I. TITLE:

Research and Development of Agriculture Tractors and Equipment

II. CATALOG DESCRIPTION:

Tours of the major agriculture tractor and equipment industries. The tour includes: research and development, engineering, foundries, and the assembly of engines, transmissions, final drives, combines, cotton pickers, and planting equipment. (Summer) Prerequisites: AGR 170 or instructor’s approval. Students must have completed 60 hours of course work.

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

III. PURPOSE:

To introduce students to the design, development, and testing of agriculture tractors and equipment.

IV. COURSE OBJECTIVES:

A. To complete a first-hand study of the agriculture equipment industry by touring.
B. To expose students to the challenges that engineers, technicians, and support teams face and techniques they use to solve problems.
C. To show students protocol used in designing and developing agriculture tractors and equipment.
D. To introduce students to new job markets and potential employers to quality trainees.
E. To add depth to the subject by noting similarities and differences among companies.

V. CONTENT OUTLINE:

To have short instructional labs in each of the following areas:

A. Global Positioning Systems
B. Thermotrons
C. Hydraulics
D. Cold Room
E. Dyno Tests
F. High Temperature Room
G. Laminated Objected Modeling
H. Electro Magnetic Chamber
I. Advanced Manufacturing Engineering
J. Material Inspection
K. Drivetrain
L. Pro-E
M. Engine Test cells
N. Sress Labs
O. Development Lab
P. Acoustics
Q. Dusty Test
R. Implements Lab
S. Foundry Castings
T. Laser Cutting
U. Traction Lab
V. Tractor Assembly Lines
W. Combine and Harvester Assembly Lines
X. Planter and Seeder Assembly Lines
Y. System assemblies; engine, hydraulics, drive trains, etc.

VI. INSTRUCTIONAL ACTIVITIES:

A. Demonstrations
B. Audio-visual Presentations
C. Discussion
D. Lecture
E. Tour

VII. FIELD AND CLINICAL EXPERIENCES:

Students will tour leading agricultural tractor and equipment designers and manufactures. Previous tours have included Cummins Engines Plant, Cummins Technology Center, Caterpillar Challenger Plant, Case Technology Center, Case International Assembly Plant, Robert Bosch Fluid Power Corporation, John Deere Foundry, John Deere Tractor Assembly, John Deere Engine Plant, John Deere Planter Plant and Case International Combine and Harvester Works.

VIII. RESOURCES:

A. Tour guides
B. Resource personnel (engineers and technicians)
C. Brochure materials and handouts
D. Cutaways
E. Working models
F. Prototypes
G. Production units

IX. **GRADING PROCEDURES:**

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tr>
<td>90 – 100</td>
<td>A</td>
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<tr>
<td>80 – 89</td>
<td>B</td>
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<td>70 – 79</td>
<td>C</td>
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<td>60 – 69</td>
<td>D</td>
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<td>Below 60</td>
<td>E</td>
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A. Each student will be required to attend all tours at the scheduled time. Failure to do so will be reflected in the grading process.
B. Each student will be required to keep a journal of daily tours and events to be turned in and evaluated. A handout with the format will be provided.
C. A final paper will be assigned on one of the tours with the paper format and grading procedure provided in a later handout.

*Graduate students will be expected to complete extra work. A handout will follow.*

X. **ATTENDANCE POLICY:**

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

Due to the intensity and short duration of the trip, and section (i.e. morning or afternoon) missed results in a two-letter grade drop.

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:**

Technical brochures are provided by the manufacturers.

XIII. **PREREQUISITES:**

AGR 170 or instructor’s approval. Students must have completed 60 hours of course work.

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.