813. Techniques in Animal Biotechnology
Spring of odd years. 3(2-2) P: BCH 462 or BCH 472. R: Approval of department; application required.
Basic molecular biology procedures with emphasis on mammalian systems.

824. Methods of Quantitative and Molecular Genetics for Livestock
Spring of odd years. 3(2) P: (ANS 404) Quantitative and molecular methods for animal geneticists. Identification and evaluation of molecular markers, genome maps, linkage and segregation analyses, optimal mating designs, and marker-quantitative trait loci associations in livestock species.

825. Animal Biotechnology
Spring of even years. 3(3-0) R: Approval of department; application required.
Basic concepts in animal biotechnology. Application of molecular biology to animal studies. Current topics in animal biotechnology and use of animals in pharmaceutical development.

826. Livestock Immunogenetics
Fall of odd years. 4(3-2) P: (ANS 404 or ANS 425) Evaluation and exploration of indicator traits and candidate genes of immunocompetence that contribute to resistance or susceptibility to infectious diseases of livestock.

827. Integrated Risk Assessment of Environmental Hazards
Spring of odd years. 3(3-0) R: Open only to graduate students in the College of Agriculture and Natural Resources or College of Engineering or College of Human Medicine or College of Natural Science or College of Osteopathic Medicine or College of Veterinary Medicine. Alternative approaches to assessing environmental and health risk. Analyzing, interpreting, and using scientific data from ecology, agriculture, environmental chemodynamics, biology, geological sciences, and toxicology in the risk assessment process.

841. Advanced Endocrine Physiology and Pharmacology
Fall. 4(4-0) Interdepartmental with Physiology, Pharmacology and Toxicology; and Psychology. Administered by Physiology. P: BCH 461, PSL 442. R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. Basic and advanced concepts of endocrine and reproductive physiology and pharmacology.

842. Population Genetics, Genealogy and Genomics
Fall. 3(3-0) Interdepartmental with Forestry, Crop and Soil Sciences; Genetics; and Fisheries and Wildlife; Horticulture. Administered by Forestry. RB: Pre-calculus, basic genetics. Population genetic processes underlying patterns of molecular genetic variation. Genealogical approaches to the study of genomic diversity, phylogenetic reconstruction, and molecular ecology.

883. Applied Ruminant Nutrition
Summer. 3(2-2) P: (ANS 513 or ANS 515 or PSL 517) RB: (ANS 483) Nutritional and metabolic principles for dairy and beef cattle and sheep. Diet formulation. Nutritional assessment and feeding management. Field trips required.

890. Advanced Independent Study
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department; application required. Investigation of topics of special interest.

898. Master’s Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to master’s students in Animal Science. Approval of department. Application required. Scholarly project for non-thesis (Plan B) master’s degree.

899. Master’s Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to master’s students in Animal Science. Approval of department.

901. Selected Topics in Animal Breeding and Genetics
Fall, Spring, Summer. 1 to 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. Selected topics of current interest and importance in animal breeding and genetics.

906. Protein Nutrition and Metabolism

935. Nutrition: Lipid and Carbohydrate Metabolism
Fall of even years. 3(3-0) Interdepartmental with Human Nutrition and Foods. Administered by Human Nutrition and Foods. Regulatory aspects of lipid and carbohydrate metabolism as influenced by nutritional status.

936. Protein Nutrition and Metabolism

937. Mineral Nutrition and Metabolism
Fall of even years. 3(3-0) Interdepartmental with Human Nutrition and Foods. Forms and locations of mineral elements in the body, metabolic functions, deficiencies, and toxicities, interrelationships and quantitative requirements.

938. Nutrition: Metabolism and Function of Vitamins
Spring of odd years. 3(3-0) Interdepartmental with Human Nutrition and Foods. Administered by Human Nutrition and Foods. Regulatory roles of vitamins at cellular and molecular levels.

943. Techniques of Analyzing Unbalanced Research Data
Spring. 4(4-0) Interdepartmental with Crop and Soil Sciences, Forestry; Fisheries and Wildlife; and Horticulture. P: STT 464. R: Open only to graduate students in the College of Agriculture and Natural Resources. Linear model techniques to analyze research data characterized by missing and unequal number of observations in classes. Simultaneous consideration of multiple factors. Estimable comparisons. Hypothesis testing. Computational strategies. Variance and covariance components. Breeding values.

