

DIVISION OF NUTRITIONAL SCIENCES

ADMINISTRATION

Cutherto Garza, director

Carole Bisogni, associate director for academic affairs

Betty Lewis, graduate faculty representative, Field of Nutrition

T. Colin Campbell and William Arion, division honors chairs

THE DIVISION

Nutritional science deals with the intricate relationship of food, nutrition, and health. At Cornell, the focal point for this broad field of study, which ranges from nutrient chemistry to world hunger, is the Division of Nutritional Sciences.

The division is affiliated with both the College of Human Ecology and the College of Agriculture and Life Sciences and brings together specialists from many disciplines in the biological and social sciences. Their work covers undergraduate and graduate teaching, nutrition research, and nutrition education for the public through Cornell Cooperative Extension.

The faculty in the division are working toward two closely related goals: increasing our knowledge of nutrition and health, and applying what we know to people's everyday problems. This approach carries over to undergraduate education. Students who major in nutritional sciences learn how to interpret basic research from the laboratory and from the social sciences. They also come to understand the practical implications of their studies. Many students have the chance to test out their ideas by conducting a research project or working in the community.

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 interactive terminals for the university's computer system.

The division's Learning Resource Center in Martha Van Rensselaer Hall is used by many 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.

THE MAJOR

The B.S. degree program with a major in nutritional sciences (NS) provides students with thorough foundations in the basic sciences and the broad field of nutritional sciences. By supplementing the core curriculum with different electives, students can pursue a variety of career interests including medicine and other health careers, fitness and sports nutrition, clinical nutrition, dietetics, nutritional biochemistry, nutrition education and communications, and consumer foods and agriculture.

ACADEMIC ADVISING

Every student majoring in nutritional sciences is assigned a faculty adviser from the division. 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 not only helps students select courses but can often suggest opportunities for individual study or experience outside the classroom.

The specific course requirements for graduation are available on request. Questions about undergraduate study should be addressed to Carole Bisogni, associate director for academic affairs, 335 Martha Van Rensselaer Hall.

THE CORE CURRICULUM

In 1990 the faculty revised the undergraduate requirements for a nutrition major establishing a single option or core curriculum for all students entering the major in August 1990. The 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 Human 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 for the major. 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 core curriculum, consult the Human Ecology Student Guide or obtain information from the division's Academic Affairs Office, 335 MVR.

Students entering the major before August 1990 may complete the requirements in effect when they matriculated or they may complete the new requirements. Students should contact their advisers or the DNS Academic Affairs Office, 335 MVR, for information about switching to the new requirements.

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 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, 335 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 Anne Kendall-Casella, N206B MVR, or Joan Koch, 373 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, experimental foods, and food chemistry.

FIELD STUDY

Structured field experience in a community agency or health-care facility can be taken for credit in several ways: through the Human Ecology Field and International Study Program, as an independent study course, as a class project, or as a summer study project.

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 option in nutritional sciences, 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 T. Colin Campbell, N204 Martha Van Rensselaer Hall or William Arion, 227 Savage Hall, honors chairs.

COURSES RECOMMENDED FOR NONMAJORS

Courses in nutritional sciences can strengthen programs of study in biological sciences, biology and society, medicine, 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 245, Social Science Perspectives on Human Nutrition; NS 222, Maternal and Child Nutrition; NS 247, Food for Contemporary Living; NS 315, Obesity and the Regulation of Body Weight; NS 349, Geriatric Nutrition; and 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.

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

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.

This course is intended to be an introduction to the basic concepts of nutritional sciences and the role that nutrition, exercise, and other health behaviors play in the promotion of human health. Concepts and contemporary controversies involved in weight control, cardio-vascular disease, cancer, special nutrition of infants and elderly, and nutrition and behavior will be discussed. Emphasis is on understanding the biological mechanisms through which good nutrition and regular exercise influence health.

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.

M W F 1:25. V. Utermohlen. 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.

245 Social Science Perspectives on Human Nutrition

Fall. 3 credits. Prerequisite: NS 115. M W F 2:30. J. Sobal, D. Sanjur. Social science theories, concepts, and methods that contribute to understanding of human food and nutrition will be presented, including perspectives from history, anthropology, sociology, psychology, demography, economics and political/policy science. The course will provide integration of biological and social science frameworks for viewing human nutrition, as well as examine differences between social science and biological viewpoints. Students will apply social science analysis to contemporary nutrition topics, issues, and problems.

