

ANIMAL SCIENCE

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COLLEGE OF AGRICULTURAL SCIENCES

AbuGhazaleh, Amer A., Assistant Professor, Ph.D., South Dakota State University, 2002; 2004. Dairy Nutrition.

Apgar, Gary A., Associate Professor, Ph.D., Virginia Polytechnic Institute, 1994; 1998. Monogastric nutrition, swine production.

Arthur, Robert, Professor, *Emeritus*, Ph.D., University of Missouri, 1970; 1977.

Atkinson, Rebecca L., Assistant Professor, Ph.D., University of Wyoming, 2006; 2006. Beef nutrition, forages.

Goodman, Bill L., Professor, *Emeritus*, Ph.D., Ohio State University, 1959; 1958.

Hausler, Carl L., Associate Professor, *Emeritus*, Ph.D., Purdue University, 1970; 1970.

Hinners, Scott W., Professor, Ph.D., *Emeritus*, University of Illinois, 1958; 1951.

Jones, Karen L., Associate Professor, Ph.D., Texas A&M, 1999; 1999. Animal biotechnology, genetics reproductive physiology.

Kammlade, W. G., Jr., Associate Professor, *Emeritus*, Ph.D., University of Illinois, 1951; 1954.

King, Sheryl S., Professor, Ph.D., University of California, Davis, 1983; 1983. Reproduction physiology, equine science.

Kroening, Gilbert H., Professor, *Emeritus*, Ph.D., Cornell University, 1965; 1969.

Minish, Gary., Professor and *Dean*, Ph.D., Michigan State University, 1996; 2004. Beef production and evaluation.

Olson, Howard H., Professor, *Emeritus*, Ph.D., University of Minnesota, 1952; 1954.

Strack, Louis E., Associate Professor, *Emeritus*, D.V.M., University of Illinois, 1961; 1968.

Winters, Todd A., Professor, *Chair*, Ph.D., University of Wisconsin-Madison, 1992; 1994. Animal biotechnology, reproductive physiology, endocrinology.

Woody, Harold Dee, Associate Professor, *Emeritus*, Ph.D., Michigan State University, 1978; 1978.

Young, Anthony W., Professor, *Emeritus*, Ph.D., University of Kentucky, 1969; 1980.

The Department of Animal Science, Food and Nutrition offers programs of study leading to the Master of Science degree with a major in animal science. Programs may be designed in the various disciplines of nutrition, reproductive physiology, biotechnology and/ or growth and development with emphasis on beef cattle, dairy cattle, horses, swine or humans. Other animal or cell culture systems are sometimes used as research models.

Admission to programs administered by the Department of Animal Science, Food and Nutrition must be approved by the Graduate Programs Committee. Application forms are available online at <https://www.gradapp.siu.edu>. Applicants must have the registrar of each college previously attended send official transcripts directly to the Department of Animal Sciences, Food and Nutrition.

This program requires a nonrefundable \$50.00 application fee that must be submitted with the application for Admissions to Graduate Study in Animal Science, Food and Nutrition. Applicants may pay this fee by credit card if applying electronically. Applicants submitting a paper application must pay by personal check, cashier's check, or money order made out to SIU, and payable to a U.S. Bank.

Requirements

Minimum requirements for students entering the master's degree program are: (a) a bachelor's degree in Animal Science, Dairy Science, Biological Sciences, or related field; (b) a minimum 3.0 cumulative undergraduate G.P.A. (A=4.0); (c) 800 cumulative score with minimum scores of 350 on the verbal or quantitative sections and a 3.2 analytical writing score on the Graduate Record Exam (GRE); (d) Statement of Research Interests; and (e) three letters of recommendation (at least two from undergraduate professors). Students can be admitted with a G.P.A. under 3.0 or for a GRE deficiency on a conditional basis and must enroll in a minimum of seven hours of structured courses at the 400-500 level during their first semester and achieve a *B* or better in each course or be dropped from the program. Undergraduate courses cannot be given graduate credit.

