<u>**Meat Science Unit Objectives**</u>: By the end of this unit, students will be able to…

1. Calculate ADG and WDA and summarize the significance of these calculations.
2. Summarize the differences between prenatal and postnatal growth in meat animals.
3. Interpret a sigmoid growth curve and identify the point of birth, point of inflection, point of maturation, and puberty.
4. Determine which animal will be more profitable and valuable based on differences in the sigmoid growth curves.
5. Plot changes that occur due to castration using a sigmoid growth curve.
6. Interpret the changes in the rate of growth of muscle, bone, and fat in a meat animal between birth and maturation; utilize these differences in rates of tissue growth to justify when an animal should be harvested for maximal meat quality and profitability.
7. Summarize the benefits and drawbacks of castration in meat animals.
8. Describe use of anabolic implants & beta-antagonists in meat animals, and support your stance on this issue with evidence.
9. Calculate dressing percentage of a given meat animal if provided with the live weight and carcass weight.
10. Calculate the cutting losses and cutting yields of a carcass.
11. Summarize the impact of Upton Sinclair's *The Jungle* on regulation in the meat industry and provide a summary of changes that have occurred in the regulation of the meat industry since the early 1900s.
12. Summarize the purpose and role of each of the following pieces of legislation: a. Pure Food & Drug Act   b. Meat Inspection Act   c. Wholesome Meat Act d. Humane Slaughter Act/Humane Methods of Slaughter Act
13. Define "adulterated meat" and provide examples of actions that would cause a cut of meat to be considered adulterated meat.
14. Determine whether not federal inspection is required for a given meat processing facility and what this inspection would entail.
15. Summarize the stipulations that are required by a facility in order to fully comply with HMSA.
16. Compare and contrast what occurs during antemortem and postmortem federal inspection of meat facilities.
17. Grade a cut of beef, pork, or poultry based on a picture or written description.
18. Define "complete protein" and explain the difference between an essential amino acid and a nonessential amino acid.
19. Define "marbling" and summarize the importance of this concept in regards to the quality and value of a cut of meat.
20. Summarize how meat changes as a result of the Maillard Reaction and as a result of fermentation.
21. Identify the key factors that affect the flavor and quality of a cut of meat.
22. Summarize all of the factors that are necessary for muscle to be converted into meat.
23. Summarize the importance of tenderness in regards to the value of a cut of meat and describe the factors that affect the tenderness of meat.
24. Summarize the role that each of the following play in the sliding filament model: a. Myosin   b. Actin   c. Troponin/Tropomyosin   d. ATP   e. Calcium
25. Identify the components of the sliding filament model in a given image.
26. Explain how the sliding filament model, rigor mortis, tenderness, and meat quality are all related.