

<b>Course</b>	Agricultural Science I
<b>Unit</b>	Introduction to Animal Nutrition
<b>Lesson</b>	Meeting Nutritional Needs of Animals
<b>Estimated Time</b>	50 minutes

### Student Outcome

Identify how the nutritional needs of animals may be met.

### Learning Objectives


1. List the sources of information on nutritional requirements.
2. Describe the steps necessary to meet the nutritional needs of animals.
3. Identify sources of nutrients.

### Grade Level Expectations

SC/ST/1/C/09-11/a

### Resources, Supplies & Equipment, and Supplemental Information

#### Resources

1. Activity Sheets
  -  AS 1 – Identifying Nutritional Requirements
2. *Introduction to Animal Nutrition (Student Reference)*. University of Missouri-Columbia: Instructional Materials Laboratory, 1996.
3. *Introduction to Animal Nutrition Curriculum Enhancement*. University of Missouri-Columbia: Instructional Materials Laboratory, 2003.

#### Supplemental Information

1. Internet Sites
  - ☐ Animal Science Publications. MU Extension. University of Missouri-Columbia. Accessed May 10, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/g02051.htm>.
  - ☐ Animal Science Publications. MU Extension. University of Missouri-Columbia. Accessed April 12, 2007, from <http://extension.missouri.edu/explore/agguides/ansci/>.
  - ☐ Animals & Animal Products. U.S. Department of Agriculture. Accessed April 12, 2007, from <http://www.csrees.usda.gov/nea/animals/animals.html>.
  - ☐ Applied Animal Management. Purdue University. Accessed May 10, 2007, from <http://ag.ansc.purdue.edu/nielsen/www245/lecnotes/Nutrition.html>.
  - ☐ DiCostanzo, Alfredo. Stocker/Backgrounder Nutrition. U of M Extension. University of Minnesota. Accessed May 10, 2007, from [http://www.extension.umn.edu/Beef/components/homestudy/stocker\\_lesson4.pdf](http://www.extension.umn.edu/Beef/components/homestudy/stocker_lesson4.pdf).
  - ☐ MyPyramid.gov. USDA. Accessed May 10, 2007, from <http://www.mypyramid.gov/>.

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2. Electronic Media


- ❑ *Animal Nutrition Interactive PowerPoints*. University of Missouri-Columbia: Instructional Materials Laboratory, 2006.
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## Interest Approach

Ask students to quickly list the foods they eat for meals and snacks during a typical day. Have them try to identify the types of nutrients found in each food. Then inform students of the nutritional requirements for humans. Allow them to compare these requirements to their lists. Make a comparison between the human nutritional requirements and the students' diets and the management by producers of an animal's diet to meet its nutritional needs.

## Communicate the Learning Objectives

1. List the sources of information on nutritional requirements.
2. Describe the steps necessary to meet the nutritional needs of animals.
3. Identify sources of nutrients.

Instructor Directions	Content Outline
<b>Objective 1</b>  <i>Ask students where information can be obtained about nutritional requirements. Discuss the information each source provides.</i>	<b>List the sources of information on nutritional requirements.</b>  <ol style="list-style-type: none"><li>1. University Extension agricultural publications and livestock and dairy specialists</li><li>2. Textbooks on animal nutrition</li><li>3. Feed companies and dealers</li><li>4. National Research Council</li></ol>
<b>Objective 2</b>  <i>Discuss the steps that should be taken to meet the nutritional needs of an animal. Ask the students to explain the importance of each of the steps.</i>   AS 1 – Identifying Nutritional Requirements	<b>Describe the steps necessary to meet the nutritional needs of animals.</b>  Find information sources on the nutritional needs of animals and the nutrient content of feeds.  Next, identify the particular animal's nutritional needs <ol style="list-style-type: none"><li>1. Identify the life stage of the animal</li><li>2. Determine the animal's weight and the size of its frame.</li><li>3. Determine the desired performance (rate of gain).</li><li>4. Look up all the nutritional requirements of the animal using this information.</li></ol> Identify the nutrients available in a feed. <ol style="list-style-type: none"><li>1. Identify the feeds that may be used.</li><li>2. Choose a version of a particular feed.</li><li>3. Look up the nutrients provided by that specific feed.</li></ol> Match the feed to the animal's nutritional requirements to meet its needs. This is accomplished by balancing a ration.

Instructor Directions	Content Outline
<p><b>Objective 3</b></p> <p><i>List the nutrients and ask students what the sources of each of the six nutrients are. Discuss each source. Display some of the nutrient sources as visual aids.</i></p>	<p><b>Identify sources of nutrients.</b></p> <ol style="list-style-type: none"> <li>1. Water - Fresh water and feeds, which contain water</li> <li>2. Protein - Amino acids in animal tissues, grains, and legumes</li> <li>3. Carbohydrates - Sugars, starches, and fibers in grain and forages</li> <li>4. Fats - Fatty acids in animal tissues, fats, and grains</li> <li>5. Vitamins - Grass, sun-cured hay, and commercial feeds</li> <li>6. Minerals - Plant and animal tissues and commercial feeds</li> </ol>
<p><b>Application:</b></p> <p> AS 1 – Identifying Nutritional Requirements</p>	<p><i>Answers are based on the University of Missouri Extension agricultural publications, using the Missouri recommended allowances.</i></p> <p>Answers to AS 1</p> <ol style="list-style-type: none"> <li>1. <ol style="list-style-type: none"> <li>a. 14.4%</li> <li>b. 85%</li> <li>c. 11.8 lbs.</li> </ol> </li> <li>2. <ol style="list-style-type: none"> <li>a. 1 lb.</li> <li>b. 18%</li> <li>c. 0.7%</li> <li>d. 1.10%</li> </ol> </li> <li>3. <ol style="list-style-type: none"> <li>a. 8.2%</li> <li>b. 0.28%</li> <li>c. 16.8 lbs.</li> </ol> </li> <li>4. <ol style="list-style-type: none"> <li>a. 14%</li> <li>b. 0.6%</li> <li>c. 0.9%</li> <li>d. 0.65%</li> </ol> </li> <li>5. <ol style="list-style-type: none"> <li>a. 7%</li> <li>b. 0.18%</li> <li>c. 18.1 lbs.</li> <li>d. 48.8%</li> </ol> </li> </ol>

Instructor Directions	Content Outline
	<p>Other activities</p> <ol style="list-style-type: none"> <li>1. Have students do research to determine the nutrients provided by different feeds.</li> </ol>
<b>Closure/Summary:</b>	<p>Many sources of information about the nutrients in feed and the nutritional requirements of animals are available. Once sources are found, the animal's needs and then the feed nutrients should be identified. The two must be matched to meet the animal's needs. The necessary nutrients may be supplied to an animal through many different feed sources.</p>
<b>Evaluation: Quiz</b>	<p>Answers:</p> <ol style="list-style-type: none"> <li>1. a</li> <li>2. c</li> <li>3. d</li> <li>4. d</li> <li>5. a</li> <li>6. d</li> <li>7. c</li> <li>8. d</li> <li>9. Answers may include any three of the following: University Extension livestock and dairy specialists and agricultural publications, textbooks, feed dealers and companies, National Research Council.</li> <li>10. a. Find information sources on the nutritional needs of animals and the nutrient content of feeds. b. Identify the animal's nutritional needs. c. Identify the nutrients available in feed. d. Match the feed to the animal's nutritional requirements to meet its needs.</li> </ol>