

## DIVISION OF NUTRITIONAL SCIENCES

### ADMINISTRATION

Cutberto Garza, director

Carole Bisogni, associate director for academic affairs

Kathleen Rasmussen, graduate faculty representative, Field of Nutrition

### THE DIVISION

Nutritional sciences draws upon the chemical, biological, and social sciences to understand the complex relationships among human health, nutritional status, food and lifestyle patterns, and social and institutional environments. Understanding these relationships includes the study of the metabolic regulation and function of nutrients, nutrient requirements through the life span, role of diet in reducing risk of chronic disease, nutritional quality of foods, and interventions and policies designed to promote nutritional health of individuals and populations.

The focus of this broad field of study at Cornell is the Division of Nutritional Sciences, which brings together specialists from many disciplines. The faculty are involved in undergraduate and graduate teaching, research, and extension of research-based knowledge throughout New York State, the nation, and the world.

The division is affiliated with both the College of Human Ecology and the College of Agriculture and Life Sciences. An undergraduate program in nutritional sciences is offered through the College of Human Ecology, and an undergraduate program, Nutrition, Food, and Agriculture, is offered in the College of Agriculture and Life Sciences. Graduate study is administered through the Field of Nutrition, which includes faculty members throughout the university.

### FACILITIES

Most of the faculty members of the division work in Savage Hall and Martha Van Rensselaer Hall. In addition to housing offices, classrooms, and seminar rooms, those buildings contain research facilities, specialized laboratories, a human metabolic research unit, and computer facilities.

The division's Learning Resource Center in Martha Van Rensselaer Hall is used by students for individual study and small group discussions. The Learning Resources Center contains class materials, audiovisual aids, and supplementary books and periodicals for independent study and special projects in nutrition. Savage Hall also has a graduate reading room.

### UNDERGRADUATE PROGRAMS

The B.S. degree programs provide students with strong training in chemistry and biology and a strong foundation in the broad field of nutritional sciences. Through the nutritional sciences major in the College of Human Ecology, students can prepare for a variety of career interests including medicine and other health careers, fitness and sports nutrition, clinical nutrition, dietetics, nutritional biochemistry, and nutrition education. The undergraduate program, Nutrition, Food and Agriculture, in the College of Agriculture and Life Sciences is for students who desire strong training in human nutrition in combination with supportive course work in agriculture and the life sciences. Students in the Nutrition, Food, and Agriculture program supplement the core nutrition curriculum with courses in such areas as food science, animal science, food and agricultural economics, and advanced biology.

Every student majoring in nutrition is assigned a faculty adviser. An effort is made to match interests, and students may change advisers at any time if their goals and interests change. Regular student-adviser conferences are required at least twice a year. The adviser helps students select courses to meet their interests and college graduation requirements and often can suggest opportunities for individual study or experience outside the classroom.

### THE CORE CURRICULUM

The core undergraduate curriculum includes introductory chemistry and biology, organic chemistry, biochemistry, physiology, and math as well as introductory courses in the social sciences. Students complete five core courses in nutritional sciences: Nutrition and Health: Concepts and Controversies, Social Science Perspectives on Food and Nutrition, Nutritional and Physicochemical Aspects of Foods, Physiological and Biochemical Bases of Nutrition, and Methods in Nutritional Sciences. Students select a minimum of three advanced courses in nutritional sciences in the area of their interest.

A strong foundation in chemistry and biology is required. New majors, including transfer students, should plan chemistry courses carefully to assure the appropriate sequence of courses. All students who have adequate preparation in high school mathematics and chemistry are encouraged to take Chemistry 207-208. For information about specific course requirements for the nutritional sciences major in the College of Human Ecology or the Nutrition, Food, and Agriculture program in the College of Agriculture and Life Sciences, contact the division's Academic Affairs Office, 309/335 MVR.

### CAREER OPTIONS AND COURSE PLANNING

The core curriculum is viewed as the minimum requirements for a major in nutritional sciences. Students should consult with their advisers to develop course programs that will prepare them for entry-level jobs or graduate study in the field(s) of their particular interests. Independent study involving research or field study may be chosen to enhance a course program. A summary of suggested areas from which students can choose electives for different career interests follows.

#### Medicine and Other Health Careers:

Students add physics and calculus to the core curriculum. Nutrition courses of special interest include those focused on the relationship of nutrition to disease, behavior, growth, development, and aging. Other electives may include genetics, advanced biology, sociology, psychology, humanities, public policy, and language.

#### Fitness and Sports Medicine:

Students can complete the Applied Exercise Science Concentration at Ithaca College which includes courses in anatomy, kinesiology, exercise physiology, and biomechanics. Nutrition courses of special interest relate to growth and development, regulation of body weight, and community nutrition and health. For information about the Applied Exercise Science Concentration, contact the DNS Academic Affairs Office, 309 MVR.

**Dietetics and Clinical Nutrition:** Students can complete the academic requirements for The American Dietetic Association (ADA) by adding courses in foods, nutrition and disease, microbiology, management, statistics, and nutritional care to the core curriculum. For additional information about meeting ADA requirements see Wanda Koszewski, 372 MVR.

**Nutritional Biochemistry:** Recommended electives include calculus, physics, genetics, advanced biology and chemistry, toxicology, and nutritional sciences courses related to the physiology, biochemistry, and metabolism of different nutrients and disease states.

**Nutrition Communications and Community Nutrition:** Suggested electives include courses in communications, education, human development, human service studies, public policy, and nutritional sciences courses related to community nutrition, maternal and child nutrition, geriatric nutrition, nutrition and disease, and food economics.

**Consumer Foods:** Recommended electives include courses in business, economics, communications, food science, microbiology, and nutritional science courses related to the physicochemical aspects of foods, management, and experimental foods.

**Nutrition, Food and Agriculture:** Recommended electives include food science, animal science, plant sciences, international agriculture, agricultural economics, biological sciences, and rural sociology.

## FIELD EXPERIENCE

Structured field experience in a community agency, health-care facility, or business can be taken for credit in several ways through the Human Ecology Field and International Study Program or as an independent study course (NS 402).

