

# MURRAY STATE UNIVERSITY

9/15

## SCHOOL OF AGRICULTURE

**COURSE PREFIX: AGR    COURSE NUMBER: 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.   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.

**IV. 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

**V. INSTRUCTIONAL ACTIVITIES:**

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

**VI. FIELD AND CLINICAL EXPERIENCES:**

Possible field trips to the University Farms during class time.

**VII. TEXTS AND RESOURCES:**

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

- 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.

**VIII. 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

#### **IX. ATTENDANCE POLICY:**

Students are expected to adhere to the MSU Attendance Policy outlined in the current *MSU Bulletin*.

#### **X. ACADEMIC HONESTY POLICY:**

Murray State University takes seriously its moral and educational obligation to maintain high standards of academic honesty and ethical behavior. Instructors are expected to evaluate students' academic achievements accurately, as well as ascertain that work submitted by students is authentic and the result of their own efforts, and consistent with established academic standards. Students are obligated to respect and abide by the basic standards of personal and professional integrity.

##### **Violations of Academic Honesty include:**

**Cheating** - Intentionally using or attempting to use unauthorized information such as books, notes, study aids, or other electronic, online, or digital devices in any academic exercise; as well as unauthorized communication of information by any means to or from others during any academic exercise.

**Fabrication and Falsification** - Intentional alteration or invention of any information or citation in an academic exercise. Falsification involves changing information whereas fabrication involves inventing or counterfeiting information.

**Multiple Submission** - The submission of substantial portions of the same academic work, including oral reports, for credit more than once without authorization from the instructor.

**Plagiarism** - Intentionally or knowingly representing the words, ideas, creative work, or data of someone else as one's own in any academic exercise, without due and proper acknowledgement.

Instructors should outline their expectations that may go beyond the scope of this policy at the beginning of each course and identify such expectations and restrictions in the course syllabus. When an instructor receives evidence, either directly or indirectly, of academic dishonesty, he or she should investigate the instance. The faculty member should then take appropriate disciplinary action.

Disciplinary action may include, but is not limited to the following:

- 1) Requiring the student(s) to repeat the exercise or do additional related exercise(s).
- 2) Lowering the grade or failing the student(s) on the particular exercise(s) involved.
- 3) Lowering the grade or failing the student(s) in the course.

**If the disciplinary action results in the awarding of a grade of E in the course, the student(s) may not drop the course.**

Faculty reserve the right to invalidate any exercise or other evaluative measures if substantial evidence exists that the integrity of the exercise has been compromised. Faculty also reserve the right to document in the course syllabi further academic honesty policy elements related to the individual disciplines.

A student may appeal the decision of the faculty member with the department chair in writing within five working days. Note: If, at any point in this process, the student alleges that actions have taken place that may be in violation of the Murray State University Non-Discrimination Statement, this process must be suspended and the matter be directed to the Office of Institutional Diversity, Equity and Access. Any appeal will be forwarded to the appropriate university committee as determined by the Provost.

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.

## **XI. NON-DISCRIMINATION POLICY AND STUDENTS WITH DISABILITIES:**

### Policy Statement

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 the Executive Director of Institutional Diversity, Equity and Access, 103 Wells Hall, (270) 809-3155 (voice), (270) 809-3361 (TDD).

### Students with Disabilities

Students requiring special assistance due to a disability should visit the Office of Student Disability Services immediately for assistance with accommodations. For more information, students should contact the Office of Student Disability Services, 423 Wells Hall, Murray, KY 42071. 270-809-2018 (voice) 270-809-5889(TDD).

## **XII. 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.