531. *Clinical Science II*

Fall. 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*

Winter. 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*

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

Continuation of O M 532.

534. *Clinical Science V*

Summer. 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*

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

A continuation of O M 534.

536. *Clinical Science VII*

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

Continuation of O M 535.

537. *Clinical Science VIII*

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

Continuation of O M 536.

590. *Special Problems in Osteopathic Medicine*

Fall, Winter, Spring, Summer. 1 to 8 credits. May reenroll for a maximum of 32 credits. Approval of department.

Each student will work under direction of a faculty member on an experimental, theoretical or applied problem.

600. *Clinical Science Practicum*

Fall, Winter, Spring, Summer. 2 to 12 credits. May reenroll for a maximum of 60 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

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. 2 to 24 credits. May reenroll for a maximum of 48 credits. Admission to a college of medicine or approval of department.

Individual or group work on special problems in medicine.

650. *Medicine Clerkship*

Fall, Winter, Spring, Summer. 2 to 16 credits. May reenroll for a maximum of 16 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Clinical exposure in osteopathic medicine. Program developed to achieve proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.

651. *Obstetrics–Gynecology Clerkship*

Fall, Winter, Spring, Summer. 8 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Clinical exposure in obstetrics and gynecology. Program developed to achieve efficiency in obstetrical patient evaluation, management; motor skills, aptitudes; care of new born; evaluation of postpartum patient; management of gynecologic problems.

652. *Pediatrics Clerkship*

Fall, Winter, Spring, Summer. 8 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Practical clinical exposure in the area of pediatrics. Program developed to achieve proficiency in motor skills and aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management and therapy.

653. *Surgery Clerkship*

Fall, Winter, Spring, Summer. 8 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Clinical exposure in area of surgical diagnosis, management, treatment. Program structure developed to achieve proficiency in motor skills, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.

654. *Anesthesiology Clerkship*

Fall, Winter, Spring, Summer. 4 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Clinical exposure in area of anesthesiology. Program structure developed to achieve proficiency in motor skills, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.

655. *Emergency Medicine Clerkship*

Fall, Winter, Spring, Summer. 4 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

A clerkship organized to develop skills in the acute evaluation and management of patients in the hospital emergency room and other locations.

656. *Orthopedics Clerkship*

Fall, Winter, Spring, Summer. 4 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Clinical exposure in area of orthopedics. Program structure developed to achieve proficiency in motor skill, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.

657. *Neurology Clerkship*

Fall, Winter, Spring, Summer. 4 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Clinical exposure in area of neurology. Program structure developed to achieve proficiency in motor skills, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.

658. *Otorhinolaryngology Clerkship*

Fall, Winter, Spring, Summer. 4 credits. Grade P in all courses offered in terms 1 through 8 or approval of department.

Clinical exposure in area of otorhinolaryngology. Program structure developed to achieve proficiency in motor skills, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.

OSTEOPATHIC MEDICINE OST (COLLEGE OF)

500. *Historical and Biological Foundations of Osteopathic Medicine*

Summer. 2(3-0) Admission to a professional medical program.

Historical development of the osteopathic profession. Integration of biological and osteopathic principles in the consideration of health and disease.

520. *Normal Endocrine Structure and Function*

Winter. 2(2-0) PSL 500A, BCH 502 or approval of department.

An integrated basic science course presenting a series of lectures and laboratories related to the normal structure and function of the endocrine organs. Prerequisite for studying endocrine diseases in systems biology.

530. *Comprehensive Patient Evaluation I*

Summer. 2 to 6 credits. Admission to a college of medicine.

Interdepartmental course in physical examination skills. Stresses comprehensive, osteopathic evaluation of the patient.

531. *Comprehensive Patient Evaluation II*

Fall. 2 to 6 credits. OST 530.

Continuation of OST 530.

532. *Comprehensive Patient Evaluation III*

Winter. 2 to 6 credits. OST 531.

Interdepartmental course in physical examination skills. Stresses application of comprehensive, osteopathic evaluation of the patient. Introduction to office procedures and physical diagnosis.

533. *Comprehensive Patient Evaluation IV*

Spring. 2 to 6 credits. OST 532.

Interdepartmental course in physical examination skills. Stresses comprehensive, osteopathic evaluation of the patient. Includes preceptorship and appropriate systems biology clinical experiences.

534. *Comprehensive Patient Evaluation and Management I*

Summer. 2 to 6 credits. OST 533.

Interdepartmental course in physical examination skills, diagnosis and patient management. Stresses comprehensive, osteopathic evaluation and management of the patient. Includes preceptor assignment and appropriate systems biology clinical experiences.

535. *Comprehensive Patient Evaluation and Management II*

Fall. 2 to 6 credits. OST 533.

Continuation of OST 534.

536. *Comprehensive Patient Evaluation and Management III*

Winter. 2 to 6 credits. OST 533.

Continuation of OST 535.

