AGBUS 107 Course Outline as of Fall 2006

CATALOG INFORMATION

Dept and Nbr: AGBUS 107   Title: MATH APPS IN AGRICULTURE
Full Title: Mathematical Applications in Agriculture
Last Reviewed: 12/7/2009

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00   Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable
Grading: Grade Only
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly:

Catalog Description:
This course presents mathematical concepts using application problems dealing with the practical aspects of agriculture. Students master mathematical concepts needed for success in real and case study problems in topics such as crop and livestock production, landscaping, horticulture, and agribusiness.

Prerequisites/Corequisites:

Recommended Preparation:
Course Completion of ENGL 100 and Course Completion of MATH 151 OR Course Completion of EMLS 100 (or ESL 100) and Course Completion of MATH 151

Limits on Enrollment:

Schedule of Classes Information:
Description: This course presents mathematical concepts using application problems dealing with the practical aspects of agriculture. Students master mathematical concepts needed for success in real and case study problems in topics such as crop and livestock production, landscaping, horticulture, and agribusiness. (Grade Only)

Prerequisites/Corequisites:
Recommended: Course Completion of ENGL 100 and Course Completion of MATH 151 OR
Course Completion of EMLS 100 (or ESL 100) and Course Completion of MATH 151
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	MC	Math Competency	Fall 1981	Fall 2009
CSU GE:	**Transfer Area**		Effective:	Inactive:
IGETC:	**Transfer Area**		Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon completion of this course, the student will be able to:
1. Calculate fundamental math operations.
2. Design, manipulate, and solve equations and problems requiring
geometric applications and dimensional analysis.
3. Formulate and solve formulas and literal equations when dealing with
practical, physical, and theoretical problems related to agriculture.
4. Formulate and solve quantitative operations in the areas of
depreciation, efficiency, purity, sales, and mixtures.
5. Analyze, evaluate, and solve mathematical word problems pertaining to
price, profit, labor, value, and quantity.
6. Apply math concepts and calculations to a variety of agriculture-
related problems.

Topics and Scope:

I. Basic mathematics operations for agriculture applications
   A. Numerical operations
      1. fractions
      2. decimals
      3. percents
      4. ratios and proportions
      5. estimating
   B. Conversions
      1. from grams to kilograms to pounds

      2. milliliters to liters

      3. percentages to decimals

   C. Averages

II. Algebra fundamentals for agriculture applications

   A. Simplification of basic algebraic expressions

   B. Equations and their solutions

   C. Formulas and literal equations

   D. Solution of systems of equations

III. Dimensional analysis for agriculture applications

   A. Dimensional numbers

   B. Dimensional analysis and use of tables

   C. Word problems

   D. Geometric applications in agriculture

IV.Percent and agriculture applications involving percent

   A. Definition of percent and applications

   B. Agriculture applications

      1. mixtures

      2. parts per million

      3. percent production

      4. percent overrun

      5. interest rates

      6. salability

   C. Consecutive percents

      1. depreciation

      2. efficiency

      3. purity

      4. sales

   D. Irrigation

      1. dehydration and cost of irrigation

      2. run time calculations

      3. system layout calculations

   E. Fertilizers and their mixtures

   F. Soils

V. Geometric applications and dimensional analysis

   A. Geometric measures

   B. Dimensional analysis involving geometric and other measures

   C. Measurements: agriculture applications

      1. conversions

      2. special triangles

      3. perimeter and area

      4. volume

      5. land measurements

      6. degree of slope

      7. scale drawings

VI. Proportion and variation

   A. Ratio and proportion

   B. Variation

   C. Pearson's Square

   D. Correspondencies in geometry

VII. Mathematical applications to agriculture

   A. Crop production

      1. soil preparation calculations

    2. planting calculations
    3. harvest calculations
    4. storage calculations
    5. other applications problems
  B. Livestock production
    1. feeds
    2. medication administration
  C. Horticulture
    1. greenhouse and nursery
    2. turfgrass
    3. fruits and nuts
    5. vegetables
  D. Landscaping and landscape design
  E. Agribusiness and financial management
    1. marketing
      a. mark-up
      b. discounts
      c. other wholesale/retail marketing techniques
    2. machinery and equipment
    3. feed and general supplies
    4. agribusiness finances
      a. price
      b. profit
      c. labor
      d. value
      e. quantity
      f. determining interest
  F. Other physical applications

Assignment:

1. Reading in assigned text, 5-10 pages per week.
2. Problem sets including mathematical concepts, calculations, and agriculture applications such as:
  a. Fertilizer mixtures
  b. Geometric measures
  c. Agriculture and horticulture applications
  d. Dimensional analysis
    1. Field capacity
    2. Irrigation
  e. Soils, water and fertilizer application
  f. Acreage calculations
  g. Measuring land parcels, fields and farms
  h. Landscape construction calculations
  i. Animal health calculations
  j. Crop and livestock production
  k. Agribusiness
3. Quizzes (4 - 6); two tests; final examination.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems

Problem solving 40 - 60%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Problem solving.

Exams 40 - 60%

Other: Includes any assessment tools that do not logically fit into the above categories.

None

Other Category 0 - 0%

Representative Textbooks and Materials:
Agricultural Mathematics. Al-Hadad, Sabah. Kendall Hunt Pub. Co. 1994.
Mathematical Applications in Agriculture. Mitchell, Nina H. Delmar, 2004
Mathematics for Agriculture: Applied Problems in Mathematics for Agriculture. Rogers, Betty C. and Hokanson, Clifford. M. Vero Media Inc., 2000.