976. Multivariate Methods in Agriculture and Natural Resources
Spring. 4(4-0) Interdepartmental with Forestry; and Fisheries and Wildlife. Administered by Forestry. P: STT 422, MTH 314. R: Open only to graduate students in the College of Agriculture and Natural Resources and in the Interdepartmental Graduate Specializations in Ecology and Evolutionary Biology. Application of multivariate methods to research problems. Hotelling’s T-test, profile analysis, discriminant analysis, canonical correlation, principal components, principal coordinates, correspondence analysis, and cluster analysis.

ANTHROPOLOGY

ANP

Department of Anthropology
College of Social Science

101. Introduction to Anthropology
Fall, Spring, Summer. 3(3-0) Human culture worldwide and throughout human history. Major subfields, methods, theories, and issues. World cultural diversity. Culture and world problems.

201. Sociocultural Diversity
Fall, Spring, Summer. 3(3-0) Origins and diversity of cultural systems. Theories of culture. Patterns of kinship. Religious, economic, and political institutions.

202. Biocultural Evolution
Fall, Spring, Summer. 3(3-0) Nature and function of culture and its relationship to human biology. Principles of change from hominin origins to present.

203. Introduction to Archaeology
Fall. 3(3-0) Theory, methodology, and techniques of archaeology. Applications to questions about past human behavior. History and concepts of archaeology as an anthropological subdiscipline. SA: ANP 360
Descriptions—Anthropology of Courses

220. Gender Relations in Comparative Perspective
Spring. 3(3-0) P: (ANP 101 or ANP 201)
Gender relations in different cultures. Economic and domestic division of labor between the sexes as a factor underlying power differentials.

264. Great Discoveries in Archaeology
Spring. 3(3-0)
Great discoveries in archaeology that have captured the public's imagination and shaped Western thought, from Olduvai Gorge and Stonehenge to Machu Picchu.

270. Women and Health: Anthropological and International Perspectives
Fall. 3(3-0) P: (ANP 101 or ANP 201)

280. The Anthropological Film
Spring. 4(3-2)
Ethnographic film as a record of vanishing cultures, as a tool for ethnological analysis, and as a source of perspectives on different cultures and variability within cultures.

320. Social and Cultural Analysis
Fall. Spring. 4(4-0) P: (ANP 101 or ANP 201) and completion of Tier I writing requirement.
Major theoretical traditions of cultural anthropology. Functionalism, symbolism, structuralism, and contemporary developments.

321. Anthropology of Social Movements
Fall. 3(3-0) P: (ANP 101 or ANP 201)
How social movements within different cultures around the world organize, create or impede change on the basis of class, religion, race, ethnicity, language, and territory.

322. Peasants and Social Change in the Developing World
Spring. 3(3-0) P: (ANP 101 or ANP 201)
Cross-cultural perspective on patterns and variations in peasant systems worldwide. Social mechanisms with which they respond to change.

330. Race, Ethnicity, and Nation: Anthropological Approaches to Collective Identity
Spring. 3(3-0) P: (ANP 101 or ANP 201 or ISS 215) Not open to freshmen or sophomores. Understanding race and ethnicity. Models analyzing racial, ethnic, and national identities; boundaries, and collective identities and differentiations. Case studies from cultures worldwide.

340. Introduction to Physical Anthropology
Fall. 4(3-2)
Problems, data, and methods of physical anthropology. Human genetics, hominid evolution, primate studies, human osteology, and human diversity. Field trips at the student's expense may be required.

361. Paleolithic Archaeology
Fall. 3(3-0) P: (ANP 101 or ANP 264 or ANP 202 or ISS 220)
Stone Age archaeology from the dawn of tool making to the specialized hunters and cave artists of the late Ice Age.

362. Evolution of Agrarian Society
Spring. 3(3-0) P: (ANP 101 or ANP 202 or ANP 264 or ANP 360) R: Not open to freshmen or sophomores.
Food production as adaptive strategy. Archaeological evidence for the appearance and development of food production in prehistory. Theories, problems, and issues in the study of food production evolution.

363. Rise of Civilization
Spring. 3(3-0) P: (ANP 101 or ANP 203 or ISS 220 or ANP 202)
Archaeological evidence for the appearance and development of the world's earliest prehistoric civilizations. The nature of complex societies and the comparative evolution of states.

370. Culture, Health, and Illness
Spring. 3(3-0) P: (ANP 101 or ANP 201 or ISS 210 or ISS 215) and completion of Tier I writing requirement.
Cross-cultural perspectives on the definition and treatment of illness.

410. Revolution and Social Change in Latin America
Fall of even years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 330C)
Comparative examination of sociocultural changes leading to and created by major revolutions in Latin America.

