



King Saud University
College of Applied Medical Sciences
Biomedical Technology Department

BMT323: Electric Skills II 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 review on tools; measuring and testing equipment .Advanced electronic components. Advanced circuit construction techniques, schematic and layout diagrams. Making printed circuit boards.

Prerequisites: BMT226

Co-requisite: None

Course Type: Mandatory

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

- Review the tools; measuring and testing equipment.
- Introduce students to skills dealing with the advanced electronic components: semiconductors, amplifiers, integrated circuits and other support devices
- Enable students to apply the advanced circuit construction techniques, schematic and layout diagrams.
- Enable students to practice making the printed circuit boards
- Enable the students to apply all learned skills in some 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 through practical session.

- 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.
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.

- 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. Review on tools; measurement and test equipment W1
2. Advanced knowledge of electronics W2
3. Semiconductors W3-4
4. Amplifiers W5-6
5. Integrated circuits W7-8
6. Relay Driving basics W9
7. AC-DC power supply W10
8. Linear power regulator W11
9. Advanced circuit construction techniques: printed circuit boards W12-13