Minimum requirements for the master's degree may be fulfilled by satisfactory completion of 35 semester hours of graduate credit, with a minimum of 20 hours inside animal science, a minimum of 15 hours of 500-level graduate courses, and at least 8 hours outside the College of Agricultural Sciences. A maximum of two animal production related courses (ANS 409, 430, 465, 485) may be counted for graduate credit in the thesis option. Additional University requirements are stated in the SIUC Graduate Catalog. Specific required course work includes:

- a. Two semesters of ANS 581 (Seminar)
- b. Two semesters of graduate-level statistics
- c. A minimum of one semester of upper-level biochemistry
- d. Six credit hours of ANS 595

Each student, whether in the thesis or non-thesis option, will be mentored by a member of the Animal Science, Food and Nutrition faculty designated as the major professor. The major professor will serve as the research mentor and academic advisor. A graduate advisory committee will be selected with consultation of the major professor. The committee will consist of no fewer than three graduate faculty members. Two members of the committee must be from the Animal Science, Food and Nutrition faculty, and one of the members of the

committee must be from outside the department. The major professor will chair the student's graduate committee.

All candidates in the thesis option are required to conduct original research. All candidates in the non-thesis option cannot take ANS 599 (Thesis) for graduate credit. All students are encouraged to participate in research within the department to provide a broader experience. Each master's degree candidate must pass a comprehensive oral examination covering all graduate work including the thesis or research paper.

Information concerning admission policies, requisites for graduation, and availability of financial assistance for graduate study in animal science may be obtained from the Department of Animal Science, Food and Nutrition, Southern Illinois University Carbondale, Carbondale, IL 62901-4417; (618) 453-2329; <http://www.siu.edu/departments/coagr/animal/index.htm>.

Courses (ANS)

Field trips are required for certain courses.

409-4 Equine Science. Designed for students interested in the more scientific aspects of equine physiology and management. The class will take a more advanced look at anatomy and physiology of the systems of the equine and consider how they relate to selection, use and management. Lecture and laboratory. Lab fee \$50. Prerequisite: 219 and 331.

415-4 Advanced Animal Nutrition. Advanced principles and practices associated with digestion, absorption and metabolism of nutrients as related to domestic monogastrics, ruminants and horses. Prerequisite: 215 and 315.

419-4 Stable Management. Designed for the advanced equine science student planning a career in the horse field. Teaches in-depth management techniques on an applied basis. Students will have the opportunity to learn both theory and application of management in one course. One-hour lecture, four hours laboratory. Laboratory fee \$75. Prerequisite: 219, 409 and consent of department.

421-2 International Animal Production. A study of world animal production practices with emphasis on the developing countries. Adaptability of animals to environmental extremes and management practices employed to improve productivity. Prerequisite: junior standing plus Animal Science 121 or one year of biological science.

425-3 Biochemical Aspects in Nutrition. (Same as Food and Nutrition 425) The interrelationship of cell physiology, metabolism and nutrition as related to energy and nutrient utilization, including host needs and biochemical disorders and diseases requiring specific nutrition consideration. Prerequisite: 215 or Food and Nutrition 360, Chemistry 140b, course in Physiology.

426-3 Mammalian Endocrinology. Comparative endocrinology of the effects of hormones on target tissues including mechanisms of hormone biosynthesis, release, transports, receptor kinetics, and signal transduction. Measurement of hormones, receptors, and signal transduction. Endocrine-related diseases and disorders. Prerequisite: course in physiology.

430-4 Dairy Cattle Management. Application of the principles of breeding, physiology and economics to management of a profitable dairy herd. Breeds of dairy cattle, housing, milking practices and quality milk production. Field trip. Laboratory/Field Trip Fee: \$35. Prerequisites: ANS 315, 332.

431-4 Reproductive Physiology. Comparative anatomy and physiology of the male and female reproductive system of domestic animals; hormones; reproductive cycles; mating behavior; gestation and parturition; sperm physiology; collection and processing of semen; artificial insemination, pregnancy tests; diseases. Laboratory fee \$10. Prerequisite: 121 or a course in physiology.

433-4 Introduction to Agricultural Biotechnology. (Same as Plant and Soil Science 433.) This course will cover the basic principles of plant and animal biotechnology using current examples; gene mapping in breeding, transgenic approaches to improve crop plants and transgenic approaches to improve animals will be considered. Technology transfer from laboratory to marketplace will be considered. An understanding of gene mapping, cloning, transfer and expression will be derived. Prerequisite: senior standing or consent of instructor.

