152. *The Dynamics of Scientific Ideas III*

(193E.) Fall, Winter, Spring. 4(2-3) 151 preferred; or 111, 117, 121, 131, 171H, 181, or 322.

Controversies concerning interpretation of modern scientific concepts such as evolution, uncertainty and relativity are discussed in terms of developing a personal philosophy.

160. *Knowledge and Science*

(191B.) Fall, Winter, Spring, Summer. 4(2-3)

The intuitive and reasonable nature of scientific "truth" is examined in relation to the structure and functions of the human brain.

171H. *Honors Natural Science*

(192H.) Fall. 4(2-3)

Exploration of various topics of interest and value to students eligible for Honors, especially the nature and significance of science in western culture and its interrelationship with other creative activities.

172H. *Honors Natural Science*

(193H.) Fall, Winter, Spring, Summer. 4(2-3) 171H.

A continuation of 171H.

173H. *Honors Natural Science*

(191H.) Fall, Winter, Spring, Summer. 4(2-3) 172H.

Continuation of 172H.

181. *Natural Science*

Fall. 4(2-3) Approval of department.

The role of methods in science emphasizing the development and modification of systems of explanation. The nature of the cell and sexual reproduction as background for Mendelian gene theory and its modern modifications. Social implications are emphasized.

182. *Natural Science*

Winter. 4(2-3 181 or approval of department.

Methods in science continued with emphasis on evolutionary ideas regarding the origin of earth features and existing life forms. The origin and development of man is considered along with a number of modern problems.

183. *Natural Science*

Spring. 4(2-3) 182 or approval of department.

Nature of sience as exemplified by ideas from Physical Science. The Copernican Revolution is used as an example of the science-society interaction. Modern concepts of the nature of matter are also introduced.

300. *Supervised Individual Study*

Fall, Winter, Spring. 2 to 4 credits. 12 credits in department courses, or 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.

321. *Studies in Natural Science I*

Fall. 4(2-3) Juniors.

An interdisciplinary analysis of the nature of science and its role in the human experience, with emphasis on science as a way of knowing. Subject matter used includes material from the physical sciences.

322. *Studies in Natural Science II*

Winter. 4(2-3) Juniors.

An interdisciplinary study of the nature of science and its role in the human experience, with emphasis on the way science affects society and is, in turn, affected by society. Subject matter used includes material from the biological sciences.

323. *Studies in Natural Science III*

Spring. 4(2-3) Juniors.

An interdisciplinary approach to the nature of science and its role in the human experience, with emphasis on man and his understanding of the world around him. Subject matter used includes material from the historical sciences.

NATURAL SCIENCE (COLLEGE OF) NSC

390H. *The Human Organism*

Winter. 3(2-0) 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 genetics, molecular biology, behavior, developmental biology, physiology and ecology.

391H. *Man's Universe*

Fall. 3(2-0) 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.

800. *Electron Microscopy of Biological Material*

Fall. 4(2-6) Graduate student in area of biology; or approval of college.

Preparation of biological material for observation in the electron microscope; operation and principles of the electron microscope; associated electron microscope photography and darkroom techniques.

801. *Special Problems in Electron Microscopy*

Fall, Winter, Spring, Summer. 1 to 15 credits. Approval of instructor.

NURSING N E

College of Natural Science

205. *Foundations of Nursing*

Fall. 3(2-3) Approval of school.

Introduction to principles basic in identifying nursing problems and their use in sound planning of patient care.

206. *Foundations of Nursing*

Winter. 4(3-3) 205.

Fundamental principles are presented as they relate to the care of the whole person; identification of problems confronting the individual in illness, methods of approach to the patient as a person whereby joint effort may contribute to improved well-being and/or recovery.

207. *Foundations of Nursing*

Spring. 4(2-6) 206.

Continues building on concepts, using principles and knowledge introduced in the foregoing nursing courses. The laboratory now moves into the clinical area where practice in the nursing of patients becomes the focus of application of past learning and study.

