

# ARNR - Animal & Range Natural Res

## ARNR 505 Ruminant Microbiology: 2 Credits (2 Lec)

PREREQUISITE: BIOM 360, BIOM 405, or MB 505. (Sp) S odd years.

Explores the taxonomic and morphological diversity of microbial taxa in the ruminant gut and their roles in animal health, nutrition, and productivity

## ARNR 507 Research Methods: 1 Credits (1 Other)

PREREQUISITE: Graduate standing. (F, Sp) Application of scientific method and research techniques, including design of experiments and use of appropriate statistical procedures. Offered fall and spring  
Repeatable up to 5 credits.

## ARNR 508 Rangeland Ecological Theory and Application: 3 Credits (3 Lec)

PREREQUISITE: Graduate standing. () F odd years. In this course students will explore the scientific literature and ecological basis for rangeland management practices and will develop an ecological awareness to support critical evaluation of and solution building for ecological problems on arid and semi-arid landscapes

## ARNR 513 Advanced Forage Production: 1 Credits (1 Lec)

() F odd years. This course is intended to provide graduate students with information pertaining to introduced forage species so that they will be able to effectively determine: what is included in forage quality and its impact on animal performance; determine the role that forages play in agriculture and animal production; evaluate the effects that management strategies and the environment can have on forage production; plan grazing and harvesting strategies based on producer needs and availability; be able to develop their own planning and management strategies based on cases provided.

## ARNR 520 Nutrient Metabolism: 3 Credits (3 Lec)

PREREQUISITE: ANSC 320, and either CHMY 123 or BCH 380 or consent of instructor. () S odd years. Energy and protein utilization, emphasis on how energy and protein requirements are determined. -

## ARNR 521 Adv Ruminant Nutrition: 3 Credits (2 Lec, 2 Lab)

PREREQUISITE: ANSC 320 or consent of instructor. () F even years. Physiological and microbiology aspects of ruminant digestion and their influence on the metabolism of extraluminal tissues

## ARNR 523 Adv Physiology of Reproduction: 3 Credits (3 Lec)

PREREQUISITE: Graduate standing and ANSC 321 or equivalent course. () S odd years. In-depth study of reproductive processes in domestic mammals, with emphasis on the application of recent techniques in solving reproductive problems associated with infertility. Student should have prior understanding of the reproductive anatomy, physiology, and endocrinology of female and male domesticated mammals

## ARNR 524 Adv Animal Breeding: 3 Credits (3 Lec)

PREREQUISITE: ANSC 322. () S even years. Quantitative and molecular genetics applied to the improvement of animals. Study of relationships among relatives, methods of estimating genetic parameters, application of crossbreeding systems and selection techniques, and the application of molecular biology to understand the basis of economically important traits in livestock. Offered spring, even years

## ARNR 525 Muscle Growth & Biology: 3 Credits (3 Lec)

PREREQUISITE: BCH 380 AND BIOB 160. () Growth and development of muscle, muscle structure and how growth is controlled by hormones and DNA will be studied. The impact of growth manipulation on the final product, meat, will also be evaluated. Offered spring even years

## ARNR 527 Livestock Mineral Nutrition: 1 Credits (1 Lec)

Lectures will include an overview of livestock mineral nutrition, discussion mineral feed tags and analyses reports, and in-depth discussion of the minerals commonly included in livestock mineral programs. Fall alternate years, to be offered odd years.

## ARNR 541 Range Ecophysiology: 3 Credits (3 Lec)

PREREQUISITE: NRSM 240 or BIOE 370 or consent of instructor.

Lectures and selected readings on the response of range plants and animals to daily and seasonal changes in their environment, including physiology, animal behavior, and plant population biology

## ARNR 543 Riparian Process & Function: 3 Credits (3 Lec)

PREREQUISITE: NRSM 455, BIOE 370 and EARTH 432R. This course involves an in depth investigation of the geomorphological physical and biological parameters unique to riparian areas of the Northern Rocky Mountains and Great Plains. Emphasis will be placed on how these parameters interact to create the biotic communities associated with riparian areas

## ARNR 544 Advanced Grazing Management and Ecology: 3 Credits (3 Lec)

PREREQUISITE: NRSM 240 or NRSM 350 or NRSM 351 or BIOE 370. () Review of management principles for livestock grazing rangelands and their ecological relationships. Study design and scientific results will be examined to critically review information. Offered spring odd years

## ARNR 555 Rangeland Wildlife Ecology & Management: 3 Credits (3 Lec)

PREREQUISITE: Graduate student standing. (F) Course explores the history, ecology, and management of wildlife populations occurring on rangelands. Emphasis will be placed on habitat and population management with primary consideration of management issues facing wildlife populations in the West. Offered fall, even years

## ARNR 575 Prof Paper & Project: 1-4 Credits (1-4 Other)

PREREQUISITE: Graduate standing. A research or professional paper or project dealing with a topic in the field. The topic must have been mutually agreed upon by the student and his or her major adviser and graduate committee  
Repeatable up to 6 credits.

## ARNR 589 Graduate Consultation: 3 Credits (3 Other)

PREREQUISITE: Master's standing and approval of the Dean of Graduate Studies. This course may be used only by students who have completed all of their course work (and thesis, if on a thesis plan) but who need additional faculty or staff time or help  
Repeatable up to 99 credits.

## ARNR 590 Master's Thesis: 1-10 Credits (1-10 Other)

PREREQUISITE: Master's standing  
Repeatable up to 99 credits.

## ARNR 591 Special Topics: 1-4 Credits (1-4 Lec)

PREREQUISITE: Upper division courses and others as determined for each offering. Courses not required in any curriculum for which there is a particular one time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number  
Repeatable up to 12 credits.

## ARNR 592 Independent Study: 1-3 Credits (1-3 Other)

PREREQUISITE: Graduate standing, consent of instructor, approval of department head and Dean of Graduate Studies. Directed research and study on an individual basis  
Repeatable up to 6 credits.

**ARNR 594 Research Seminar: 1 Credits (1 Lec)**

PREREQUISITE: ARNR 507. Graduate students will meet weekly to discuss and critique papers for up-coming departmental seminar speakers. Students will also participate in seminars, and present their research both in an oral and written format  
Repeatable up to 3 credits.

**ARNR 690 Doctoral Thesis: 1-10 Credits (1-10 Other)**

PREREQUISITE: Doctoral standing  
Repeatable up to 99 credits.