434-2 Physiology of Lactation. Anatomy and physiology of milk secretion; endocrine control; milk precursors and synthesis; milk composition; physiology and mechanics of milking; lactation-related disorders and diseases; transgenic milk. Prerequisite: course in physiology.

435-1 to 4 Agricultural Molecular Biotechnology Seminar. (Same as Plant and Soil Science 435) Molecular biology is rapidly making important contributions to agricultural science through biotechnology. An appreciation of the techniques of molecular biology and their application to plant improvement is important to all in agriculture and biology. The relationships between plant molecular biology and the biotechnology industry will be discussed. Presentations on particular research problems will be made. Graded *S/U*.

455-2 Animal Nutrient Management. Scope and problems associated with animal nutrient management; current regulations and law on environmental protection. Principles covering waste management technology and current livestock nutrient management systems are presented. Field trips will be scheduled. Prerequisite: junior standing.

465-4 Swine Management. Swine production systems and management techniques including breeding and selection, reproduction, nutrition, herd health and disease prevention, housing and waste management, marketing, production costs and enterprise analysis. Field trip. Laboratory/Field Trip Fee: \$35. Prerequisites: 315 and 332 or consent of instructor.

485-4 Beef Cattle Management. Beef cattle production systems and management, breeding and selection, reproduction, nutrition, and herd health with emphasis on the most economical and efficient systems. Field Trip: \$35. Prerequisite: ANS 315, ANS 332.

495-1 to 6 Instruction in the Animal Sciences. Acquaints the students with different teaching environments and styles. Students will be expected to participate in instructing animal science courses. Prerequisite: junior standing. Consent of instructor. Not for graduate thesis option credit.

500-3 Research Methods in Agricultural Science. Experimental design and biometry as applied to biological and allied fields. Prerequisite: graduate student.

506-3 Instrumentation Methods in Agricultural Science. Basic methods and techniques of analytical instrumentation used in human and animal nutrition are taught in the lectures with applications of instruments carried out in the laboratories. Lab Fee: \$100. Prerequisites: Consent of instructor.

515-3 Energy and Protein Utilization. (Same as Food and Nutrition 515) Energy and protein utilization including digestion, absorption and metabolism as related to mammalian physiology. Prerequisite: course in organic chemistry.

516-3 Minerals and Vitamins. (Same as Food and Nutrition 516) Basic and applied principles of mineral and vitamin metabolism. Emphasis on metabolic functions, reaction mechanisms and interrelationships. Prerequisite: course in organic chemistry.

531-1 to 6 (2,2,2) Advanced Animal Physiology. Advanced Physiological concepts as they relate to mammalian systems—subjects covered are: **(a)** advanced reproductive physiology **(b)** developmental physiology **(c)** endocrine physiology. Prerequisite: 331 or an approved course in systemic physiology.

581-1 to 2 (1,1) Seminar. Problems relating to various phases of animal industries. Maximum of one hour per semester.

588-1 to 8 International Graduate Studies. University residential graduate study program abroad. Prior approval by the department is required both for the nature of the program and the number of credit hours.

590-1 to 3 Readings in Animal Science. Reading in specialized fields under direction of approved graduate specialists.

593-1 to 3 Individual Research. Investigation of a problem in animal science under the supervision of an approved graduate specialist.

595-1 to 4 Instruction in Animal Sciences. Acquaints the students with different teaching environments and styles. Students will be expected to aid faculty in the instruction of animal science courses.

599-1 to 6 Thesis. Credit is given for a Master's thesis when it is accepted and approved by the thesis committee. Not for non-thesis option credit.

601-1 per semester Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.

FOOD AND NUTRITION

COLLEGE OF AGRICULTURAL SCIENCES

Ashraf, Hea-Ran Lee, Professor, *Emeritus* Ph.D., Iowa State University, 1979; 1980.

Banz, William J., Professor, Ph.D., University of Tennessee, 1995; 1995. Human nutrition, nutritional physiology.

Endres, Jeannette M., Professor, *Emeritus* Ph.D., St. Louis University, 1972; 1975. Community nutrition, dietetics, life cycle nutrition.

