of

Courses

# OBSTETRICS, GYNECOLOGY AND REPRODUCTIVE BIOLOGY OGR

## **College of Human Medicine**

# 608. Obstetrics/Gynecology Clerkship

Fall, Winter, Spring, Summer. 1 to 17 credits. May reenroll 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.

# 609. Obstetrics and Gynecology Advanced Clerkship

Fall, Winter, Spring, Summer. 4 to 16 credits. May reenroll for a maximum of 16 credits. OGR 608, approval of department and approval of community coordinator.

Advanced clinical experience in gynecology and/ or obstetrics.

# OSTEOPATHIC MEDICINE OM

# College of Osteopathic Medicine

# 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.

## 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.

### 651. Obstetrics—Gynecology Clerkship

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

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

# 653. Surgery Clerkship

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

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.

### 656. Orthopedics Clerkship

Fall, Winter, Spring, Summer. 6 credits. May reenroll for a maximum of 12 credits. Grade P in all courses offered in terms 1 through 8.

Clinical exposure in area of orthopedics. 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. 6 credits. May reenroll for a maximum of 12 credits. Grade P in all courses offered in terms 1 through 8

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. Basic Concepts in Biomechanics

Winter. 2(2-0) Admission to a college of medicine or approval of department. Interdepartmental with and administered by the Department of Biomechanics.

Basic concepts of biomechanics and their relationship to functional anatomy and osteopathic manipulative therapy.

### 516. Medical Ethics

Winter. 3(3-0) Interdepartmental with and administered by the College of Human Medicine.

Analysis and evaluation of the ethical elements of medical decision making. Topics include: patient rights, physican responsibilities, euthanasia, informed consent, parentalism, confidentiality, biomedical research, and allocation of scarce resources.

# 520. Normal Endocrine Structure and Function

Spring. 3 credits. BCH 502.

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

Fall. 2 to 6 credits. Admission to a college of medicine. ANT 565 or concurrently.

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

### 531. Comprehensive Patient Evaluation II

Winter. 2 to 6 credits. OST 530, ANT

565.

Continuation of OST 530.

### 532. Comprehensive Patient Evaluation III

Spring. 4 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

Fall. 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.

# 552. Systems Biology - Integumentary

Summer. 2 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

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

# 553. Systems Biology - Nervous System

Fall. 10 credits. ANT 563, PSL 500A, PTH 502, BCH 502, PHM 521, MPH 521.

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

# 554. Systems Biology - Cardiovascular

Spring. 15 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

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

## 555. Systems Biology - Respiratory

Summer. 8 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

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

# 556. Systems Biology - Urinary

Summer. 7 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

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

### 557. Systems Biology - Gastrointestinal

Winter. 13 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 520, PTH 502.

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

### 558. Systems Biology - Growth and Development

Fall. 5 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PTH 502.

A multidisciplinary approach to growth and development within the field of pediatrics providing functional integration of biological, behavioral and clinical sciences.

# 559. Systems Biology - Reproductive

Fall. 7 credits. ANT 560, ANT 565; PSL 500A; MPH 521; BCH 502; PTH 502.

A multidisciplinary approach to the male and female reproductive system providing functional integration of basic science and clinical information (includes obstetrics and gynecology).

# 560. Systems Biology - Musculoskeletal

Fall. 6 credits. ANT 560, ANT 565; PSL 500A; MPH 521; BCH 502; PHM 521; PTH 502.

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

# 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.

#### 600. **Ambulatory Care**

Fall, Winter, Spring, Summer. 24 credits. Grade P in all courses offered in Terms 1-8 or approval of department.

A multidisciplinary approach in clinical settings to the ambulatory patient to achieve proficiency in motor skills, aptitudes, comprehension of concepts and principles: patient evaluation, diagnosis, management, and therapy.

### Subspecialty Clerkship: Child Psychiatry 610.

Fall, Winter, Spring, Summer. 4 to 16 credits. PSC 608. Interdepartmental with and administered by the Department of Psychiatry. Subspecialty experiences in psychiatry in clinical settings with child patients and their families.

