Descriptions — Food Science of Courses

455. Food Analysis I
Fall: 4(2-6) CEM 132 and 162 or approval of department. Modern methods of analysis for fat, protein, moisture and other macronutrients of food. Application of spectrophotometry in determination of microconstituents; use of dye-binding, complexometric and isodimetric techniques in food analysis.

456. Food Analysis II
Winter: 4(2-6) CEM 182 and 241 or approval of department. Use of colorimetry and spectrophotometry, chromatographic methods and other techniques for the analysis of food constituents and additives.

457. Quality Control in the Food Industry
Winter of even-numbered years. 3(3-0)
SST 201 or approval of department. Organization of quality control within the food industry by case study. Use of control charts, sampling plans, flavor panel analyses.

458. Special Problems in Food Science
Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 9 credits. Advanced undergraduates may select research work in food chemistry, food microbiology, food engineering, food plant management, processing dairy products, meat, poultry and fishery products, fruits and vegetables, cereals or beverages.

460. Seminar
Fall. 1(1-0) Approval of department. Preparation and presentation of reports on a specialized aspect of food science.

828. Food Processing Concepts, Systems and Selected New Processes
Winter. 3(3-0) 331, 332 or 440, or approval of department. Concepts of and requirements for processing systems and continuous processes. Use of computers in food processing; microwave heating of foods; radiation preservation of foods and related processing methods.

830. Thermal Processing of Food Products
Winter. 4(3-3) 331; 332 or 440, or approval of department. Heating and cooling characteristics of foods in containers, thermal resistance of microorganisms, and derivation of process times and temperatures for pasteurization and sterilization.

832. Microbiology of Food Processing
Fall. 3(2-3) 440 or approval of department. Control of food spoilage and food poisoning microorganisms in food processing and the role of bacterial spores in process selection.

850. Selected Topics in Food Science
Fall of even-numbered years. Winter and Spring of odd-numbered years. 3(3-0) May re-enroll for a maximum of 9 credits if a different topic is taken. Approval of department. Fall: advanced food plant management. Winter: utilization, additives and new processing methods. Spring: flavor and color evaluation and advanced statistical quality control.

880. Special Problems in Food Science
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 12 credits. Approval of department. Investigation of food science areas of special interest to individual graduate students.

889. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

931. Research Techniques and Instrumentation
Fall, Winter, Spring. 3(1-6) May re-enroll for a maximum of 9 credits if a different topic is taken. 455 or 456 or approval of department.

950. Advanced Topics in Food Science
Fall, Winter, Spring. 3(3-3) May re-enroll for a maximum of 15 credits if a different topic is taken. 333, BCH 401 or approval of department. Fall of odd-numbered years: Advanced Chemical Concepts of Carbohydrates and Proteins. Winter of even-numbered years: Lipids. Spring of even-numbered years: Enzymatic Reactions. Fall of even-numbered years: Chemistry of Plant Products. Spring of even-numbered years: Muscle Chemistry.

990. Food Science Seminar
Fall, Winter, Spring. 1(1-0) May re-enroll for a maximum of 3 credits toward M.S. and 6 credits toward the Ph.D. Approval of department. Preparation and presentation of reports on a specialized aspect of research findings in food science.

999. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

200. Food Preparation
Fall, Spring. 3(2-6) CEM 132. Scientific principles of food preparation with special emphasis on the physical and chemical changes involved.

200A. Lectures in Foods
Fall, Spring. 1(2-0) 100; CEM 132. Lecture part of 200. Completion of this course, 100 and CEM 132 constitutes substitution for 200.

220. Meal Management
Fall, Winter, Spring. 5(3-4) Sophomores. Analysis of factors that influence family meals; family food behavior, resources, and family goals and values. Emphasis on the use of the money resource. Survey of patterns for meal service. Study of food laws.

350. Fundamental Principles of Nutrition
Winter. 4(3-2) FSL 331 or BCH 200 or concurrently. Identification, function, metabolism and food sources of specific nutrients required by man for normal growth and development.

400H. Honors Work
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for a maximum of 16 credits. Seniors, approval of department.

403. Experimental Foods I
Fall. 4(3-6) 200 or FSC 211. Colloidal properties of foods with special reference to protein in food preparation. Objective and subjective evaluation of effect of ingredient proportion, manipulation, temperatures, etc. on quality characteristics. Simple statistical treatment and interpretation of data.

404. Experimental Foods II
Fall. 4(3-6) 200 or FSC 211. Continuation of 403 with focus on chemical and physical properties of fats and carbohydrates as they affect food preparation and preservation.

406. Cultural Aspects of Food
Spring. 9(3-0) Juniors. A cross cultural investigation of food and its consumption. Factors such as history, religion, food sources and socio-economic status are considered.

406L. Laboratory—Cultural Aspects of Food
Spring. 1(0-3) 100 or 200; 406 or concurrently. Art and science of cookery in relation to historical, national, regional, racial and religious customs.

409. Demonstrations in Foods and Nutrition
Winter. 4(1-6) 403; 350 or 481; COM 101 or ATL 112; or approval of department. Principles and techniques of demonstration as applied to teaching or promotional work.