247 Food for Contemporary Living

Fall and 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 335 Martha Van Rensselaer Hall). Laboratory coat required. Three evening prelims to be arranged.

Lec, M 12:20; lab, T R 10:10-12:40. J. Koch.

This course will promote an understanding and integration of sound nutritional practice in the scientific concepts and techniques of food preparation in a health-conscious society. High 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; as well as sensory quality evaluation. A positive regard for safe food handling practices and storage procedures is stressed.

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.

[420 Nutritional Aspects of Raw and Processed Foods (also Food Science 420)]

Fall. 3 credits. Prerequisites: organic chemistry and Food 100 or NS 115. S-U grades optional. Not offered 1990-91.

M W F 12:20. D. Miller.

An evaluation of factors that affect the nutritional quality of foods and diets. Nutritional quality is defined. Methods and approaches for assessing nutritional quality are presented. Factors that may alter the nutritional quality of foods and food supplies (e.g., agricultural practices, processing, storage, cooking, fortification, government regulations, and new technologies) are discussed.]

[315 Obesity and the Regulation of Body Weight (also Psychology 315)]

Spring. 3 credits. Prerequisites: NS 115, Psych 101. Not offered 1990–91. 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.]

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. T. C. Campbell.

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.

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 335 Martha Van Rensselaer Hall). Two evening prelims to be scheduled.

Lec, M 12:20; labs, M W 1:25–4 or T R 8:15–10:45 or T R 1:25–4. M. Kazarinoff, K. Rasmussen.

Introduction to principles and procedure of analytical techniques and data analysis in human nutrition with emphasis on analytical skills and technical knowledge necessary to understand how we know about nutrient functions and how we measure and interpret nutrient status of individuals. Topics will include methods of analysis of nutrients and metabolites in foods, tissues, and body fluids and methods for assessing individual food intake and nutrition knowledge, attitudes, and practice. A limited number of experiments using variations in diet and various techniques for obtaining and analyzing samples will be conducted to further understanding of the principles underlying the observational methods, their associated problems and pitfalls, and their reliability. The course will culminate with an independent project in which student will adapt a published procedure to test a hypothesis they have identified.

345 Nutritional and Physicochemical Aspects of Food

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

T R 2–3:15. R. Parker, B. Lewis.

This course offers students exposure to a wide range of issues related to nutritional, physical, and chemical properties of foods. Emphasis will be placed on determinants of food quality (appearance, flavor, odor, texture, nutritional value), including structural and compositional factors, physiological, enzymic and nonenzymic phenomena, and processing and preparation techniques. Also discussed will be issues related to food safety, regulation, and food composition data bases.

346 Introduction to Physicochemical Aspects of Food—Laboratory

Spring. 2 credits. Each section limited to 18 students. Prerequisites: NS 345 or concurrent registration, a college course in organic chemistry, and permission of instructor during course registration (permission-of-instructor forms must be obtained from and returned to 335 Martha Van Rensselaer Hall). S-U grades optional.

M W 2–4:25. R. Parker, B. Lewis.

Laboratory exercises designed to illustrate principles related to food quality and ingredient functionality and to introduce students to the analytical methodology associated with food evaluation.

347 Human Growth and Development: Biological and Social Psychological Considerations (also Human Development and Family Studies 347 and Biology and Sociology 347)

Spring. 3 credits. Prerequisites: Biological Sciences 101 or 109 or equivalent; Human Development and Family Studies 115 or Psychology 101 and NS 115 or equivalent. Offered alternate years.

M W F 1:25. J. Haas, S. Robertson.

A review of major patterns of physical growth from the fetal period through adolescence, with consideration of biological and socioenvironmental determinants of growth, as well as physical and psychological consequences of variations in growth patterns. An examination of normal patterns of growth is followed by an analysis of major sources of variations (normal and atypical).

349 Geriatric Nutrition

Fall. 3 credits. Prerequisites: NS 115.

M W F 10:10. 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.

361 Biochemistry and Human Behavior (also Psychology 361)

Fall. 3 credits. Prerequisites: Biological Sciences 101–102, Chemistry 103–104, Psychology 123, or permission of instructor. A fundamental knowledge of human biology and chemistry is essential. S-U grades optional.

