

AGRICULTURE

MASTER OF SCIENCE IN AGRICULTURE

Nutrition and Food Science Subplan

in the Department of Human Nutrition and Food Science, College of Agriculture.

www.csupomona.edu/~hnfs

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The Master of Science in Agriculture with the subplan in Nutrition and Food Science offers interdisciplinary in-depth study of the principles and application of nutritional and food sciences. The program is structured with Thesis and Non-Thesis tracks. Both tracks meet the objectives of both the generalist and those seeking specialization in one of the following areas: nutritional biochemistry, community nutrition, clinical nutrition, or food science. Students in both the Thesis and Non-Thesis tracks will acquire skills to pursue careers in teaching, research industry, Students in the Thesis track will be prepared for advanced graduate studies. The teaching format includes lectures, discussions, research methods, evaluation of scientific literature, laboratory work, and independent research.

ADMISSION TO THE PROGRAM

An applicant for admission to the Master of Science program in Nutrition and Food Science must have a baccalaureate degree in Foods and Nutrition or a baccalaureate degree with a minimum of 24 quarter units of courses in any biological science area, or nutrition, or food science related major; and 12 units in closely related areas such as biochemistry, physiology, or microbiology from an accredited university. Science classes, (i.e. physiology, biochemistry, microbiology) will include a minimum of 3 hours laboratory experience per week. An undergraduate grade point average of 3.0 and the GRE are required for unconditional admission. Graduates of foreign institutions should have a TOEFL score of 580 or better. In addition, the Department of Human Nutrition and Food Science must be in receipt of three letters of recommendation from individuals familiar with the applicant's academic qualifications and potential as a graduate student. Applicants not meeting these standards may be conditionally accepted and must meet the requirements for unconditional admission within two quarters of their acceptance into the master's program. Admission to the program does not admit a student to candidacy for a degree.

REQUIREMENTS

1. ADVISORY COMMITTEE

Non-Thesis Track:

By the end of the second quarter following admission, the student and the graduate coordinator or interested faculty member will develop an emphasis area in nutrition based on the student's interest and preparation. The student's approved program will include required core courses, a selection of additional courses in a specialization, electives, a topic for a publishable critical review of contemporary nutrition or food science area and a seminar on that area.

Thesis Track:

By the end of the second quarter following admission the student and the major professor will develop an academic program and research project in a selected area of nutrition or food science. The

major professor and the student will establish a Thesis committee to include not less than 2 other faculty members or equivalent persons holding terminal degrees such as a DVM or MD. The student's approved program will include required core courses, a selection of additional courses in a specialization, electives, and a Thesis.

2. The degree program shall include a minimum of 45 quarter units of which at least 24 units shall be in graduate 500 and 600-level courses. Deficiencies in undergraduate preparation must be made up in addition to the 45 quarter units required for the degree.
3. No more than 13 units of acceptable graduate credit may be transferred from another graduate institution. No more than 13 units taken through Extended University may be used on a contract. No more than 13 units of acceptable graduate credit may be petitioned by an undergraduate student. A total limit of 13 transfer, Extended University, and/or units petitioned for graduate credit may be included on a master's contract. The stipulated time limit of 7 years applies to all of the above.
4. A grade point average of 3.0 (B) or better must be maintained in all upper-division undergraduate and all graduate courses. A grade point average of 3.0 (B) or better must be maintained in all core courses.
5. Pass the Graduation Writing Test (http://www.csupomona.edu/~academic/testcenter/test_schedule.htm#GWT)
6. The Thesis track candidate must complete a formal thesis. The thesis must be presented and defended no later than the ninth week of the quarter in which the candidate expects to graduate. Two copies must be submitted for binding in accordance with university regulations.
7. The Non-Thesis track candidate must satisfactorily complete with at least a B grade a written publishable critical review and corresponding seminar on an approved contemporary nutrition problem.
8. The candidate must be enrolled in the university during the quarter of graduation.

