930. Music of the 20th Century
Spring. 3(3-0) Approval of department.
Intensive study of selected topics in 20th century music.

931. Seminar in Musicology
Fall, Winter, Spring. 3 credits. May
renewal for a maximum of 15 credits. Approval of department.

932. Survey of the History of Theory
Winter. 3(2-0) Approval of department.
Significant theoretical treatises from the 6th century B.C. to the early 20th century.

933. Administration of Music Education Programs
Spring of even-numbered years. 3(3-0)
Approval of department.
Techniques for administering school music and higher education music programs.

934. Current Tendencies in Music Education
Winter of even-numbered years. 3(3-0)
Approval of department.
Current trends and practices in public school music education.

935. Advanced Research Techniques in Music
Winter. 3(3-0) Approval of department.
Selected research techniques in music education with emphasis on experimental design and com­puterized data analysis.

936. Analytical Studies
Fall. 3(3-0) Approval of department.
Analysis of melody, harmony, rhythm, color, texture, count­erpunk, and form in part-music from the sixteenth through the late sixteenth/early seventeenth century.

937. Analytical Studies
Winter. 3(3-0) Approval of department.
Analysis of melody, harmony, rhythm, color, texture, count­erpunk, and form in music from the late sixteenth/early eighteenth century through the nineteenth century.

938. 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.

939. Set-Theoretic Analysis of Atonal Music
Spring. 2(2-0) Approval of department.
Set-theory principles and their application to the analysis of atonal music.

940. Contrapuntal Techniques
Winter of even-numbered years, Summer.
3(3-0) MUS 482 or approval of department.
Advanced contrapuntal practice from the sixteenth century to the present.

941. Contrapuntal Techniques
Spring of even-numbered years, Summer.
3(3-0) MUS 483 or approval of department.
Continuation of MUS 970.

942. Contrapuntal Techniques
Winter of even-numbered years, Summer.
3(3-0) MUS 484 or approval of department.
Continuation of MUS 971.

943. Doctoral Dissertation Research
Fall, Winter, Spring. Summer. Variable credits. Approval of department.

NATURAL SCIENCE N S

College of Natural Science

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 our attempts to under­stand the world. 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 ethical issues relating to our increasing control of reproduction and heredity. Reproduction and heredity from the molecular, cellular and organismic perspectives, including human structure and function.
D. The nature of living things, contrasting various scientific and non-scientific perspectives. The implications of the modern scientific understanding of life for our beliefs and values.

122. Human Bicosocial Evolution (N)
Fall, Winter, Spring. 4(3-2)
Current understanding of human beings and their beliefs as products of biological and cul­tural evolution. Implications for the future of humanity.

125. Time and Change in Nature (N)
Fall, Winter, Spring. 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. Emphasis on 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 death and of 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 Biocology of Health (N)
Fall, Winter, Spring. 4(3-2)
Human health examined from evolutionary and ecological viewpoints. Emphasis will be on the impact of a technological environment on our health.

129. Biotechnology and Human Values (N)
Winter, Spring. 4(4-0)
Consideration of social and ethical issues which arise from our increasing control of the human body through biotechnology.

135. Changing Concepts of the Universe (N)
Fall, Winter, Spring. Summer. 4(3-2)
Students may not receive credit in more than one of the following: AST 119, AST 217, AST 229, N S 135, N S 335.
A. The origin and development of scientific explanations of the physical world. The origins of modern science and the scientific revolutions.
B. The role of science in the development of western 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.
1814. Natural Science (N)
Fall. 4(3-2) Not open to students with credit in N S 115. Enrollment in Remedial-Developmental Writing Program 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 1814 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 1824 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 technological and social problems; exploration of avenues for assessing such consequences as an aid to formulation of public policy.

209. Humans and Disease (N)
Fall, Winter, Spring. 4(4-0)
Disease as a natural biological phenomenon and how it has influenced the human race from a worldwide perspective. Environmental and cultural factors and how these influence and interrelate with disease.

242. Wilderness Environmental Field Studies (N)
Winter, Summer. 4(4-0) Approval of instructor. Students may not receive credit in more than one of the following: N S 142, N S 142A, N S 242.
Study of ecosystem balance between physical, biological and human elements while hiking in selected wilderness areas. Requires out-of-state travel.

292. Selected Topics
Fall, Winter, Spring. 3 to 5 credits. May be offered for a maximum of 8 credits if different topics are taken.
Interdisciplinary study of topics in the natural sciences or the natural sciences as related to the humanities and social sciences.

300. Supervised Individual Study
Fall, Winter, Spring, Summer. 2 to 4 credits. May be offered for a maximum of 12 credits. Approval of department. Selected students requesting individual study of interdisciplinary problems. 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 issues 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.

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.

350. Issues in Science and Religion
Winter, Spring. 4(4-0) Juniors or approval of department. Interdepartmental with and 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. Engineering and Public Policy
Spring, 3(3-0) Seniors, or approval of department. Interdepartmental with and administered by Engineering.
Sociotechnical assessment of impact of technology on society, with analysis of the role of engineering and natural science in contributing to public policy formulation.

456. Foundations of Developmental Biology
Winter of even-numbered years. 3(3-0) ZOL 311; ZOL 417 recommended. Interdepartmental with and administered by the Department of Zoology.
Reading and discussion of original research which posed significant problems of modern developmental biology.

NATURAL SCIENCE NSC
(COLLEGE OF)

201. Science Problem Solving Seminar I
Fall. 2(2-0) MTH 108 concurrently, approval of instructor.
Problem solving principles and application of strategies to the disciplines of science and mathematics. Activities reflecting the types of problems encountered in these disciplines emphasized.

202. Science Problem Solving Seminar II
Winter. 2(2-0) NSC 201, approval of instructor.
Continuation of NSC 201. Emphasis upon problem solving in science disciplines and principles of research design.

203. Science Problem Solving Seminar III
Spring. 2(1-3) May be obtained for a maximum of 4 credits. NSC 202, approval of instructor.
Applied experience in research. Design and implementation of simple research problems. Relationship of science and society.

305. Women in Science
Spring. 3(3-0) Introductory course in chemistry or physics or biological science or approval of instructor.
The development of women scientists in the past, present, and future will be examined. Emphasis will be on representations from physics, biology, medicine, mathematics, and engineering.

390H. The Human Organism
Winter. 3(3-0) Approval of the Honors College or course coordinator.
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. Our Universe
Fall. 3(3-0) Approval of the Honors College or course coordinator.
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 Human Beings
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.

410. Environmental Toxicology
Winter. 4(4-0) B S 121, 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.

445. Pest Management, Pesticide Chemistry and Application Systems for Plant Protection
Fall. 5(3-4) CEM 143, ENT 425, HRT 402 or CSS 402, BOT 405 or concurrently or approval of instructor. Interdepartmental with Agriculture and Natural Resources.
A broad overview of pesticide chemistry, efficient usage, environmental fate, legislation and application techniques.

446. Pest Management: Biological Systems for Plant Protection
Fall. 3(3-0) ENT 425, HRT 402 or CSS 402, BOT 405 or concurrently or approval of instructor. Interdepartmental with Agriculture and Natural Resources.
Management of plant pests utilizing host resistance, cultural practices, legislation, and biological systems.