M W F 9:05. B. Strupp.

A survey of the scientific literature on the role of brain and body biochemical changes as determinants of human behavior. The topics covered include action and effects of psychopharmacologic agents, the biology of learning and memory, the role of abnormal biochemistry in cognitive disorders, biochemical theories of psychosis, and effects of nutrition on behavior.

378 Food, Nutrition, and Service Management

Fall. 3 credits. Prerequisites: NS 247 or permission of instructor. S-U grades optional.

T R 2:30–4:05. J. Koch.

Applications of organization and management principles and theory to foodservice organizations, 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. Other experiences may be possible in community foodservice operations.

398 Honors in Nutritional Sciences

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

T 2:30–4. Division faculty.

Research design. Analysis of research papers on selected topics.

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 Counseling 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.

400 Directed Readings

For study that predominantly involves library research and independent reading.

401 Empirical Research

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

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.

403 Teaching Apprenticeship

For study that includes assisting faculty with instruction.

[415 Field-based Learning in Nutrition

Fall, spring, or summer. 2–6 credits. S-U grades optional. Prerequisites: junior, senior, or graduate standing; 9 hours of coursework in NS; and permission of instructor. Not offered 1990–91.

Hours in placement arranged individually.

Undergraduate and graduate students are placed, according to their interests and backgrounds, in organizations and agencies that provide nutrition and food services. Students may be required to provide their own transportation to placements.]

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 pediatrics. Original research papers, books, review papers, and publications of professional organizations are used throughout the course.

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 335 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. A. Kendall Casella.

Development of skills necessary to implement nutrition care plans: interviewing and counseling, dietary assessment, calculation of therapeutic diets and menu planning, and quality assurance are covered.

445 Community Nutrition and Health

Spring. 3 credits. Prerequisites: NS 245 and NS 331 or concurrent enrollment in 331. S-U grades optional. The field-project component of this course may involve off-campus activity; students are responsible for their own transportation.

M F 11:15; disc, W 2:30-4:30. A. Gillespie and Division faculty.

Study of human nutrition and health problems from a community perspective; programs and policies related to nutrition at local, state, and federal levels; and approaches and techniques for effective application of social science theories and research in community nutrition programs.

446 Physiochemical Aspects of Food

Fall. 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.

447 Physiochemical Aspects of Food—Laboratory

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

T 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.

448 Physiochemical Aspects of Food—Laboratory

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

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

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

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.

457 National and International Food Economics

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.

Examination of individual components essential for an understanding of the United States and world food economies. Analysis of the world food economy. Review and analysis of (a) the major economic factors determining the demand for food, the composition of food consumption, and nutritional intake; and (b) the major economic factors affecting food production and supply. Examination and evaluation of the effectiveness of various food policies and programs in altering food consumption patterns. Principles of nutritional planning in developing countries within the context of the process of economic and social development.

488 Applied Dietetics in Foodservice Systems

Spring. 3 credits. Limited to 30 students. Prerequisites: NS 378, Applied Microbiology, learning theory course, and permission of instructor (permission-of-instructor forms must be obtained from and returned to 335 Martha Van Rensselaer Hall). S-U grades optional. Uniform required.

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

J. Koch.

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.

498 Honors in Nutritional Sciences

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

T 2:30-4. T. C. Campbell, coordinator.

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.

499 Honors Problem

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

Disc, T 11:15, plus additional hours to be arranged. Division faculty;

T. C. Campbell, coordinator.

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

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.

601-604 Advanced Nutrition Series

A series of nutrition courses offered jointly by the Division of Nutritional Sciences and the Departments of Animal Science and Poultry Science. Prerequisites: courses in nutrition, physiology, and biochemistry, including intermediary metabolism, or permission of instructor.

601 Proteins and Amino Acids (also Animal Science 601)

Fall. 2 credits. Prerequisites: physiology, biochemistry, and nutrition, or permission of instructors. Letter grade only. Offered even-numbered years. Not offered 1991-92.

Hours to be arranged. R. E. Austic.

A course in amino acid and protein nutrition with emphasis on the dynamic aspects of protein digestion and amino acid absorption, protein and amino acid metabolism, nutrient interrelationships, assessment of protein quality, and amino acid availability and amino acid requirements in humans.

