

**845. Pedagogy of Theory**  
(840.) Spring, Summer. 3(3-0) Approval of department.  
Music theory treatises and pedagogical practices of historical importance.

**850. Applied Music**  
Fall, Winter, Spring, Summer. 3 credits for Applied Music majors; 2 credits for others. May re-enroll for credit.

**852. Choral Technique and Materials**  
Spring, Summer. 3(3-0) Completion of undergraduate program in music education. Advanced course for further development of choral proficiency. Demonstrations of choral techniques, conducting by students, examination and evaluation of new materials.

**860. Problems in Analysis**  
Fall, Winter, Spring, Summer. 4(4-0) May re-enroll for a maximum of 8 credits. Approval of department.  
An application of analytical procedures to school music repertoire.

**880. Materials of Music**  
Fall, Winter, Spring, Summer. 1 to 4 credits. 282.  
Correlation of the areas of music theory as a basis for the study of 19th and 20th century music.

**881. Materials of Music**  
Fall, Winter, Spring, Summer. 1 to 4 credits. 880.  
Continuation of 880.

**882. Materials of Music**  
Fall, Winter, Spring, Summer. 1 to 4 credits. 881.  
Continuation of 881.

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

**903. Proseminar in Music Education**  
Fall, Winter, Spring, Summer. 3(3-0) May re-enroll for a maximum of 9 credits. Approval of department.  
Consideration of problems of music teaching and learning with readings from aesthetics, psychology, human growth, and education.

**915. Medieval Music**  
Fall. 3(3-0)  
Investigation of various developments in European music to middle of fifteenth century. Some attention given to Gregorian Chant as well as to various types of secular Monody, but greater stress is laid on the forms and styles of Polyphonic music.

**916. Renaissance Music**  
Winter. 3(3-0)  
Investigation of developments in European music from 1450 to 1600, tracing developments in both sacred and secular music.

**917. Music of the Seventeenth Century**  
Spring. 3(3-0)  
Instrumental and vocal music of Early Baroque period.

**924. Seminar in Musicology**  
Fall, Winter, Spring. 3 credits. May re-enroll for credit. Approval of department.

**954. Music Supervision**  
Summer of even-numbered years. 3(3-0) Completion of undergraduate program in Music Education.

**955. Current Tendencies in Music Education**  
Winter of even-numbered years. Summer of odd-numbered years. 3(3-0) Completion of undergraduate program in Music Education.

**956. Advanced Research Techniques in Music**  
Spring, Summer. 3(3-0) Approval of department.  
Application of behavioral research to music including development and validation of original data gathering devices.

**960. Analytical Studies in Music Literature**  
Fall, Summer. 3(3-0) 382 and two years of music literature or approval of department.  
Melodic, formal, contrapuntal and harmonic analysis of music from plainsong to contemporary music.

**961. Analytical Studies in Music Literature**  
Winter, Summer. 3(3-0) 960.  
Continuation of 960.

**962. Analytical Studies in Music Literature**  
Spring, Summer. 3(3-0) 961.  
Continuation of 961.

**970. Contrapuntal Techniques**  
Fall of odd-numbered years, Summer. 3(3-0) 482 or approval of department.  
Advanced contrapuntal practice from the sixteenth century to the present.

**971. Contrapuntal Techniques**  
Winter of even-numbered years, Summer. 3(3-0) 970.  
Continuation of 970.

**972. Contrapuntal Techniques**  
Spring of even-numbered years, Summer. 3(3-0) 971.  
Continuation of 971.

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

## NATURAL RESOURCES N R

### College of Agriculture and Natural Resources

**202. Soils and Man's Environment**  
Winter. 3(3-0) Interdepartmental with the Resource Development, and Fisheries and Wildlife Departments and Soil Science and administered by Soil Science.  
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 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.

**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 students 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.

**436. Pest Management II: Biological Systems for Plant Protection**  
Winter. 3(3-0) ENT 430, BOT 405, HRT 402 or CSC 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.

†See page A-2 item 3.

**Descriptions — Natural Resources  
of  
Courses**

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

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.

**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**

To satisfy the University General Education requirement, a student must take one course in each of the following groups. Additional courses may be taken for elective credit.

1. 111, 117, 121, 131, 151, 171H, 181, 322.
2. 112, 118, 122, 132, 152, 162, 172H, 182, 323.
3. 113, 116, 120, 133, 150, 160, 173H, 183, 321.

**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 121, 131, 141, 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**

(191A.) Fall, Winter, Spring, Summer. 4(2-3) 112 preferred; or 122, 132, 142, 152, 162, 172H, or 182.

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

**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 140, 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, 131, 141, 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 Bioecology 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, 121, 141, 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, 122, 142, 152, 162, 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.

**140. Life, Its Origin**

(116., 191D.) Fall, Winter, Spring, Summer. 4(2-3)

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.

**141. Life, Its Continuity**

(117., 192D.) Fall, Winter, Spring, Summer. 4(2-3)

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.

**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.

**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 120, 140, 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, 121, 131, 141, 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. Evolution of Scientific Ideas I**

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

The nature of science, its power, its limitations and the interaction of science and culture. The idea of motion and/or matter from early concepts to relativity.

**161. Evolution of Scientific Ideas II**

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

The nature of science, its power, its limitations and the interaction of science and culture. The evolution of the gene concept from Mendel to modern times. Genetic theory—its application to man.

**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.