531B. Medical Microbiology: Bacteriology and Mycology
Winter. 3(2-4) A course in biochemistry and admission to the veterinary professional program, or approval of department.
Basic principles of bacteriology and mycology and their relation to disease in animals.

531C. Medical Microbiology: Virology
Spring. 2(3-4) A course in biochemistry and admission to the veterinary professional program, or approval of department.
Basic principles of virology and their relation to disease in animals.

531D. Medical Microbiology: Parasitology
Spring. 2(3-4) Admission to the veterinary professional program, or approval of department.
Basic principles of parasitology (protozoology, helminthology, and entomology) and their relation to disease in animals.

532. Veterinary Microbiology and Public Health
531 or approval of department.
Biology, immunology, pathogenesis, and medical aspects of microorganisms associated with infectious diseases of animals. Epidemiology of animal diseases significant to human health.

536. Veterinary Parasitology I
(501.) Winter, Summer. 4(3-4) Veterinary Medicine students or approval of department.
Distribution, biology, and control of parasitic animals of importance to veterinary medicine.

537. Veterinary Parasitology II
(502.) Fall, Spring. 4(3-4) 536 or approval of department.
Continuation of 536.

800. Seminar
(S30.) Fall, Winter, Spring, Summer. 1(1-0).

813. Molecular Virology
Fall. 3(3-0) Background in biochemistry, and approval of department.
Molecular nature and biochemistry of replication of bacterial and animal viruses. Emphasis is on current advances, research concepts, and the role of viruses in molecular biology research.

816. Parasitic Metazoa
(802.) Spring of odd-numbered years. 4(3-4) 416 or ZOL 461 or approval of department.
Comparative biology, physiology, and host-parasite relationships of parasitic helminths and arthropods.

817. Parasitic Protozoa
(803.) Spring of even-numbered years. 3(3-4) 416 or ZOL 482 or approval of department.
Comparative biology, physiology, and host-parasite relationships of parasitic protozoa.

820. Ecology of Animal Parasites
Summer. 3 credits. 416, approval of department. Students at W. K. Kellogg Biological Station.
Interaction of parasitic animals (protozoa, helminths, and arthropods) with their natural environment, including host, biotic, and physical aspects.

827. Immunohistochemistry
Spring. 3(3-0) 427, 493, BCH 452, or ZOL 441, and CEM 383 recommended.
Structure and reactivity of antigens and antibodies; synthesis of immunoglobulins. Emphasis is on current advances and research concepts.

828. Immunohistochemistry Laboratory
Spring. 2(0-6) 427; 827 or concurrently.
Laboratory based partially on subject matter of 827. Experimental techniques used in immunological assays and immune systems.

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

900. Topics in Microbiology
Fall, Winter, Spring. 3 or 4(2-0) May re-enroll if different topic is taken. Approval of department.
Topics will be selected from taxonomic subdisciplines such as bacteriology, virology, protozoology, mycology, helminthology, and from intersecting disciplines such as microbial genetics, immunology, physiology, and ecology.

901. Experimental Microbiology
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits. Approval of department.
Experiments, demonstrations, and discussions of current research programs in various areas of microbiology.

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

MILITARY SCIENCE

All University

041. General Military Science
Fall, Winter, Spring. Zero credit. Approval of department.
Application of leadership techniques, the decision-making process and staff planning. Military customs and traditions. Students will concurrently enroll in a selected non-Military Science course to fulfill military professional requirements.

121. Preview of Military Science
Fall, Winter. 1(2-0) Approval of department.
Role of the ROTC officer in the Army. Assists the student in planning a curriculum to satisfy requirements for a commission.

122. Marksmanship and Hunter Safety
Fall, Spring. 1(0-2) 121 or approval of department.
Small arms marksmanship and safety. Practical exercises on local firing ranges. Individual basic military marksmanship and the skills necessary to participate in a competitive or recreational shooting program.

223. Terrain Analysis and Land Navigation
Winter, Spring. 3(3-0) 121 and approval of department.

Military maps, map construction, specifications and uses. Includes both a study of aerial photograph and an introduction to remote energy sensors employed by defense agencies as they relate to tactical operations.

