

**415. Special Problems**

Fall, Winter, Spring. 1 to 3 credits. May re-enroll for a maximum of 5 credits. Seniors and approval of department.

Special studies in fields not covered by other animal husbandry courses.

**451. Swine Production**

Fall. 4(3-3) ANS 325 or approval of department.

Historical aspects with emphasis on current trends. Breeds, breeding, selection, nutrition requirements, management practices, marketing, housing and environmental needs, disease and parasite problems. Visits to representative farms.

**452. Sheep Production**

Winter of even-numbered years. 4(3-3) ANS 325 or approval of department.

History, modern breeds, breeding, selection, nutrition and feeding, management, marketing, housing, diseases and parasites, wool. Visits to farm flocks. Practice in management skills.

**453. Beef Production**

Spring. 4(3-3) ANS 325 or approval of department.

History, breeds, breeding, selection, nutrition and feeding, commercial systems of production, diseases and parasites. Visits to purebred herds and to feed lots. Practice in management skills.

**454. Horse Production**

Fall of even-numbered years. 3(1-3) ANS 325 or approval of department by interview.

Horse selection, breeding, feeding, management and merchandising. Arranged class hours to be spent at the Horse Farm.

**462. Meat Animal Breeding**

Spring. 3(2-2) ANS 461.

Uses and effects of different breeding systems with beef cattle, sheep, and swine. Formulating breeding plans.

**488. The Impact of Animal Resource Management Upon the World's Developing Nations**

Winter. 3(4-0)

For course description, see Interdisciplinary Courses.

**825. Techniques in Nutrition Research**

Winter of odd-numbered years. 1 to 3 credits. CEM 333; approval of department. Interdepartmental with Human Nutrition and Foods.

Use of specialized instruments and techniques. Laboratory safety. Management of laboratory animals. Development of abilities in areas of particular interest to individual students.

**890. Advanced Special Problems**

Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 8 credits. Approval of department.

Investigation of animal husbandry areas of special interest to individual graduate students.

**899. Research**

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

**912. Seminar**

Fall, Winter, Spring. 1 credit.

**926. Comparative Nutrition-Lipids and Carbohydrates**

Winter of odd-numbered years. 4(4-0) BCH 452 and a previous course on principles of nutrition. Interdepartmental with and administered by Human Nutrition and Foods.

Regulatory aspects of carbohydrate and lipid metabolism as influenced by nutrition in mammals. Emphasis on normal and abnormal physiological states such as obesity, ketosis and diabetes.

**927. Comparative Nutrition-Protein Metabolism and Developmental Biology**

Winter of even-numbered years. 4(4-0) BCH 452, PSL 502 or concurrently. Interdepartmental with and administered by Human Nutrition and Foods.

Protein quality assessment, protein status, protein calorie malnutrition, amino acid metabolism, protein turnover, digestion and absorption, hormonal control of protein metabolism, developmental aspects of protein metabolism and growth.

**928. Comparative Nutrition-Minerals**

Spring of even-numbered years. 3 credits. BCH 452, PSL 502. Interdepartmental with Human Nutrition and Foods.

Forms and location in body, metabolic roles, deficiency and toxicity signs, interrelationships, requirements and biological availability of sources.

**929. Comparative Nutrition-Vitamins**

Winter of odd-numbered years. 3(3-0) BCH 452 and a previous course on principles of nutrition. Interdepartmental with Human Nutrition and Foods.

Chemical and physical properties, standards of activity, occurrence, metabolic roles, antivitamins, deficiency and toxicity signs, requirements and factors affecting requirements.

**963. Genetics of Breed Improvement**

Winter. 3(3-0) ANS 461, STT 421.

Breed improvement. Changing gene frequency. Genetic and environmental subdivision of phenotypic variance.

**964. Breeding Systems and Plans**

Spring. 3(3-0) 963.

Biometric relations between related animals. Role of selection in changing populations. The effects of different mating systems.

**999. Research**

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

**ANIMAL SCIENCE ANS**

**College of Agriculture and Natural Resources**

**101. Animal Science**

Fall. 5(4-2)

Survey of the animal industries including history, economic geography, anatomy and physiology, nutrition and feed usage, and systems of commercial livestock and poultry production.

**213. Animal Science Seminar**

Fall. 1(2-0)

Animal science industries. Industry representatives will be utilized to discuss particular areas.

