By the end of the course, students will be expected to:

- Describe and evaluate cropping systems in relation to purposes of crop and bioenergy production, environmental conservation and protection, and sustainability.
- Be able to develop and justify, orally and in writing, plans for cropping and farming systems that achieve a given purpose, e.g., sustainable bioenergy crop production, within constraints of available soil and climate.
- Choose, evaluate, and justify, orally and in writing, one or more crop species for a cropping system.
- Comprehend and apply knowledge and principles of crop and soil ecology and management to problematic situations in agriculture.

### Requirements

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four Lecture Quizzes</td>
<td>100</td>
</tr>
<tr>
<td>Decision cases/homework</td>
<td>100</td>
</tr>
<tr>
<td>Two Lecture Examinations</td>
<td>200</td>
</tr>
<tr>
<td>Final Examination</td>
<td>100</td>
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<tr>
<td>IMPACT Center Project</td>
<td>100</td>
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<tr>
<td>Laboratory</td>
<td>300</td>
</tr>
<tr>
<td>Field Project</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1000</strong></td>
</tr>
<tr>
<td>Extra Credit (class participation)</td>
<td>50</td>
</tr>
</tbody>
</table>

### Date | Topic Outline | Reading - Loomis & Conner

Aug. 27
- 1. Introduction

Aug. 29
- 2. Purposeful Agriculture
  - a. Population
  - b. Production

Aug. 31
- c. Sustainability
  - 1. Productivity
    - a. Energy
  - Ch. 1, 3, 15, 18

Sept. 3
- 2. Profitability

Sept. 5
- 3. Stability
- Ch. 3
- 4. New Technology
- Ch. 3, 18

Sept. 7
- 5. Low Inputs
- Ch. 18
- 6. Environmental Protection

Sept. 10 **Quiz 1**
- d. Crop Selection
  - 1. Genetic Diversity
    - Ch. 4

Sept. 12, 14
- a. Crop Evolution and Domestication
- b. Cultivar Development

Sept. 17
- 2. Principles
- a. Adaptation to Environmental Constraints
1. Aerial Environment
   a. Temperature
   b. Radiation
   c. CO₂ and O₂
   d. Water

2. Soil
   a. Physical
   b. Chemical
   c. Nitrogen

3. Plant Responses
   a. Radiation
   b. Temperature
   c. Water
      1. Stress
      2. Efficiency
      d. Impedance
   e. Nutrients
   f. Biotic

Quiz 1

Examination 1

Oct. 08, 10
  a. Radiation

Oct. 12, 15
  b. Temperature

Oct. 17, 19
  c. Water

Nov. 02, 10
  a. Tillage

Nov. 05
  b. Sowing and Planting

Nov. 07
  1. Rate

Nov. 14, 16
  2. Date

Nov. 19
  3. Depth

Nov. 21
  4. Method

Nov. 26, 28
  4. Fertility

Nov. 30
  5. Irrigation

Quiz 4

Dec. 03, 04
  3. IMPACT Project Reports

Laboratory Schedule

Aug. 30
  1. Describing Goals and Objectives. The TAES IMPACT Center

Sept. 06
  2. Crop Diversity and Selection

Sept. 13
  3. Seeds and Crop Establishment

Sept. 20
  4. Ontogeny of Crop Plants

Sept. 27
  5. Leaf Area, Light Interception and Competition

Oct. 04
  6. Crop Response to Environment and Stress

Oct. 11
  7. Photosynthesis, Respiration and Transpiration

Oct. 18
  8. Mid-term Practical Examination, Discuss Field Projects

Oct. 25
  9. Chemical Regulation of Plant Growth

Nov. 01
  10. Mineral Nutrition and Fertilization

Nov. 08
  11. Flowering and Maturation

Nov. 15
  12. Final Practical Examination, Discuss Field Projects

Nov. 29
  13. Reports on Field Projects
**Textbook**


**Evaluation of Learning Outcomes:**

Students’ recall and comprehension of knowledge and principles will be evaluated through four quizzes and through class discussion/participation. Students’ performance on two essay examinations, a final examination, and decision-case exercises will be used to evaluate their ability to apply, analyze, and evaluate recommendations for development and improvement of cropping systems, including species selection and management principles and practices. Students ability to identify, manipulate, and evaluate plant responses to soil, climatic, biological, and management variables will be evaluated through experiential and tactile learning activities and quizzes and practical examinations.

**Students with disabilities:**

*Americans with Disabilities Act (ADA) Policy Statement*

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be granted a learning environment that provides for reasonable accommodation of their disability. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Room B118 Cain Hall or call 845-1637.

**Student Honor Code:**

“An Aggie does not lie, cheat, or steal or tolerate those who do”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the process of the Honor System.