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 of earth and living things are studied as vital and related problems. Emphasis on problem-solving in science and impact of evolutionary concepts on human species.  

127. **The Bioecology of Health**  
Fall, Winter, Spring. 4(3-2)  
Man's health examined from evolutionary and ecological viewpoints. Emphasis on the impact of increasingly man-made environment has had on the health of Western man.  

129. **The Biotechnology of Health**  
Fall, 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.  
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**  
(111) Fall, Winter, Spring. 4(3-2)  
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.  

142A. **Life, Its Environment**  
Summer. 4(3-2) Approval of instructor. May not receive credit in both N S 142 and N S 142A.  
Academic goals and objectives are parallel to those for Natural Science 142; however, examination of geological and ecological features will be done through direct experience in wilderness areas off campus. Offered only in an off campus wilderness setting. Approved through Spring term 1980.  

152. **Science and Culture in the 20th Century**  
(193E.) Fall, Winter, Spring. 4(3-2)  
Contemporary science involving interpretation of modern scientific concepts such as evolution, uncertainty and relativity are discussed in terms of developing a personal philosophy.  

162. **Race, The Evolution of an Idea**  
Fall, Winter, Spring. 4(3-2)  
Human races and mankind evolving. The biological concept of race 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**  
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(3-2) Not open to students with credit in N S 115. Enrollment in ATL 101 or approval of department.  
Scientific methods emphasizing development and modification of explanation systems. The nature of cells and sexual reproduction as background for Mendelian gene theory and its modern modifications. Social implications are emphasized.  

182. **Natural Science**  
Winter. 4(3-2) Not open to students with credit in N S 125. N S 181 or approval of department.  
Scientific methods with emphasis on evolutionary ideas regarding origin of earth features as related to modern problems. Human origins and development are considered, with a number of modern problems.  

183. **Natural Science**  
Spring. 4(3-2) Not open to students with credit in N S 135. N S 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 cosmology are also introduced.  

200. **Technology and Society**  
Winter. 3(3-0) Twelve credits of Natural Science, Interdepartmental with and administered by the Department of Engineering. 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 receive 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.  

325. **Biological and Social Aspects of Human Reproduction**  
Fall, Winter, 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.  

380. **Issues in Science and Religion**  
Winter. 4(4-0) Juniors or approval of department. Interdepartmental with the Department of Religious Studies. Administered by the Department of Religious Studies.  
History of relationships between science and religion. Methods of science and religion. Attempts at resolution of conflicts and formation of new syntheses.  

401. **Technology Assessment**  
Spring. 3(3-0) Seniors, or approval of department. Interdepartmental with and administered by the Department of Engineering. 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.  

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**NATURAL SCIENCE NSC**  
(COLLEGE OF)  

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 on 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.  

392H. **The Uniqueness of Man**  
Spring. 3(3-0) Approval of the Honors College, or course coordinator.  
Physiological processes; behavioral mechanisms; genetic information; life support systems; physical disorders and adjustment to hostile environments.  

401. **Nature and Uses of Electron Microscopes**  
Fall. 3(2) 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.  

A-148
444. Pest Management I: Systems Management for Plant Protection
(437) Fall, 4(3-2) FSM 200 or EC 201. Interdepartmental with Agriculture and Natural Resources.
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.

445. Pest Management II: Pesticide Chemistry and Application Systems for Plant Protection
(435) Winter, 5(3-4) CEM 132. Interdepartmental with Agriculture and Natural Resources.
A broad overview of pesticide chemistry, efficient usage, environmental fate, legislation and application techniques.

446. Pest Management III: Biological Systems for Plant Protection
(436) Spring, 3(3-0) ENS 140, BOT 405, HRT 402 or CSS 402. Interdepartmental with Agriculture and Natural Resources.
Management of plant pests utilizing host resistance, cultural practices, legislation, and biological systems.

460. Clinic in Natural Science Teaching
Fall, Winter, Spring, Summer. 1 credit. May reenroll for a maximum of 6 credits. Bachelor's degree.
Each practicum will deal with a specific science or science related problem and its implications for instruction. Discussions are intended to have immediate application by participants.

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

810. Methods in Transmission Electron Microscopy
Winter, Spring, 3(1-5) NSC 400 or approval of instructor.
Use of the transmission electron microscopes and preparative instruments. Preparative techniques for biological and nonbiological materials. Photographic principles including interpretation of micrographs.

820. Methods in Scanning Electron Microscopy
Winter, Spring, 3(1-5) NSC 400 or approval of instructor.
Use of the scanning electron microscope and preparative equipment. Preparative techniques for biological and nonbiological materials. Interpretation of micrographs.

830. Analytical Electron Microscopy
Fall, 2(1-3) NSC 810 or NSC 820 or approval of instructor.
Use of X-ray analysis on electron microscopes and electron microprobes with biological and physical materials. Methods of preparation and analysis of product data.

Nursing Descriptions of Courses

401. Nursing VI
Winter, Summer, 10(4-18) N E 400. Individuals in compensated-decompensated health states, families in diminished-unstable health states, and communities in optimal health states. Functions interdependently within health care teams. Applies research findings to practice.

402A. Psychiatric Nursing of Individuals
Fall, Winter, Spring. 6 credits. Seniors. N E 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
Fall, Winter, Spring. 6 credits. Seniors. N E 402A 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.

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.

405. Nursing VII
Fall, Winter, Spring. 10(3-21) N E 401.
Integration of nursing, biological and behavioral sciences stressing application of the nursing process to the care of individuals, families and communities in depleted health states. Applies research findings to practice.

406. Nursing Leadership and Management
Fall, Winter, Spring. 8(4-16) Senior majors.
Three areas of emphasis are leadership, management and problem-solving within health care work groups. Clinical experience throughout the term is continuous within one work group. Clinical laboratory in community hospitals and agencies.

407. Introduction to Nursing Research
Fall, Winter, Spring. 2(2-0) Seniors in School of Nursing.
Critical reading and critique of nursing research literature; define research terminology and procedures and apply to clinical nursing through discussion and writing.