I. **TITLE:**

Combine and Grain Handling Systems

II. **CATALOG DESCRIPTION:**

Developing a complete grain harvesting, handling, drying, and storage operation. A study of combine operation and the materials flow concept, closed loop handling, psychometrics, grain drying, drying methods, facility layout, and facility management. Combine comparison, selection, and utilization.

*To receive graduate credit for this course, a student must be admitted to graduate studies prior to registering for the course.*

III. **PURPOSE:**

To provide students with the skills necessary to operate combines efficiently and to design and implement grain handling and storage units.

IV. **COURSE OBJECTIVES:**

Upon enrollment in this class, you agreed you wanted to learn:

A. The fundamentals, field operation, yield monitoring, maintenance, and safety of combine harvesting.
B. Current knowledge on economics of grain storage and cost of construction.
C. How to design a grain handling system which is cost effective and expandable.
D. The various equipment used in grain handling and how to match that equipment.

V. **CONTENT OUTLINE:**

In order to accomplish these objectives, you agreed you wanted to study:

A. Introduction
   1. Properties of Grain
   2. Review of Ag Engineering Principles
B. Combines
1. History
2. Types and Sizes
3. Fundamentals
4. Operation-Loss Checks
5. Field Trips – Corn and Beans

C. Hauling Equipment
   1. Needs
   2. Types and Sizes

D. Grain Drying and Storage
   1. How grain dries
   2. Types and sizes of drying and aeration equipment
   3. Advantages and disadvantages of on-farm storage grain bins
   4. Augers and handling equipment
   5. Monitoring equipment
   6. Field trips

E. Economics, Management, and Cost
   1. Insect control
   2. Interest cost
   3. Facility management

F. Safety

VI. INSTRUCTIONAL ACTIVITIES:

A. Audio-Visual Presentations
B. Lecture
C. Demonstrations
D. Drawing and Drafting
E. Problem Solving
F. Guest Speakers
G. Field Trips
H. Laboratories
I. Independent Assignments

VII. FIELD AND CLINICAL EXPERIENCES:

Students will complete several field trips and clinical experiences, including a mini-internship in a Grain Handling Facility.

VIII. RESOURCES:

A. Large 3-ring notebook
B. Handouts
C. Resource Personnel
IX. **GRADING PROCEDURES:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance</td>
<td>300</td>
</tr>
<tr>
<td>One hour exam – combines</td>
<td>100</td>
</tr>
<tr>
<td>Class presentations/debate – combines</td>
<td>100</td>
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<tr>
<td>Independent assignments</td>
<td>200</td>
</tr>
<tr>
<td>Class act./Lab reports/Field trips</td>
<td>300</td>
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<tr>
<td>Mini-internship</td>
<td>100</td>
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<tr>
<td>Notebook</td>
<td>100</td>
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<tr>
<td>Final exam</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1300</strong></td>
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</tbody>
</table>

Grading scale:
- 90 – 100 = A
- 80 – 89 = B
- 70 – 79 = C
- 60 – 69 = D
- Below 60 = E

X. **ATTENDANCE POLICY:**

Please refer to the most current copy of the *Murray State University's Undergraduate Bulletin and Graduate Bulletin*.

XI. **ACADEMIC HONESTY POLICY:**

( Adopted by the MSU Board of Regents)

Cheating, plagiarism (submitting another person’s material as one’s own), or doing work for another person which will receive academic credit are all impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, term papers, or the presentation on unacknowledged material as if it were the student’s own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

NOTE: The School of Agriculture Faculty have adopted and implemented an Academic Honesty Policy in addition to the University Honesty Policy, which can be found in the current *Undergraduate Bulletin and Graduate Bulletin*. The policy sets guidelines regarding acts of dishonesty and the procedure to follow should an event occur. It is each Agriculture student’s responsibility to obtain and read a copy of this document. The School’s Academic Honesty Policy can be obtained by asking for a copy from any Agriculture Faculty member or the Secretary.
XII. TEXT AND REFERENCES:

B. Grain Drying, Handling, and Storage Handbook, MWPS. (text on reserve)
C. Students will assemble a reference notebook throughout the course.

XIII. PREREQUISITES:

None

XIV. STATEMENT OF AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY:

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact Sabrina Y. Dial, Director of Equal Opportunity, Murray State University, 103 Wells Hall, Murray, KY 42071-3318. Telephone: 270-809-3155 (voice), 270-809-3361 (TDD).

XV. MSU SCHOOL OF AGRICULTURE CELL PHONE POLICY

The School of Agriculture recognizes that in today’s world cell phones are a familiar and often necessary form of communication for students.

It shall be the policy of the School that no cell phone usage shall be allowed in class and/or labs without the prior consent of the course instructor. This shall include verbal calling, incoming calls, email, text messaging, and use of cell phone calculators on tests and quizzes.

Cell phones must be kept off and out of sight (i.e. secured to a person’s belt or kept in a bag or purse away from desks and lab counters).

Should a student’s cell phone be visible, ring, or other form of unauthorized usage that is interruptive to the class or lab, the student may be asked to leave class and not return for that class/lab period.

Upon prior consent of the instructor, a student may obtain permission to have their phone on in case of an emergency or in critical family situations.
This policy also includes pagers and other electronic equipment such as blackberries and/or computers/laptops.