303. *Medical and Surgical Nursing*

Fall, Spring. 12 credits. 207.

Care of individuals receiving medical and surgical therapy with emphasis on integration of preventative, emotional and social aspects of illness, pathological relationships, and all forms of therapy and rehabilitation as they relate to medical and surgical nursing. Instruction and guided practice.

304. *Medical and Surgical Specialties*

Winter, Summer. 12 credits. 303.

Continuation of 303.

305. *Maternity Nursing*

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

Nursing through pregnancy, parturition, and puerperium, including care of the new born. Instruction and guided practice.

306. *Nursing of Children*

Fall, Winter, Spring, Summer. 12 credits. 207; FCS 262B.

Normal growth and development from infancy through adolescence, care and health supervision of well children, treatment and rehabilitation of sick and handicapped children. Instruction and guided practice.

400H. *Honors Work*

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

402A. *Psychiatric Nursing of Individuals*

(402.) Fall, Winter, Spring. 6 credits. Seniors, 402B concurrently.

Provides opportunities to develop skill in utilizing concepts and principles relevant to creating and maintaining therapeutic interpersonal relationships; individual and group participation with other professionals in providing comprehensive mental health services to the mentally ill individual and his family.

402B. *Group Process and Community Action in Psychiatric Nursing*

(402.) Fall, Winter, Spring. 6 credits. Seniors. 402A concurrently.

Provides opportunities to develop skill in utilizing concepts, principles and dynamics of group and community interactions relevant to providing nursing intervention in programs for primary, secondary and tertiary prevention in community mental health.

403A. *Introduction to Public Health*

Fall, Winter, Spring. 4(4-0) Majors or approval of school.

Philosophy, development, organization, and responsibilities of public health are explored in the light of the current economic and political climate. An introduction to vital statistics, epidemiology, and environmental health is included. Provides a frame of reference for practice in this field.

403B. *Public Health Nursing*

Fall, Winter, Spring. 8(4-16) Seniors.

Relationships between public health nursing and other health and welfare services. Guided practice is provided for students working with individuals, families and community resources. Major focus is on health maintenance, health

promotion and nursing care to the sick in their homes. Roles, responsibilities and functions of the nurse in the community are stressed.

404. Survey of Nursing
Fall, Winter, Spring. 4 credits. Seniors.
Development of nursing to present status, current problems and long-term goals. Fields of service open to graduate nurses; nursing organizations, national, state and local, their services and objectives.

406. Senior Nursing
Fall, Winter, Spring. 8(3-20) Senior majors.
A study of basic principles of leadership and their application in the practice of team nursing.

OSTEOPATHIC MEDICINE* O M

College of Osteopathic Medicine

501. Medical Biology I
Fall. 4(4-0)
Integrated aspects of biology providing a foundation and vocabulary preparatory to studies in osteopathic medicine.

502. Medical Biology II
Winter. 7(6-3)
Continuation of 501 emphasizing pathology and pharmacology.

530. Clinical Science I
Fall. 1(1-0)
Fundamental concepts and skills essential to the performance of a clinical history and physical examination.

531. Clinical Science II
Winter. 2(2-0)
Techniques, concepts and skills required for competent history taking and physical examination utilizing lectures, laboratory and films for instructional purposes.

532. Clinical Science III
Spring. 4(4-0)
A clinical study program providing an opportunity to learn the skills of history taking and physical examination by actual performance of the involved techniques on patients under physician supervision.

533. Clinical Science IV
Summer. 4(4-0)
Continuation of 532.

534. Clinical Science V
Fall. 4(4-0)
A clinic-based program providing additional emphasis on history taking and physical examination as well as developing fundamental abilities in diagnosis and problem solving in the clinic setting.