REQUIRED CORE COURSES

Introduction to Graduate Research	AG	500	(3)
Design and Analysis of Experimental Research	AG	510	(4)
Empirical Research Methods Using Regression Analysis	AG	520	(4)
Research Proposal	AG	530	(3)
Advanced Nutrition	FN	533	(3)
or Advanced Food Chemistry	FN	520	(3)
Seminar	FN	570	(2)
Total			(19)

Non-Thesis – 26 units

Recent Advances in Nutrient Metabolism: Carbohydrates	FN	535	(3)
Recent Advances in Nutrient Metabolism: Lipids	FN	535	(3)
Recent Advances in Nutrient Metabolism: Proteins	FN	535	(3)
Recent Advances in Nutrient Metabolism: Vitamins and Minerals	FN	535	(3)
Life Cycle Nutrition	FN	536	(3)
Comprehensive exam	AG	697	(1)
Electives			(10)
Total			(26)

Thesis -Nutrition Specialization-26 units

Recent Advances in Nutrition Metabolism*	FN	535	(6)
Presentation of Research Proposal	FN	693	(1)
Thesis Research	FN	694	(6)
Masters Degree Thesis	FN	696	(3)
Electives			(10)
Total			(26)

Thesis –Food Science Specialization-26 units

Advanced Food Chemistry	FN	520	(3)
Recent Advances in Nutrition Metabolism#	FN	535	(3)
Presentation of Research Proposal	FN	693	(1)
Thesis Research	FN	694	(6)
Master's Degree Thesis	FN	696	(3)
Electives			(10)
Total			(26)

* Choose at least two from five different topics; see course descriptions for more information.

Choose at least one of the five different topics; see course descriptions for more information.

Nutrition and Food Science: Suggested Courses

Current Topics in Clinical Practice	FN	545	(2)
Epidemiology	MIC	330	(3)
General Virology	MIC	430/430L	(3/2)
Hematology	MIC	444/444L	(3/1)
Human Genetics	BIO	403/403L	(3/1)
Population Genetics	BIO	445/445L	(3/1)
Concepts of Molecular Biology	BIO	450	(3)
Molecular Biology Techniques	BIO	451/451L	(1)
Bioinformatics	BIO	459/459L	(4)
Scientific Communication	BIO	490	(1)
Endocrinology	BIO	520/520L	(3/1)
Renal Physiology	BIO	521	(3)
Molecular Biology of Development	BIO	555	(4)
Cellular Immunity and Disease	BIO	570/570L	(3/1)
Research Methods	KIN	590	(3)
Research Design	KIN	591	(3)
Advanced Physiology of Exercise	KIN	683/683L	(3/1)
Advanced Concepts in Exercise Testing and Counseling	KIN	684	(3)
Food Science: Suggested Courses			
Strength of Biological Materials	AE	330	(3)
Food Process Engineering	AE	332/332L	(3/1)
Meat Utilization	AVS	327/327L	(3/1)
Seafood and Poultry Processing Technology	AVS	328/328A	(3/1)
Nutritive Analysis	AVS	424	(2)
Meat Processing and Technology	AVS	427/427L	(3/2)
Applied Thermodynamics	ETM	306	(4)
Applied Heat Transfer	ETM	308	(3)
Machine Elements/Laboratory	ETM	315/325L	(3/1)
Applied Total Quality Management	ETP	300	(3)
Industrial Safety	ETP	302	(3)
Quality Assurance	ETP	375	(3)
Polymer Chemistry	CHM	409	(3)
Chemical Thermodynamics	CHM	415	(3)
Solution Equilibria in Analytical Chemistry	CHM	421	(2)
Enzymology	CHM	451/451L	(3/1)
Agribusiness Marketing	FMA	504	(4)
Commodities and Risk Management	FMA	505	(4)

Essentials of Marketing Management	GBA	517	(4)
Production and Operations Management	GBA	531	(4)
Organizational Management Principles and Behavior	GBA	535	(4)
Advanced Engineering Thermodynamics	EGR	545	(4)
Heterogeneous Phase Equilibria	EGR	546	(4)

These are not all-inclusive courses. Students may choose others in consultation with their graduate advisor.

Nutrition and Food Science Specialization courses to be selected with consent of the student's major professor from 300, 400, 500 and 600 level courses with no more than 21 units from 300 and 400 level courses.

GRADUATE COURSE DESCRIPTIONS**FN 520 Advanced Food Chemistry (3)**

Selected advanced topics on chemical properties and changes in foods and their role in food processing and preservation. Topics include chemical and physical concepts in food preservation, biochemical changes during processing and preservation, reaction kinetics and shelf-life evaluation of foods. Prerequisite: FN 420/420L or equivalent.

FN 533 Advanced Nutrition (3)

Study of the experimental basis for determination of the Dietary Recommended Intakes (DRIs). Evaluation of the interrelationships between metabolism, physiology, and genetics with nutrient requirements. The role of the DRIs in preventing nutritional inadequacy and prevention of chronic disease will be examined. Written exams and oral presentations. 3 lecture/discussions. Prerequisites: FN 433, 434, and 435 or equivalent or permission of instructor.