**325. Principles of Animal Nutrition**

Spring. 5(5-0) CEM 132; BCH 200 recommended.

Livestock feeds and their nutrients. Functions of and requirements for nutrients. Evaluation of feeds. Feeding practices. Formulation of rations for beef and dairy cattle, horses, poultry, sheep and swine.

**461. Principles of Animal Breeding**

Winter. 3(3-0) CSC 250.

Quantitative inheritance. Gene frequency. Statistical tools used in animal breeding. Effect of selection and mating systems on animal population.

**525. Animal Nutrition**

Winter, Summer. 5(4-2) BCH 401.

Principles of nutrition. Nutrients and their metabolism. Nutritive requirements for maintenance, growth, reproduction, lactation and work. Nutrient sources and their use in preparing diets for domestic animals.

**826. Animal Nutrition**

Spring. 4(4-0) One course each: biochemistry, physiology; and approval of department.

Nutrition basic to animal feeding. Application of chemistry and physiology to nutrition. Nutrient requirements for normal body functions. Techniques involved in nutrition research; readings in current literature.

**854. Design of Animal Experiments**

Spring. 4(4-0) STT 423.

Choice, implementation and statistical analysis of experimental plans for research with animals. Designs for reduction of experimental error. Analysis of experiments with complex structure or unequal subclass numbers.

**965. Biometrical Genetics**

Fall. 4(4-0) One course in quantitative or population genetics.

Genetic expectations in random mating and inbred populations. Estimation of genetic parameters. Relation of gene frequency to population mean and variance. Components of genetic variance. Correlation of relatives. Selection theory.

**ANTHROPOLOGY ANP**

**College of Human Medicine  
College of Osteopathic Medicine  
College of Social Science**

**100. The Origin of Man and Culture**

Fall, Winter, Spring, Summer. 4(3-1)

Introduction to physical anthropology: the position of man in the animal kingdom, the genetic mechanisms of evolution, human beginnings and the fossil record, racial evolution and racial types among modern man, the anticipation of culture among other animals and the development of human culture, and culture as an adaptive mechanism.

**171. Introduction to Anthropology**

Fall, Winter, Spring, Summer. 4(3-1)

Comparison of ways of life among primitive, peasant and civilized peoples. Implications of these styles of life for understanding of human behavior in general and exotic cultures in particular.

**200. Resource Ecology and Man**

For course description, see Interdisciplinary Courses.

**221. Introduction to Social and Cultural Analysis**

Fall, Spring. 4(3-1) 171.

Basic theoretical framework of socio-cultural analysis; structural functionalism, evolutionism, and cultural ecology.

**250. Culture, Environment and Adaptation**

Fall. 4(3-1) 100.

Culture as an adaptive process—as developed in the million years of human history and still influencing environmental quality, population control, and allocation of resources in primitive and modern societies.

**263. Origin of Civilization: Archaeology**

Spring. 4(3-0) 100 or 171.

The rise, development and spread of culture in the period before written history. Archaeological evidence is used to trace the evolution of culture as it has been reconstructed from the excavation of pre-historic sites in the Old and New World.

**275. The Anthropology of Asia**

Fall. 4(3-0) Sophomores or approval of department.

Several cultural complexes and cultures types— from hunting and gathering through complex civilization—of East, Southeast, and South Asia. The cultures and nature of their development will be examined. Past and present significance of cultural stability and change will be seen in a comparative framework.

**281. The Africans and Their Cultures**

Fall, Spring. 4(3-0) Sophomores or approval of department.

Racial and cultural problems confronting the African peoples.

**285. Anthropology and the Modern World**

Spring. 4(2-2) 171.

Interwoven nature of cultural traditions in the modern world. Consideration of how people of developing nations respond to the dominant cultural forces of industrialized nations.

**381. Anthropology and Education**

Winter. 4(3-1) 171 or other Social Science. For Education and Anthropology majors.

Maturation and socialization in various societies of Asia, Africa, and Latin America. These will be compared with educational institutions in the U.S. and Europe. It is expected to be a contribution to the broader cross-cultural investigation of the teaching/learning process.

**384. Contemporary Problems of Japan**

For course description, see Interdisciplinary Courses.

**387. Ethnicity and Nation Building**

Spring. 4(2-2) 171.