## INDEPENDENT STUDY ELECTIVES

Independent study courses (NS 400, 401, 402) can be used to obtain credit for more diverse or intensive experience than the classroom can offer, whether this involves laboratory work, library research, or field study. Any student interested in independent study should obtain the sponsorship of a faculty adviser and the approval of Carole Bisogni or consider applying to the honors program.

## HONORS PROGRAM

The honors program, leading to a B.S. degree with honors in nutritional sciences, gives official recognition to students who have demonstrated excellence in their academic work and their capacity for independent study.

In addition to fulfilling the requirements for a major, students in the honors program take courses on designing and evaluating research, complete an original piece of research, and prepare an honors thesis. The honors project may be laboratory or field research or deal with policy and program development. Animals may be used in some research studies.

For more information, students should contact Ruth Schwartz, N205 MVR.

## COURSES RECOMMENDED FOR NONMAJORS

Courses in nutritional sciences can strengthen programs of study in biological sciences, biology and society, agriculture, food science, human development, human services, and other fields.

NS 115, Nutrition and Health: Concepts and Controversies, is open to all students. After NS 115, nonmajors with limited backgrounds in chemistry and biology may elect NS 222, Maternal and Child Nutrition; NS 247, Food for Contemporary Living; NS 275, Human Biology and Evolution; NS 306, Nutritional Problems of Developing Nations; NS 315, Obesity and the Regulation of Body Weight; NS 347, Human Growth and Development: Biological and Behavioral Interactions; NS 349, Geriatric Nutrition; NS 375 Developmental Psychobiology: Motivational Processes; NS 457, National and International Food Economics. Nonmajors with strong backgrounds in chemistry and the biological sciences may consider NS 331, Physiological and Biochemical Bases of Human Nutrition, as well as many advanced nutritional sciences courses, such as NS 421 Nutrition and Exercise.

## GRADUATE PROGRAMS

Graduate study is administered by the Field of Nutrition, a group of more than fifty faculty members from throughout the university who have a common interest in nutritional problems. In the M.S. and Ph.D. degree programs, students may specialize in animal nutrition, human nutrition, international nutrition, nutritional biochemistry, foods, or general nutrition. Research is emphasized in all graduate programs. Field experience may be a component of concentrations in community, international and public-health nutrition, and nutrition education.

The specialties and interests represented by faculty in the Field of Nutrition provide almost unlimited opportunity for graduate study. Cornell's extensive laboratory and agricultural facilities ensure that students interested in experimental nutrition have exceptional choice and thorough training. As the largest faculty in the country devoted to the study of human nutrition, the field includes specialists in biochemical, metabolic, epidemiological, and sociocultural research. Opportunities to work with community and federal agencies are available to students interested in applied nutrition and public policy, and students in international nutrition are expected to conduct their thesis research abroad.

For more information about the graduate program, interested persons may write for the brochure Graduate Study in Nutrition, available from the Graduate Faculty Representative, Field of Nutrition, Cornell University, MVR Hall, Ithaca, New York 14853-6301; telephone (607)255-4410.

## COURSES

### NS 115 Nutrition and Health: Concepts and Controversies

Fall. 3 credits. S-U grades optional.

M W F 1:25. Evening prelims, times to be arranged. D. Levitsky.

Facts and fallacies concerning the role that nutrition, exercise, and other health behaviors play in preventing disease, maintaining good health, and maximizing athletic performance will be discussed. Emphasis is on understanding the biological mechanisms through which good nutrition and regular exercise affect psychological and physical health.

### NS 116 Personalized Health and Nutrition

Fall. 1 credit. Corequisite: NS 115. S-U only. Limited 10 per section.

TBA. D. Levitsky.

This course provides students enrolled in NS 115 individualized assistance in many skills used in NS 115 including using computers to analyze diets, using electronic mail, finding and using scientific references, and reviewing material presented in NS 115 lectures.

### NS 120 Contemporary Perspectives in Nutrition

Spring. 1 credit. S-U grades only.

W 12:20. G. Combs.

A series of presentations by experts from various areas of the field of nutrition involving consideration of the many types of activities of nutritionists in contemporary society, including the requisite knowledge areas and skills for those activities.

### NS 222 Maternal and Child Nutrition

Spring. 3 credits. Prerequisites: NS 115 and a college biology course or permission of the instructor. S-U grades optional. Not offered 1993-94.

M W F 1:25. Division faculty.

Involves the study of nutritional requirements in pregnancy, lactation, infancy, and childhood growth through adolescence. Topics include the relationship between maternal diet and pregnancy outcome; analysis of different methods of infant feeding; and nutritional status of pregnant women, children, and adolescents in the United States and in developing countries.]

### NS 245 Social Science Perspectives on Food and Nutrition

Fall. 3 credits. Prerequisite: NS 115. Limited to nutrition majors. Letter grade only.

TR 10:10-11:25. D. Sanjur, J. Sobal.

Theories, concepts, and methods from several social science disciplines will be applied to food and nutrition topics and issues.

Emphasis will be placed on theories on the formation and modification of food habits, dietary methodologies, ethnicity and food habits, and educational programs in nutrition in both national and international contexts.

### NS 247 Food for Contemporary Living

Spring. 3 credits. Each section limited to 16 students. Prerequisite: NS 115. Permission of instructor during course registration required (permission-of-instructor forms must be obtained from and returned to 309 Martha Van Rensselaer Hall). Laboratory coat required. Three evening prelims to be arranged.

Lec, T 9:05; lab, T R 10:10-12:40, or T R 2:15-4:35. G. Armbruster.

Emphasizes integration of sound nutritional practice in the scientific concepts and techniques of food preparation. Priority will be given to factors that influence meal planning, selection, and preparation of food, such as resources available; ethnic, cultural, and behavioral considerations; food presentation; sensory quality evaluation. Safe food handling practices and storage procedures included.

### NS 275 Human Biology and Evolution (also Biological Sciences 275 and Anthropology 275)

Fall. S-U grades optional, with permission of either instructor. Offered alternate years.

