King Fahd University of Petroleum & Minerals
College of Chemicals and Materials, Bioengineering Department
BIOE 312: Bioinstrumentation Lab
Syllabus - Term 25A

Catalog Course Description: Signal conditioning, amplification, and filtration. Principle of circuit design of some biomedical measurement devices: ECG, EMG, EOG, and EEG. Oscillometric blood pressure measurement. Photoplethysmogram measurement. Respiratory ventilation detection. Pulse meter and Body impedance detection. Doppler ultrasound blood velocity measurement. Transcutaneous electrical nerve stimulates measurement. Respiration flow/vital capacity measurement.
Course Prerequisite: EE237 **Co-requisite:** BIOE 311

Textbook: Lab Manual and KH-730 Manual.
Instructors: Dr. Adullah Abdulhameed/ abdullah.abdulhameed@kfupm.edu.sa; Eng. Tahani Alfareed/ tahani.fareed@kfupm.edu.sa
Office Hours: By appointment.

Course Learning Outcomes:

1. Conduct BIOE experiments using appropriate measurement techniques
2. Present accurate, well-organized experimental results with proper validation.
3. Interpret experimental results and conclude using engineering judgment
4. Use modern technologies to communicate ideas and findings in an effective manner
5. Produce high-quality engineering reports that include accurate explanations, and comprehensive scientific documentation.
6. Demonstrate the ability to understand and respond to questions thoughtfully and accurately during presentations.

Course Topics:

Week#	Experiment
1	No lab
2	Electrocardiogram measurement
3	Electrocardiogram measurement / Introduction to LabVIEW
4	Electromyography measurement
	Quiz #1
5	No lab
6	Electrooculography measurement
7	Electroencephalogram measurement
8	Oscillometric blood pressure measurement
9	Photoplethysmogram measurement
	Quiz #2
10	Respiratory ventilation detection/ Transcutaneous electrical nerve stimulate measurement.
11	Pulse meter and Body impedance detection
12	Doppler ultrasound blood velocity measurement.
	Quiz #3
13	Respiration flow/vital capacity measurement
14	Safety analyzer
15	Final Exam

The Grading Policy:

Quizzes	**20%**
Lab Reports	**25%**
Prelabs	**10%**
Project	**10% (W#14)**
Final exam (Theory + practical)	**35% (W#15)**

Important Notes:

- Each student must be vigilant of Academic Integrity at all times.
- Only official excuses obtained from the Deanship of Students Affairs are accepted.
- If a student reaches the third unexcused absence, it will result in a DN grade.
- For every unexcused absence, the prelab and the report marks will be zero for the given experiment.
- Excuses for officially authorized absences must be presented no later than one week following the resumption of class attendance.
- No makeup will be accommodated for missed quizzes or exams.
- You must submit your report via Blackboard by the due date. Late reports will not be accepted.
- You must return everything to its place before leaving the lab. Marks will be deducted for bad behavior or misuse of lab equipment.
- Make sure that all materials that you submit are your own. If you copy and paste (including images) or copy text from the Internet or any other source (unless you cite the sources), that is considered plagiarism. Other proper action will be taken that may eventually lead to the transfer of the student to student affairs.
- If you directly provide/supply solutions to others in the course or take solutions supplied by others and submit them as your own, that is considered cheating.
- The instructor reserves the right to modify the course outline and policies mentioned in this syllabus at any time during the semester.
- Refer to the registrar website for the academic calendar and important deadlines: https://registrar.kfupm.edu.sa/academic-calendar/current-semester/