463. Seminar
Fall. 2(0-4) Must have job experience to enroll.
Detailed report on work performed in practical experience or outside packaging projects.

801. Package Design
Fall. 4(3-3)
Advanced work in the development of the graphic and structural design of packages.

834. Special Investigations in Packaging
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

889. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

PARK AND RECREATION RESOURCES*

College of Agriculture and Natural Resources* PRR

200. Resource Ecology and Management (B D 344.) Fall, Spring. 3(3-0) Approval of department.

300. Wilderness Survival (B D 440.) Fall, Spring. 3(3-0)
Outdoor skills for utilization of plant and animal materials to provide shelter, fire, signals, water, and food in the outdoors. Psychology and attitudes conducive to wilderness survival and appreciation. Field trip required.

301. Environmental Attitudes and Concepts (B D 442.) Fall. 3(3-0)

344. Leisure and Recreation Resources (B D 446.) Fall. 3(3-0)
Leisure in relation to park and recreation resources. History and philosophy, significance in modern society, and impact on urban and natural resource developments.

351. Environmental Interpretation I: Principles (B D 448.) Winter. 3(2-0)
Philosophy, needs, types, and uses of information services in private, municipal, county, state and federal park and recreation areas. The role of the park interpreter (naturalist).

440. Park and Recreation Administration (B D 449.) Fall. 4(4-0)
Park and recreation organization, administration and policy at municipal, county, and regional level. Field trip required.

442. State and Federal Recreation Resource Policy (B D 450.) Winter. 3(3-0)
Origin, development and significance of public policy in recreation resource development in the United States with emphasis at state and federal levels. Field trip required.

444. Park and Recreation Area Design (B D 452.) Fall. 4(2-4) Approval of department.
Planning and design principles of space, scale, and circulation applied to the use of park and recreation areas and facilities. Field trip required.

448. Park Area Operations (B D 445.) Spring. 3(3-0) Approval of department.
Problems in operations and maintenance of park and recreation areas and facilities. Personnel practices, budgeting, and maintenance schedules. Selection and adaptability of maintenance equipment. Field trip required.

450. Natural Resource Administration (R D 420.)* Fall, Spring. 4(4-0) Interdepartmental with Fisheries and Wildlife, Forestry, and Resource Development Departments and Natural Resources. Administered by the Forestry Department.

451. Environmental Interpretation II: Methods and Devices (R D 422.)* Fall, Spring. 3(3-0) Not open to majors.
Methodology and equipment used in information transmission in natural, historic, and scenic areas. Site selection and development criteria for natural resource interpretation.

480. Supervised Study (R D 424.)* Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 10 credits. Approval of department.
Seminars on current problems. Supervised readings. Individual undergraduate research on selected topics.

843. Senior Proseminar (R D 425.)* Winter. 1(0-0) Senior majors.
Seminars on current professional problems and literature.

844. Park and Recreation Policy (R D 426.) Spring. 3(3-0) Interdepartmental with the Resource Development Department.
Recreation, leisure and work concepts. Determination of needs for recreation facilities. Factors affecting public and private allocation of resources for provision of needed facilities.

846. Urban Recreation Area and Program Analysis (R D 428.)* Spring. 4(4-0) Approval of department.
Analysis of urban public, private and commercial recreation areas, facilities, and programs. Construction of a typology of urban communities. Course is conducted in selected urban communities in Michigan.

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*Established January 1, 1969. Formerly a part of the Department of Resource Development.
848. Recreation Resource Law  
Spring. 3(3-0)  
Legal basis for public recreation. Methods of acquiring recreational resources, including contracts and condemnation procedures. Administrative problems, including zoning, liability, civil rights and law enforcement. Study of cases and statutes.

880. Special Problems  
Fall, Winter, Spring. 1 to 6 credits. May re-enroll for a maximum of 10 credits. Approval of department. Seminars on current problems. Supervised readings. Independent study of selected topics.

550. Research  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

PATHOLOGY  PTH

College of Human Medicine  
College of Osteopathic Medicine  
College of Veterinary Medicine

404. General Pathology  
Fall. 5(3-6) ANT 420, Junior Medical Technology majors, or approval of department.

407. Clinical Pathology  
Winter. 5(3-4) 404 or approval of department. Theory and techniques in hematology, coagulation, blood banking, clinical microscopy and chemical pathology, including urinalysis, blood chemistry and continuous flow analysis.

408. Clinical Pathology  
Spring. 5(3-4) 404 or approval of department. Continuation of 407.

501. Pathology of Infancy and Childhood  
Winter. 5(5-0) Year V Human Medicine Students. An analysis of disease processes in the immature human between birth and puberty.

550. Veterinary Pathology I  
Spring. 6(3-6) Admission to the professional veterinary program, or approval of department.