Ethnic minorities and the roles they play in fostering and/or hindering nation building processes in Third World countries. A theoretical framework is utilized to compare systematically these roles in various areas of the world.

**389. Continuing Revolution in China: Problems and Approaches**

For course description, see Interdisciplinary Courses.

**390. Survey of Subsaharan Africa**

For course description, see Interdisciplinary Courses.

**391. Survey of Subsaharan Africa**

For course description, see Interdisciplinary Courses.

**400H. Honors Work**

Fall, Winter, Spring, Summer. 1 to 16 credits. May re-enroll for a maximum of 20 credits. Approval of department.

**411. Studies in the Anthropology of Asia**

Fall, Winter, Spring. 4(3-0) May re-enroll for credit for Part II in an area and/or for another area. 171; 275 or approval of department.

Separate courses in Asian cultures: China; Japan; Southeast Asia; South Asia; Central Asia. A two part course sequence is usually given. Part I: Ethnographic survey. Part II: Sub-areas, special problems and approaches.

**415. Studies in the Anthropology of Africa**

Winter, Spring. 4(3-0) May re-enroll for credit for Part II in an area and/or for another area. 171; 281 or approval of department.

Separate courses on African cultures: West Africa; Central Africa; East Africa. A two part course sequence is usually given. Part I: Ethnographic survey. Part II: Sub-areas, special problems and approaches.

**419. Studies in the Anthropology in the New World**

Fall, Winter, Summer. 4(3-0) May re-enroll for credit for Part II in an area and/or for another area. 171 or approval of department.

Separate courses on New World cultures: Arctic; North America; Middle America; South America. A two part course sequence is usually given. Part I: Ethnographic survey. Part II: Sub-areas, special problems and approaches.

**423. Studies in the Anthropology of the Near East**

Winter, Spring. 4(3-0) May re-enroll for credit for Part II in an area and/or for another area. 171 or approval of department.

Separate courses on Near East cultures: North Africa and Southwest Asia. A two part course sequence is usually given. Part I: Ethnographic survey. Part II: Sub-areas, special problems and approaches.

**434. Ethnic Minorities Around the World**

Spring. 4(3-0)

Examination of ethnic minorities, their problems and patterns of adaptation in Asia, Africa and Latin America. Emphasis is placed on social structure of the minorities and the dominant attitudes of both the majority and minority peoples.

**450. Area Courses in Prehistory**

Fall, Winter. 4(4-0) 100 or 171, and 263; 6 additional credits in anthropology.

Archaeology of different areas with emphasis on prehistoric adaptations to natural and social environments. Settlement patterns, subsistence, technology, and style will be considered. Areas covered will vary with staff and student interest.

**463. Social Anthropology**

Fall. 4(3-0) 171 or approval of department.

Organization and structure of non-Western societies, ranging from simpler tribal and peasant societies to complex civilizations. Social institutions, such as those based upon kinship, sex, age and status, analyzed for specific groups.

**464. Religion and Culture**

Winter. 4(3-0) 171 or SOC 241 or approval of department.

Religious beliefs and magical practices of primitive peoples and functions of magic and folklore in contemporary society. Religion as an institution in society.

**466. Cross-Cultural Relations in the Modern World**

Winter of even-numbered years. 3(3-0)

473. Interdepartmental with the Sociology Department.

Relationship of native peoples to world-wide forces and reactions of native peoples to world struggle for power. Problems involved in administration of programs for non-Western societies.

**467. Language and Culture**

Fall, Spring. 4(3-0) Approval of department. Interdepartmental with the English Department.

A survey exploring the interconnectedness of language and culture. Special areas to be emphasized include: Child Language Learning;

Linguistic and Cultural Contact Phenomena; "Specialized" Languages, such as Cant, Argot, Trade Jargon, Lingua Franca; "Hybridization" and "Substratum"; Language and Cultural Change; a brief examination of Theories of Origins and of the Sapir-Whorf Hypothesis.

**469. Cultural Areas of the World**

Winter, Summer. 4(3-0) May re-enroll for credit when new area is given. 100 or 171 or SOC 241 or approval of department.

Social character of people, social organization, culture of area in relationship to social heritage, local conditions and world affairs. Areas emphasized will vary with staff and student's interest: Africa, American Indian, Latin America, Near East, Northeast Asia, Pacific, and Southeast Asia.

