831. Physiological Biochemistry I
   Winter, 3(3-0) BCH 401.
   Physiological biochemistry, with emphasis on
   metabolic interpretation of normal and altered
   physiological states of the human organism and
   appropriate animal models.

832. Physiological Biochemistry II
   Spring, 3(3-0) BCH 831.
   Continuation of BCH 831.

855. Special Problems
   Fall, Winter, Spring, Summer. 1 to 6
   credits. May reenroll for a maximum of 12 cred­
   its. Approval of department. Consideration of current problems.

856. Plant Genetics and Molecular Biology
   Spring of even-numbered years. 3(3-0)
   Approval of department and a course in intro­
duction to genetics. Interdepartmental with Ge­
etics and the Department of Botany and Plant Pathology, Administered by the Department of
Botany and Plant Pathology.
   Recent advances in genetics and molecular biol­
ogy of higher plants.

864. Plant Biochemistry
   Spring, 4(4-0) BCH 401, BOT 301 or approval of department. Interdepartmental with the Depart­
ment of Botany and Plant Pathology.
   Metabolism of nitrogen compounds, carbohy­
drates, and lipids unique to plants' cell or­
ganels; photosynthesis; photorepiration; dark respiration; cell wall; lectins; nitrogen cycle in­
cluding nitrogen fixation; sulfur cycle.

888. Laboratory Rotation
   Fall, Winter, Spring, Summer. 1 to 6
   credits. May reenroll for a maximum of 15 cred­
   its. Graduate student majors; approval of de­
partment.
   Participation in research laboratories to learn exper­
imental techniques and research ap­
proaches, broaden research experience, and as­
sess research interests prior to selecting a thesis adviser.

899. Master's Thesis Research
   Fall, Winter, Spring, Summer. Varia­
ble credit. Approval of department.

900. Selected Topics in Biochemistry
   Fall, Winter, Spring. 1 to 3 credits.
   May reenroll for a maximum of 10 credits if dif­
ferent topics are taken. Approval of department.
   Topics will be selected from the areas of bio­
chemical genetics, biochemistry of develop­
ment, biochemical evolution, complex proteins, lipid metabolism, immunobiology, hor­
mones, control mechanisms and structure of bio­
logical macromolecules.

911. Selected Topics in Biochemistry
   Fall, Winter, Spring. 1 to 3 credits.
   May reenroll for a maximum of 10 credits if dif­
ferent topics are taken. Approval of department.
   Topics will be selected from the areas of bio­ener­
getics, bioinstrumentation, complex carbohy­
drates, mechanisms of enzyme action, natural products, carbohydrate metabolism, mass spec­
trometry and biochemistry of isoprenoid com­
ounds.

975. Seminar in Biochemistry
   Fall, Winter, Spring. 1(1-0). May
   reenroll for a maximum of 8 credits. Approval of department.

999. Doctoral Dissertation Research
   Fall, Winter, Spring, Summer. Varia­
ble credit. Approval of department.

BILOGICAL SCIENCE B S

College of Natural Science
The content of courses 400, 405, and 420, as well as the research and problems courses 499, 800 and 899, may vary from term to term. Brochures giving detailed information about individual courses are available in the Office of the Assis­tant Dean for Lifelong Education in the College of Natural Science. These courses are primarily designed for in-service teachers and interested adults and are offered in off-campus locations.

292. Introductory Biology for Non-Science Majors
   Fall, Winter, Spring, Summer. 4(3-3)
   12 credits in general education natural science courses.
   Concepts, procedures, and perspectives appro­
priate to developing a basic literacy in biology with emphasis on fundamental biological prin­
ciples and their relation to world society. Approp­
riate preparation for pre-service elementary teachers.

210. General Biology
   Fall, Spring, 4(4-2) Not open to stu­
dents with credit in LBS 141.
   Principles of biological organization: scientific method, biochemistry, cell biology, and evolu­
tion.

211. General Biology
   Fall, Winter, Summer. 4(4-2) CEM
   140 or high school chemistry. Not open to stu­
dents with credit in LBS 242.
   Principles of biological regulation and integra­tion: genetics, development, and selected physi­
ological topics.

212. General Biology
   Winter, Spring, Summer. 4(4-2) Not open to students with credit in LBS 140.
   Principles of biological diversity: taxonomy and systematic, comparative physiology, and ecolog­

400. Biological Science for Teachers
   Fall, Winter, Spring, Summer. 1 to 4
   credits. May reenroll for a maximum of 12 cred­
its. Teacher certification with science major or minor.
   A course for in-service teachers, topics will be selected from actual classroom problems of the participants. Stress will be placed on field, labo­ratory and inquiry teaching.

405. Topics in Biological Science
   Fall, Winter, Spring, Summer. 1 to 4
   credits. May reenroll for a maximum of 8 credits if different topic is taken. Approval of depart­
ment.
   Presentation of single topics from the biological sciences by senior faculty and guest lecturers.
   Topics are selected to facilitate development of strong biological science programs in schools.

418. Field Biology for Teachers
   Fall, Winter, Spring, Summer. 4 cred­
its. Biological course or approval of department.
   Field investigation and interpretation of prairie, dune, forest and wetland communities. An eco­system approach to ecological concepts. Natural history and identification of key species. Field trips required.

420. Seminar in Recent Advances in Biological Science
   Fall, Winter, Spring. 1 to 3
   credits. May reenroll for a maximum of 6 credits if different topic is taken. Approval of depart­
ment.
   A series of lectures by senior faculty of topics on the history, development, the most recent ad­
vances and the possible future and limits of the Biological Sciences.

460. Ornithology for Teachers
   Summer. 3 credits. A course in biology or approval of department. Not open to Zoology majors. Given at W. K. Kellogg Biological Sta­tion, Interdepartmental with and adminis­
tered by the Department of Zoology.
   Distribution, breeding cycles, migration, food and feeding habits, voice and other important areas of avian biology. Emphasis on field identifi­cation and natural history.

499. Research
   Fall, Winter, Spring. 2 to 4 credits. May reenroll for a maximum of 12 credits. App­
roval of director of biological science program and student's adviser.
   Undergraduates are invited on an individual ba­sis into research laboratories of faculty in biolog­
ical departments of the college. After three terms of research, a presentation in thesis form is pro­
duced and defended.

500. Problems in Biological Science
   Fall, Winter, Spring. 1 to 6 credits.
   May reenroll for a maximum of 18 credits. B.S. degree in biological science.

805. Outdoor Environmental Studies
   Fall, Winter, Spring. 1 to 4
   credits. May reenroll for a maximum of 9 credits if different topics are taken. B S 418 or ZOL 460 or approval of department.
   Emphasis on environmental understanding, De­
velopment of educational materials through team research and teaching. Trials of materials with elementary, middle, secondary school or college students.

599. Master's Thesis Research
   Fall, Winter, Spring. Variable credit.
   Approval of department.

BIOMECHANICS BIM

College of Osteopathic Medicine

501. Basic Concepts in Biomechanics
   Winter. 2(2-0). Admission to a course of medicine or approval of department. Interde­
partmental with the College of Osteopathic Medicine.
   Basic concepts of biomechanics and their rela­tionship to functional anatomy and osteopathic manipulative therapy.