Lec, M W 10:10; disc M 10:10.

K. A. R. Kennedy, J. D. Haas.

An introduction to the biology of Homo sapiens through an examination of human evolution, biological diversity, and modes of adaptation to past and present environments. Evolutionary theory is reviewed in relation to the current evidence from the fossil record and studies of the evolution of human behavior. A survey of human adaptation covers a complex of biological and behavioral responses to environmental stress. Human diversity is examined as the product of long-term evolutionary forces and short-term adaptive responses. Topics such as creationism, the Pittdown fraud, the sociobiology debate, genetic engineering, race and IQ, and racism are presented as examples of current issues in human biology.

### NS 300 Special Studies for Undergraduates

Fall or spring. Prerequisites: permission of instructor. S-U grades optional.

Special arrangements to establish equivalency for courses not transferred from a previous

major or institution. Students prepare a description of the study they want to undertake on a form available from the Student Services Office. The form, signed by both the instructor directing the study and the associate director for academic affairs, is filed at course registration or during the change-of-registration period.

**NS 306 Nutritional Problems of Developing Nations**

Spring. 3 credits. Prerequisites: NS 115. S-U grades optional.

T R 10:10–11:25. Division faculty.  
The course is designed for undergraduates interested in the nutritional problems of developing countries. Attention is given to the causes of hunger and malnutrition, the epidemiology of the major nutritional problems afflicting poor nations, the functional consequences of these problems on individuals and societies, and the types of programs that can be implemented to improve health and nutrition.

**NS 315 Obesity and the Regulation of Body Weight (also Psychology 315)**

Spring. 3 credits. Prerequisites: NS 115, Psych 101. S-U grades optional.

T R 1:30–3. D. Levitsky.  
This course is a multidisciplinary discussion of the causes, effects, and treatments of human obesity. Topics include the biopsychology of eating behavior, genetics of obesity, role of activity and energy metabolism, psychosocial determinants of obesity, anorexia nervosa, therapy and its effectiveness, and social discrimination.

**NS 331 Physiological and Biochemical Bases of Human Nutrition**

Spring. 3 credits. Prerequisites: Biological Sciences 330 or 331 or equivalent. S-U grades optional.

M W F 10:10. M. Stipanuk.  
The biochemical and physiological bases for human nutritional requirements, including digestion and absorption, energy metabolism, food intake regulation, lipids, carbohydrates, protein and amino acids, minerals, vitamins, and relationship of nutrition to major chronic diseases.

**NS 332 Methods in Nutritional Sciences**

Spring. 3 credits. Each section limited to 18 students. Prerequisites: NS 245, NS 345, NS 331 or concurrent registration and permission of instructor during course registration (permission-of-instructor forms must be obtained from and returned to 309 Martha Van Rensselaer Hall). One evening prelim to be scheduled. Lab fee \$25.00.

Lec, M 12:20; labs, M W 1:25–4 or T R 8:15–10:45 or T R 1:25–4. J. T. Brenna.  
Laboratory introduction to principles and analytical techniques of nutritional research. Emphasis is on analytical concepts and skills required to determine nutrient function and nutritional status of individuals. Topics include methods of nutrient, metabolite, and enzyme analysis in body fluids, and methods for assessing individual food intake and nutritional status.

**NS 345 Nutritional and Physicochemical Aspects of Food**

Spring. 3 credits. Prerequisite: college course in organic chemistry or biochemistry. S-U grades optional.

T R 2:30–3:45. B. Lewis, R. Parker.  
A study of the nutritional, physical and chemical properties of foods including

composition, food structure, enzymic and nonenzymic phenomena, and processing/preparation aspects. Issues related to food safety, regulation, and food composition data bases will also be discussed.

**[NS 347 Human Growth and Development: Biological and Behavioral Interactions (also Human Development and Family Studies 347 and Biology and Sociology 347 and Biology and Society 347)]**

Spring. 3 credits. Prerequisites: Biological Sciences 101 or 109 or equivalent; Human Development and Family Studies 115 or Psychology 101 or equivalent. Offered alternate years. Not offered 1993–94.

M W F 1:25. J. Haas, S. Robertson.  
This course is concerned with the interrelationships between physical and psychological growth and development in humans, particularly during infancy. Intrinsic and extrinsic causes of variations in growth, including various forms of stimulation, are considered. In addition, the consequences of early growth and its variations for current and subsequent behavioral, psychological, and physical development are examined. The interaction between physical and behavioral or psychological factors is emphasized throughout the course.]

**NS 349 Geriatric Nutrition**

Fall. 3 credits. Prerequisites: NS 115.

TR 2:30–3:45. D. Roe.  
Aims of the course are to acquaint students with effects of aging on nutritional needs; to teach them methods of nutritional assessment that are appropriate for use with the elderly; and to give them information on nutritional interventions that have been shown to have positive effects on the nutritional and health status of older individuals.

**NS 361 Biology of Normal and Abnormal Behavior**

Fall. 3 credits. Prerequisites: Biological Sciences 101–102, Psychology 101, or permission of the instructor. A fundamental knowledge of biology and psychology is essential. S-U grades optional. Limited to juniors and seniors.

M W F 9:05. B. Strupp.  
A critical evaluation of biological factors thought to influence behavior and/or cognitive functioning. Biological, psychological, and societal influences will be integrated. Topics include nutrition and behavior, psychiatric disorders, developmental exposure to environmental toxins and drugs of abuse, and biopsychology of learning, memory, intelligence, and related cognitive disorders.

**NS 375 Developmental Psychobiology: Motivational Processes**

Spring. 3 credits.

T R 10:10. E. Blass.  
This course examines the principles of behavioral development in mammals. The approach focuses on behavioral ecology by identifying demands that animals must satisfy during development and the resources that are used in so doing. Among these demands are food, water, shelter and warmth.

**NS 378 Food, Nutrition, and Service Management**

Fall. 3 credits. Prerequisites: NS 247 or permission of instructor. S-U grades optional. T R 8:40–9:55. P. Tennant.