Girard, T.C., Associate Professor, M.S., University of Wisconsin-Stout, 1992; 1993. Hospitality and tourism.

Higginbotham, Allan, Assistant Professor, Ph.D., Auburn University, 2001; 2002. Nutritional endocrinology, community nutrition.

Kim, Kyungmi, Assistant Professor, Ph.D., Virginia Tech, 2002. Hospitality and Tourism Management.

Konishi, Frank, Professor, *Emeritus*, Ph.D., Cornell University, 1958.

Long, Sara, Professor, Ph.D., Southern Illinois University Carbondale, 1991; 1990. Clinical dietetics.

Peterson, Sharon L., Assistant Professor, Ph.D., Pennsylvania State University, 1996; 2006. Community nutrition.

Smith, Sylvia F., Assistant Professor, Ph.D., University of Tennessee 2007; 2007. Food Service Management, Culinary Tourism.

Winters, Todd A., Professor and *Chair*, Ph.D., University of Wisconsin-Madison, 1992; 1994. Nutritional endocrinology and physiology.

The Department of Animal Science, Food and Nutrition offers a Master of Science degree in Food and Nutrition with two concentration options: *community nutrition* and *nutritional sciences*. For program details not included in this description, prospective community nutrition students may visit the dietetic internship site at <http://www.siu.edu/departments/coagr/animal/dietetic/grad>. Nutritional sciences students should go to <http://www.siu.edu/~animal>

This program requires a nonrefundable \$50.00 application fee that must be submitted with the application for Admissions to Graduate Study in Animal Science, Food and Nutrition. Applicants may pay this fee by credit card if applying electronically. Applicants submitting a paper application must pay by personal check, cashier's check, or money order made out to SIU, and payable to a U.S. Bank.

Community Nutrition Concentration

The *community nutrition* curriculum incorporates the public health nutrition knowledge and skills criteria of the Association of Graduate Programs in Public Health Nutrition, Inc. In addition to master's degree work, students complete an accredited dietetic internship that qualifies them to take the registration examination for dietitians. Accreditation is from the Commission on Accreditation for Dietetics Education—CADE—of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995. In addition to admission requirements below, students need a Verification Statement for having completed a Didactic Program in Dietetics issued by a CADE-accredited program director.

Admission

Applicants must meet the following criteria to be considered for admission to the program. Everyone, United States citizens and non-citizens alike, must complete a Didactic Program in Dietetics (DPD) accredited by the Commission on Accreditation for Dietetics Education (CADE). CADE is a specialized accrediting body recognized by the United States Department of Education and the Council for Higher Education Accreditation. CADE establishes and enforces "Eligibility Requirements and Accreditation Standards" for nutrition/dietetics education. It accredits education programs (including bachelor's and graduate level *Didactic Programs in Dietetics*) that prepare students for careers as "Registered Dietitians". More information about CADE is available online at <http://www.eatright.org/cade>.

- (1) A baccalaureate degree from a regionally accredited college or university (completed within the last ten years)
- (2) Completion of a Didactic Program in Dietetics (DPD) as accredited by the Commission on Accreditation for Dietetics Education. Students should supply appropriate documentation from their DPD Directors that is to be submitted with their application.
- (3) A grade point average of 3.0 or higher (where 4.0 = A) is recommended.
- (4) Completion of the Graduate Record Examination (GRE) within the last five years. A score of 1000 or higher on combined verbal and quantitative portions is recommended.
- (5) Desire to complete a Master of Science degree in Food and Nutrition with a concentration in community nutrition combined with a 7 and 1/2 month dietetic internship with community nutrition emphasis.
- (6) International students who have not completed a Didactic Program in Dietetics should review the "International Fact Sheet" on the web at http://www.eatright.org/Public/7782_19558.cfm. This is a 10-page document that answers many questions about education and credentialing requirements for *registered dietitians* and *dietetic technicians registered* in the United States.
- (7) **D&D Matching.** Applicants to Dietetic Internships (DI) must participate in computer matching. Instructions and a mark/sense card to prioritize DI preferences can be requested from any CADE-accredited

Didactic Program in Dietetics or from D&D Digital Systems, 304 Main Street, Ames, IA. 50010-6148. Allow turn around time for submitting by postmark deadline. There is no charge for this material. However, there is a \$50.00 charge for matching that is due with prioritized program rankings. **SIUC's Match Number is 438.** SIUC matches only during the spring. Students who match with SIUC through the spring matching process are enrolled in SIUC's program in August (fall semester).