537. *Comprehensive Patient Evaluation and Management IV*

Spring. 2 to 6 credits. OST 533.

Continuation of OST 536.

551. Systems Biology I

(O M 550.) Fall. 3 to 12 credits. ANT 560, BCH 501.

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

552. Systems Biology II

Spring. 3 to 6 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521B, PTH 502.

A multidisciplinary approach to the integumentary system providing a functional integration of basic science and clinical information.

553. Systems Biology III

(O M 551.) Spring. 5 to 15 credits. ANT 563, PSL 500A, PTH 502, BCH 502, PHM 520B, MPH 521.

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

554. Systems Biology IV

(O M 552.) Fall. 5 to 15 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521B, PTH 502.

Continuation of OST 553 with emphasis on multidisciplinary approach to the cardiovascular system.

555. Systems Biology V

(O M 553.) Winter. 5 to 10 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521B, PTH 502.

Continuation of OST 554 with emphasis on multidisciplinary approach to the respiratory system.

556. Systems Biology VI

(O M 553.) Winter. 5 to 10 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521B, PTH 502.

Continuation of OST 555. This system will represent a multidisciplinary approach to the urinary system.

557. Systems Biology VII

(O M 554.) Spring. 5 to 15 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521B, PTH 502.

Continuation of OST 556 with emphasis on multidisciplinary approach to the gastrointestinal system and metabolism.

558. Systems Biology VIII

(O M 555.) Summer. 5 to 15 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521B, PTH 502.

Continuation of OST 557 with emphasis on multidisciplinary approach of the growth and development within (but not limited to) the field of pediatrics, obstetrics and gynecology.

590. Special Problems

Fall, Winter, Spring, Summer. 1 to 8 credits. May reenroll for a maximum of 32 credits. Approval of department.

Each student will work under direction of a faculty member on an experimental, theoretical or applied problem.

610. The Osteopathic Examination I

(F M 630.) Fall. 1(0-4) Admission to a college of medicine or approval of instructor.

Instruction in the osteopathic examination.

611. The Osteopathic Examination II

(F M 640.) Winter. 1(0-4) OST 610 or approval of instructor.

Continuation of OST 610.

612. The Osteopathic Examination III

(F M 650.) Spring. 1(0-4) OST 611 or approval of instructor.

Continuation of OST 611.

613. The Osteopathic Examination IV

(F M 660.) Summer. 1(0-4) OST 612 or approval of instructor.

Continuation of OST 612.

614. The Osteopathic Examination V

(F M 670.) Winter. 1(0-4) OST 612 or approval of instructor.

Continuation of OST 613.

615. The Osteopathic Examination VI

(F M 680.) Winter. 1(0-4) OST 612 or approval of instructor.

Continuation of OST 614.

616. The Osteopathic Examination VII

(F M 690.) Spring. 1(0-4) OST 613, OST 614, OST 615 or approval of instructor.

Continuation of OST 615.

620. Systems Biology–Directed Studies

Fall, Winter, Spring, Summer. 1 to 15 credits. Admission to a professional medical program or approval of coordinator.

A directed study in systems biology for the continuing advanced student or remediation of any systems biology: hemopoietic, integumentary, nervous, cardiovascular, respiratory, urinary, gastrointestinal, growth and development.

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, Spring. 4(4-0)

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.

330. Package Printing

Winter. 3(3-0) PKG 320 or approval of school.

Basic printing processes used for packaging materials. Advantages, disadvantages and identification of these printing methods.

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(4-0) PKG 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) PKG 422 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 reenroll for a maximum of 9 credits. PKG 422, 2.50 grade-point average and approval of school.

Development of solutions to specific packaging problems.

425. Packaging Process Analysis

Winter, Spring. 4(4-0) 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.

427. Packaging Materials and Systems Laboratory

Fall, Winter, Spring. 3(1-6) PKG 320, PKG 422 or approval of school.

Methods of measuring properties of packaging materials. Design, manufacture and performance testing of complete packages. Techniques for evaluating test results. Value of various test methods.

428. Packaging Development

Fall, Spring. 4(3-2) PKG 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.

429. Packaging Economics

Winter. 3(3-0) PKG 422, EC 200, AFA 201 or approval of school.

Examination of economic issues in packaging as they relate to policies of the firm and of government. Relationships between economic policy and social issues.

430. Packaging Machinery

Spring. 4(4-0) PKG 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. One-day field trip required.

463. Seminar

Fall. 2(0-4) Senior Majors.

Discussions on current packaging problems.

801. Packaging Systems

Fall. 4(3-3)

Analysis of various existing packaging systems; problem solving exercises.

820. Permeability and Shelf Life

Winter. 4(3-3) PKG 422, MTH 113, CPS 110 or approval of school.

Comprehensive study of the relationship of the storage life of packaged food and agricultural products and the gas, moisture, and vapor permeability of packages in various environments. Computer aided package design.