Applications of organization and management principles and theory to foodservice organiza-

tions, operations, and nutrition services. Emphasis is placed on leadership development, decision making/problem solving; procurement, production, distribution and quality assurance in food and nutrition services; human resource management; and financial planning in food and nutrition services.

**NS 380 Integrating Food Systems and Human Nutrition Needs**

Spring. 2 credits. Prerequisites: NS 115 or Food 200 or An Sc. 100. Letter grade only.

T R 8:40–9:55. G. Combs.  
A student-centered course that employs case studies to address concepts linking human nutrition and health issues to those involving systems of food production and distribution. Student teams will investigate new and existing technological options within food systems to address domestic or international human nutrition needs.

**NS 398 Honors in Nutritional Sciences**

Fall. 1 credit. Limited to students admitted to the division honors program. S-U grades only.

TBA. Division faculty.  
Research design. Analysis of research papers on selected topics.

**NS 400–401–402–403 Special Studies for Undergraduates**

Fall or spring. Credits to be arranged. S-U grades optional.

Division faculty.  
For advanced independent study by an individual student or for study on an experimental basis with a group of students in a field of nutritional sciences not otherwise provided through course work in the division or elsewhere at the university. Students prepare a description of the study they want to undertake on a form to be signed by the instructor directing the study and the associate director for academic affairs. The form, available from the Student Services Office, is filed at course registration or within the change-of-registration period. To ensure review before the close of the course registration or change-of-registration period, students should submit the special-studies form to the associate director for academic affairs as early as possible.

**NS 400 Directed Readings**

For study that predominantly involves library research and independent reading.

**NS 401 Empirical Research**

For study that predominantly involves data collection and analysis or laboratory or studio projects.

**NS 402 Supervised Fieldwork**

For study that involves both responsible participation in a community setting and reflection on that experience through discussion, reading, and writing. Academic credit is awarded for this integration of theory and practice.

**NS 403 Teaching Apprenticeship**

For study that includes assisting faculty with instruction.

**NS 421 Nutrition and Exercise**

Spring. 3 credits. Prerequisites: Bio S 311 and NS 115 or NS 331. S-U grades optional.

M W F 11:15. W. Koszewski.  
This course will acquaint students with the interaction between nutrition, exercise, and athletic performance. Topics will cover the biological, psychological, and sociological

aspects of nutrition in exercise performance. Students will learn nutritional counseling techniques in educating the recreational and professional athlete, coach, and trainer.

**NS 441 Nutrition and Disease**

Fall. 4 credits. Prerequisites: NS 331 and a human physiology course. S-U grades optional.

M W F 10:10 and F 8. V. Utermohlen. Study of the physiologic and metabolic anomalies in chronic and acute illnesses and the principles of nutritional therapy and prevention. The topics covered include diabetes mellitus, starvation, obesity, nutritional assessment, nutritional pharmacology, severe injury, infection, cancer, gastrointestinal diseases, liver disorders, renal diseases, cardiovascular diseases, and pediatric conditions.

**NS 442 Implementation of Nutrition Care**

Fall. 3 credits. Limited enrollment. Prerequisites: NS 247, concurrent registration in NS 441 (or equivalent background in either course), and permission of instructor during course registration. (Permission-of-instructor forms must be obtained from and returned to 309 Martha Van Rensselaer Hall.) S-U grades optional.

Lec, M W 9:05; lab 1 T 2:30-4:20, lab 2 R 11:15-1:10. W. Koszewski.

Development of skills necessary to implement nutrition care plans: interviewing and counseling, theories of nutrition education, dietary assessment, principles of diet therapy and menu planning, and quality assurance are covered.

**NS 446 Physicochemical Aspects of Food**

Spring. 3 credits. Prerequisite: biochemistry, which may be taken concurrently. S-U grades optional.

M W F 9:05. G. Armbruster.

The relation of food quality to (a) rheological properties of food systems, (b) oxidation and reduction reactions, and (c) enzymatic and nonenzymatic browning. Covers physical and chemical factors accounting for the color, flavor, and texture of natural and processed foods.

**NS 447 Physicochemical Aspects of Food—Laboratory**

Spring. 1 credit. Prerequisite: NS 446 or concurrent registration. S-U grades optional.

M 1:25-4:25. G. Armbruster.

Laboratory experiments designed to illustrate the effect of varying ingredients and treatment on the quality of food products. Objective testing methods are used to determine food quality characteristics.

**NS 448 Physicochemical Aspects of Food—Laboratory**

Spring. 1 credit. Prerequisite: NS 446 or concurrent registration. S-U grades optional.

W 1:25-4:25. G. Armbruster.

Laboratory experiments designed to illustrate (a) the physicochemical behavior of colloidal systems, (b) chemical reactions of some food components, and (c) effects of temperature, pH, moisture, inorganic salts, and enzymes on physicochemical changes in natural foods, food components, and food mixtures.

**NS 456 Experimental Foods Methods**

Spring. 3 credits. Prerequisites: NS 446, 447 and/or 448.

Labs, T R 1:25-4:25. G. Armbruster.

Application of the scientific method in the design and performance of experimental food

problems and the interpretation and evaluation of results. Evaluation of the use of instruments and chemical and sensory methods in the measurement of food properties. Independent problems.

**NS 457 National and International Food Economics (also Economics 374)**

Spring. 3 credits. Prerequisites: Econ 101 or CEH 110 and junior standing, or permission of instructor. S-U grades optional.

M W F 9:05. E. Thorbecke.

Analysis of the world food economy. Review and analysis of the major economic factors determining the demand for food, the composition of food consumption, and nutritional intake; and the major economic factors affecting food production and supply. Evaluation of effectiveness of various policies and programs in alleviating poverty and malnutrition.

**NS 488 Applied Dietetics in Foodservice Systems**

Spring. 3 credits. Limited to 27 students.

Prerequisites: NS 378, Micro 290, and permission of instructor (permission-of-instructor forms must be obtained from and returned to 309 Martha Van Rensselaer Hall). S-U grades optional. Uniform required.

