

**350. Leadership Development for Agriculture and Natural Resources**

Winter, Spring. 3(3-0) May re-enroll for a maximum of 6 credits. Approval of department. Interdepartmental with and administered by Agriculture.

Leadership development. Preparation for community leadership. Firsthand look at social, economic, and political problems. Series of seminars, interviews, field trips. Emphasis on awareness, action, and involvement.

**425. Agriculture and Natural Resources Seminar**

Spring. (2-0) Interdepartmental with and administered by Agriculture.

Current agricultural, natural resources, and environmental problems and solutions as presented by discussion leaders from various disciplines, arranged by undergraduate students.

**450. Natural Resource Administration**

Fall, Spring. 4(4-0) Interdepartmental with Fisheries and Wildlife, Forestry, Parks and Recreation Resources and Resource Development Departments. Administered by the Forestry Department.

Concepts and methods of administering wildland properties. The legal, economic and social environment. Benefit-cost analysis of management changes. Unit organization, personnel management and accounting. Presents a systems view of administration.

**471. Environmental Topics in Nonmetropolitan Regions**

Fall. 4(4-0) Nomination of students by own department and approved by participating faculty. Interdepartmental with the College of Natural Science and Agriculture.

Environmental topics in nonmetropolitan regions including issues on: production agriculture, service industries, nonagricultural uses, rural urban balance, discussion topics and case studies.

**475. International Studies in Agriculture and Natural Resources**

Summer. 3 to 9 credits. Approval of the college. Interdepartmental with and administered by Agriculture.

Study-travel experience emphasizing contemporary problems affecting agriculture in the world, national, and local communities. Field trips, case studies, interviews with leading experts, government officials, community leaders. Supervised individual study.

**491. Natural Resources and Modern Society**

Spring, Summer. 3(3-0) Juniors. Interdepartmental with the Forestry and the Resource Development Departments and administered by Forestry Department.

A survey of the social and economic significance of natural resources in modern industrial and urban society. Current problems of natural resources management and use are examined in terms of the society in which they exist.

**111. The Nature of Science I**

(192A.) Fall, Winter, Spring, Summer. 4(2-3)

The development and validation of scientific concepts as examples of man's attempt to understand the world in which he lives. Selected topics from the life sciences illustrate the process of scientific investigation.

**112. The Nature of Science II**

(193A.) Fall, Winter, Spring, Summer. 4(2-3) 111 preferred; or 117, 121, 131, 151, 171H, 181, or 322.

Man's attempts to explain the present in terms of past events are explored through selected topics from the life sciences and earth sciences. Stresses the role of controversy in science and the nature of scientific evidence.

**113. The Nature of Science III**

(183., 191A.) Fall, Winter, Spring, Summer. 4(2-3) 112 preferred; or 118, 122, 132, 134, 152, 172H, or 182.

The origin and development of scientific explanations of the physical world. The origins of modern science and scientific revolutions.

**116. Integrated Studies in Science I**

(191D.) Fall, Winter, Spring, Summer. 4(2-3)

Science as a process of studying of nature, explored through consideration of the organization science perceives in nature. Topics from the physical and life sciences used to illustrate the integration of the sciences into a concept of natural systems.

**117. Integrated Studies in Science II**

(192D.) Fall, Winter, Spring, Summer. 4(2-3) 116 preferred; or 120, 150, 160, or 321.

The nature of scientific theories and the means of supporting or refuting them. Emphasis on the interaction of theories from the physical, earth and life sciences.

**118. Integrated Studies in Science III**

(193D.) Fall, Winter, Spring, Summer. 4(2-3) 117 preferred; or 111, 121, 131, 151, 171H, 181, or 322.

The use and limitations of scientific problem-solving. The interaction of the physical, earth and life sciences in the development of integrative-interdisciplinary solutions to important contemporary problems.

**120. Science, Beliefs and Values I**

(191B.) Fall, Winter, Spring, Summer. 4(2-3)

Man's attempts to understand the universe and his place within it. The interaction between scientific concepts and the beliefs and values of the culture in which they are proposed.

**121. Science, Beliefs and Values II**

(192B.) Fall, Winter, Spring, Summer. 4(2-3) 120 preferred; or 116, 150, 160, or 321.

The nature of living things, contrasting various scientific and non-scientific views. The implications of the modern scientists' understanding of life for our beliefs and values.

**122. Science, Beliefs and Values III**

(193B.) Fall, Winter, Spring, Summer. 4(2-3) 121 preferred; or 111, 117, 131, 151, 171H, 181, or 322.

Man's current understanding of himself and his beliefs as products of biological and cultural evolution. Implications for man's future.

**127. The Bio-ecology of Health**

Fall, Winter, Spring. 4(3-2)

Man's health examined from evolutionary and ecological viewpoints. Emphasis on the impact an increasingly man-made environment has had on the health of Western man.

**131. Science, Man and Society I**

(192C.) Fall, Winter, Spring, Summer. 4(2-3)

The role science plays in our lives is explored through consideration of aspects of reproduction and heredity. Emphasis on the origin of scientific explanations and their significance to the individual.