411. North American Indian Ethnography
Spring. 3(3-0) P: (ANP 101 or ANP 201)
Social and cultural patterns of North American Indian societies. History, economy, politics, social organization, religion, and social change.

412. Social and Cultural Status of Latinos in the U.S.
Spring of odd years. 3(3-0) P: (ANP 101 or ANP 201 or SOC 100 or ISS 215) and completion of Tier I writing requirement.
Social and cultural history of Chicanos, Puerto Ricans, Cubans and Central Americans in the United States and their contributions to American society.

413. Cultures of Southeast Asia
Spring of even years. 3(3-0) P: (ANP 101 or ANP 201)
Southeast Asian peoples, cultures, and nations. Tropical forest and sea trading adaptations. Recent social change.

414. Anthropology of South Asia
Fall of even years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 210 or ISS 215)
Anthropology of India, Pakistan, Nepal, Bangladesh, and Sri Lanka. Religion, social organization, village life, urban structures, economic organization, history, and social change.

415. China: Culture and Society
Fall of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 330B)
Socioeconomic and cultural continuity and change from traditional civilization to the contemporary state and the communist period. Village and urban society and their relationships.

416. Anthropology of Southern Africa
Fall of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 330A)
Structure and organization of major cultures. Transformations caused by global, national, and local forces.

417. Anthropology of East Africa
Spring of even years. 3(3-0) P: (ANP 101 or ANP 201)
Social and cultural organization of the peoples of eastern Africa. Relationships between states and ethnic groups.

420. Language and Culture
Fall. Spring. 3(3-0) P: (ANP 101 or ANP 201 or ISS 210) and completion of Tier I writing requirement.
The anthropology of religion and the symbolic analysis of ritual. Theoretical and ethnographic literature.

422. Religion and Culture
Spring of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 210) and completion of Tier I writing requirement.
The anthropology of religion and the symbolic analysis of ritual. Theoretical and ethnographic literature.

423. Psychological Anthropology
Spring of even years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 210 or ISS 215)
Cross-cultural perspectives on culture and personality. Enculturation, life-cycle, person and self, emotion and cognition, mental illness.

424. Culture and Economic Behavior
Fall of even years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 210 or ISS 215)
Relationship of economy to sociocultural phenomena in pre-capitalist and dependent capitalist societies.

426. Urban Anthropology
Spring of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 220)
The anthropological approach to urban issues. Cross-cultural perspectives on the informal economy, power, ideology, and community.

427. Interpretive Anthropology
Fall of even years. 3(3-0) P: (ANP 101 or ANP 201)
Culture as a system for interpreting experiences through shared meanings and understandings. The relationship of systems of thought to systems of action. Implications for conducting anthropological fieldwork and describing other cultures.

428. Environments of International Enterprise
Spring of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 215)
Anthropoligical commentary on (1) issues stemming from disparate cultures and objectives of transnational organizations and host countries; and (2) cultural and power issues that affect activity in international, inter-organizational business relationships.
429. Ethnographic Field Methods
Spring, 3(3-0) P: (ANP 101 or ANP 201) and completion of Tier I writing requirement. R: Not open to freshmen or sophomores.
Field research in cultural anthropology. Research design, participant observation, relationship of techniques to methods, and ethics.

430. Culture, Resources, and Power
Fall of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 225 or ISS 315)
Contemporary anthropological perspectives on culture as it relates to power and the use of resources. Anthropological analysis of related contemporary issues.
SA: ANP 425

431. Gender, Environment and Development
Fall of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ANP 451. European Prehistory
Fall of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ISS 220)
Spring of even years. 3(3-0) P: (ANP 101 or ANP 442. Genes and Diversity
340 or CJ 210 or ISS 220)
Spring of even years. 3(3-0) P: (ANP 101 or ANP 201 or ANP 340 or ISS 220)
Theories of human evolution during the past five million years fossil evidence.

440. Hominid Fossils
Spring of odd years. 3(3-0) P: (ANP 101 or ANP 202 or ANP 340 or CJ 210 or ISS 220)
Theories of human evolution during the past five million years fossil evidence.

441. Osteology and Forensic Anthropology
Spring of even years. 4(3-2) P: (ANP 202 or ANP 340 or CJ 210 or ISS 220)

442. Genes and Diversity
Fall of odd years. 3(3-0) P: (ANP 101 or ANP 202 or BS 110 or LBS 144 or ISS 220)
Controversies over the contributions of nature and nurture to biological diversity. Issues of gender differences and the race concept.