Lec, M W 9:05; lab, M, T, or W 1:30-6.

P. Tennant.

Students will gain experience in care and use of institutional equipment, menu planning, recipe development, job analysis and evaluation, volume food production, applied sanitation, in-service training, and other skills required to operate/manage a foodservice program. Some laboratories will be arranged through Cornell Dining.

**NS 498 Honors in Nutritional Sciences**

Spring. 1 credit. Limited to students admitted to the division honors program. Students may register in NS NS 499 concurrently.

TBA. Division faculty.

Informal presentation and discussion of current topics in food and nutrition in which all members participate. Written reports on topics discussed may be requested. Delineation of honors research problems in consultation with faculty adviser.

**NS 499 Honors Problem**

Fall and spring. Credits to be arranged. Open only to students in the division honors program.

TBA. Division faculty.

An independent literature, laboratory, or field investigation. Students should plan to spread the work over two semesters.

**NS 600 Special Problems for Graduate Students**

Fall or spring. Credit to be arranged. Limited to graduate students recommended by their chair and approved by the instructor in charge. S-U grades optional.

Hours to be arranged. Division faculty.

Emphasis on independent advanced work. Experience in research laboratories in the division may be arranged.

**NS 601 Proteins and Amino Acids (also Animal Science 601)**

Spring. 2 credits. Prerequisites: physiology, biochemistry, and nutrition, or permission of instructor. Letter grade only. Offered even-numbered years.

W F 12:20. R. E. Austic.

A course in amino acid and protein nutrition, with emphasis on the dynamic aspects of

protein digestion, amino acid transport, and amino acid and nitrogen metabolism. Topics also will include nutritional interrelationships of amino acids, amino acid availability and requirements, and the roles of amino acids in selected physiological processes.

**NS 602 Lipids**

Fall. 2 credits.

T R 11:15. A. Bensadoun.

Advanced course on biochemical, metabolic, and nutritional aspects of lipids. Emphasis is on critical analysis of current topics of lipid methodology, lipid absorption, lipoprotein secretion, structure, and catabolism; molecular biology of lipoproteins and their receptors; mechanisms of hormonal regulation of lipolysis and fatty acid synthesis; and cholesterol metabolism and atherosclerosis.

**NS 604 The Vitamins**

Fall. 2 credits.

T R 10:10. G. F. Combs, Jr.

Discussion sessions on nutritional aspects of the vitamins, including recent developments in nutritional and biochemical interrelationships with other nutrients and metabolites.

**NS 611 Molecular Toxicology (also Toxicology 611)**

Spring. 2 credits. Prerequisite: Toxicology 610 and a full-year 400-level course in biochemistry or equivalent. S-U grades optional. Offered alternate years.

Hours to be arranged. Staff.

A study of fundamental biochemical mechanisms of absorption, transport, metabolism, and excretion of drugs, carcinogens, and toxicants. Emphasis on oxidative and conjugative pathways of metabolism and of environmental and nutritional factors that influence toxicant metabolism and disposition. Methods of evaluating in vivo and in vitro metabolism.

**NS 612 Methods of Assessing Physical Growth in Children**

Spring. 3 credits. Limited to graduate students and students who have permission of the instructor. A previous course in statistics required. S-U grades optional.

Lec, T 1:25; lab, R 1:25-4:25; disc, T 2:15-3:05. J. Haas.

A laboratory course to train students in methods and techniques used to assess the physical growth and development of children. The methods explored are those applicable for field or community studies and cover anthropometry, body composition, skeletal age, maturity indicators, physical fitness, and energy expenditure.

**NS 614 Topics in Maternal and Child Nutrition**

Fall. 3 credits. Prerequisites: NS 331, and 222 or 347, Biological Sciences 311, and permission of instructor.

T R 8:30-10:00. K. Rasmussen.

Advanced course on the role of nutrition during pregnancy and lactation. Feeding and growth of infants and children in health and disease is considered. Critical evaluation of current literature is emphasized.

**NS 617 Teaching Seminar**

Fall or spring, first half of semester. 0 credit. Limited to division graduate students and students who have permission of the instructor. S-U only.

Hours to be arranged. C. Bisogni, D. Way.

A series of workshops focusing on development of teaching skills for guiding classroom

learning in lecture, discussion, and laboratory settings. Preparation of content, presentation, and interaction techniques and evaluative methods are emphasized in relation to the student's specific teaching assignment. Videotape simulations provide opportunity for practice and analysis of teaching behaviors.

#### NS 618 Teaching Experience

Fall or spring. 0 credit. Limited to division graduate students and students who have permission of instructor. S-U only.

Hours to be arranged. Division faculty; C. Bisogni, coordinator.

Designed to provide experience in teaching nutritional sciences by direct involvement in college courses under supervision of a faculty member. The aspects of teaching and the degree of involvement vary, depending on the needs of the course and the experience of the student.

#### NS 619 Field of Nutrition Seminar (also Animal Science 619)

Fall or spring. 0 credit. S-U only.

M 4. Faculty and guest lecturers.

Lectures on current research in nutrition.

#### NS 620 Food Carbohydrates (also Food Science 620)

Spring. 2 credits. Prerequisites: Biological Sciences 330 or equivalent. Letter grades only. Offered alternate years.

T R 10:10. J. Brady, B. Lewis.

A consideration of the chemistry of carbohydrates, including sugars and complex carbohydrates (starches, pectins, hemicelluloses, gums, cellulose, and conjugated carbohydrates). Emphasis is on intrinsic chemistry, functionality in food systems, and changes occurring during food processing and storage.

#### NS 626 Special Topics in Food

Spring. 2 credits.

Hours to be arranged. G. Armbruster, B. Lewis.

Current research related to food is reviewed in the context of basic principles and their application to the quality of food.

#### NS 630 Anthropometric Assessment

Spring, weeks 3-5. 1 credit. Prerequisites: NS 331 or equivalent and permission of instructor.

T 2:30-5:30, S 9-12. J. Haas.

