College of San Mateo
Course Outline

☐ New Course
☒ Update/No change
☐ Course Revision (Minor)
☐ Course Revision (Major)

Date: Nov. 16, 2006
Removed HBA Fall 2010

Department: ELEC **Number:** 232

Course Title: Advanced Electronics Mathematics **Units:** 1.0

Hours/Week: **Lecture:** 1 **Lab:** **By Arrangement:** 0

Length of Course

☒ Semester-long
☐ Short course (Number of weeks___)
☐ Open entry/Open exit

Grading

☒ Letter
☐ Credit/No Credit
☐ Grade Option (letter or Credit/No Credit)

1. **Prerequisite** (Attach Enrollment Limitation Validation Form.)

ELEC 231 with a grade of C or higher, or equivalent

2. **Corequisite** (Attach Enrollment Limitation Validation Form.)

None

3. **Recommended Preparation** (Attach Enrollment Validation Form.)

None

4. **Catalog Description** (Include prerequisites/corequisites/recommended preparation.)

In depth applications of algebra, trigonometry, logarithms and graphing as applied to amplifier, oscillator and microwave circuits. Transfers to CSU with successful completion of ELEC 231. (CSU)

5. **Class Schedule Description** (Include prerequisites/corequisites/recommended preparation.)

In depth applications of algebra, trigonometry, logarithms and graphing as applied to amplifier, oscillator and microwave circuits. Transfers to CSU with successful completion of ELEC 231. (CSU)

6. **Student Learning Outcomes** (Identify 1-6 expected learner outcomes using active verbs.)

Upon successful completion of the course, the student will be able to:

1. analyze and solve typical algebra problems utilizing recognized problem solving procedures;
2. plot a curve on X-Y graph paper of two or more variable and interpret the meaning of the data represented;

3. solve right triangle trigonometry problems and apply these techniques to alternative current voltaqe, current and phase relationships;
4. define the difference between common and natural logarithms;
5. relate common and natural logarithms to exponential calculations and describe how logarithms are a superior method to solve these calculations;
6. apply common and natural logarithms to electronics calculations, such as gain/loss and charge/discharge measurements;
7. define the j-operator in electronics calculations and how it is applied to electronics circuit analysis;
8. define and contrast rectangular and polar notation and how they relate to j-operator calculations;
9. apply the rules of algebra to solve complex network calculations in advanced circuit analysis;
10. apply the rules of algebra and trigonometry to both series and parallel resonance circuits

7. **Course Objectives** (Identify specific teaching objectives detailing course content and activities. *For some courses, the course objectives will be the same as the student learning outcomes. If this is the case, please simply indicate this in this section).*

Same as above

8. **Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, you may attach a sample course syllabus with a timeline.)

a. Review of Algebra utilizing recognized problem solving procedures, including: linear, 2nd degree and quadratic equations; exponents and radicals; factoring; fractional equations; reduction of terms and expressions to simplest terms; and solving for values embedded within an equation (objective 1)
b. Review of X-Y graphing techniques using two or more variables and interpretation of the data represented (objective 2)
c. Review of trigonometric functions as applied to alternating current electronics circuits (objective 3)
d. Definition of common and natural logarithms and their practical applications to electronics circuits (objectives 4, 5, 6)
e. Analysis of complex alternating current circuits, using j-operators, rectangular and polar notation, and right triangle trigonometry (objectives 7, 8, 10)
f. Solution of complex network calculations in advanced electronic circuit analysis (objective 9)

9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Include examples of out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills.)

Includes lecture and group discussion relating to the topics being considered. Weekly reading and homework will be assigned.

10. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Evaluation will be based on satisfactory performance on homework activities, section tests and a final exam.

11. Representative Text Materials (With few exceptions, texts need to be current. Include publication dates.)

Deem, Electronics and Computer Mathematics. Eighth Edition. Copyright 2006.

Prepared by: _____
(Signature)

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