450. African Archaeology
Fall of even years. 3(3-0) P: (HST 360 or ANP 203 or ANP 202 or ISS 220)
The archaeological sequence in Africa from the dawn of the Paleolithic to the late Iron Age. Key sites and the interpretation of archaeological evidence.

451. European Prehistory
Spring of even years. 3(3-0) P: (ANP 101 or ANP 202 or ANP 202 or ISS 220)
Patterns of change in technology, subsistence, economy, settlement, social organization, and political complexity from the earliest human occupation through the Iron Age. Major issues in European archaeology.

452. North American Prehistory
Spring of odd years. 3(3-0) P: (ANP 101 or ANP 201 or ANP 202 or ANP 202 or ISS 220)
Characteristics and processes of North American prehistory on a regional level. Economic, social, political and technological change through time.

453. Mesoamerican Prehistory
Fall of odd years. 3(3-0) P: (ANP 101 or ANP 203 or ANP 202 or ISS 220 or ANP 264)
Emergence and development of civilizations from first occupation to Spanish Conquest. Use of archaeology, ethnohistory, and history. Major theories of plant domestication and state evolution.

460. Public Archaeology
Fall of even years. 3(3-0) P: (ANP 203 or ANP 202 or ISS 220)
Federal and state legislation and regulations governing archaeology and historic preservation. Major agencies responsible for compliance.

461. Method and Theory in Historical Archaeology
Fall of odd years. 3(3-0) P: (ANP 203)
Theory and methodology in historical archaeology and its relation to history and anthropology.

462. Frontiers and Colonization in Historical Archaeology
Spring of even years. 3(3-0) P: (ANP 203)
Cultural dynamics and historical archaeological research in frontier and colonizing situations. European expansion in North America.

463. Laboratory Methods in Archaeology
Spring of odd years. 3(2-2) P: (ANP 203 or ANP 464)
Preparation and preservation of archaeological data. Conservation, cleaning, cataloguing, and classification. Analysis of lithics, ceramics, faunal and floral remains, metals, and glass.

464. Field Methods in Archaeology
Summer, 2 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: (ANP 101 or ANP 202 or ANP 203)
Field research. Survey, excavation, mapping, data recording, and field laboratory procedures.

470. Food, Hunger and Society
Fall of even years. 3(3-0) P: (ANP 101 or ANP 201 or ANP 202 or ANP 270 or BS 110 or LBS 144 or HNF 150)
Cultural, economic, social, and ecological factors affecting the production and use of food. Relationship of culture to hunger.

480. History of Anthropological Theory
Fall of even years. 3(3-0) P: (ANP 201 or ANP 202 or ANP 203 and (ANP 320 or ANP 321 or ANP 322 or ANP 330 or ANP 340 or ANP 361 or ANP 363 or ANP 370)
The 18th, 19th and early 20th century foundations of anthropological theory. Major contemporary theoretical approaches.

490. Independent Study
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department.

Anthropology—Descriptions of Courses

491. Topics in Anthropology
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P: (ANP 101 or ANP 201 or ANP 203) or one 300-level anthropology course. Selected topics in sociocultural anthropology, archaeology, physical anthropology, anthropological linguistics, or medical anthropology.

820. Language and Cultural Meaning
Spring of odd years. 4(3-2) P: ANP 429. R: Open only to graduate students. Intellectual history of 20th century linguistic thinking. Saussure’s influence on cultural anthropology. Post-structuralist approaches.

822. Religion and Ritual
Fall of even years. 3(3-0) R: Open only to graduate students in Anthropology. Cross-cultural comparison of religious beliefs, values, and practices in traditional and developing cultures. Religious institutions in cultural systems. Anthropological theories of religion and culture.

826. International Development and Sustainability
Spring of odd years. 3(3-0) Interdepartmental with Resource Development; and Political Science. Administered by Resource Development. Environmental, economic, political, legal, management, and cultural components of sustainable development.

832. Class and Ethnicity in Social Differentiation
Fall of odd years. 3(3-0) R: Open only to graduate students. Approval of department. Anthropological theories on nature and sources of social differentiation and inequality within cultures and ethnic communities. Class and ethnic identity in cultural contexts.

833. Ethnographic Analysis
Spring of odd years. 3(3-0) R: Approval of department. Methodological and theoretical issues in the analysis of the ethnographic monograph.