Overview of methods of assessing nutritional and health status, techniques of anthropometry, body composition, energy expenditure and physical performance applicable to children and adults.

#### [NS 631 Dietary Assessment

Fall. 1 credit. 7 weeks only. Prerequisites: statistics and NS 331 or equivalent. Enrollment limited. Not offered 1993-94.

R 2:30-5:30. D. Sanjur.

Study of methods and techniques for assessing dietary intakes at the individual and household levels.]

#### [NS 632 Clinical Assessment

Spring. 1 credit. Prerequisites: NS 441, 630, 631, and Biological Sciences 330 or 331; NS 332 or Biological Sciences 430; and permission of instructor. Not offered 1993-94.

T R 2:30-5:30. V. Utermohlen and division faculty.

Study of methods and techniques for clinical assessment of nutritional status and diagnosis of nutritional disorders.]

#### NS 633 Human Metabolic Studies

Spring. 1 credit. Prerequisite: NS 331. Limited to 20 students. S-U grades optional.

Hours to be arranged; 6 meetings over a 3-week period, 2-1/2 hours each. D. Roe.

Lectures cover planning and writing a study protocol; selecting an experimental design; selecting subjects; designing, preparing, analyzing diets; how to make collections; how to examine data for subject period and treatment effects. Students will participate in a 6-day study.

#### [NS 635 Mechanisms of Metabolic Regulation (also Biological Sciences 635)

Spring. 2 credits. Prerequisites: Chemistry 358 or 360 or either Biological Sciences 330 or 331 or permission of instructor. Offered alternate years.

T R 9:05. M. N. Kazarinoff.

Lectures only. The identification and characterization of regulatory steps in metabolism are considered from both theoretical and practical aspects. The intracellular mechanisms of regulation are stressed, with specific examples examined in detail.]

#### NS 636 Integration and Coordination of Energy Metabolism (also Biological Sciences 637)

Fall. 3 credits. Prerequisites: Biological Sciences 330 and 331, or equivalent.

M W F 9:05. W. J. Arion.

The dynamics of energy metabolism in humans and higher animals are developed through characterizations of how the metabolic components support the structure and function of the individual tissues. Mechanisms that control and coordinate energy metabolism within and between organs are analyzed in the context of selected physiological and pathological stresses.

#### NS 637 Epidemiology of Nutrition

Spring. 3 credits. Limited to graduate students. Prerequisites: Statistics and Biometry 602 or 604 or equivalent, NS 331 or equivalent.

Hours to be announced. J.-P. Habicht.

Course covers principles of nutritional epidemiology, impact assessment of nutrition intervention programs, and nutritional surveillance. Teaching principles of using nutritional information for decision making, including the levels of evidence about nutrition and health for making decisions. The course shows how the biochemistry and physiology of nutrition can be related to epidemiological assessment and research strategies.

#### NS 638 Epidemiology of Nutrition Seminar

Spring. 3 credits. Reserved for graduate students planning field intervention studies; by permission of instructor. Prerequisite: NS 637.

Hours to be announced. J.-P. Habicht.

Covers the meta-analysis, design, measurement, and analytic issues involved in developing, implementing, and analyzing studies of field interventions with nutritional impact.

#### NS 639 Epidemiology Seminar (also Statistics and Biometry 639)

Fall and spring. 0-1 credit. Limited to graduate students; others by permission of instructor. Contact P. Cassano 255-7551 for permission and credit information. S-U grades only.

M 12:20. J.-P. Habicht, H. Erb, P. Cassano. This course will develop skills in the preparation and interpretation of epidemiological data by discussing current research topics and issues.

#### NS 640 Social Science Theories in Nutrition

Fall. 3 credits. Limited to 20 graduate students.

T R 2:30-3:45. J. Sobal.

Social science theories from psychology, sociology, anthropology, economics, political science, geography, and history that contribute to understanding food and nutrition will be examined. Examples of approaches, concepts, and methods from each discipline will be added to understand how to apply social science theories to nutrition topics, issues, and problems.

#### NS 641 Applied Regression Methods in Nutrition and Human Ecology

Spring. 3 credits. Prerequisite: Stats 601 or equivalent.

M W F 11:15. E. Frongillo.

Second statistics course intended for graduate students who need to apply regression methodology in nutrition, health, human services, human development, or program intervention. The course covers the conceptual and statistical aspects of regression models for continuous, discrete, and time-to-event response variables with multiple covariates. Interpretation of parameters, confounding and interaction, and assessing fit are emphasized. An introduction to modeling complex observational data with multiple response variables is presented.

#### NS 644 Community Nutrition Research Seminar

Fall and spring. 0 credit. S-U only.

M 11:15. A. Gillespie and division faculty.

This seminar series focuses on research presentations in nutrition education and other areas of community nutrition. Cornell faculty and graduate students and outside invited speakers present research proposals, results from ongoing research, theoretical bases for research, program evaluations, and discuss current issues in community nutrition research. The format varies but always includes discussion by participants.

#### NS 645 Nutrition Intervention in Communities: A Global Perspective

Spring. 3 credits. Limited to 25 graduate students with an interest in human nutrition and health and exceptional senior nutrition majors by permission. Prerequisite: NS 640 is highly recommended.

T R 8:40-9:55. C. Olson and nutrition intervention and policy faculty.

The goal of the course is to help students gain tools and develop conceptual frameworks for thinking critically about nutrition interventions in communities around the world. The course involves extensive reading and active involvement in class discussions on selected topics.

#### NS 646 Seminar in Physicochemical Aspects of Food

Spring. 1-3 credits. Prerequisite: a college course in organic chemistry or biochemistry. S-U grades optional.

T R 2:30-3:45; disc to be arranged. B. Lewis, R. Parker.

An introduction to physicochemical aspects of food, for graduate students who have had

limited or no work in this area. The seminar uses the lectures of NS 345 as a basis for supplementary readings and critical review of research on selected topics.

**NS 650 Public Health Nutrition**

Spring. 3 credits. For graduate students with a major or minor in nutrition and undergraduate nutrition majors in their senior year. Prerequisite: NS 331 or equivalent.