452. Patterns of Food Selection
Fall. Summer of even-numbered years. 3(3-0) 350 or equivalent credit in nutrition and chemistry; teaching or extension experience. Factors influencing food choices. Evaluation of dietary habits in relation to nutritional needs of individuals.
453. Readings in Nutrition
Winter. 3(3-0) 452 or approval of department. A study of recent developments in research in human nutrition.

454. Recent Advances in Foods
Spring. 3(3-0) 403. Critical analysis of recent developments in preparation, preservation and conservation of foods.

461. Human Nutrition I
Fall. 4(2-2) BCH 200; PSL 332 or 341.
Metabolism of protein, fats and carbohydrates, as applied to nutritional requirements and food supplies of people.

462. Human Nutrition II
Winter. 4(2-2) 481.
Metabolism of vitamins and minerals as applied to the nutritional requirements and food supplies of people.

463. Human Nutrition III
Spring. 4(3-0) 462.
Critical analysis of methods used in assessing human nutrition status; evaluation of nutritional problems of current interest.

464. Diet Therapy
Spring. 4(2-2) 462 or concurrently.
Dietary modifications necessary in pathological conditions, including dietary treatment of diabetes, gout, nephritis, and gastrointestinal disorders.

800. Seminar in Foods and Nutrition
Fall, Winter, Spring. 1(1-0) 403 or 463.

805. Experimental Foods III
Spring. 4(1-5) 404 or approval of department.
Planning, executing, and reporting individual research projects. Data collection, evaluation and interpretation to demonstrate understanding of research techniques and attitudes, and awareness of significant problems in the field.

813A. Special Studies in Nutrition
Fall, Winter, Spring. Variable credit. 461.

813B. Special Studies in Experimental Foods
Fall, Winter, Spring. Summer. Variable credits. 404; BCH 200 or 803 and 804.

816. Applied Human Nutrition
Spring. 3(3-0) 462.

825. Techniques in Nutrition Research
Winter. 3(3-0) 3 credits. CEM 333; approval of department. Interdepartmental with and administered by the Animal Husbandry Department. Use of specialized instruments and techniques. Laboratory safety. Management of laboratory animals. Development of abilities in areas of particular interest to individual students.

889. Research
Fall, Winter, Spring. Summer. Variable credit. Approval of department.

927. Comparative Nutrition I
Winter. 2 or 4 credits. BCH 402; PSL 502 or concurrently. Interdepartmental with the Animal Husbandry Department. Mammalian nutrition based on biochemical and physiological phenomena. Proteins are studied in the first half of the term; carbohydrates, fats and macro-minerals in the last half.

928. Comparative Nutrition II
Spring. 2 or 4 credits. BCH 402; PSL 502 or concurrently. Interdepartmental with and administered by the Animal Husbandry Department. Mammalian nutrition based on biochemical and physiological phenomena. Micro-minerals are studied in the first half of the term; vitamins in the last half.

999. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

FOREIGN LANGUAGES
See German and Russian, Linguistics and Oriental and African Languages, and Romance Languages.

FOREST - Descriptions of Courses

309. Wood Technology
(F P 309.) Winter. 4(2-4)
Structures of wood. Mechanical and physical properties of wood. Wood anatomy and relations to growth.

348. Forest Regulation and Valuation
Winter, 3(3-0) 392, 305.
Principles of organizing and regulating forest properties; basic forest valuation procedures.

409. Forest Hydrology
Winter, 3(3-0) SLS 210.
Hydrologic cycle, with emphasis on soil, water and ground water resources; instrumentation and measurement of the various components. Effects of forest management on water quantity and quality.

410. Forest Tree Improvement
Fall. 3(2-3)
Distribution of genetic variation in natural tree populations. Introduction, selection, progeny testing, species hybridization, and polyembryony to obtain superior tree populations.

411. Tree Physiology
Fall. 3(3-0) BOT 301.
The fundamental principles of plant physiology with particular reference to the growth and development of woody plants, and consideration of the influence of genetic and environmental factors on physiological processes in trees.

419. Woodland Forestry
Fall, Spring, Summer. 3(2-2) Not open to majors.
Management of small woodlands. Tree identification, forest planning, improvement cutting, harvesting methods, forest measurements; use and marketing of forest products; other uses. One-day field trip required.

424. Forest Soils
Spring, 4(3-3) 220; SLS 210. Interdepartmental with the Soil Science Department.
Interrelationships of forestry site and the growth of forest. Classification, productivity and productivity of forest soils. Effects of silvicultural and forest management practices on the soil. Two-day field trip required.

430. Lumber Processing
(F P 310.) Fall. 3(3-0) 309.

431. Fiber and Laminated Wood Processing
(F P 410.) Spring. 3(3-0) 309.

446. Range Management
Winter. 4(2-3) 229 or approval of department.
Development of range industry; grazing regions and reconnaissance; planning multiple-use management on forest range and wateredatos.

449. Field Studies in Forestry
Fall. 5 credits. 348.
Intensive study of multiple use forest resource management in various forest regions. Three-week field trip required.