881. *Materials of Music*

Fall, Winter, Spring, Summer. 1 to 4 credits. MUS 880.

Continuation of MUS 880.

882. *Materials of Music*

Fall, Winter, Spring, Summer. 1 to 4 credits. MUS 881.

Continuation of MUS 881.

899. *Master's Thesis Research*

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

903. *Proseminar in Music Education*

Fall, Winter, Spring, Summer. 3(3-0) May reenroll 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 Seventeeth Century*

Spring. 3(3-0)

Instrumental and vocal music of Early Baroque period.

924. *Seminar in Musicology*

Fall, Winter, Spring. 3 credits. May reenroll for credit. Approval of deparment.

943. *Survey of the History of Theory*

Winter. 2(2-0) Approval of department.

Significant theoretical treatises from the 6th century B.C. to the early 20th century.

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*

Fall. 3(3-0) Approval of department.

Analysis of melody, harmony, rhythm, color, texture, counterpoint, and form in part-music from the thirteenth century through the late sixteenth/early seventeenth century.

961. *Analytical Studies*

Winter. 3(3-0) Approval of department.

Analysis of melody, harmony, rhythm, color, texture, counterpoint, and form in music from the late seventeenth/early eighteenth century through the nineteenth century.

962. *Analytical Studies*

Spring. 3(3-0) Approval of department.

Analysis of melody, harmony, rhythm, color, texture, counterpoint, and form in music of the twentieth century.

963. *Schenker Analysis*

Fall. 2(2-0) Approval of department.

Analytical techniques and concepts of Heinrich Schenker. Examination of his sketches and writings, reading about him, and analysis of music using his techniques.

964. *Set-Theory Analysis of Atonal Music*

Spring. 2(2-0) Approval of department.

Set-Theory principles and their application to the analysis of atonal music.

970. *Contrapuntal Techniques*

Fall of odd-numbered years, Summer. 3(3-0) MUS 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) MUS 970.

Continuation of MUS 970.

972. *Contrapuntal Techniques*

Spring of even-numbered years, Summer. 3(3-0) MUS 971.

Continuation of MUS 971.

999. *Doctoral Dissertation Research*

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

College of Natural Science University College

Students who have not taken any of the required natural science courses, may take any three course 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 have already 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)
182	125 (112, 117, 132, 141,193)
183	135 (113, 120, 133, 150,160, 191)

115. *The Nature and Continuity of Life (N)*

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 (N)*

(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 (N)*

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 societies.

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*

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 (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.