Rangeland Ecology & Management (RNG)

RNG 121. *INTRODUCTION TO WILDLAND ECOLOGY. (4 Credits)
Ecological principles will be applied to understand contemporary issues related to rangelands, specifically the rangeland biomes that comprises over 50% of the Earth’s surface (FAO, SRM, USDA ERS). Topics to be covered fall into the following categories: Fundamentals of Ecology; Animals (wildlife & livestock); Disturbance (e.g., invasive species, fire, mineral extraction, etc.); Ecosystem Goods & Services (e.g., carbon sequestration, watersheds, biodiversity, recreation, etc.). The course will largely focus on U.S. rangelands, however a portion will examine the ecology and issues of international rangelands in Africa, Eurasia, Australia, and South America. (Bacc Core Course)
Attributes: CPBS – Core, Pers, Biological Science
Equivalent to: RNG 299H
This course is repeatable for 16 credits.

RNG 299H. SPECIAL TOPICS. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 301. WILDLAND RESTORATION AND ECOLOGY. (4 Credits)
Emphasis is placed on understanding the ecology of arid and semi-arid ecosystems through the study of ecological processes responsible for ecosystem function. Range improvement practices for stabilizing and repairing degraded rangelands, and directing autogenic recovery mechanisms are discussed. This involves manipulating plants, soil, animals and microenvironments for improved ecosystem function.
Recommended: Course work in soils and ecology

RNG 403. SENIOR THESIS. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 405. READING AND CONFERENCE. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 406. PROJECTS. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 411. ADVANCED PLANT ID. (2 Credits)
Advanced rangeland plant taxonomy.
This course is repeatable for 16 credits.

RNG 412. RANGELAND-ANIMAL RELATIONS. (4 Credits)
Domestic and wild animal use of rangelands as related to environmental factors, palatability, food habits, nutrition, physiology, and their effects on management of rangeland-animal resources.

RNG 421. WILDLAND RESTORATION AND ECOLOGY. (4 Credits)
Emphasis is placed on understanding the ecology of arid and semi-arid ecosystems through the study of ecological processes responsible for ecosystem function. Range improvement practices for stabilizing and repairing degraded rangelands, and directing autogenic recovery mechanisms are discussed. This involves manipulating plants, soil, animals and microenvironments for improved ecosystem function.
Recommended: Course work in soils and ecology

RNG 425. RANGELAND ECOLOGY & MANAGEMENT. (3 Credits)
Nature and management of rangelands. Integrated land use with emphasis on plant-animal-soil interactions.

RNG 430. APPLIED GIS IN RANGELAND SCIENCE. (4 Credits)
Introducing the use of GIS and geospatial information (remote sensing for GIS, GPS, landscape ecology, and cartography principles) in rangeland sciences problem solving and analysis.
Prerequisites: GEO 365 with D- or better or GEOG 360 with D- or better

RNG 441. RANGELAND ANALYSIS. (4 Credits)
Techniques used to describe vegetation in shrub-lands, grasslands, and forests. Use of measurements in resource management. Course is field-oriented, emphasizing both theory and practice of wildland inventory methods.
Recommended: ST 351 or ST 351H

RNG 442. RANGELAND-ANIMAL RELATIONS. (4 Credits)
Domestic and wild animal use of rangelands as related to environmental factors, palatability, food habits, nutrition, physiology, and their effects on management of rangeland-animal resources.

RNG 455. RIPARIAN ECOHYDROLOGY AND MANAGEMENT. (4 Credits)
A systems approach to study ecological and hydrological relationships occurring in riparian ecosystems. The class is focused on gaining knowledge of multiple connections between soil, water, and terrestrial vegetation occurring in riparian systems. Emphasis is placed on land use effects on the riparian ecologic and hydrologic function, methods of rehabilitation, and theories of the proper use of riparian ecosystems under a multiple-use philosophy (i.e., fish, wildlife, livestock, aesthetics, recreation, and silviculture).
Prerequisites: RNG 355 with D- or better

RNG 470. PASTORAL SYSTEMS OF THE WORLD. (4 Credits)
Description and evaluation of ecosystems which support grazing animals and pastoralists. Biology, ecology and management of these landscapes will be explored through climate, soils, and plant communities and human-livestock interactions. The historic role of trade and contemporary challenges to the ecological, social and economic sustainability of pastoral systems will be examined.
RNG 490. RANGELAND MANAGEMENT PLANNING. (4 Credits)
Administration and management of rangelands; planning processes involving goal setting, inventories, personnel management, environment, conflict resolution, and other constraints necessary for decision-making. Use of data collected from field problems to support the execution of class plans. Field trip required. Lec/lab.