324. Military Teaching
Fall, Winter. 4(4-0) Basic course, approval of department.
Methods of teaching manipulative skills to groups with varying educational backgrounds. Emphasis on determination of entry behavior, progress analysis, testing and test construction. Introduction to current teaching aids. Practical experience in simulated field situations is stressed during laboratory.

325. Military Management
Spring. 4(3-0) 324 or approval of department.
Task analysis approach to missions. The subject of tactics is used as a teaching vehicle for the managerial approach to the preparation and execution phases of military operations. Emphasis is placed on physical and moral leadership during the laboratory sections.

426. Military Law
Winter. 4(4-0) Approval of department.
Civilian and military law as they pertain to individuals and organizations associated with the Department of Defense.

427. Seminar
Spring. 1(1-0) Approval of department.
Pre-commissioning orientation stressing current military policies, procedures, customs and trends.

MUSIC

College of Arts and Letters

094. Band
Summer. Zero credit. Membership determined by audition.
Attendance at all rehearsals and public concerts obligatory. See 118.

100. Theory Review
Fall, Summer. 3(3-3) For majors who need theory review.
Basic course in fundamentals and ear training.

112. Chamber Music
Fall, Winter, Spring. 1(1-0) May re-enroll for a maximum of 12 credits. Approval of department.
Performance of works for small ensembles.

118. Band
A. Marching Band
Fall. 1 credit. May re-enroll for credit. Membership determined by audition.
The Marching Band participates at football games.

B. Spartan Brass
Winter. 1 credit. May re-enroll for credit. Membership determined by audition.
The Spartan Brass participates at basketball games.
C. Concert Band.
Fall, Winter, Spring. 1 credit. May re-enroll for credit. Membership determined by audition.
Public appearances are scheduled on campus each term.

D. Symphonic Band
Fall, Winter, Spring. 1 credit. May re-enroll for credit. Membership determined by audition. A high level of achievement in performing ability is required.
Concerts are scheduled both on and off campus.

E. Wind Ensemble
Fall, Winter, Spring. 1 credit. May re-enroll for a maximum of 12 credits. Membership determined by audition. The highest level of performance is required.
Full range of wind literature is performed. Public concerts are presented both on and off campus.

133. Orchestra
Fall, Winter, Spring. 1(0-5) May re-enroll for a maximum of 12 credits. Membership determined by audition.
Standard overtures and symphonies studied and publicly performed. Attendance at all rehearsals and public concerts obligatory.

135. Music in Elementary Education
Fall, Winter, Spring, Summer. 2(2-3)
Elementary education majors.
Basis, scope and sequence of music instruction in the elementary schools with an introduction to basic knowledge and skills used in elementary school music.

141. Class Instruments and Voice
Fall. 1(0-2) Knowledge of notation.
Music majors, or approval of department.
Class instruction in piano, voice, violin, cello, clarinet, and cornet.

142. Class Instruments and Voice
Winter. 1(0-2) 141.
Continuation of 141.

143. Class Instruments and Voice
Spring. 1(0-2) 142.
Continuation of 142.

145. Music Foundations I
Fall, Winter, Spring. 3(3-0) 135 and approval of department.
Development of understanding and knowledge of music fundamentals, ear training, music reading, rhythm, and other basic music perceptions. Designed specifically for elementary classroom teachers who elect a strong concentration in music.

146. Music Foundations II
Winter, Spring. 3(3-1) 145.
Continuation of 145 with particular emphasis on music literature as a basis for development of enlarged musical understanding. Music writing skills are also stressed.

147. Elementary Piano
Fall, Winter, Spring. 2(2-2) 145 or approval of department. Elementary Education and Physical Education and Recreation majors.
Beginning class piano instruction. Development of ability to play the three principal chords in all keys and to harmonize simple melodies using these chords. Transposition of simple melodies. Ability to play simple melodies and rhythms suitable for use in lower intermediate grades or in recreation work.

148. Elementary Piano
Winter, Spring. 2(2-2) 147. Elementary Education majors.
Continuation of 147.

150. Keyboard Instruments and Harp
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 24 credits. Audition required.
Instruction in piano, organ and harp.

