MURRAY STATE UNIVERSITY  
COURSE SYLLABUS OUTLINE  

SCHOOL OF AGRICULTURE  
COURSE NUMBER: AGR 133  
CREDIT HOURS: 2  

I. TITLE:  
Field Applications for Agriculture  

II. CATALOG DESCRIPTION:  
This course will teach students methods of solving many application problems that will be encountered in the field of agriculture using applied mathematical and logic skills. The emphasis will be to use practical mathematical skills already acquired from secondary education to address agricultural situations involving computations that are necessary for upper level courses in agriculture. Some knowledge of agricultural situations may be required. Possible field trips to the University Farms during class times. Prerequisite: Declared area or major in agriculture or with consent of the instructor.  

III. PURPOSE:  
To enable students to solve problems that will be encountered in various agricultural occupations. This course is designed to allow the students to connect current basic math skills with common application problems in agriculture. It is not the purpose of this class to replace any advanced math requirements that are required in the various agricultural curriculums.  

IV. COURSE OBJECTIVES:  
A. Calculation of field acreage using various shapes and sizes.  
B. Determination of the amount of fertilizer applied per acre to obtain the quantities of recommended nutrients.  
C. Calibration of farm sprayers to obtain proper rates of application. Calculate herbicide concentrate additions to spray tank to obtain desired application rate.  
D. Determination of seeding rates and plant populations in the field.  
E. Measurement of yield of various crops.  
F. Calculate fertilizer proportioner rates for correct application in a greenhouse setting.  
G. Calculate production volume rates for soilless media during greenhouse production.  
H. Utilize unit analysis in designing irrigation systems.  
I. Calculate ratios using gears, belts, and chains.
J. Figure horsepower, torque, cubic centimeters, and cubic inch displacement for various engines.
K. Utilize Ohm’s Law for electrical calculations.
L. Calculate efficiencies of motors and electrical systems.
M. Calculation of stocking rates and density for grazing livestock.
N. Calculate standardized performance analysis data for beef cattle and swine.
O. Compute comparative analysis for within cow herds.
P. Calculate the weight per day of age of livestock.
Q. Calculate effective cost/return ratios for beef and swine.
R. Calculation of interest payments on agribusiness loans.
S. Figure the mean, median, and standard deviation of a sample.

V. **CONTENT OUTLINE:**

A. Introduction
B. Applications related to agronomy
C. Applications related to horticulture
D. Applications related to agricultural systems technology and agricultural engineering
E. Applications related to animal science
F. Applications related to agricultural business

VI. **INSTRUCTIONAL ACTIVITIES:**

A. Homework assignments
B. Class exercises in agricultural problems and their solutions
C. Lectures

VII. **FIELD AND CLINICAL EXPERIENCES:**

Possible field trips to the University Farms during class time.

VIII. **RESOURCES:**

A. Classroom with computer projection.
B. Use of e-study center
C. University library
D. Agricultural faculty members who have assisted in providing application problems for this course.

IX. **GRADING PROCEDURES:**

The completion and the on-time return of homework assignments will determine 35% of the grade. Homework turned in late will be given only partial credit. Late work will be lowered by 10% each week it is delinquent. Work will NOT be accepted after 2 weeks past the due date. Three exams will
be given during the term with each exam being worth 15% of your grade. The comprehensive final will be worth 20% of the grade. The course is graded on an A, B, C, D, and E 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:

Mathematical Applications in Agriculture by Nina H. Mitchell, 2004, Delmar Learning, Clifton Park, NY

XIII. PREREQUISITES:

Declared area or major in agriculture or with consent of the instructor.
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.