King Saud University
College of Applied Medical Sciences
Biomedical Technology Department

BMT226: Electrical Skills I 2 (1-1-0)

Current Instructor: Mr. Mostafa Hamid Mohamed and Dr Ali S. AlMejrad
Course Coordinator: Dr Ali **S.** AlMejrad
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Textbook(s) and/or Other Required Materials: Selected chapters and notes from different sources.

Course Description (catalog): This course covers basic hand tools and measuring and testing equipment, basic electronic components. Circuit construction techniques, schematic and basic layout diagrams. Mounting components, component testing and continuity checks.

Prerequisites: BMT211
Co-requisite: None
Course Type: Mandatory

Course Learning Outcomes: The global content of the course will:

- Introduce students to basic hand tools and measuring and testing equipment.
- Introduce students to skills dealing with the basic electronic components: passive and active basic semiconductors
- Enable students to understand basic circuit construction techniques, schematic and layout diagrams.
- Enable students to practice the skills of mounting components, component testing and continuity checks.
- Enable the students to apply all learned skills in some basic projects.

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.
Covered

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.
Covered

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

d. an ability to analyze, design, and implement biomedical systems, components or processes for

broadly-defined engineering technology problems appropriate to program educational objectives.

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

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f. an ability to identify, analyze, and solve broadly-defined biomedical technology problems.

Covered

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.

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

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

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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.

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

Major Topics covered and schedule in weeks:

1. Hand tools W1
2. Measurement and test equipment W2
3. Basic knowledge of electricity and electronics W3-4
4. Passive components W5-6
5. Active components : basic semiconductors W7-8
6. Circuit construction techniques: schematics diagrams W9
7. Circuit construction techniques: layouts diagrams W10
8. Rectifier circuit W11
9. Smoothing circuit W12
10. Stabilizing circuit W13