151. Voice
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 24 credits. Audition required.

152. Stringed Instruments
Fall, Winter, Spring. 1 to 4 credits. May re-enroll for a maximum of 24 credits. Audition required.

153. Woodwind Instruments
Fall, Winter, Spring. 1 to 4 credits. May re-enroll for a maximum of 24 credits. Audition required.

154. Brass Instruments
Fall, Winter, Spring. 1 to 4 credits. May re-enroll for a maximum of 24 credits. Audition required.

155. Percussion
Fall, Winter, Spring. 1 to 4 credits. May re-enroll for a maximum of 24 credits. Audition required.

180. Basic Harmony
Fall. 3(3-1)
Fundamentals of basic musicianship: notation, clefs, scales, intervals, triads, meter, rhythm, and tonality. The analysis and writing of diatonic harmony in the style of the Bach 4-part choral.

181. Basic Harmony
Winter. 3(3-1) 180.
Continuation of 180.

182. Basic Harmony
Spring. 3(3-1) 181.
Continuation of 181.

183. Aural Harmony
Fall, Winter, Spring, Summer. 1(0-2) 160 concurrently.
The aural counterpart of basic harmony. Drill in harmonic, melodic and rhythmic dictation. Sight singing and keyboard harmony.

184. Aural Harmony
Fall, Winter, Spring, Summer. 1(0-2) 163; 181 concurrently.

185. Aural Harmony
Fall, Winter, Spring, Summer. 1(0-2) 154; 182 concurrently.

190. State Singers
Fall, Winter, Spring. 1(0-4) May re-enroll for a maximum of 12 credits. Membership determined by audition; ability to sight read.
Four hours of rehearsals a week. Attendance at all rehearsals and public performance obligatory.

191. Chorus
Fall, Winter, Spring, Summer. 1(0-2½) May re-enroll for a maximum of 12 credits.
Two and one-half hours of rehearsals per week. Attendance at all rehearsals and public concerts obligatory.

192. Glee Club, Men and Women
Fall, Winter, Spring. 1(0-3) May re-enroll for a maximum of 12 credits. Membership determined by audition.
Three hours of rehearsals a week. Attendance at all rehearsals and public concerts obligatory.

193. University Chorale
Fall, Winter, Spring. 1(0-4) Audition.
Choral ensemble designed primarily for graduate and upper class undergraduate students. Representative literature for chamber chorale with emphasis on Renaissance, Baroque, and contemporary composers. Limited to 25 students.

195. Jazz Laboratory Band
Fall, Winter, Spring. Summer. 1(0-4) May re-enroll for a maximum of 12 credits. Membership determined by audition.
Practical experience in playing music in the jazz idiom. Techniques of rehearsing a stage band. Playing of student arrangements; performance of jazz composition and arrangements in concert.

200H. Honors Work
Fall, Winter, Spring, Summer. 1 to 10 credits. May re-enroll for a maximum of 15 credits. Approval of department.

224. History of Music
Fall. 3(3-0) 183.
Music from Ancient Greece through Renaissance and Gothic periods, concluding with the Renaissance. Greek theory and "ethos"; age of plain-song; development of polyphony; instruments peculiar to period under question.

225. History of Music
Winter. 3(3-0) 224.
Baroque and classical periods. Special attention to fugue, opera, oratorio, sonata, and symphony. Analysis of characteristic works.

228. History of Music
Spring. 3(3-0) 225.
Romantic period, impressionism, and contemporary trends. Continuation of development of form, melody, rhythm, and tonality. Final examination is comprehensive, covering 224, 225 and 226.

241. Advanced Class Piano
Fall. 1(0-2) 143 or approval of department. For School Music Choral majors only.
Continuation of Class Piano 143. Special emphasis given to developing practical skills at the piano for use in the public school classroom.

242. Advanced Class Piano
Winter. 1(0-2) 241 or approval of department.
Continuation of 241.

243. Advanced Class Piano
Spring. 1(0-2) 242 or approval of department.
Continuation of 242.

245. Music in Special Education
Fall, Winter, Spring, Summer. 3(3-0) 135. Special education majors.
Methods of teaching music in special education programs.

