



FED 101: Fundamentals of Engineering Design: For Biomedical Engineers

2 Credits,

3 Contact hour

Instructor: Alev Erdi, PhD,

Course Coordinator: Alev Erdi Ph.D.

Textbook:

MATLAB Programming for Engineers, 4th Ed., Stephen J. Chapman – ISBN: 978-0495244493

Course Description:

Teams of students work on open-ended engineering projects, which introduce them to real-world design problems in biomedical engineering. Topics covered include introduction to basic engineering design elements, information literacy, processes, measurements, product and project design and development with hands-on experiments. Technical writing and oral presentation, along with project management skills, are emphasized.

Prerequisites:

None

This is a required course All BME Students

Course Learning Outcomes (CLO):

1. Understand the basic engineering design and development process and how to apply that knowledge to create a robot to perform a relevant surgical procedure, while taking into account medical issues relevant to biomedical engineering.
2. Define a research topic, locate and retrieve information, and employ principles consistent with the ethical and legal uses of information.
3. Demonstrate a working Prototype.
4. Demonstrate effective communication skills: Gain experience with research and technical writing and oral presentations

5. Work in Multi-disciplinary teams with in BME: Learn to work and communicate effectively with peers on multi-disciplinary teams to attain a common goal.

Student Outcomes:

Student outcome 2- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

Related CLO – 1, 3

Student outcome 3 - an ability to communicate effectively with a range of audiences.

Related CLO – 2, 4, 5

Student outcome 5- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

Related CLO – 2, 4, 5

Program Specific Criteria C - the capability to apply advanced science and engineering to solve the problems at the interface of engineering and biology

Related CLO – 1

Course Topics: An introduction to Engineering Design, MATLAB Programing, the LEGO EV3 system, Simulink for EV3 Programming