135. Changing Concepts of the Universe (N)
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 (N)
(118.) 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 (N)
(193E.) Fall, Winter, Spring. 4(3-2)
Controversies concerning 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 (N)
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 (N)
(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 (N)
(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 (N)
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.

1814. Natural Science (N)
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.

1824. Natural Science (N)
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.

1834. Natural Science (N)
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, Society and Public Policy
Winter. 3(3-0) Twelve credits from natural science or engineering. Interdepartmental with and administered by Engineering.
Description and analysis of certain current technologies and their consequences; exploration of avenues for assessing such consequences as an aid to formulation of public policy.

300. Supervised Individual Study
Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll 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, veneral disease and drugs.

335. Science, Health and the Consumer
Spring. 4(4-0) Juniors or approval of department.
Scientific basis for decisions affecting individual and public health. Emphasis is on learning to use scientific principles to make rational judgments in these areas.

380. Issues in Science and Religion
Winter. 4(4-0) Juniors or approval of department. Interdepartmental with the Department of Religious Studies and Justin Morrill College. 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.

NATURAL SCIENCE (COLLEGE OF) NSC

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 geneics, 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.

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.

410. Environmental Toxicology
Winter. 4(4-0) B S 212, BCH 401. Interdepartmental with Agriculture and Natural Resources.
Fate and effects of toxic chemicals in soil, plants, wildlife, and aquatic systems. Interactions between chemicals and the environment which influence their fate and ecological importance.

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) ENT 430, 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 technique 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 technique for biological and nonbiological materials. Interpretation of micrographs.

830. Analytical Electron Misroscopy

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 N E

College of Natural Science

200. Nursing I

Spring. 4(4-0) Admission to School of Nursing.

Concepts and theories of nursing, science and Man in relation to professional nursing prctice. Role of nursing in contemporary society.

300. Nursing II

Fall, Summer. 10(7-9) N E 200.

Independent nursing role. The well individual. Holistic approach to Man. Impact of developmental levels upon client health. Application of nursing process in maintaining wellness.

301. Nursing III

Fall, Winter. 10(6-12) N E 300.

Independent nursing role. Application of nursing process in a variety of health care settings. Healthy clients adapting to stress at all stages in the life cycle.

302. Nursing IV

Winter, Spring. 10(5-15) N E 301, N E 441.

Promotion of adaptation of individuals in diminished-stable health states and families in stable health states. Relates research findings to practice.

400. Nursing V

Fall, Spring. 10(5-15) N E 302, N E 407.

Individuals in diminished-unstable health states and families in stable health states. Community assessment skills. Interdisciplinary approach to health care systems. Relates research findings to practice.

400H. Honors Work

Fall, Winter, Spring, Summer. 1 to 12 credits. Approval of school.

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 resesarch findings to practice.

405. Nursing VII

Fall, 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.

407. Introduction to Nursing Research

Winter, Spring. 2(2-0) Approval of school.

Critical reading and critique of nursing research literature; define research terminology and procedures and apply to clinical nursing through discussion and writing.

440. Clinical Problems in Adaptation I

Fall, Summer. 5(5-0) PSL 241 and approval of school.

Homeostasis; range of physiological alterations to stress. Man's adaptive-maladaptive responses.

441. Clinical Problems in Adaptation II

Fall, Winter. 5(5-0) N E 440 and approval of school.

Continuation of N E 440.

490. Special Problems in Nursing

Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 12 credits. Approval of school.

Exploration of certain areas in nursing in greater depth and/or from a different perspective than possible within the limits of required courses.

495. Selected Topics in Nursing

Fall, Winter, Spring. 2 to 6 credits. May reenroll for a maximum of 6 credits if different topic is taken. Approval of school.

Allows exploration of unique issues in nursing. Topics to be selected from current issues.

521. Evaluation of Health Services

Spring. 2 to 4 credits. Approval of instructor. Interdepartmental with and administered by the Department of Community Health Science.

Use of experimental and quasi-experimental designs. Cost benefit and efficiency models. Assessment of health services delivery.

540. Family Health Seminar

(561.) Fall. 3(3-0) Majors or approval of instructor.

Conceptual frameworks of family. Assessment of family health behavior.

541. Facilitating Patient Participation

(552.) Winter. 2(2-0) N E 564 or approval of instructor.

Learning theories and methods to promote patient self care.

564. Primary Care Seminar I: Role of Family Nurse Clinician

(560.) Fall. 2(2-0) Approval of instructor.

Role of the Family Nurse Clinician in primary care.

565. Primary Care Seminar II: Interdisciplinary Team Functioning

(550.) Winter. 2(2-0) Approval of instructor.

Theories of team functioning. Communication, consultation, collaboration, conflict and decision making. Role strategies.

566. Primary Care Seminar III: Organizational Structure

(562.) Spring. 3(3-0) N E 564, N E 565 or approval of instructor.

Organization of primary care. Administration of the nursing service.

567. Primary Care Seminar IV: Health Care Policy

(563.) Summer. 3(3-0) N E 566 or approval of instructor.

Policy influence on health care delivery systems.

570. Nursing Theories and Conceptual Models

Fall. 3(3-0) STT 421 or approval of instructor.

Issues, problems and processes of theory and concept development.