271. Fundamentals of Music
Fall, Winter, Spring. 3(3-1) Non-majors.
Fundamentals of music to develop understanding and knowledge of scales and modes, key signatures, chord structures, chord progressions and non-harmonic tones.

272. Introduction to Music Literature I
Fall, Winter, Spring. 3(3-0) Non-majors.
An introduction to music in the Western tradition. The elements of musical expression and the techniques of musical analysis in connection with representative musical masterpieces of the Middle Ages, the Renaissance, the Baroque, the period of Classicism and Romanticism, and the twentieth century.
411. Opera
Winter of odd-numbered years. 2(1-2)
Six terms of voice or approval of department.
History of opera from 1600 to the present.

412. Oratorio
Fall of even-numbered years. Summer, 2(1-2)
Six terms of voice or approval of department.
History of oratorio from 1600 to the present.

415A. Renaissance Music
Fall. 2 credits. 182 or approval of department.

415B. 19th Century Music
Fall. 2 credits. 182 or approval of department.

417A. Classical Music
Spring. 2 credits. 182 or approval of department.

417B. 20th Century Music, European
Winter. 2 credits. 182 or approval of department.

417C. Piano Music, 19th Century
Spring. 2 credits. 182 or approval of department.

417E. English-American Art Song
Spring of even-numbered years. 2 credits. 182 or approval of department.

417F. Organ Literature From 1900 to Present
Spring of even-numbered years. 2 credits. 182 or approval of department.

418H. Honors Course in Music Literature
Fall. 3(3-0) or 4(3-0) Music 226 and approval of department.
A tutorial class. Primary emphasis on instrumental and vocal music 1750-1900, but work may be directed towards the student's special field of interest.

420H. Honors Course in Music Literature
Spring. 3(3-0) or 4(3-0) 226 and approval of department.
Continuation of 419H.

421. Music and Worship
Fall. 3(3-0) 226 or approval of department.
Relationship of music and liturgy to Christian worship. Traditional liturgies and forms of service of the Christian churches with emphasis on function and place of music in worship.

422. Hymnology
Winter. 3(3-0) 226 or approval of department.
Greek and Latin hymns, canticles, and transition from psalmody into hymnody. Hymns and tunes studied with emphasis on their natural place in church year. Special attention to anthem settings of hymns and adaptation of traditional melodies, especially Gregorian.

423. Choral Repertoire for the Church
Spring, Summer. 3(3-0) Approval of department.
Choral literature for church choirs; emphasis on motets, anthems, responses, and materials for both youth and adult choirs.

424. Preparatory Musicology
Fall. 3(3-0) 226. 212.
A seminar dealing with research in various fields of musicology, including ethnomusicology.

425. Preparatory Musicology
Winter, Summer. 3(3-0) 424.
Selected topics in music history from the ancient Greeks to 1600.

429. Band Materials
Spring, Summer. 1(0-2) May re-enroll for credit. Juniors.
Analysis and performance of literature suitable for school bands.

433. Advanced Conducting
Fall. 2(2-0)
Continuation of baton techniques and analysis through study of orchestral and choral works.

434. Advanced Conducting
Winter. 2(2-0) 433.
Continuation of 433.

435. Advanced Conducting
Spring, Summer. 2(2-0) 434.
Continuation of 434.

438. Brass and Woodwind Techniques
Summer. 2(1-2) Senior music majors.
Materials and contemporary pedagogical practices of group wind instrumental instruction.

440. Fundamentals of Electronic Music
Fall, Summer. 2(2-0) 382 or approval of department.
Instruction in the use of the Moog synthesizer, mixer and recorders.

441. Fundamentals of Electronic Music
Winter, Summer. 2(2-0) 440 or approval of department.
Supervised use of the Moog synthesizer.

442. Creative Composition in Electronic Music
Fall, Winter, Spring, Summer. Variable credit. May re-enroll for maximum of 8 credits. 441 or approval of department.
Assigned use of the Electronic Music Studio.

450. Recreational Music
Spring. Summer of odd-numbered years. 2(3-0) Majors.
Organization and administration of a community music program for adults; community chorus, orchestra, and band. Non-symphonic instruments and their use in recreation. Summer camp and playground music. Recreational music as it is organized and used by industries.