535. Clinical Science VI
Winter. 4(4-0)
A continuation of 534.

536. Clinical Science VII
Spring. 4(4-0)
Continuation of 535.

537. Clinical Science VIII
Summer. 4(4-0)
Continuation of 536.

550. Systems Biology I
Spring. 7(5-6) 502.
A multidisciplinary approach to the hemantopoetic and nervous systems providing a functional integration of basic science and clinical information.

551. Systems Biology II
Summer. 6(5-3)
Continuation of 550 with emphasis on a multidisciplinary approach to the nervous system.

552. Systems Biology III
Fall. 11(8-9)
Continuation of 551 with emphasis on multidisciplinary approach to the cardiovascular system.

553. Systems Biology IV
Winter. 11(8-8)
Continuation of 552 with emphasis on multidiscinplinary approach to the respiratory, renal and urinary systems.

554. Systems Biology V
Spring. 11(9-5)
Continuation of 553 with emphasis on multidisciplinary approach to the gastrointestinal system.

555. Systems Biology VI
Summer. 11(9-6)
Continuation of 554 with emphasis on multidisciplinary approach to the study of pediatrics, obstetrics and gynecology.

600. Clinical Science Practicum
Fall, Winter, Spring, Summer. 15 credits. May re-enroll for a maximum of 60 credits.
A clinic oriented course covering the major areas of medical practice including involvement in Family Practice and Community Health Services.

620. Directed Studies
Fall, Winter, Spring, Summer. 1 to 6 credits. May re-enroll for a maximum of 24 credits. Approval of department.
Individual or group work on special problems in medicine.

OBSTETRICS, GYNECOLOGY AND REPRODUCTIVE BIOLOGY* OGR

College of Human Medicine

608. Obstetrics/Gynecology Clerkship
Fall, Winter, Spring, Summer. 1 to 17 credits. May re-enroll for a maximum of 43 credits. H M 602.
Experience with gynecologic and obstetrical patients, in in-patient and out-patient settings, under the direction of community practitioners and members of the MSU faculty.

*Established July 1, 1971.

PACKAGING PKG

College of Agriculture and Natural Resources

210. Principles of Packaging
Fall, Winter, Spring, Summer. 3(3-0)
A general course in packaging principles covering the growth and development of the field, and the technological and motivational problems involved in present day packaging. Consideration will be given to the basic functions of the package and their relation to the needs and wants of our society.

320. Packaging Materials
Fall, Winter, Spring. 5(4-4) CEM 132.
Detailed study of common packaging materials such as wood, paper, paperboards, plastics, metal foils and sheets, glass, and cushioning media. A one-day field trip required.

330. Graphics for the Packaging Industry
Winter. 4(3-3) 320 or approval of school.
Designing graphics for specific types of printing processes and for various packaging materials. Considerations in ink formulation, identification of the various printing processes used, and the advantages and disadvantages of various reproduction methods as used for packaging.

422. Packaging Systems
Fall, Winter, Spring. 5(4-4) 320 or approval of school.
Design, use and evaluation of packages and packaging systems. A one-day field trip is required.

423. Dynamics of Packaging
Winter, Spring. 5(4-3) 422, MTH 215, or approval of department.
A study of the protective function of the packaging systems in relation to their environment and shock and vibration isolation methods. A one-day field trip is required.

424. Packaging Problems
Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 9 credits. 422, 2.5 grade-point average and approval of school.
Development of solutions to specific packaging problems.

425. Packaging Process Analysis
Fall, Winter, Spring. 4(3-3) 422; CPS 110.
The integrated study of the operation structure and control of the packaging and package-making process. A one-day field trip is required.

428. Packaging Development
Fall, Spring. 4(3-2) 320.
A study of the functions of each area concerned with the development of packages to meet present-day requirements of protection and merchandising.

430. Packaging Machinery
Spring. 4(3-3) 320 or approval of school.
The components for automated packaging lines, and auxiliary materials handling equipment, including consideration of design, selection, specification and operation of machinery for the package-making and package-filling operations.