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; mechanisms of hormonal regulation of lipolysis and fatty acid synthesis; and cholesterol metabolism and atherosclerosis.

604 The Vitamins

Fall. 2 credits.

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

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

[607 Nitrogen Metabolism (also Biological Sciences 650)]

Spring. 2 credits. Prerequisites: Chemistry 358 or 360 and Biological Sciences 330 or 331, or permission of instructor. Offered alternate years. Not offered 1990-91.

T R 9:05. Staff.

The course will cover most aspects of nitrogen metabolism. The first section will consider nitrogen fixation and assimilation in bacteria and the metabolism and biological importance of purines, pyrimidines, porphyrins, alkaloids, and amines. This will be followed by discussion of the pathways of amino acid biosynthesis and degradation. The final section will include discussion of protein

turnover and degradation, nitrogen excretion, and interorgan relationships in higher organisms. Emphasis throughout the course will be on hormonal, developmental, and molecular biological aspects of metabolic regulation and evolutionary differences.]

[611 Molecular Toxicology (also Toxicology 611)]

Spring. 2 credits. Prerequisite: full-year 400-level course in biochemistry or equivalent. S-U grades optional. Offered alternate years. Next offered 1991-92.

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.]

[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; labs, 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.

[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 9:05-10:30. 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.

[616 Readings in Food]

Fall. 2 credits. Prerequisite: organic chemistry. Recommended: biochemistry. S-U grades optional. May be repeated for credit with permission of instructor.

W 7:30-9:25 p.m. N. Mondy.

Critical review of selected topics in the current literature. Emphasis on experimental data and basic scientific principles underlying modern theory and practice relative to food quality. Training in oral and written presentations of scientific information.

[617 Teaching Seminar]

Fall or spring, first half of semester. 1 credit. Limited to division graduate students and students who have permission of the instructor. S-U grades only.

Hours to be arranged. C. Bisogni, D. Taylor-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.

[618 Teaching Experience]

Fall or spring. No credit. Limited to division graduate students and students who have permission of instructor. No grades given.

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.

[619 Field of Nutrition Seminar (also Animal Science 619)]

Fall or spring. No credit. No grades given.

M 4:30. Faculty and guest lecturers.

Lectures on current research in nutrition.

[620 Food Carbohydrates (also Food Science 620)]

Spring. 2 credits. Prerequisites: Biological Sciences 330 or equivalent. Letter grades only. Offered alternate years; next offered 1991-92.

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.]

[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.

[627 Special Topics in Food]

Spring. 2 credits. Prerequisite: organic chemistry. Recommended: biochemistry. S-U grades optional. May be repeated for credit with permission of instructor.

W 7:30-9:30 p.m. N. Mondy.

Current research related to international food production and processing and toxicants in the food chain.

[630-633 Advanced Nutrition Laboratory]

Fall or spring. 1-5 credits. Limited to 12 students.

630: T 2:30-5:30, S 9-12. 631-633: T R 2:30-5:30. Division faculty.

Laboratories on the anthropometric, dietary, clinical, and biochemical assessment of human nutritional status. The individual courses are taught in sequence over the entire semester. Any or all of the modules may be taken for credit.

[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.

[631 Dietary Assessment]

Fall. 1 credit. 7 weeks only. Prerequisites: statistics and NS 331 or equivalent. Enrollment limited. Not offered fall 1990.

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

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

[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.

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.

[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.

Instruction in the principles of human metabolic studies and how these are carried out. Includes how to plan and write a protocol for a study; how to select an appropriate experimental design; how to select subjects; how to design, prepare, and analyze diets; how to make collections of urine and feces; and how to examine data for subject period and treatment effects. Assigned readings, which will be discussed in class, will be from selected recent papers in which techniques of human metabolic studies are described. Learning experiences will include participation in a six-day study.

[634 Vitamins and Coenzymes (also Biological Sciences 634)]

Spring. 2 credits. Prerequisites: organic chemistry 253 or 357-358 and Biological Sciences 330 or 331, or their equivalents in biochemistry. Offered alternate years. Next offered 1991-92.

T R 10:10. M. N. Kazarinoff.

Lectures on the chemistry, biochemistry, and physiology of vitamins and coenzymes. Emphasis is placed on the relationship of structure and function, and mechanisms are examined in detail. Readings from the current primary literature are assigned weekly.]

[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. Division faculty.