#### 614. The Osteopathic Examination I

Winter, Spring. 1(0-4) OST 533 or approval of instructor.

Emphasizes continuing development of palpatory diagnostic skills, neuromusculoskeletal patient assessment, selection and utilization of appropriate osteopathic manipulative treat-

#### 615. The Osteopathic Examination II

Spring, Summer. 1(0-4) OST 614 or approval of instructor.

Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory di-agnosis and osteopathic manipulative treatment in ambulatory clinics.

# The Osteopathic Examination III

Fall, Summer, 1(0-4) OST 615 or approval of instructor.

Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory di-agnosis and osteopathic manipulative treatment in the hospital setting.

#### **PACKAGING PKG**

### College of Agriculture and Natural Resources

#### Principles of Packaging 210.

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. 4(4-0) PKG 210, PHY 237, CEM 141A or CEM 141B, CEM 161, CEM 143.

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.

#### Package Printing 330.

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

school.

Basic printing processes used for packaging materials. Advantages, disadvantages and identifi-cation of these printing methods.

### 340. Packaging and the Environment

Winter, 3(3-0)

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

### Packaging Systems

Fall, Winter, Spring. 4(4-0) PKG 320 or approval of school

Design, use and evaluation of packages and packaging systems.

#### 423. **Dynamics of Packaging**

Fall, Winter, 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 oneday field trip is required.

### 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

Fall, Winter, Spring. 4(3-2) PKG 422.

The integrated study of the operation, structure and control of packaging and package-making processes. A one-day field trip is required.

### Packaging Materials and Systems Laboratoru

Fall, Winter, Spring. 4(2-4) 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.

#### Packaging Development 428.

Fall, Winter, Spring. 4(3-2) PKG 427, CPS 115, Seniors.

Development of packages to meet present-day requirements of protection and merchandising.

### 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, in-cluding consideration of design, selection, speci-fication and operation of machinery for the package-making and package-filling operations.

# Distribution Packaging

Fall, Winter, Spring. 3(3-0) EC 200, PKG 422, Juniors or approval of school.

Interrelationships between packaging and other segments of the distribution system. Market related issues in packaging: materials handling, transportation, and inventory control.

#### Pharmaceutical Packaging 438.

Winter, 3(3-0) PKG 427.

Special requirements for packaging pharmaceuticals and medical devices. Packageforms and procedures that meet these requirements. Labeling, regulatory requirements, and effect of sterilization on packages.

#### Special Topics 440.

Fall, Winter, Spring, Summer, 1 to 4 credits. May reenroll for a maximum of 12 credits if different topics are taken. Juniors or approval of school.

### 448. Design of Shipping Containers

Spring. 2(1-2) PKG 423.

Students design, build and test a shipping package system for an industrial product. Lectures by industry personnel on specific shipping containers not discussed in other packaging courses.

#### 450. Packaging Laws and Regulations

Spring. 3(3-0) PKG 422 or approval of

school.

History and development of packaging laws and regulations. Relationships among law, government regulation and commercial regulation. Effect of current laws and regulations on packaging. Personal liability of the packaging professional.

#### Food Packaging 455.

Fall, 4(3-2) PKG 427 or approval of

school.

Food packaging systems and their relationship to specific products, processes, regulations and equipment.

#### 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.

#### 810. Advanced Packaging Materials

Spring. 3(2-2) PKG 427 or approval of department.

Physical and chemical properties of packaging materials. Relationship between properties of materials and performance of packages.

# Permeability and Shelf Life

Winter. 4(3-3) PKG 422, MTH 113, CPS 115 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.

## 822.

 $Fall.\ 1(1-0)\ Approval\ of\ department.$ 

Discussions of recent advances in packaging and reports by graduate students and faculty on re-search problems. Field trips required.

# Special Investigations in Packaging

Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits. Approval of school.

# Selected Topics

Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits if different topics are taken. Approval of department.