560. Pathology II  
Winter, Summer. 7(4-8) 550. Continuation of 550, with coverage of the hematopoietic, cardiovascular, urinary, digestive, respiratory and reproductive systems; integration of principles of clinical pathology.

610. Veterinary Clinical Pathology  
Fall, Spring. 3(2-3) 560. Laboratory procedures in the diagnosis and prognosis of animal diseases; examination of body tissues, fluids and excreta.

615. Diseases of Poultry  
Winter, Summer. 4(4-0) Eighth-term Veterinary Medicine students. Etiology, signs, lesions, differential diagnosis and control of infectious and noninfectious diseases of birds, with emphasis on domestic poultry.

620. Human Pathology I  
Fall. 5(4-2) Medical school Sophomores or approval of department. Recognition and classification of gross and microscopic structural changes in disease, analysis of functional consequences, and correlation with clinical manifestations.

621. Human Pathology II  
Winter. 5(4-2) 620. Continuation of 620.

622. Principles of Laboratory Medicine  
Spring. 5(4-2) 621. Study of diseases, the diagnosis and management of which rely on laboratory methods; hematologic, endocrine, metabolic, and infectious diseases are included.

800. Problems in Pathology  
Fall, Winter, Spring, Summer. 5(1-0) May re-enroll for a maximum of 3 credits for M.S. candidates and 6 credits for Ph.D. candidates. Approval of department. Seminar required of all majors in Pathology.

801. Pathology Seminar  
Fall, Winter, Spring, Summer. 1(1-0) May re-enroll for a maximum of 3 credits for M.S. candidates and 6 credits for Ph.D. candidates. Approval of department. Seminar required of all majors in Pathology.

802. Advanced Histopathology  
Fall. 5(0-0) Approval of department. A relatively advanced and comprehensive study in the histopathologic aspects of systemic and special pathology; independent study in the field of pathogenesis and microscopic pathology.

803. Advanced Histopathology  
Winter. 5(6-0) 802 and approval of department. Continuation of 802.

804. Histopathologic Techniques  
Fall. 3(1-4) Approval of department. Theory and practice in preparation of tissues for examination with the light microscope; special stains and histochemical procedures included.

805. Pathology Proseminar  
Fall. 2(2-0) Approval of department. Philosophy and methods of research; thesis and other research reports; literature review; illustration of research data; practical assignments.

810. Post-Mortem Diagnosis  
Winter, Summer. 3(0-3) May re-enroll for a maximum of 6 credits. Approval of department. Required of majors. Instruction and practice in diagnosis of animal diseases by means of necropsy and other laboratory techniques. Emphasis will be placed upon correlation and interpretation of gross and microscopic lesions and the results of other tests.

811. Advanced Clinical Pathology  
Winter. 3(1-6) Approval of department. Application of standard and newer techniques and instrumentation in hematology, biochemistry, parasitology, etc., to the diagnosis of disease.

812. Hematology  
Winter. 5(3-4) 408 or 610 or approval of department. Pathology of diseases of blood and an analysis of diagnostic laboratory procedures.

820. Oncology  
Spring. 3(0-6) Approval of department. A study of benign and malignant neoplasms with emphasis on gross and microscopic characteristics and diagnosis.

826. Laboratory Animal Pathology  
Spring. 4(3-3) Graduate status and approval of department. Interdepartmental with and administered by Laboratory Animal Resources. Macroscopic and microscopic studies on the diseases of laboratory animals with special emphasis on naturally-occurring diseases which might interfere with the interpretation of experimental results.

899. Research  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

910. Biology of Disease  
Fall. 3(3-3) Approval of department. Primarily for students in the biological sciences. Basic morphologic changes in disease with emphasis on the related physiologic pathology. Laboratory includes relevant problems in post-mortem diagnosis.

990. Advanced Correlative Pathology  
Fall, Winter, Spring. 5(0-15) May re-enroll for a maximum of 15 credits. Approval of department. Experience in morphologic and clinical pathology and correlation of these with the clinical aspects of disease.

999. Research  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

PHARMACOLOGY  PHM

College of Human Medicine  
College of Osteopathic Medicine  
College of Veterinary Medicine

350. Introductory Human Pharmacology  
Spring. 3(0-0) PSL 322 or concurrently; or approval of department. Survey of pharmacology including general principles, central nervous system drugs, autonomic nervous system drugs, cardiovascular and renal drugs, endocrine drugs, anti-infectives, poisoning therapy, and other basic related topics.

430. Drug Abuse  
Fall. 3(3-0) Juniors and approval of department. Biology and chemistry recommended. Actions, mechanism of action, toxicity and use of drugs of abuse. Sociological and psychological aspects of drug abuse and the legal aspects of the sale and distribution of drugs are considered.