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.

[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 elements and dynamics of energy metabolism in higher animals are systematically developed through biochemical characterizations of the metabolic components and structure of major tissues and organs, stressing correlations with physiologic functions.

Mechanisms that control energy metabolism within individual tissues and coordinate these processes in an intact animal are analyzed in the contexts of selected physiologic and pathologic stresses.

637 Epidemiology of Nutrition

Spring. 3 credits. Taught in conjunction with Advanced Epidemiology (Vet Med 665). Limited to graduate students. Prerequisites: Statistics and Biometry 602 or 604 or equivalent, NS 331 or equivalent, Vet Med 664 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.

638 Epidemiology of Nutrition Seminar

Spring. 3 credits. Reserved for graduate students planning field intervention studies; by permission of instructor. Prerequisite: NS 636.

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.

639 Epidemiology Seminar (also Statistics and Biometry 639)

Fall and spring. 1 credit. Limited to graduate students; others by permission of instructor. S-U grades only.

Hours to be announced. J.-P. Habicht, H. Erb.

This course will develop skills in the preparation and interpretation of epidemiological data by discussing current research topics and issues.

644 Community Nutrition Research Seminar

Fall and spring. No credit. No grades given.

Hours to be announced. A. Gillespie and community nutrition 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.

645 Community Nutrition

Spring. 2 credits. Limited to graduate students with a major or minor in human nutrition who have had a previous course in community nutrition.

M 1:25-3. A. Gillespie and community nutrition faculty.

Students will be actively involved in discussing community nutrition needs assessments, program planning and development, evaluation of impact, the implications of public policy and current issues in community nutrition.

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 2-3:15; 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.

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.

M W F 9:05. 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.

[651 Nutrition and the Chemical Environment (also Toxicology 651)]

Fall. 3 credits. Prerequisite: NS 331 or equivalent. S-U grades optional. Not offered 1990-91.

M W F 11:15. D. Roe.

An overview of interactions between drugs and nutrients is presented. Specific lecture topics include food-drug incompatibilities, drug-induced nutritional deficiencies, and nutritional teratology. Students will obtain methods skills in selection of animal models, in nutritional pharmacology, and in research designs appropriate to human studies.]

652 Nutrition Counseling

Spring. 1 or 2 credits. Prerequisites: NS 441 and 442. S-U grades only.

W 10:10-12:05. J. Koch.

Principles and procedures of nutritional counseling in clinical practice. Emphasis on subject matter and process skills necessary to develop, implement, and evaluate nutritional care plans for individuals and groups. Includes workshops, simulation techniques, and work with clients in selected settings.

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

Fall. 3 credits. Prerequisites: basic physiology, intermediate biochemistry, and general nutrition. Offered alternate years. Not offered 1991-92.

M W F 9:05. R. Schwartz, D. R. Van Campen, R. H. Wasserman, C. C. McCormick.

Lectures and discussions on nutritional aspects and physiological, biochemical, and hormonal factors relating to the major macro and micro elements. Included is information on the chemistry of ions and complexes, methods used in research on biologically important minerals, absorption, transport, homeostasis, essentiality, toxicity, and requirements of mineral elements. Lectures and class discussions will emphasize recent developments and experimental approaches.

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.

669 Field Seminar on Nutrition in Government

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

V. Utermohlen.

This 2-3 day seminar provides an overview of policy decision making and implementation of nutrition programs at the state and national levels. Seminars alternate yearly between Washington, D.C. and Albany, NY. 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.

[670 Clinical Field Studies]

Fall, spring, or summer. 15 credits maximum. Limited to graduate students in clinical nutrition. Prerequisites: NS 441, 442, 630, 631, 632, 633 and 652. S-U grades only. Not offered 1990-91.

Full-time study at off-campus clinical sites. Division faculty.

The delivery of nutritional care in hospitals, outpatient clinics, and community settings.]

680 International Nutrition Problems, Policy and Programs

Fall. 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.

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. Not offered 1991-92.

M 1:25-3:20. 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-demonstration-discussion.

682 Isotope Kinetics (also Biological Sciences 752)

Spring. 2 credits. Prerequisite: calculus. S-U grades optional. Not offered 1990-91.

Hours to be arranged. Division faculty. Quantitative analysis of the transport and distribution of nutrients, metabolites, and drugs in multicompartmental systems. The material will be presented as lectures, discussion groups, and problem sets.]