**132. Science, Man and Society II**

(193C.) Fall, Winter, Spring, Summer. 4(2-3) 131 preferred; or 111, 117, 121, 151, 171H, 181, or 322.

The origin and evolution of earth and man are studied as vital and related problems. Emphasis on problem-solving in science and the impact of evolutionary concepts on human societies.

**133. Science, Man and Society III**

(191C.) Fall, Winter, Spring, Summer. 4(2-3) 132 preferred; or 112, 118, 122, 134, 152, 172H, or 182.

Origin, growth and nature of theories in modern science. Includes aspects of astronomy and radioactivity. Emphasis on the application of scientific methodology and its products to problems of society.

**134. Science, Man and Society IV**

(193F.) Fall, Winter, Spring, Summer. 4(2-3) 131 preferred; or 111, 117, 121, 151, 171H, or 181.

Biological concepts of race. Exploration of scientific alternatives to the currently held biological concept of race.

**150. The Dynamics of Scientific Ideas I**

(191E.) Fall, Winter, Spring, Summer. 4(2-3)

The role of science in the development of western man's ideas about reality. The origin and development of mechanistic concepts of the physical world and their part in intellectual dialogue.

**151. The Dynamics of Scientific Ideas II**

(192E.) Fall, Winter, Spring. 4(2-3) 150 preferred; or 116, 120, 160, or 321.

The influence of scientific ideas about the living world on the western intellectual tradition. Emphasis on the successes and failures of scientific ideas in offering a unified picture of reality.

**152. The Dynamics of Scientific Ideas III**

(193E.) Fall, Winter, Spring. 4(2-3) 151 preferred; or 111, 117, 121, 131, 171H, 181, or 322.

Controversies concerning interpretation of modern scientific concepts such as evolution, uncertainty and relativity are discussed in terms of developing a personal philosophy.

**160. Knowledge and Science**

(191B.) Fall, Winter, Spring, Summer. 4(2-3)

The intuitive and reasonable nature of scientific "truth" is examined in relation to the structure and functions of the human brain.

**171H. Honors Natural Science**

(192H.) Fall. 4(2-3)

Exploration of various topics of interest and value to students eligible for Honors, especially the nature and significance of science in western culture and its interrelationship with other creative activities.

**172H. Honors Natural Science**

(193H.) Fall, Winter, Spring, Summer. 4(2-3) 171H.

A continuation of 171H.

**NATURAL SCIENCE N S**

**University College**

Students may earn credit in only one of the courses in each of the following three groups:

1. 111, 117, 121, 131,
2. 112, 118, 122, 132, 134,
3. 113, 116, 120, 133,
1. 151, 171H, 181, 322
2. 152, 172H, 182, 323
3. 150, 160, 173H, 183, 321

**173H. Honors Natural Science**  
(191H.) Fall, Winter, Spring, Summer.  
4(2-3) 172H.  
Continuation of 172H.

**181. Natural Science**  
Fall. 4(2-3) Approval of department.  
The role of methods in science emphasizing the development and modification of systems of explanation. The nature of the cell and sexual reproduction as background for Mendelian gene theory and its modern modifications. Social implications are emphasized.

**182. Natural Science**  
Winter. 4(2-3) 181 or approval of department.  
Methods in science continued with emphasis on evolutionary ideas regarding the origin of earth features and existing life forms. The origin and development of man is considered along with a number of modern problems.

**183. Natural Science**  
Spring. 4(2-3) 182 or approval of department.  
Nature of science as exemplified by ideas from Physical Science. The Copernican Revolution is used as an example of the science-society interaction. Modern concepts of the nature of matter are also introduced.

**200. Technology and Society**  
Winter. 3(3-0) Twelve credits of natural science. Interdepartmental with and administered by the Engineering Department.  
An attempt to describe and analyze portions of current technology and its desired and undesired consequences; and exploration of avenues for assessing such consequences for future technologies.

**300. Supervised Individual Study**  
Fall, Winter, Spring. 2 to 4 credits.  
12 credits in department courses, or approval of department.  
Selected students requesting individual study of interdisciplinary problems will work under supervision of University College professors. Variable elective credit will be determined when the student secures instructor, adviser, and department approval.

**321. Studies in Natural Science I**  
Fall. 4(2-3) Juniors.  
An interdisciplinary analysis of the nature of science and its role in the human experience, with emphasis on science as a way of knowing. Subject matter used includes material from the physical sciences.

**322. Studies in Natural Science II**  
Winter. 4(2-3) Juniors.  
An interdisciplinary study of the nature of science and its role in the human experience, with emphasis on the way science affects society and is, in turn, affected by society. Subject matter used includes material from the biological sciences.

**323. Studies in Natural Science III**  
Spring. 4(2-3) Juniors.  
An interdisciplinary approach to the nature of science and its role in the human experience, with emphasis on man and his understanding of the world around him. Subject matter used includes material from the historical sciences.

