302. Environmental Attitudes and Concepts  
Fall, 3 credits  

304. Designs for Recreation: Nature and Man  
Fall, Spring, 3 credits  
Design strategies are used to demonstrate relationships between characteristics of the environment and man's use of it. Integration of work, leisure, and recreation uses within environmental potentials and limits is emphasized.

344. Leisure and Recreation Resources  
Fall, Spring, 3 credits  
Leisure in relation to park and recreation resources. History and philosophy, significance in modern society, and impact on urban and natural resource developments.

440. Park and Recreation Administration  
Fall, Winter, 4 credits  
Park and recreation organization, administration and policy at municipal, county, and regional level. Field trip required.

442. State and Federal Recreation Resource Policy  
Winter, 3 credits  
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  
Fall, Winter, Spring, 3 credits  
Design principles of park and recreation areas and facilities. Field trip required.

446. Park Area Operations  
Spring, 3 credits  
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.

448. Field Studies in Park Administration  
Fall, 3 credits  
Investigation and analysis of outstanding park and recreation programs. Visits to areas under local, state, and federal jurisdiction. Evaluation of administrative practices, area management, and operation policies. Conducted as a traveling class with agency assistance.

449. Recreation Land Management  
Winter, 3 credits  
Not open to majors. Fundamentals of outdoor recreation resource management. Planning, development, and administration of programs and facilities.

450. Natural Resource Administration  
Fall, Spring, 4-4 credits  

451. Environmental Interpretation II: Methods and Devices  
Spring, 4 credits  
Methodology and equipment used in information transmission in natural, historic, and genic areas. Site selection and development criteria for natural resource interpretation.

455. Natural Resource Economics  
Winter, 4 credits  
450 or approval of department. Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Resource Development and Natural Resources. Administered by the Department of Forestry. Basic economic and political principles and techniques that govern the production and consumption of forest land products, including basic forest valuation procedures.

480. Supervised Study  
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.

484. Senior Proseminar  
Winter, 1 credit  
Seniors. Interdepartmental with departments of Agriculture and Environment, Interdisciplinary, Parks and Recreation, Forestry, and Natural Resources.

801. Dimensions of Recreation and Leisure  
Fall, 3 credits  
444 or approval of department. Concepts of recreation and leisure in the United States and their implications for professional development. Extensive reading into concepts, definitions, values, educational components and historic roots of recreation and leisure.

840. Recreation Economics  
Spring, 4 credits  
FOR 809 or approval of instructor. Interdepartmental with the departments of Forestry and Resource Development. Applications of economic analysis to recreation resource problems including measurement of demand and supply, valuation of recreation resources, determination of economic impact, economic decision making, and policy considerations.

842. Park and Recreation Policy  
Winter, 3 credits  
Interdepartmental with the Department of Resource Development. Recreation, leisure and work concepts. Determination of needs for recreation facilities. Factors affecting public and private allocation of resources for provision of needed facilities.
544. Recreation Research Methods  
Winter. (4-0) Approval of department. 
Relate recreation research to broader context of social scientific investigation and to the nature and philosophy of social scientific research. Examine the theoretical and methodological approaches in recreation research.

546. Urban Recreation Area and Program Analysis  
Spring. (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.

548. Recreation Resource Law  
Spring. (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.

550. Development of Water Recreation Resources  
Winter. (3-0) Approval of department. 
Administration, research, design, and construction of water recreation facilities. Policy issues, use conflict, and fiscal planning reviewed in light of interagency relationship and legislative mandate.

552. Recreation Research Seminar  
Fell, Winter, Spring. Summer. 1 to 6 credits. May re-enroll for a maximum of 10 credits. Approval of department. 
Advanced work for non-thesis projects or advanced individual study in recreation: policy, land use, planning, systems administration and management, economics, recreation forestry, commercial recreation enterprises, recreation and social problems, environmental interpretation, travel and touring, spatial analysis, leisure concepts, research.

553. Research  
Fell, 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, Spring. 5(3-0) ANT 420. Junior Medical Technology majors, or approval of department. 

407. Clinical Pathology  
Winter, Summer. 3(3-0) or 5(3-4) Approval of department. 
Theory and techniques in histology and cytopathology.

408. Clinical Pathology  
Fall, Spring. 3(3-0) or 5(3-4) Approval of department. 
Immunohematology, urinalysis, and topics in blood chemistry.

502. Human Pathology I  
Winter. 2 to 5 credits. Admission to a college of medicine or approval of department. 
Pathologic processes and specific disease syndromes with emphasis on clinical applications. Concepts of disease and pathologic process in selected common disease or conditions for the beginning medical student with a limited knowledge of anatomy, physiology, and biochemistry.

503. Human Pathology II  
Spring. 2(2-1) 502. 
An introductory study of neuropathology in which vocabulary and concepts of neuromuscular diseases are systematically reviewed. Self-instructional option available.

504. Human Pathology III  
Fall. 3(2-3) 503 or approval of department. 
A continuation of PTH 503. Diseases of the cardiovascular system, including stress effects, arteriosclerotic and disorders of autonomic and endocrine regulation. Laboratory sessions include the study of histologic sections.

505. Human Pathology IV  
Winter. 3(2-2) 504 or approval of department. 
A continuation of 504. The systems include: lung, kidney, male genitourinary and bone and joints. In the laboratory sections, gross and microscopic changes in diseased tissues are studied and correlated with lecture material. Separate lab sessions covering pulmonary function tests, acid-base balance and urinalysis are included.

506. Human Pathology V  
Spring. 3(2-2) 505 or approval of department. 
A continuation of PTH 505. The systems include gastrointestinal tract (including liver and pancreas), female reproductive tract and breast.

550. Veterinary Pathology  
Spring. 6(3-6) Admission to the professional veterinary program, or approval of department. 
Principles of pathology, including causes of disease, disturbances of cell growth and metabolism, neoplasm, circulatory changes, inflammation and neoplasms; introduction to clinical hematology.

608. Pathology Clerkship  
Fall, Winter, Spring. Summer. 3 to 17 credits. May re-enroll for a maximum of 17 credits. K M 602 or approval of department. 
Anatomic and clinical pathology, with emphasis on clinical-pathological correlations. Conducted in the pathology departments of affiliated hospitals.

650. Applied Veterinary Pathology  
Fall, Winter, Spring. Summer. 8(4-12) Completion of eighth term of professional veterinary medicine course. 
Instruction, demonstration and practice in laboratory diagnosis of animal diseases, using the techniques of necropsy and clinical pathology and correlating the results with those of microbiology, toxicology and histopathology.

800. Problems in Pathology  
Fall, Winter, Spring, Summer. Variable credit. Approval of department. 
Elective work for students in veterinary medicine interested in pathology as a specialty, or in the special pathology of diseases of a particular class or species, and for graduate minors and majors interested in pathological techniques or in non-thesis research.

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(6-0) 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) 902 and approval of department. 
Continuation of 902.

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

810. Post-Mortem Diagnosis  
Winter, Summer. 3(0-9) 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  
Fall. 3(3-9) Approval of department. 
Application of standard and newer techniques and instrumentation in hematology, biochemistry, immunohematology, parasitology, etc., to the diagnosis of disease.

812. Hematology  
Winter. 5(3-4) 405 or approval of department. 
Pathology of diseases of blood and an analysis of diagnostic laboratory procedures.

820. Oncology  
Spring. 3(6-0) 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. 
Macro 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.

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