Program Completion Requirements

Unless otherwise stated, the policies of the University and of the Graduate School shall establish the minimum requirements for retention in and graduation from the program. This includes a minimum grade point average for graduation of 3.0 (4.0 point scale).

The *Community Nutrition* concentration requires 38 credit hours from the following: FN 540, FN 574, FN 585, WED 561, FN 530, HED 493, HED 483 or HED 500, EPSY 506, FN 581, FN 599 or FN 593, FN 580A, FN 580B, FN 580C. The thesis or research paper committee is composed of at least 2 departmental faculty members and one faculty member from outside of department. Master's degree candidates must pass a comprehensive oral examination conducted by their committee, covering all graduate work including thesis or research paper.

Nutritional Sciences Concentration

Students applying to the *nutritional sciences* concentration are expected to have an undergraduate degree in biological sciences, such as nutrition, physiology, zoology, or a related field. Students are also expected to have strong academic and analytical skills.

Admission

A grade point average of 3.0 or higher (4.0 = A) and a score of 1000 or higher on the combined verbal and quantitative portions of the Graduate Record Examination are recommended for program entrance. Students should submit a statement of career goals and interest in completing the master's degree, as well as 3 letters of recommendation from former professors or employers.

Program Completion Requirements

Unless otherwise stated, the policies of the University and of the Graduate School shall establish the minimum requirements for retention in and graduation from the program. This includes a minimum grade point average for graduation of 3.0 (4.0 point scale). The *nutritional sciences* concentration requires 12 to 16 credit hours from the following: FN 581, EPSY 506, EPSY 508 or WED 561, FN 599, or FN 593. The graduate committee will assist with the selection of an additional 14 to 18 credit hours of graduate coursework appropriate for their concentration. This concentration requires a minimum of 32 credit hours to graduate. The graduate student's committee will be composed of at least two departmental faculty members and one faculty member from outside of department. Master's degree candidates must pass a comprehensive oral examination conducted by their committee, covering all graduate work including their thesis or research paper.

Courses (FN)

Food and Nutrition is a program within the Department of Animal Science, Food and Nutrition.

410-3 Nutrition Education. Course provides principles, techniques and evaluation methods necessary to incorporate food and nutrition into the educational curriculum of schools, hospitals, out-patient clinics and health agencies. Prerequisite: 320 and 321 or equivalent.

420-3 Recent Developments in Nutrition. Critical study of current scientific literature in nutrition. Prerequisite: 320 or equivalent.

421-2 Recent Trends in Food. Critical study of current scientific literature in food. Prerequisite: 320 or equivalent.

425-3 Biochemical Aspects of Nutrition. (Same as Animal Science 425.) The interrelationship of cell physiology, metabolism and nutrition as related to energy and nutrient utilization, including host needs and biochemical disorders and diseases requiring specific nutrition consideration. Prerequisite: 215 or 360 Chemistry 140b, course in Physiology.

435-3 Hospitality Marketing Management. This course concentrates on marketing hotels, restaurants and tourism. Problems and characteristics specific to the students will be able to develop a comprehensive strategy for marketing a hospitality operation. The starting point for the hospitality industry will be examined. By the end of the course students will be able to develop a comprehensive strategy for marketing a hospitality operation. The starting point for the development of hospitality marketing strategy assumes basic marketing knowledge has been derived from completing a previous marketing course. Prerequisite: 202 or 302 and Marketing 304.

440-3 Hospitality Risk Management. Introduction to risk management, security, liability and contact management applicable to the awareness and/or operations of hotel, restaurants and resorts. Prerequisite: specialization in hospitality and tourism, 202, Management 304 or consent of instructor.

460-4 Food Service Management. The course includes practical experience in the operational administration of a food service facility by providing opportunities to demonstrate ability and creativity in managing noon lunch services for the Old Main Room. Labs involve situations in which students fill various roles in food service and may occur outside of the regular schedule. Lab fee: \$30. Prerequisite: specialization in hospitality and tourism 202, 360, 373 or consent.