**401. Technology Assessment**  
Spring. 3(3-0) Seniors, or approval of department. Interdepartmental with and administered by the Engineering Department.  
Sociotechnical evaluation of impact of proposed technologies on economic, political, and cultural aspects of society. Identification of technical strategies and social goals. Techniques of assessment.

## NATURAL SCIENCE NSC (COLLEGE OF)

**390H. The Human Organism**  
Winter. 3(2-0) Juniors; approval of the Honors College.  
The importance of new discoveries in biology for our understanding of the human organism with emphasis from the fields of genetics, molecular biology, behavior, developmental biology, physiology and ecology.

**391H. Man's Universe**  
Fall. 3(2-0) Juniors; approval of the Honors College.  
A creative review by senior faculty from astronomy, biochemistry, biophysics, geology, physics, and philosophy of the impact of recent space probes in developing modern concepts of the universe, the origin of the earth and life upon it.

**471. Environmental Topics in Nonmetropolitan Regions**  
Fall. 4(4-0) Nomination of students by own department and approved by participating faculty. Interdepartmental with Natural Resources and Agriculture and administered by Natural Resources.  
Environmental topics in nonmetropolitan regions including issues on: production agriculture, service industries, nonagricultural uses, rural urban balance, discussion topics and case studies.

**800. Electron Microscopy of Biological Material**  
Fall. 4(2-6) Approval of instructor.  
Preparation of biological material for observation in the electron microscope; operation and principles of the electron microscope; associated electron microscope photography and darkroom techniques.

**801. Special Problems in Electron Microscopy**  
Fall, Winter, Spring, Summer. 1 to 15 credits. Approval of instructor.

## NURSING NE College of Natural Science

**205. Foundations of Nursing**  
Fall. 3(2-3) Approval of school.  
Introduction to principles basic in identifying nursing problems and their use in sound planning of patient care.

**206. Foundations of Nursing**  
Winter. 4(3-3) 205.  
Fundamental principles are presented as they relate to the care of the whole person; identification of problems confronting the individual in illness, methods of approach to the patient as a person whereby joint effort may contribute to improved well-being and/or recovery.

**207. Foundations of Nursing**  
Spring. 4(2-6) 206.  
Continues building on concepts, using principles and knowledge introduced in the foregoing nursing courses. The laboratory now moves into the clinical area where practice in the nursing of patients becomes the focus of application of past learning and study.

**303. Medical and Surgical Nursing**  
Fall, Spring. 12 credits. 207.  
Care of individuals receiving medical and surgical therapy with emphasis on integration of preventive, emotional and social aspects of illness, pathological relationships, and all forms of therapy and rehabilitation as they relate to medical and surgical nursing. Instruction and guided practice.

**304. Medical and Surgical Specialties**  
Winter, Summer. 12 credits. 303.  
Continuation of 303.

**305. Maternity Nursing**  
Fall, Winter, Spring, Summer. 12 credits. Approval of school.  
Nursing through pregnancy, parturition, and puerperium, including care of the new born. Instruction and guided practice.

**306. Nursing of Children**  
Fall, Winter, Spring, Summer. 12 credits. 207; FCS 262B.  
Normal growth and development from infancy through adolescence, care and health supervision of well children, treatment and rehabilitation of sick and handicapped children. Instruction and guided practice.

**400H. Honors Work**  
Fall, Winter, Spring, Summer. 1 to 12 credits. Approval of school.

**402A. Psychiatric Nursing of Individuals**  
(402.) Fall, Winter, Spring. 6 credits. Seniors, 402B concurrently.  
Provides opportunities to develop skill in utilizing concepts and principles relevant to creating and maintaining therapeutic interpersonal relationships; individual and group participation with other professionals in providing comprehensive mental health services to the mentally ill individual and his family.

**402B. Group Process and Community Action in Psychiatric Nursing**  
(402.) Fall, Winter, Spring. 6 credits. Seniors. 402A concurrently.  
Provides opportunities to develop skill in utilizing concepts, principles and dynamics of group and community interactions relevant to providing nursing intervention in programs for primary, secondary and tertiary prevention in community mental health.

**403A. Introduction to Public Health**  
Fall, Winter, Spring. 4(4-0) Majors or approval of school.  
Philosophy, development, organization, and responsibilities of public health are explored in the light of the current economic and political climate. An introduction to vital statistics, epidemiology, and environmental health is included. Provides a frame of reference for practice in this field.

**403B. Public Health Nursing**  
Fall, Winter, Spring. 8(4-16) Seniors.  
Relationships between public health nursing and other health and welfare services. Guided practice is provided for students working with individuals, families and community resources. Major focus is on health maintenance, health promotion and nursing care to the sick in their homes. Roles, responsibilities and functions of the nurse in the community are stressed.

**404. Survey of Nursing**  
Fall, Winter, Spring. 4 credits. Seniors.  
Development of nursing to present status, current problems and long-term goals. Fields of service open to graduate nurses; nursing organizations, national, state and local, their services and objectives.