683 Field Studies in International/Community Nutrition

Fall. 1 credit. Graduate student status or permission of instructor required. 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 (where, how, when), (2) experimental design issues (choice of population, design, sample sizes, ethics), (3) choice of procedures (laboratory and other), and (4) planning for and carrying out data collection (including specifics of purchasing equipment and supplies; transport of equipment, self and data; health precautions; and data collection and coding). 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.

685 Food and Nutrition Policy (also Agricultural Economics 685)

Fall. 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 1:15-2:25. P. Pinstруп-Andersen. The course will identify the principal links between human nutrition and government action, with emphasis on developing countries. The process of policy formation, including economic and political factors, will be discussed. Political-economy issues, including the influence of and conflict among interest groups and rent-seeking behavior related to food and nutrition policies and programs, will be analyzed. The role of nutrition information and surveillance in policy design, implementation, and evaluation will be analyzed along with methodologies for empirical analysis of food and nutrition policy. Findings and analytical methodologies from case studies in developing countries will be used as appropriate. The role of improved nutrition in economic development as both an indicator of welfare and a productivity-enhancing factor as well as basic relationships among nutrition, poverty, food, health, and household behavior will be briefly presented at the beginning of the course to provide a context for policy discussions.

695 Seminar in International Nutrition, Agriculture, and Development Policy (also International Agriculture 695)

Spring. 1 credit. Prerequisite: Permission of instructor.

Hours to be announced. T. Brun. Concentrates on major issues in food and nutrition policies as they relate to agriculture. Issues include Africa's nutritional and agricultural decline, lessons from China and Vietnam, the cash crop-food crop debate, and the nutritional impact of several agricultural programs. Emphasis is placed on agricultural policies that are leading to growth and equity.

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. Some presentations consist of discussion of a proposed research protocol. Sometimes a debate or forum is organized to allow a broad-ranging discussion of an issue related to international food and nutrition.

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. Usually one or more students will approach a professor and arrange for tutorial study on an agreed topic. This will usually be achieved by extensive use of literature and discussions of this with the faculty members. In certain semesters it may consist of a small seminar or lecture course on a subject not now adequately covered in an existing course. On occasion it may involve laboratory or field work. Because the topics change, the course may be repeated for credit.

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, 16 Fernow Hall, 255-8008.

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 and ecotoxicology and environmental chemistry. Included are presentations of basic research studies as well as fundamental concepts and research activities involving environmental problems of a toxicological nature. Presentations are given by speakers from Cornell and visitors.

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.

699 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.

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.
 Arnbruster, 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.
 Brun, Thierry, Ph.D., U. of California, Berkeley. Visiting Prof.
 Campbell, Cathy C., Ph.D., Cornell U. Asst. 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.
 Cowell, Catherine, M.S., U. of Connecticut. Adjunct Prof.
 Crompton, D. W. T., Ph.D., Sc.D., U. of Cambridge (England). Adjunct 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
 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.
 Mondy, Nell I., Ph.D., Cornell U. Prof.
 Nesheim, Malden C., Ph.D., Cornell U. Prof.
 Olson, Christine M., Ph.D., U. of Wisconsin. Assoc. Prof.
 Parker, Robert S., Ph.D., Oregon State U. Assoc. Prof.
 Pinstруп-Andersen, Per, Ph.D., Oklahoma State U. of Agriculture and Applied Science. Prof.
 Rasmussen, Kathleen M., Sc.D., Harvard U. Assoc. Prof.

Rivlin, Richard S., M.D., U. of London
(England). Prof.
Roe, Daphne A., M.D., U. of London (England).
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/Biochemis-
try, Molecular and Cell Biology

Other Teaching Personnel

Kendall Casella, Anne, R.D., Ph.D., Cornell
University. Lecturer
Koch, Joan M. L., R.D., Ph.D., Cornell Univer-
sity. Senior Lecturer
Strupp, Barbara, Ph.D., Cornell University.
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
Combs, Gerald F., Jr., Prof., Poultry Science/
Nutritional Sciences
McCormick, Charles, Assoc. Prof., Poultry
Science/Nutritional Sciences
Miller, Dennis, Assoc. 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
Warner, Richard G., Prof., Animal Science/
Nutritional Sciences