

NATURAL RESOURCES N R

College of Agriculture and Natural Resources

202. Soils and Man's Environment

Winter. 3(3-0) *Interdepartmental with the departments of Crop and Soil Sciences, Resource Development, and Fisheries and Wildlife and administered by the Department of Crop and Soil Sciences.*

Use of soil and water resources in a technological society as it relates to environmental quality. Nature of pollution problems and their possible solutions. Food production and world population.

220. Plants and Their Environment

Winter. 3(3-0) *Interdepartmental with and administered by the Forestry Department.*

Fundamental ecological relationships between various climatic, edaphic and biotic environmental factors of the ecosystem and plant response, including structure, function and evaluation of species.

275. Exploring International Agriculture

Spring. 3(3-0) *Interdepartmental with and administered by Agriculture.*

Exploration of overseas assignments with international agencies; potential world food actualities and potentialities; special problems of the tropics compared with those in temperate regions.

350. Leadership Development for Agriculture and Natural Resources

Winter, Spring. 3(3-0) *May 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. Field trips required.

399. Agriculture Internship

Fall, Winter, Spring, Summer. Zero to 10 credits. [10 credits.] *† Juniors and approval of department. Interdepartmental with and administered by Agriculture.*

Professionalized experiences in a student's major. Supervision and evaluation conducted by faculty and cooperating agencies.

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.

435. Pest Management I: Pesticide Chemistry and Application Systems for Plant Protection

Fall. 5(3-4) CEM 132. *Interdepartmental with Agriculture and the College of Natural Science. Administered by the College of Natural Science.*

A broad overview of pesticide chemistry, efficient usage, environmental fate, legislation and application techniques.

†See page A-2 item 3.

436. Pest Management II: Biological Systems for Plant Protection

Winter. 3(3-0) ENT 430, BOT 405, HRT 402 or CSS 402. *Interdepartmental with Agriculture and the College of Natural Science. Administered by the College of Natural Science.*

Management of plant pests utilizing host resistance, cultural practices, legislation, and biological systems.

437. Pest Management III: Systems Management for Plant Protection

Spring. 4(3-2) NSC 435 and 436, FSM 200 or EC 201. *Interdepartmental with Agriculture and the College of Natural Science. Administered by the College of Natural Science.*

Designed to integrate knowledge and improve ability in arriving at pest management decisions of varying complexity involving the fields of agronomy, wildlife, horticulture, entomology, and plant pathology.

450. Natural Resource Administration

Fall, Spring. 4(4-0) Seniors. *Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Park and Recreation Resources and Resource Development. Administered by the Department of Forestry.*

Concepts and methods of administering wild-land 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.

455. Natural Resource Economics

Winter. 4(4-0) 450 or approval of department. *Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Park and Recreation Resources and Resource Development. Administered by the Department of Forestry.*

Basic economic and political principles and techniques that govern the production and consumption of forest land products, including basic forest valuation procedures.

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.

NATURAL SCIENCE N S

University College

Students who have not taken any of the required natural science courses, may take any three courses from the following list.

N S 115, 122, 125, 135, 142, 152, 162, 171H, 172H, 173H

OR

If you are enrolled in ATL 101, you may take N S 181, 182, 183.

Students who already have taken one or two natural science courses should refer to the chart below to complete the University requirements of 12 credits in Natural Science.

You may take	if you have not had credit in
N S 115	111, 116, 121, 131, 140, 151, 161, 181, 192, 322
122	193
125	112, 117, 132, 141, 182, 193, 323
135	113, 120, 133, 150, 160, 183, 191, 321
142	118, 193
152	193
162	193
171H	192
172H	193
173H	191
181	115 (111, 116, 121, 131, 140, 151, 161, 192, 322)
182	125 (112, 117, 132, 141, 193, 323)
183	135 (113, 120, 133, 150, 160, 191, 321)

115. The Nature and Continuity of Life

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

- A. The development and testing 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 nature of scientific investigation.
- B. Theories of the origin, development and structure of life and the universe of which it is a part. Examination of contemporary problems associated with defining life and death.
- C. Consideration of social and ethical issues relating to our increasing control of reproduction and heredity. Reproduction and heredity from molecular, cellular and organismic perspectives, including human structure and function.
- D. 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. Biosocial Evolution of Man

(193B. Fall, Winter, Spring. 4(3-2)

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

125. Time and Change in Nature

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

- A. 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.
- B. Heredity, evolution and diversity of life are examined from the viewpoint of the biological and cultural development of the human species. Evolutionary relationships between humans and their environment.
- C. The origin and evolution on earth and living things are studied as vital and related problems. Emphasis on problem-solving in science and impact of evolutionary concepts on human societies.

**Descriptions — Natural Science
of
Courses**

127. The Biocology 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.

129. The Biotechnology of Health

Winter, Spring. 4(4-0)

Survey of the biotechnology currently and potentially available to manage health problems. Social issues associated with this biotechnology.

135. Changing Concepts of the Universe

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

- A. The origin and development of scientific explanations of the physical world. The origins of modern science and scientific revolutions.
- B. 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.
- C. Growth of theories of celestial motion and of matter. Their interrelationship. Impact of scientific knowledge on society. The contribution of science to clarification and solution of social problems.
- D. 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.

142. Life, Its Environment

(118., 193D.) Fall, Winter, Spring, Summer. 4(2-3)

Natural ecological systems and the impact of human biological and cultural development on them. Examination of specific ecological problems and the role of science in seeking solutions.

152. The Dynamics of Scientific Ideas III

(193E.) Fall, Winter, Spring. 4(2-3)

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

162. Evolution of Scientific Ideas III

(193F., 134.) Fall, Winter, Spring, Summer. 4(2-3) Any group, one course.

The nature of science, its powers, its limitations and the interaction of science and culture. Human races and mankind evolving. The biological concepts of races based on the theories of the gene, evolution, and natural selection.

171H. Man's Nature

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

Various issues confronting modern man in his attempt to understand his biological self. Emphasis on the role that science can play in helping to resolve these issues.

172H. Man's Place in Nature

(193H.) Winter. 4(3-2)

Various issues confronting modern man in his attempt to understand his place in and relation to the environment. Emphasis on the role of science in helping to resolve these issues.

173H. Science-Technology and Human Values

(191H.) Spring. 4(3-2)

The nature and significance of science and technology in Western culture, with emphasis on their relationship to other creative activities, particularly those within the arts.

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) One term of American Thought and Language. 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, Summer. 2 to 4 credits. May re-enroll for a maximum of 12 credits. 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.

310. Science and Pseudoscience

Spring. 3(3-0) Juniors.

Techniques of reasoned, critical analysis applied to science-related ideas such as astrology, gods from outer space, and the secret life of plants. Specific topics selected from recent writings.

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.

325. Biological and Social Aspects of Human Reproduction

Spring. 4(4-0) Juniors or approval of department.

Anatomy and physiology of human reproduction will be integrated with consideration of such current social concerns as contraception, abortion, venereal disease and drugs.

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)**

IDC. Human Adjustment to Environment

For course description, see Interdisciplinary Courses.

390H. The Human Organism

Winter. 3(3-0) 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(3-0) 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.

400. Nature and Uses of Electron Microscopes

Fall. 3(2-1) MTH 111, Juniors, 1 year college physics.

Principles of electron optics including history, construction, and design of electron optical equipment. Lectures and demonstrations will be given on uses of various types of electron microscopy in representative biological and physical sciences.

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