**473. Culture and Personality**

Fall, Spring, Summer. 4(3-0) 171 or SOC 241. Interdepartmental with the Sociology Department.

Human nature in evolutionary and cross-cultural perspective. Special attention to relating theories of anthropology and psychology to methods of studying personality in non-Western societies.

**474. Culture and Economic Behavior**

Winter. 4(4-0) 463 or approval of department.

Economic systems of changing cultures in Asia, Africa and Latin America. The cultural matrix of economic transactions and relations of economic and other social and cultural institutions seen in a comparative framework. Emphasis is placed on traditional agricultural or tribal communities.

**475. Culture and Political Behavior**

Spring. 4(4-0) 463 or approval of department.

Political systems of changing cultures in Asia, Africa and Latin America. Relation between political and other social institutions and analysis of the organization of conflict in non-Western societies. The relation of tribal and peasant politics to national politics in developing countries seen in a comparative framework.

**476. Canadian-American Studies**

For course description, see Interdisciplinary Courses.

**821. Evolution of Man**

Fall. 5(3-3) Approval of department.

Intensive review of biological and cultural evolution of man, with emphasis placed on anatomy, ethnology, polymorphism, genetics, cultural ecology, prehistory, and the development of civilization.

**825. Seminar in Cross-Cultural Relations**

Winter of odd-numbered years. 4(3-0) Approval of department. Interdepartmental with the Sociology Department.

Analysis of the relations between superordinate and subordinate societies and between coordinate societies and cross-cultural exchange programs.

**826. Ethnology of Selected Areas**

Fall, Spring. 4(3-0) May re-enroll for a maximum of 16 credits. Approval of department.

Intensive review of ethnology of selected culture areas with emphasis on current anthropological problems of that area.

**827. Contemporary Theories in Anthropology**

Winter. 4(4-0) May re-enroll for credit with approval of department. Approval of department.

Review of current theoretical problems in social and cultural anthropology.

**828. Social Structure**  
 Spring. 5(5-0) Approval of department.

Intensive analysis of theoretic models of social structure and their applicability for the analysis of cultures.

**829. History of Anthropological Theory**  
 Fall. 5(5-0) Approval of department.

A review of the various schools of thought, important personalities, and principal concepts that have contributed to the development of anthropological theory.

**831. Linguistic Anthropology**  
 Winter. 5(3-2) Approval of department.

The nature of language; techniques for the description and comparison of languages; linguistics as an anthropological tool; language and culture.

**833. Anthropological Problems of Prehistory**  
 Spring. 5(3-2) Approval of department.

Relation of archaeology to the other fields of anthropology on both a theoretical and practical level. Archaeological data are used to introduce problems of long-range cultural change and development.

**835. Human Osteology and Osteometry**  
 Fall of even-numbered years. 3(3-4) 821 or ANT 540.

Identification of human bones and fragments; aging, sexing and determining the race of skeletal remains; measuring techniques for cranial and postcranial remains; the more common forms of paleopathology.

**836. Hominid Paleontology**  
 Winter of even-numbered years. 4(3-1) 821.

Seminar requiring student research of general and specific topics of hominid paleontology, events, trends, and processes in hominid evolution.

**838. Interdisciplinary Seminar on Africa**  
 For course description, see Interdisciplinary Courses.

**850. Archaeological Methods and Techniques**  
 Winter. 4(4-0) 833 or approval of department.

Seminar outlining archaeological method and the role of technique in the strategy of archaeology. Techniques and problems of informational retrieval will be emphasized.

**856. Methodology of Anthropological Research**  
 Spring. 1 to 12 credits. Approval of department.

Seminar in problems of anthropological investigation considered in the framework of history and philosophy of science. Relevance of various field techniques, methods of data gathering and data handling, and strategies of analysis for various problems are treated.

**865. Environment, Technology, and Culture**  
 Spring. 4(3-0) Approval of department.

Cultural ecology, study of the relation of man and his physical environment, the role of technology in mediating between the two. Comparative analysis of the interdependence of social organization, technology and environment. Case histories of cultural and social change arising from technological innovations.

**870. Applied Anthropology**  
 Spring of odd-numbered years. 4(3-0) Approval of department.

Theoretical and methodological problems involved in planned social change. Course will focus on field experience in the local community. Designed mainly for graduate students having professional interest in the application of social change.