TBA. D. Roe.

Lectures cover social, environmental, and disease variables that influence the nutrition of infants, children, and adults. Students gain experience in nutritional assessment methods. Endemic nutritional problems (such as obesity, dental caries, and anemias) of public health importance of the United States are discussed. Student presentations are made in class. Field experience is offered.

**NS 659 The Nutrition, Physiology, and Biochemistry of Mineral Elements (also Veterinary Medicine 759 and Biological Science 615)**

Spring (first 7 weeks). 2 credits. Prerequisites: basic physiology, intermediate biochemistry, and general nutrition.

T R 3-4:40. R. Schwartz, R. H. Wasserman, and C. C. McCormick.

The objective of this course is to provide students with an insight into the fundamental concepts of mineral nutrition and to highlight the unique aspects of minerals as nutrients. Lectures and discussions focus on absorption, transport, homeostasis, function, essentiality, toxicity, and requirements of key minerals.

**NS 660 Special Topics in Nutrition**

Fall or spring. 3 credits maximum each term. Registration by permission of the instructor.

Hours to be arranged. Division faculty. Designed for students who want to become informed in any specific topic related directly or indirectly to nutrition. The course may include individual tutorial study, experience in research laboratories, a lecture series on a special topic selected by a professor or a group of students, and/or selected lectures of another course already offered. Topics may be changed so that the course may be repeated for credit.

**NS 669 Field Seminar on Nutrition in Government**

Spring. 1 credit. Limited to 15 students. S-U grades only.

Division faculty.

This 2-3 day seminar provides an overview of policy decision making and implementation of nutrition programs at the national level in Washington, D.C. Provides opportunities to meet and confer with staff members of the legislature and selected government and private agencies. An orientation meeting and follow-up group discussion and summary report are also part of this seminar. Supplemental fee required.

**NS 680 International Nutrition Problems, Policy and Programs**

Spring. 3 credits. Prerequisite: permission of instructor.

T R 11:15-12:30. M. Latham.

Designed for graduate students who want to learn about the important nutritional problems of developing countries. The major forms of malnutrition related to poverty and their underlying causes are discussed. Emphasis is placed on programs and policies that can assist poor countries and communities to improve their nutritional and health status.

**NS 681 Nutritional and Public Health Importance of Human Parasitic Infections**

Fall. 2 credits. Prerequisites: graduate student status or permission of instructor. S-U grades optional. Offered alternate years.

M 2:30-4:15. L. Stephenson and staff.

Reviews the scientific evidence for relationships between human nutritional status and common human parasitic infections. Concentrates on malnutrition (protein-energy malnutrition, anemia) in developing countries. Parasitic infections emphasized are malaria, hookworm, ascaris, schistosomiasis, and trichuriasis. Format is lecture-discussion.]

**NS 683 Field Studies in International/Community Nutrition**

Fall. 1 credit. Graduate student status or permission of instructor required. Strongly recommended for graduate students doing field research. S-U grades only.

Hours to be arranged; 12 class hours on 3 Saturdays. L. Stephenson.

Reviews practical considerations in conducting field research in developing countries, including (1) seeking fundings, (2) experimental design issues, (3) choice of procedures, and (4) planning for and carrying out data collection. Also includes how to a) construct a C.V., b) write an abstract and prepare a clear 10-minute talk with legible slides (FASEB formation), and c) when, where, and how to publish research results. Extensive handouts. Lecture/demonstration/discussion.

**NS 685 Food and Nutrition Policy (also Agricultural Economics 685)**

Spring. 3 credits. Prerequisites: Consumer Economics and Housing 310 or Consumer Economics and Housing 603 or Economics 311 or 313 or Agricultural Economics 415 or equivalent. Knowledge of multiple regression. S-U grades optional.

M W 1:25-2:35. D. Sahn.

The course will focus on performing economic analysis to examine the role of the state in alleviating malnutrition and poverty in developing countries. The role of macroeconomic and sectoral policies, particularly in agriculture, in affecting prices and incomes of the poor, as well as their nutritional status, will be stressed. In addition, the course will explore the experience of specific intervention programs, such as food subsidies and the role of food aid, in raising incomes and consumption. Methodologies for empirical data analysis and economic modeling will be covered.

**NS 690 Advanced Analytical Chemistry III: Trace Elements and Isotopic Analysis (also Chemistry 628)**

Spring. 3 credits. Primarily for graduate students. Prerequisite: Chemistry 288 or 390, or Chemistry 208 and Physics 102 and Mathematics 112, or permission of instructor. Offered alternate years.

T R 10:10. J. T. Brenna.

Modern trace, micro, and surface methods of analysis, including atomic spectroscopy, solids mass spectrometry, high precision isotope ratio techniques, activation analysis, microscopic microprobe, and electron spectroscopy. Applications to biological and solid state problems.

**NS 698 International Nutrition Seminar**

Fall and spring. No credit. No grades given.

R 12:20-1:10. M. Latham.

This seminar series consists of presentations by Cornell faculty and graduate students, and by outside invited speakers. Speakers cover a range of topics which relate to nutritional problems, policy, and programs in the non-industrialized countries.

**NS 699 Special Topics in International Nutrition**

Fall and spring. 3 credits maximum each term. Registration by permission of instructor.

M. Latham and faculty in Program in International Nutrition.

This option is designed for graduate students, mainly those with a concentration in international nutrition, who wish to become familiar with some specific topic related to international nutrition that is not adequately covered in an existing course. It consists usually of tutorial study on an agreed topic. Because the topics change, the course may be repeated for credit.

**NS 700 Current Topics in Toxicology (also Toxicology 698)**

Fall or spring. 1-3 credits. S-U grades optional.

Hours to be arranged. Staff.

A discussion of the most current developments in various areas of toxicological research and testing. Faculty and students will participate jointly in evaluating research findings and provide seminars and discussion of such material. For information regarding topic, instructor, and credit, contact the office of the Graduate Field of Environmental Toxicology.