456. Studio Teaching and Observation
Fall. 2(1-2) 347, 348, 349.
Supervised study of music teaching in classes and private lessons plus one-hour seminar each week.

457. Influence of Music on Behavior
Fall. 3(3-0) Nine credits of psychology or approval of department.
Study of the physiological and psychological effects of music, relations of music to health. Experimental studies, related philosophical and psychological theory will be reviewed.

471. Music Therapy Techniques
Winter. 3(3-0) 470.
Survey of procedures in music therapy; investigation of the use of music as a tool in treatment of mentally ill, mentally and physically handicapped; introduction to hospital organization.

472. Music Therapy Techniques
Spring. 3(3-0) 471.
Continuation of 471.

480. Advanced Studies in Style and Form
Fall. 2(3-1) 380, 381, 382.
Continuation of 336.

481. Advanced Studies in Style and Form
Winter. 2(2-1) 480.
Continuation of 480.

482. Advanced Studies in Style and Form
Spring. 2(2-1) 481.
Continuation of 481.

483. Composition
Fall, Winter, Spring. 2(2-0) May re-enroll for a maximum of 6 credits. 252 or approval of department.
Guided projects in creative writing.

486. Psychology of Music
Fall, Summer. 3(3-0) Approval of department. Interdepartmental and administered by the Psychology Department.
Musical behavior with emphasis on psychological aspects of perception, learning, effective response, and ability. Emphasis on social and cultural influences in forming musical tastes, including mass media music.
487. Psychology of Music  
Winter, Summer. 3(3-0) PSY 486. 
Interdepartmental with and administered by the Psychology Department. 
Basic research concepts and experimental methods in psychology of music research. 
Practical training in conducting experimental research of musical behavior.

490. Independent Study: Special Problems in Music Research  
Fall, Winter, Spring. 1 to 4 credits. May re-enroll for credit. 
Approval of department. 
Individual problems in music research.

495. Opera Workshop  
Fall. May re-enroll for a maximum of 6 credits. 
Approval of department. 
Practical experience in performance and production of opera and opera scenes.

802. Seminar in History of Music  
Summer of odd-numbered years. 4(8-2) 
Critical study in depth of music literature and performance practices within historical perspective.

803. Seminar in Music Education  
Fall. 3(3-0) Approval of department. 
Consideration of the historical and philosophical basis for music instruction in education.

804. Seminar in Music Learning  
Fall. 3(3-0) Approval of department. 
Detailed analysis of the conditions of music learning for teachers of music including consideration of perception, nutureation and concept formation.

805. Seminar in Music Curriculum  
Spring. 3(3-0) Approval of department. 
Development of goals, objectives, learning sequence and evaluative techniques for music learning at all instructional levels.

812. Research Problems in Music  
Fall, Winter, Spring. Variable credit.

813. Chamber Music  
Fall, Winter, Spring, Summer. 1(1-0) May re-enroll for a maximum of 6 credits. 
Approval of department. 
Performance of works for small ensembles.

815. Seminar in Chamber Music: 18th Century  
Fall. 2(3-0) Approval of department. 
Intensive study of selected chamber music works of the 18th century.

816. Seminar in Chamber Music: 19th Century  
Winter. 2(3-0) Approval of department. 
Intensive study of selected chamber music works of the 19th century.

817. Seminar in Chamber Music: 20th Century  
Spring. 2(3-0) Approval of department. 
Intensive study of selected chamber music works of the 20th century.

820. Music Workshop  
Summer. 1 to 6 credits. May re-enroll for a maximum of 6 credits. 
Approval of department.

824. Research Methods and Materials  
Fall, Winter, Summer. 3(3-0) 
A critical examination of encyclopedias, indices, and other aids to research.

825. Acoustics for Musicians  
Winter. 3(3-0) 
Classical theory of sound, stressing its application to musical instruments and the human voice.

830. Sixteenth Century Counterpoint  
Fall of even-numbered years, Summer. 3(3-0) 482 or approval of department. 
Study and writing of counterpoint based upon the works of Orlando Lasso and Palestrina.

