King Saud University
College of Applied Medical Sciences
Department of Biomedical Technology
BMT222   Applied Mathematics for BMT (I)   2 (2-0-0)

Current Instructor: Prof. Mohamad Rizon Juhari
Course Coordinator: Prof. Mohamad Rizon Juhari
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Textbook(s) and/or Other Required Materials: Primary: Peter K.F. Kuhfittis, **"**Basic Technical Mathematics with Calculus",   Brooks/Cole Inc.

Course Description (catalog): This course continues the coverage of a Review of some fundamental concepts in algebra, Solution of simultaneous equations using determinants etc., Factoring and fraction, Quadratic equations and quadratic formula, Trigonometric functions and identities, Logarithmic and exponential functions and their graphical representation, vectors and oblique triangles, Complex numbers, Derivatives of algebraic and trigonometric functions and application of differentiation, Maclaurin Series, Euler's identity.

Prerequisites: None
Co-requisite: None
Course Type: Mandatory

Course Learning Outcomes:
Upon completing BMT222, students should have the following capabilities:
1. Students are knowledgeable of the fundamental concepts in algebra, Solution of simultaneous equations using determinants
2. Students are knowledgeable of using the Laplace Factoring and fraction, Quadratic equations and quadratic formula
3. Students demonstrate of using the Trigonometric functions and identities, Logarithmic and exponential functions and their graphical representation
4. Students demonstrate an ability to use Vectors and oblique triangles, Complex numbers.
5. Students demonstrate an ability to use Derivatives of algebraic and trigonometric functions and application of differentiation, Maclaurin Series, Euler's identity

Student Outcomes Covered by Course:
a. an ability to select and apply the knowledge, techniques, skills, and modern tools of biomedical technology to include the application of circuit analysis, analog and digital electronics, microcomputers, biomechanics, biomedical instrumentation systems, and safety in the building, testing, operation, and maintenance of biomedical equipment.
Understanding the fundamental concepts in algebra, Solution of simultaneous equations using determinants

b. an ability to select and apply a knowledge of mathematics, chemistry, physics, and biological sciences, engineering, and technology to building, testing, operation, and maintenance of biomedical equipment and the ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of biomedical systems.

Ability to understand the Laplace Factoring and fraction, Quadratic equations and quadratic formula, the Trigonometric functions and identities, Logarithmic and exponential functions and their graphical representation. Ability to use Vectors and oblique triangles, Complex numbers.

c. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes.

d. an ability to analyze, design, and implement biomedical systems, components or processes for broadly-defined engineering technology problems appropriate to program educational objectives.

e. an ability to function effectively as a member or leader on a technical team.

f. an ability to identify, analyze, and solve broadly-defined biomedical technology problems. Ability to use Derivatives of algebraic and trigonometric functions and application of differentiation, Maclaurin Series, Euler's identity

g. an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature.

h. an understanding of the need for and an ability to engage in self-directed continuing professional development.

i. an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity.

j. a knowledge of the impact of engineering technology solutions in a societal and global context and an understanding of the clinical application of biomedical equipment.

k. a commitment to quality, timeliness, and continuous improvement.

Major Topics covered and schedule in weeks:
1. A Review of some fundamental concepts in algebra
2. Solution of simultaneous equations using determinants etc.
3. Factoring and fraction
4. Quadratic equations and quadratic formula
5. Trigonometric functions and identities
6. Logarithmic and exponential functions and their graphical representation.
7. Vectors and oblique triangles
8. Complex numbers
9. Derivatives of algebraic and trigonometric functions and application of differentiation, Maclaurin Series, Euler's identity