FN 535 Recent Advances in Nutrient Metabolism (3)

Recent developments and research in nutrient metabolism. A major nutrient class (proteins, fats, carbohydrates, vitamins and minerals) will be studied during each quarter. Each course to be subtitled identifying the nutrient class to be discussed. 3 lecture/discussions. Prerequisites: FN 433, 434, and 435 or equivalent.

FN 536 Advanced Life Cycle Nutrition (3)

Discussion of how developmental physiology and cellular growth and differentiation influence nutrient requirements during pregnancy and lactation, fetal growth, infancy, premature birth, childhood, adolescence and old age. Planning nutrition programs to meet the nutrient needs of at-risk women, infants and children. Review of the nutritionally relevant chronic diseases with age. Oral presentation and discussion of the scientific literature dealing with the life cycle. 3 lecture/discussions. Prerequisite FN 434 or permission of instructor.

FN 540 Field Experience (2)

Supervised experience in various areas determined by graduate advisor. Prerequisite: consent of advisor.

FN 543 Diet Therapy (3)

Study of the physiological and biochemical changes imposed on the body by certain diseases and dietary modifications used for treatment. Adaptation of dietary patterns of individuals to special needs of disease states and preventive care. 3 lecture discussions. Prerequisite: FN 433, FN 434, FN 435 or equivalent and completed dietetics internship.

FN 545 Current Topics in Clinical Practice I, II, III (2)

Presentations by professionals on selected topics. Student case presentations. May be repeated up to a maximum of 6 units. To be taken concurrently with FN 560 Clinical Practice. Prerequisite: acceptance into Dietetic Internship.

FN 550 Independent Study (1-2)

Individual investigation and original study to be conducted in a field of interest selected by the student with consent of advisor. Designed to meet individual student needs. Maximum of 2 units may be earned.

FN 560 Clinical Practice I, II, III (4)

Supervised preprofessional practice in an assigned clinical site. May be repeated for credit up to a maximum of 12 units. To be taken concurrently with FN 545 Introduction to Clinical Practice. Prerequisite: acceptance into Dietetic Internship. No master's degree credit given.

FN 570 Seminar (2)

Study of selected topics in nutrition and food science. Each seminar subtitled to describe its emphasis. Total credit limited to 4 units. 2 seminars. Prerequisite: graduate standing.

FN 599/599A/599L Special Topics (1-3)

Group study of a selected topic in nutrition or food science and technology which is specified in advance for graduate students. Total credit limited to 3 units. Instruction is by lecture, laboratory, activity, or a combination. Prerequisite: permission of instructor.

KIN 685/FN 685 Nutrition in Sports and Exercise (4)

Knowledge concerning the role of nutrients in optimizing human performance. Assessment of caloric and nutrient requirements associated with exercise. Special consideration is given to gender specific needs of athletes, nutritional ergogenic aids, and eating disorders. 4 seminars. Prerequisites: KIN 683/683L and FN 533.

FN 691 Directed Study (1-2)

Individualized research in a specialized area under the direction of a faculty member which may or may not lead to a thesis. Maximum credit 2 units.

FN 692 Independent Study (1-2)

Individual investigation and original study to be conducted in a field of interest selected by the student under the supervision of a faculty member. Study may not lead to a thesis. Maximum credit 2 units. Unconditional standing required.

FN 693 Presentation of Research Proposal (1)

A public oral presentation and discussion of a written proposed research plan for the master's thesis. Required for Advancement to Candidacy. Prerequisites: ABM 575 and FN 538/538L or KIN 590 and KIN 591 or equivalent with consent of graduate coordinator or thesis advisor. Unconditional standing required.

FN 694 Thesis Research (1-6)

Individual research in an area of specialization conducted as part of the preparation for writing a thesis under the direction of graduate faculty. Maximum credit 6 units. Unconditional standing required. Must have completed FN 693.

FN 696 Master's Degree Thesis (3)

Compilation of data culminating in the summarizing and reporting, in thesis form, of independent supervised research. Maximum credit 3 units. Advancement to Candidacy required.

FN 699 Master's Degree Continuation (0)

Enrollment in this course allows candidates that have enrolled in the maximum number of thesis or project units to maintain resident status in order to receive university services. Approval of graduate program coordinator is required to register for this class. Advancement to candidacy is required. This course is graded on a mandatory credit/no credit basis.