831. Sixteenth Century Counterpoint  
Winter of odd-numbered years, Summer. 2(3-0) 830. 
Continuation of 830.

832. Sixteenth Century Counterpoint  
Spring of odd-numbered years, Summer. 3(3-0) 831. 
Continuation of 831 to include a study of madrigal counterpoint.

840. Pedagogy of Theory  
Fall. 3(3-0) Approval of department. 
Music theory treated and pedagogical practices of historical importance.

841. Pedagogy of Theory  
Winter. 3(3-0) 840. 
Current literature in the field of music theory and approaches to theory pedagogy.

842. Pedagogy of Theory  
Spring. 3(3-0) 841. 
Continuation of 841 with emphasis upon new instructional media.

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

852. Choral Technique and Materials  
Spring. 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. 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. 1 to 4 credits. 499. 
Correlation of the areas of music theory as a basis for the study of 19th and 20th century music.
962. Analytical Studies in Music Literature
Spring, Summer. 3(3-0) 961.
970. Contrapuntal Techniques
Winter of even-numbered years, Summer. 3(3-0) 482 or approval of department.
Advanced contrapuntal practice from the sixteenth century to the present.
971. Contrapuntal Techniques
Spring of even-numbered years, Summer. 3(3-0) 971.
972. Contrapuntal Techniques
Winter of even-numbered years, Summer. 3(3-0) 970.
Continuation of 970.
973. Contrapuntal Techniques
Spring, Summer. 3(3-0) 971. 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 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.

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

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 resource management and use are examined in terms of the society in which they exist.

NATURAL SCIENCE N S
University College

Students may earn credit in only one of the courses in each of the following three groups:
1. 111, 117, 131
2. 112, 118, 122, 132, 134
3. 113, 116, 120, 133
4. 151, 171H, 161, 322
5. 152, 172H, 183, 323
6. 150, 160, 173H, 163, 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 attempts 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 117, 121, 131, 151, 171H, 161, 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
(193B.) Fall, Winter, Spring, Summer. 4(2-3) 111 preferred; or 117, 121, 131, 151, 171H, 161, or 322.
The origin and development of scientific explanations of the physical world. The origins of modern science and scientific revolutions.

116. Integrated Studies in Science I
(191B.) Fall, Winter, Spring, Summer. 4(2-3)
Science as a process of studying nature, explored through consideration of the organization science perceives in nature. Topics from the physical and life sciences need to illustrate the integration of the sciences into a concept of natural systems.

117. Integrated Studies in Science II
(192B.) Fall, Winter, Spring, Summer. 4(2-3) 116 preferred; or 120, 150, 160, or 321.
The nature of scientific theories and the means of supporting or refuting them. Emphasis on the interaction of theories from the physical, earth and life sciences.

118. Integrated Studies in Science III
(193D.) Fall, Winter, Spring, Summer. 4(2-3) 117 preferred; or 111, 121, 131, 171H, 161, or 322.
The use and limitations of scientific problem-solving. The interaction of the physical, earth and life sciences in the development of integrative-interdisciplinary solutions to important contemporary problems.

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 116, 150, 160, or 321.
The nature of living things, contrasting various scientific and non-scientific views. The implications for the the scientific understanding of life for our beliefs and values.

122. Science, Beliefs and Values III
(192S.) Fall, Winter, Spring, Summer. 4(2-3) 121 preferred; or 111, 117, 151, 171H, 161, or 322.
Man's current understanding of himself and his beliefs as products of biological and cultural evolution. Implications for man's future.

131. Science, Man and Society I
(193C.) 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
(193D.) Fall, Winter, Spring, Summer. 4(2-3) 131 preferred; or 111, 117, 121, 151, 171H, 161, 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, 118, 122, 132, 154, 152, 172H, or 192.

134. Science, Man and Society IV
(193F.) Fall, Winter, Spring, Summer. 4(2-3) 131 preferred; or 111, 117, 121, 151, 171H, or 181.
Biological concepts of race. Exploration of scientific alternatives to the currently held biological concept of race.

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 116, 120, 160, or 321.
The influence of scientific ideas about the living world on the Western intellectual traditions. Emphasis on the successes and failures of scientific ideas in offering a unified picture of reality.