461-3 Service Organization and Management. Managerial aspects of the hospitality industry as related to provision of quality service. Organizational structures, management techniques, decision-making abilities, ethics, leadership and human resource issues are examined. Prerequisite: 202, 380, Management 304 and Psychology 323 or consent of instructor.

470-5 Medical Nutrition. In-depth study of pathophysiology and principles of nutrition therapy for various disease states. Application of these principles also prerequisite. Off-campus experience may be required. Prerequisite: 320, 321, Health Care Professions 105, Chemistry 140b, Physiology 201 and 208 or equivalents.

473-3 Hotel Administration. An advanced hotel administration course covering contemporary management issues such as conference management, hotel security, strategic planning, and hotel law. Prerequisite: specialization in hospitality and tourism, 302, 372, Management 304 or consent of instructor.

475-3 Nutrition Through the Life Cycle. The study of human nutrition during each phase of the life cycle, prenatal through geriatric. Students elect at least two phases for in-depth study. A general review of basic nutrition is included. Prerequisite: 320 or equivalent.

480-3 Community Nutrition. Offers a study of the objectives, implementation strategies, and evaluation methods of nutrition programs in communities' health programs. Integration of nutrition into the health care delivery system at local, state and federal levels is included. Prerequisite: 472

485-3 Advanced Nutrition. This course applies advanced principles of biochemistry and physiology to expand on basic nutrition information and explains the role of nutrients from cellular and mechanistic aspects. Prerequisite: 320, 425 or equivalents.

515-3 Energy and Protein Utilization. (Same as Animal Sciences 515.) Energy and protein utilization including digestion, absorption, and metabolism as related to mammalian physiology. Prerequisite: course in organic chemistry.

516-3 Minerals and Vitamins. (Same as Animal Science 516.) Basic and applied principles of mineral and vitamin metabolism. Emphasis on metabolic functions, reaction mechanisms and interrelationships. Prerequisite: course in organic chemistry.

530-3 Advanced Nutritional Assessment and Education. Community assessment methods, specifications or particular tools used and how these tools can be applied to particular conditions of concern in community nutrition. The methods of education for individuals and populations using dietary, biochemical, anthropometrics and physical assessment data will be taught. Prerequisite: 321 or consent of instructor.

540-3 Nutrition Policy, Programs and Services. The study of policies, programs and services concerned with prevention and treatment of nutrition problems in the population. Prerequisite: 480 and consent of instructor.

574-3 Advanced Medical Nutrition. In-depth study of the application of nutrition to the management of disease states with emphasis on current treatment and complex metabolic abnormalities. Prerequisite: 470 or equivalent.

580-9 (3,3,3) Nutrition Practicum in the Community. Designed to provide practicum experiences in dietetics for students completing the Master's in Food and Nutrition and includes (a) clinical rotation, (b) management rotation, (c) public health nutrition rotation. Prerequisite: 585 and consent of instructor.

581-1 Seminar. This course provides students with the opportunity to integrate their knowledge of clinical and community dietetics and management principles with their leadership, public speaking, writing, organizational and problem-solving skills to perform, supervise, manage, and participate in activities that reflect those completed by entry-level dietitians.

585-3 Advanced Community Nutrition. A presentation and examination of issues and programs in food and nutrition programs. Elements including the organization and management of quality nutrition services for the prevention of disease and promotion of health will be identified and applied to community programs. Prerequisite: 480 or consent of instructor.

590-1 to 3 Reading in Food and Nutrition. Individual readings in food and nutrition under graduate faculty guidance. Prerequisite: consent of instructor.

593-1 to 3 Individual Research. Investigation of a problem in food and nutrition under the supervision of an approved graduate faculty member. Graded *S/U* only.

599-1 to 6 Thesis. Credit is given for a Master's thesis when it is accepted and approved by the thesis committee. Graded *S/U* only.

601-1 Continuing Enrollment. For those graduate students who have not finished their degree programs and who are in the process of working on their dissertation, thesis, or research paper. The student must have completed a minimum of 24 hours of dissertation research, or the minimum thesis, or research hours before being eligible to register for this course. Concurrent enrollment in any other course is not permitted. Graded *S/U* or *DEF* only.