

# Rationale For Requiring Specific Junior-Level Prerequisites For Senior-Level Animal Science Production Courses

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## Abstract

Requiring specific junior-level prerequisites, such as Animal Breeding, Physiology of Reproduction and Feeds and Feeding, for senior-level production courses (Beef Cattle Science, Dairy Cattle Science, Sheep Science, Swine Science, Equine Science, and Poultry Science--each course offered for 3 semester credit hours utilizing a weekly format consisting of two hours of lecture and two hours of laboratory) has enhanced the breadth and scope with which these production courses are offered in the Department of Animal Sciences at the University of Kentucky.

## Introduction

A review of course descriptions for senior-level production courses (Beef Cattle Science, Swine Science, Sheep Science, Equine Science, Dairy Cattle Science and Poultry Science) offered at land-grant institutions indicated most had limited prerequisites. The most frequently identified prerequisite required for these courses is a animal nutrition course. Morrow (1982) indicated prerequisites of animal nutrition and genetics for the Beef Cattle Science course offered at the University of Missouri.

If system-type concepts are to be developed in these senior-level production courses, typically offered for three semester credit hours, it seems reasonable that most, if not all, of these courses should have prerequisites dealing with Animal Breeding, Animal Nutrition, Reproductive Physiology, and Live Animal and Carcass Evaluation.

Offered for three semester credit hours utilizing a weekly format of two hours of lecture and two hours of laboratory, the senior-level Beef Cattle Science, Swine Science, and Sheep Science courses offered in the Department of Animal Sciences at the University of Kentucky have prerequisites of Animal Breeding, Physiology of Reproduction, Feeds and Feeding and Live Animal and Carcass Evaluation. Prerequisites for the Dairy Cattle Science, Equine Science, and Poultry Science courses are similar except that Live Animal and Carcass Evaluation course is not required.

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Animal Science students take the required prerequisites for the senior-level production courses during their junior year--Genetics, Animal Nutrition (Organic Chemistry prerequisite), and Physiology of Reproduction are taken during the fall semester; Animal Breeding (Genetics prerequisite) and Feeds and Feeding (Animal Nutrition prerequisite) are taken during the spring semester. Due to constraints on laboratory size and availability of animals, the Live Animal and Carcass Evaluation course is offered both semesters; students required to take this course may do so during either the fall or spring semester of their junior year.

## Application to Beef Cattle Science

Components of the senior-level Beef Cattle Science course offered within the Department of Animal Sciences at the University of Kentucky are as follows: 1) Facilities, 2) Identification, 3) Industry (Global, National, State), 4) Breed Evaluation and Utilization, 5) Nutrition, 6) Reproduction, 7) Genetics, 8) Health, 9) Marketing, 10) Management Practices--Calving to Breeding, Breeding to Weaning and Weaning to Calving, 11) Industry Problems/Possibilities, 12) Industry Organizations, 13) Production Economics and 14) Taxation. The Beef Cattle Science course is taught assuming students enrolled in the course have taken the prerequisite courses of Animal Breeding, Physiology of Reproduction, Feeds and Feeding and Live Animal and Carcass Evaluation. Basic concepts presented in these prerequisite courses are applied to beef cattle production without being redeveloped. Specifically, in the section of the course dealing with beef cattle genetics, the concept of heterosis, which is developed in the junior-level Animal Breeding course, is applied to mating systems specifically applicable to different beef cattle production systems. Further, students are expected to have a basic understanding of the concepts involving ration formulation, which are developed in the junior-level Feeds and Feeding course; these ration formulation concepts are applied to feeding of various classes of beef cattle during a typical yearly beef cattle production cycle.

Students are expected to be familiar with the estrous cycle of the bovine female, the basic concepts of which are developed in the junior-level Physiology of Reproduction course. Given that students have a basic understanding of

the bovine estrous cycle permits considerable effort to be directed towards identifying factors that may impact the estrous cycle as well as how the estrous cycle can be modified through utilization of specific procedures such as estrus synchronization in the Beef Cattle Science course.

In the junior-level Live Animal and Carcass Evaluation course, students become familiar with feeder cattle grades as well as yield and quality grades of finished

cattle. Consequently, under the section of the Beef Cattle Science course dealing with marketing, no further development of these concepts is warranted prior to a discussion involving relationship between grade and market price of different classes of cattle.

The following format depicts the order suggested for Animal Science students to take the courses on a semester by semester basis at the University of Kentucky:

Year	Semester	
	Fall	Spring
Freshman	Inorganic Chemistry I	Inorganic Chemistry II
Sophomore	Organic Chemistry	Organic Chemistry
Junior	Genetics	Animal Breeding
	Animal Nutrition	Feeds and Feeding
	Physiology of Reproduction	
	Live Animal & Carcass Evaluation	Live Animal & Carcass Evaluation
Senior	Beef Cattle Science.	other senior-level production course

A similar format for Animal Science courses was suggested by Thompson (1974); however, no reference was made to any of the junior-level courses being prerequisites for the senior-level production courses, as is the case at the University of Kentucky.

Historically, the limited number of students that enroll in the senior-level Beef Cattle Science course without previously taking the prerequisites consistently perform below class average because most lack the discipline required to make up their prerequisite deficiencies.

### Summary

Requiring specific junior-level prerequisites for senior-level production courses typically offered for three semester credit hours permits greater emphasis to be placed on a systems approach to production of a specific livestock species. If the prerequisites were not required, considerable course time would need to be devoted to concepts normally presented in the prerequisite courses. Thus, less time would be available in each specific senior-level production course for integrating the different components into a production cycle. Brink (1994) suggested that senior-level production courses should be structured to provide integration of the disciplines.

### Literature Cited

- Brink, D. R. 1994. A Case Description; A Process for Animal Science Curriculum Development. *NACTA Jour.* 38(2):4-7.
- Morrow, R. E. 1982. Teaching Beef Production: "Different Strokes for Different Folks." *NACTA Jour.* 26(2): 16-17.
- Thompson, J. T. 1974. A Theoretical Undergraduate Animal Science Curriculum. *NACTA Jour.* 17(1): 10-12.

### Corrigendum

The September, 1997 issue of the NACTA Journal was Number 3 in Volume 41, not Volume 42 as appeared on the cover and frontpage.