RNG 499. SPECIAL TOPICS. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 501. RESEARCH AND SCHOLARSHIP. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 503. MASTER’S THESIS. (1-16 Credits)
This course is repeatable for 999 credits.

RNG 505. READING AND CONFERENCE. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 506. PROJECTS. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 507. SEMINAR. (1-2 Credits)
This course is repeatable for 16 credits.

RNG 521. WILDLAND RESTORATION AND ECOLOGY. (4 Credits)
Emphasis is placed on understanding the ecology of arid and semi-arid ecosystems through the study of ecological processes responsible for ecosystem function. Range improvement practices for stabilizing and repairing degraded wildlands by directing autogenic recovery mechanisms are discussed. This involves manipulating plants, soil, animals and microenvironments for improved ecosystem function.

RNG 541. RANGELAND ANALYSIS. (4 Credits)
Techniques used to describe vegetation in shrub-lands, grasslands, and forests. Use of measurements in resource management. Course is field-oriented, emphasizing both theory and practice of wildland inventory methods.
Recommended: ST 351

RNG 542. RANGELAND-ANIMAL RELATIONS. (4 Credits)
Domestic and wild animal use of rangelands as related to environmental factors, palatability, food habits, nutrition, physiography, and their effects on management of rangeland-animal resources.
Recommended: RNG 341

RNG 555. RIPARIAN HYDROLOGY AND MANAGEMENT. (4 Credits)
A systems approach to study ecological and hydrological relationships occurring in riparian ecosystems. The class is focused on gaining knowledge of multiple connections between soil, water, and terrestrial vegetation occurring in riparian systems. Emphasis is placed on land use effects on the riparian ecologic and hydrologic function, methods of rehabilitation, and theories of the proper use of riparian ecosystems under a multiple-use philosophy (i.e., fish, wildlife, livestock, aesthetics, recreation, and silviculture).
Recommended: RNG 355

RNG 577. AGROFORESTRY. (3 Credits)
Theory and worldwide practice of multiple-crop low input sustainable systems involving concurrent production of tree and agricultural products. Biological, economic, social, and political factors that underlie the application of agroforestry technology. CROSSLISTED as FES 477/ FES 577, NR 477. Equivalent to: FES 577
Recommended: Introductory course in biology.

RNG 590. RANGELAND MANAGEMENT PLANNING. (4 Credits)
Administration and management of rangelands; planning processes involving goal setting, inventories, personnel management, environment, conflict resolution, and other constraints necessary for decision-making. Use of data collected from field problems to support the execution of class plans. Field trip required. Lec/lab.

RNG 599. SPECIAL TOPICS. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 601. RESEARCH AND SCHOLARSHIP. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 603. PH.D. THESIS. (1-16 Credits)
This course is repeatable for 999 credits.

RNG 605. READING AND CONFERENCE. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 606. PROJECTS. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 607. SEMINAR. (1-2 Credits)
This course is repeatable for 16 credits.

RNG 608. WORKSHOP. (1-16 Credits)
This course is repeatable for 16 credits.

RNG 643. WILDLAND PLANT ECOHYDROLOGY. (4 Credits)
Emphasizes the physiological ecology of plants living in arid and semi-arid ecosystems. Primary class emphasis will include photosynthesis, respiration, water stress and water use efficiency, stable isotopes, root structure and function, nutrient uptake and stress, and defoliation. Offered every other winter, odd years.

RNG 662. RANGELAND ECOLOGY. (3 Credits)
Studies ecological theory and related resource management implications in rangelands and arid wildlands. Topics include the history and development of rangeland ecology, plant demography, invasive species, plant population dynamics, disturbance theory, succession, vegetation classification and range condition assessments. Offered every other winter, even years.
Recommended: Basic ecology course

RNG 670. ECOLOGICAL INVASIVE PLANT MANAGEMENT. (2 Credits)

RNG 699. SPECIAL TOPICS. (1-16 Credits)
This course is repeatable for 16 credits.