in Plant Molecular Biology
HITA 445-3  Sustainable Tourism and Development                 PLB 421-4  Botanical Microtechnique
HITA 451-3  Destination Management                              PLB 430-3  Economic Botany
HITA 460-4  Food Service Management                              PLB 439-2  Natural Areas and Rare and Endangered
HITA 461-3  Service Organization and Management                 Species
HITA 465-3  Convention Management and Services                  PLB 475-3  Advanced Cell Biology
HITA 473-3  Hotel Administration                                PLB 500-3  Advanced Plant Anatomy

Plant Systems

PSAS 401-2  Agricultural Plant Pathology                        MBMB 421-3  Biotechnology
PSAS 403A-2  Field Crop Diseases                                MBMB 425-3  Biochemistry and Physiology of
PSAS 403B-2  Horticultural Crop Diseases                       Microorganisms
PSAS 403C-2  Turfgrass Diseases                                 MBMB 451A/B-3/3  Biochemistry
PSAS 405-3  Plant Breeding                                      MBMB 453-3  Immunology
PSAS 408-3  World Crop Production Problems                      MBMB 460-3  Genetics of Bacteria and Viruses
PSAS 409-3  Crop Physiology and Ecology                        MBMB 480A/B-22  Molecular Biology of Microorganisms
PSAS 419-3  Forage Crop Management                              Laboratory
PSAS 420-4  Crop Pest Control                                  GEOL 470-3  Hydrogeology
PSAS 422-3  Turfgrass Science                                  GEOL 474-3  Geomorphology
PSAS 432-3  Greenhouse Management                               GEOG 434-4  Water Resources Hydrology
PSAS 424-4  Floriculture