834. Medical Anthropology I Overview
Fall. 3(3-0) R: Approval of department. Anthropological approaches to the study of sickness, disease, and healing. Medical anthropology as a subspeciality.
Descriptions—Anthropology
of Courses

835. Medical Anthropology II: Theoretical and Applied Issues
Spring. 3(3-0) P: ANP 834. R: Approval of department.
Seminars in the description and analysis of themes in medical anthropology.

836. Theories of Sociocultural Change
Spring of odd years. 3(3-0)
Theoretical and methodological issues. Major theorists and models.

837. Seminar in Economic Anthropology
Spring of even years. 3(3-0) P: ANP 424 or approval of department. R: Open only to graduate students in Anthropology.
Central research topics in the economic anthropology of peasant societies. Dependent capitalist formation and marginal sectors.

838. Agrarian Systems and Social Transformation
Fall of odd years. 3(3-0)
Structure and organization of agrarian societies. Transformations caused by global, national and local forces.

839. Age and Gender
Fall of odd years. 3(3-0) R: Open only to graduate students.
Cultural construction of age and gender. Effects on the individual and society.

840. Biocultural Evolution
Spring. 3(3-0) R: One course in human evolution. R: Open only to graduate students in the Department of Anthropology.
Major contemporary issues in evolutionary theory, taxonomy, and the evolution of biology and culture.

841. Physical Anthropology
Spring of odd years. 3(3-0) R: Approval of department.
Controversies in biological anthropology. History of physical anthropology and current theoretical perspectives. Critical approaches to research design.

843. Nutritional Anthropology
Spring of odd years. 3(3-0) P: ANP 470 or approval of department.
Food, foodways, and nutrition in different cultural systems. Production, storage, processing, and consumption. The social significance of eating, foods, and body image. Research methods.

850. Principles of Archaeological Analysis
Spring of odd years. 3(3-0) P: GEO 465 or approval of instructor. R: Open only to graduate students.
Formal, spatial, and temporal dimensions of archaeological research design. Appropriate analytic techniques.

853. Evolution of Civilization
Spring of even years. 3(3-0) R: One 300- or 400-level archaeology course and approval of department.
Major anthropological theories of the emergence and development of civilizations. Role of archaeological data in formulating, testing, and refining these theories.

854. Archaeological Theory
Fall of even years. 3(3-0) R: One 300- or 400-level archaeology course and approval of department.
Archaeological theory and the nature of the archaeological record. Use of archaeological data to test social theories of past human behavior.

855. The Roots of Contemporary Anthropological Theory
Fall. 3(3-0)
Development of contemporary anthropological theory from 18th and 19th centuries. Major paradigms in current anthropology.

857. Social Impact Analysis
Spring of odd years. 3(3-0) Interdepartmental with Sociology.
Sociocultural consequences of development programs on populations, communities, and regions in developing and industrial societies. Theory, purposes, methods, outcomes, and uses of social impact analysis.

880. Issues in Contemporary Archaeology
Fall of odd years. 3(3-0) R: Open only to graduate students in Anthropology. One 300- or 400-level archaeology course. Approval of department.
Theories, issues, problems, and methodological innovations affecting the conduct of research in archaeology.

890A. Individual Readings
Fall, Spring. Summer. 1 to 8 credits. A student may earn a maximum of 16 credits in all enrollments for this course. R: Open only to graduate students in Anthropology. One 300- or 400-level archaeology course. Approval of department.
Advanced study, based on prior preparation, under faculty direction.

890B. Individual Research
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 16 credits in all enrollments for this course. R: Approval of department.
Graduate student projects under faculty direction.

892. Seminar in Anthropology
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to graduate students in Anthropology. Approval of department. Studies in selected fields.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Approval of department.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Approval of department.

ARABIC

Department of Linguistics and Germanic, Slavic, Asian and African Languages
College of Arts and Letters

101. Elementary Arabic I
Fall. 4(4-1)
Basic standard Arabic. Speaking, listening comprehension, reading and writing, with emphasis on developing oral proficiency skills.

201. Second-Year Arabic I
Fall. 4(4-4) P: ARB 102 or approval of department.
Intermediate-level work on speaking, listening comprehension, reading and writing of standard Arabic, with continued emphasis on developing oral proficiency skills.

202. Second-Year Arabic II
Spring. 4(4-4) P: ARB 201 or approval of department.
Further intermediate-level work on speaking, listening comprehension, reading and writing standard Arabic, with continued increased emphasis on reading and culture.

290. Independent Study
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

490. Independent Study
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

491. Special Topics in Arabic Studies
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department.
Special topics supplementing regular course offerings proposed by faculty on a group study basis.