

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 science 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.

200. Technology and Society
Winter. 3(3-0) Twelve credits of natural science. Interdepartmental with and administered by the Engineering Department.
An attempt to describe and analyze portions of current technology and its desired and undesired consequences; and exploration of avenues for assessing such consequences for future technologies.

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.

401. Technology Assessment
Spring. 3(3-0) Seniors, or approval of department. Interdepartmental with and administered by the Engineering Department.
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 NSC
(COLLEGE OF)**

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.

471. Environmental Topics in Nonmetropolitan Regions
Fall. 4(4-0) Nomination of students by own department and approved by participating faculty. Interdepartmental with Natural Resources and Agriculture and administered by Natural Resources.
Environmental topics in nonmetropolitan regions including issues on: production agriculture, service industries, nonagricultural uses, rural urban balance, discussion topics and case studies.

800. Electron Microscopy of Biological Material
Fall. 4(2-6) Approval of instructor.
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 NE

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 preventive, 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. 3 to 8 credits. Admission to a college of medicine.

Continuation of 501 emphasizing pathology and pharmacology.

530. Clinical Science I

Fall. 2(1-3) Admission to a college of medicine.

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. 1(0-3) Admission to a college of medicine

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. 1(0-3) Admission to a college of medicine.

Continuation of 532.

534. Clinical Science V

Fall. 1(0-3) Admission to a college of medicine.

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. 1(0-3) Admission to a college of medicine.

A continuation of 534.

536. Clinical Science VII

Spring. 1(0-3) Admission to a college of medicine.

Continuation of 535.

537. Clinical Science VIII

Summer. 1(0-3) Admission to a college of medicine.

Continuation of 536.

550. Systems Biology I

Spring. 5 to 15 credits. 502.

A multidisciplinary approach to the hemantopoeitic and nervous systems providing a functional integration of basic science and clinical information.

551. Systems Biology II

Summer. 5 to 15 credits

Continuation of 550 with emphasis on a multi-disciplinary approach to the nervous system.

552. Systems Biology III

Fall. 5 to 15 credits.

Continuation of 551 with emphasis on multi-disciplinary approach to the cardiovascular system.

553. Systems Biology IV

Winter. 5 to 15 credits.

Continuation of 552 with emphasis on multi-disciplinary approach to the respiratory, renal and urinary systems.

554. Systems Biology V

Spring 5 to 15 credits.

Continuation of 553 with emphasis on multi-disciplinary approach to the gastrointestinal system.

555. Systems Biology VI

Summer. 5 to 15 credits.

Continuation of 554 with emphasis on multi-disciplinary 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.

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.

*Established July 1, 1971.

320. Packaging Materials

Fall, Spring. 3(3-0)

Common packaging materials including wood, paper, paperboard, plastics, metal foils and sheets, glass, adhesives cushioning media; their basic properties in relation to performance of package.

321. Packaging Materials Laboratory

Fall, Spring. 2(0-6) 320 or concurrently.

Problems and techniques of measuring the properties of packaging materials and the use of those measurements.

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.

340. Packaging and the Environment

Winter. 4(4-0)

Broad study of the effects of packaging on environmental quality, including solid waste, air and water quality, laws, economics, energy considerations and resources conservation.

422. Packaging Systems

Fall, Winter. 4(3-3) 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

Spring. 4(3-3) 422, MTH 113, or approval of school.

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

Winter, Spring. 4(3-3) 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) 422 or approval of school

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) 422 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.

463. Seminar

Fall. 2(0-4) Must have job experience to enroll.

Detailed report on work performed in practical experience or outside packaging projects.