**872. Seminar in Special Subject Fields**  
 Fall, Winter, Spring, Summer. Variable credit. Approval of department.

Special fields of study will include any area of anthropology selected.

**875. Individual Research Projects**  
 Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**880. Individual Readings**  
 Fall, Winter, Spring, Summer. Variable credit. Approval of department.

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

**922. Dimensions of Culture**  
 Winter. 5(5-0) Approval of department.

Intensive review of principles of cultural anthropology, ethnology, and cultural change with particular attention to systems theory and interconnections of cultural, social, personality, and ecological systems.

**923. Cultural Dynamics**  
 Spring. 5(3-2) Approval of department.

Intensive review of culture change theories, processes of the development of the self, contemporary cultural movements, and the application of anthropological knowledge.

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

**ART**

**College of Arts and Letters**

**History of Art**

**H A**

**205. Introduction to Art**  
 (ART 205.) Fall, Winter, Spring. 3(3-0) Not open to majors.

Painting, sculpture and architecture from the time of the Greeks to the present. Individual works of art examined intensively, as regards both their formal qualities and the manner in which they exemplify the shifting patterns of Western culture.

**206. History of Western Art**  
 (ART 266.) Fall. 4(4-0)

Painting, sculpture, architecture and decorative art from prehistoric to modern times. Provides acquaintance with the forms of art typical of each period and indicates the aesthetic qualities which give them artistic significance. Work in first term covers Prehistoric, Egyptian, Mesopotamian, Greek, Roman, Early Christian and Byzantine periods.

**207. History of Western Art**  
 (ART 267.) Winter. 4(4-0)

Continuation of 266. Early Medieval, Romanesque, Gothic, Renaissance and Mannerist periods.

**208. History of Western Art**  
 (ART 268.) Spring. 4(4-0)

Continuation of 267. Baroque, Rococo, Neo-Classical and subsequent periods to contemporary art.

**400H. Honors Work**  
 (ART 400H.) Fall, Winter, Spring, Summer. 1 to 6 credits. Approval of department.

**404. Greek Art**  
 (ART 450.) Winter. 4(3-0) 206 or approval of department.

The history of painting, sculpture and architecture of ancient Greece from the Bronze Age through the end of the Hellenistic period.

**405. Roman Art**  
 (ART 451.) Spring. 4(3-0) 206 or approval of department.

The history of painting, sculpture and architecture of Ancient Rome with major emphasis on the Late Republic and Early Empire.

**406. Ancient Painting**  
 (ART 452A.) Spring of odd-numbered years. 4(3-0) 206 or approval of department.

Ancient Greek and Roman painting, including Minoan Crete. Special emphasis is placed on Archaic and Classical Greek painting on pottery and on Roman wall painting from Pompeii and elsewhere.

**407. Ancient Sculpture**  
 (ART 452B.) Fall of odd-numbered years. 4(3-0) 206 or approval of department.

The sculpture of Ancient Greece and Rome, from the Bronze Age through Early Christian times.

**408. Ancient Architecture**  
 (ART 452C.) Winter of even-numbered years. 4(3-0) 206 or approval of department.

The architecture of Ancient Greece and Rome, from Mycenaean times to the 6th century A.D., with special emphasis on the religious architecture of Classical Greece and Imperial Rome.

**410. Byzantine Art**  
 (ART 454.) Fall, Summer. 4(3-0) 206 or approval of department.

Late antique painting, sculpture and architecture and their development in the East Christian Empire and Orthodox Russia.

**411. Early Medieval Art**  
 (ART 455.) Winter, Summer. 4(3-0) 207 or approval of department.

History of architecture, sculpture, and painting in the Latin West from Hiberno-Saxon art of the 7th century to the Romanesque Abbeys of the 12th century.

**412. Later Medieval Art**  
 (ART 456.) Spring, Summer. 4(3-0) 207 or approval of department.

Gothic painting, sculpture, and architecture with particular emphasis on the cathedrals of the 13th century.

**420. Italian Renaissance Architecture**  
 (ART 485.) Spring. 4(3-0) 207 or approval of department.

Important buildings of the 15th and 16th centuries, architectural theories, and architectural representations in drawings and paintings.

**421. Italian Renaissance Sculpture**  
 (ART 484.) Winter. 4(3-0) 207 or approval of department.

Major artists from circa 1250 to 1600.