**NS 702 Seminar in Toxicology (also Toxicology 702)**

Fall or spring. 1 credit. S-U grades only.

F 12:20. Staff.

The seminar program covers varied topics in biochemical, genetic, nutritional, veterinary, and regulatory toxicology, ecotoxicology, and environmental chemistry. Included are presentations of basic research studies, fundamental concepts, and research activities involving environmental problems of a toxicological nature. Presentations are given by speakers from Cornell and visitors.

**NS 703 Seminar in Nutritional Science**

Fall and spring. 1 credit. S-U grades only.

T 12:20 or W 12:20. Division faculty.

Presentations of original articles pertinent to the Nutritional Sciences. Students will learn how to make professional presentations and how to critique the presentations by others. In addition, students will learn how to read and interpret original articles published in a wide variety of journals.

**NS 899 Master's Thesis and Research**

Fall or spring. Credit to be arranged.

Prerequisite: permission of the chair of the graduate committee and the instructor. S-U grades optional.

Hours to be arranged. Division graduate faculty.

**NS 999 Doctoral Thesis and Research**

Fall or spring. Credit to be arranged.

Prerequisite: permission of the chair of the graduate committee and the instructor. S-U grades optional.

Hours to be arranged. Division graduate faculty.

## FACULTY ROSTER

Arion, William J., Ph.D., U. of N. Dakota. Prof.  
 Ambruster, Gertrude, Ph.D., Washington State U. Assoc. Prof.  
 Bensadoun, Andre, Ph.D., Cornell U. Prof., Nutritional Sciences/Physiology  
 Bisogni, Carole, Ph.D., Cornell U. Assoc. Prof. and Associate Director for Academic Affairs  
 Brenna, Thomas, Ph.D., Cornell U. Asst. Prof.  
 Brink, Muriel, M.S., Michigan State U. Prof.  
 Campbell, T. Colin, Ph.D., Cornell U. Jacob Gould Schurman Professor of Nutritional Biochemistry  
 Chen, Junshi, M.D., Peking Medical College, China. Adjunct Prof.  
 Combs, Gerald F. Jr., Ph.D. Cornell U. Prof.  
 Crompton, D. W. T., Ph.D., Sc.D., U. of Cambridge (England). Adjunct Prof.  
 Devine, C., Ph.D., Cornell U. Asst. Prof.  
 Garza, Cutberto, M.D., Baylor College; Ph.D., MIT. Director and Prof.  
 Gillespie, Ardyth, Ph.D., Iowa State U. Prof.  
 Haas, Jere D., Ph.D., Pennsylvania State U. Prof.  
 Habicht, Jean-Pierre, Ph.D., Massachusetts Inst. of Technology. James Jamison Professor of Nutritional Epidemiology  
 Jonsson, Urban, Ph.D., Chalmers U. Tech. (Sweden). Adjunct Prof.  
 Kazarinoff, Michael N., Ph.D., Cornell U. Assoc. Prof., Nutritional Sciences/Biochemistry, Molecular and Cell Biology  
 Latham, Michael C., D.T.M.&H., U. of London (England). Prof.  
 Levitsky, David A., Ph.D., Rutgers U. Assoc. Prof.  
 Lewis, Bertha A., Ph.D., U. of Minnesota. Assoc. Prof.  
 Martorell, Reynaldo, Ph.D., U. of Washington. Prof.  
 McCormick, Charles, Ph.D., North Carolina St. U. Assoc. Prof.  
 Nesheim, Malden C., Ph.D., Cornell U. Prof.  
 Noy, Nea, Ph.D., Tel-Aviv U., Assoc. Prof.  
 Olson, Christine M., Ph.D., U. of Wisconsin. Prof.  
 Parker, Robert S., Ph.D., Oregon State U. Assoc. Prof.  
 Pearson, Thomas, Ph.D., Johns Hopkins U. Adjunct Prof.  
 Peto, Richard, M.Sc., U. London (England). Adjunct Prof.  
 Rasmussen, Kathleen M., Sc.D., Harvard U. Assoc. Prof.  
 Rivera, Juan, Ph.D., Cornell U. Adjunct Asst. Prof.  
 Roe, Daphne A., M.D., U. of London (England). Prof.  
 Sahn, D., Ph.D., M.I.T. Assoc. Prof.  
 Sanjur, Diva M., Ph.D., Cornell U. Prof.  
 Schwartz, Ruth A., Ph.D., U. of London (England). Prof.  
 Sobal, Jeffery, Ph.D., U. of Pennsylvania. Assoc. Prof.  
 Stephenson, Lani, Ph.D., Cornell U. Assoc. Prof.  
 Stipanuk, Martha H., Ph.D., U. of Wisconsin. Assoc. Prof.  
 Thorbecke, Erik, Ph.D., U. of California. H. E. Babcock Professor of Economics and Food Economics  
 Utermohlen, Virginia, M.D., Columbia U. Assoc. Prof., Nutritional Sciences/Biochemistry, Molecular and Cell Biology

**Other Teaching Personnel**

Frongillo, Edward, Ph.D., Cornell U. Senior Research Associate

Koszewski, Wanda, Ph.D., Kansas St. U. Lecturer  
 Pelletier, David L., Ph.D., The Pennsylvania State Univ. Senior Research Associate  
 Strupp, Barbara, Ph.D., Cornell University. Lecturer  
 Tennant, Priscilla, M.Sc.Ed., SUNY Cortland, Lecturer

**Joint Appointees**

Apgar, B. Jean, Visiting Assoc. Prof., U.S. Plant, Soil, and Nutrition Laboratory/  
 Nutritional Sciences  
 Bauman, Dale, Prof., Animal Science/  
 Nutritional Sciences  
 Blass, Elliot, Prof., Psychology/Nutritional Sciences  
 Miller, Dennis, Prof., Food Science/Nutritional Sciences  
 Van Campen, Darrell R., Assoc. Prof., U.S. Plant, Soil, and Nutrition Laboratory/  
 Nutritional Sciences  
 VanSoest, Peter J., Prof., Animal Science/  
 Nutritional Sciences