

Medical Devices and Equipment

BM607

Instructor: Dr. Ashish Sahani

Course Overview

- Aim is to get develop a general understanding of different medical devices employed across the different branches of medicine.
- Develop confidence to design complete systems.
- Develop appreciation for standards, regulatory and safety issues involved with medical devices.
- This is a highly interdisciplinary course.

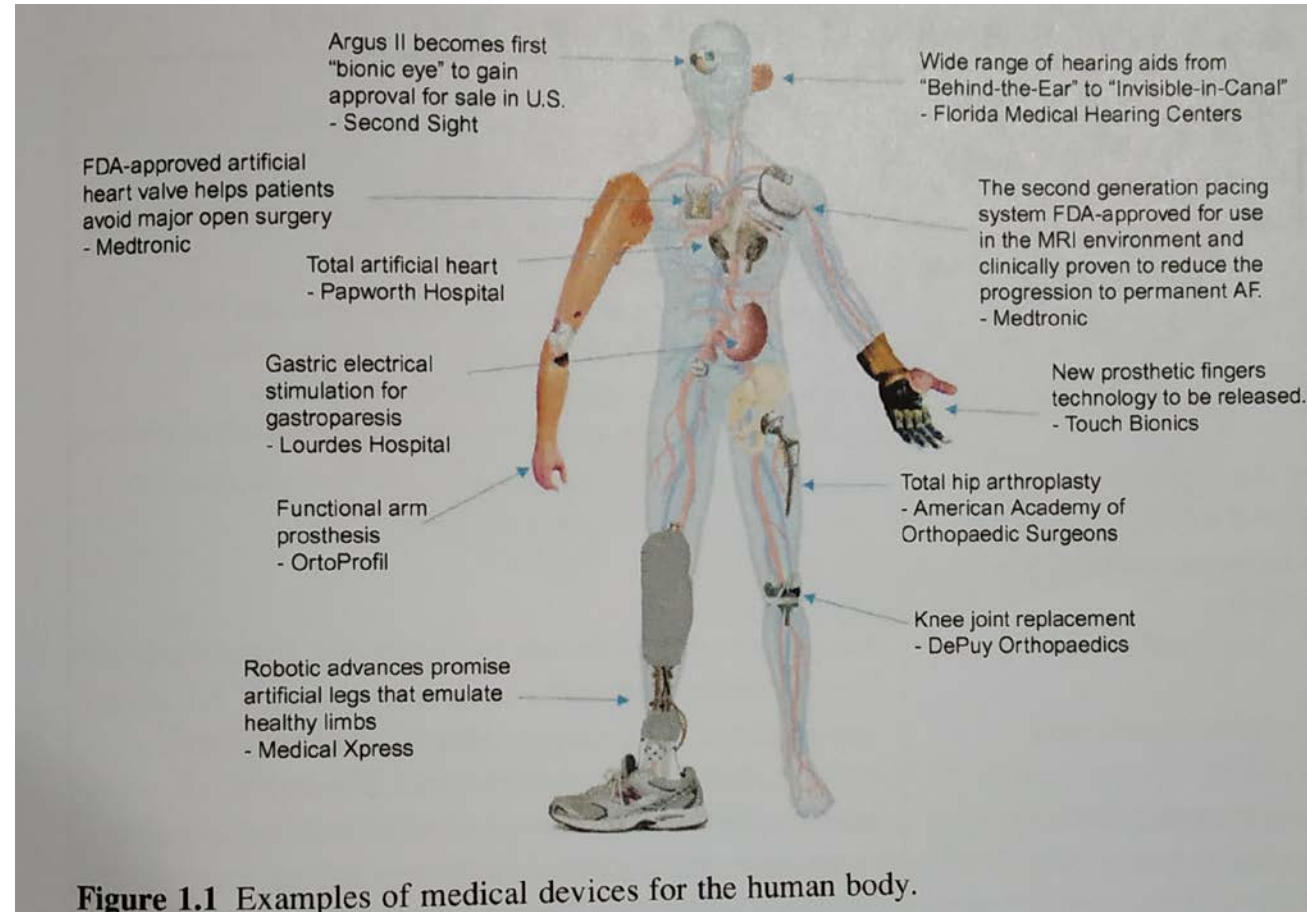
Course Plan

- I plan to take two lectures per week and one student presentation session every week.
- We would focus on few devices. It is impossible to cover everything!
- Course would be more application oriented. Means we shall have intensive lab and project.
- Theory and experiments may not be as tightly coupled as BM605.
- We shall again aim for another conference paper. But this time you have to come up with the problem statements.

Grading

- You are required to make 4 presentations based on scientific literature. Each presentation would carry 5 marks. (20 marks)
- Lab performance would carry 20 marks (2 marks for each lab). I will evaluate the lab records.
- Project proposal would carry 5 marks (Has to be made before mid-sem). Project execution along with IEEE paper would carry 20 marks.
- Mid-Sem would be 15 marks.
- End-Sem 20 marks.

Some Examples of Implantable Devices



WHO Definition

WHO GHTF
SGI

any instrument, apparatus, implement, machine, appliance, implant, reagent for *in vitro* use, software, material or other similar or related article, intended by the manufacturer to be used, alone or in combination, for human beings, for one or more of the specific medical purpose(s) of:

- diagnosis, prevention, monitoring, treatment or alleviation of disease,
- diagnosis, monitoring, treatment, alleviation of or compensation for an injury,

- investigation, replacement, modification, or support of the anatomy or of a physiological process.
- supporting or sustaining life,
- control of conception,
 - disinfection of medical devices,
 - providing information by means of *in vitro* examination of specimens derived from the human body;

and does not achieve its primary intended action by pharmacological, immunological or metabolic means, in or on the human body, but which may be assisted in its intended function by such means [2].

What are the Broad Set of Skills Required?

- Biology and Physiology
- Mechanics and Materials
- Analog and Digital Electronics
- Signal processing, Image processing, and Pattern recognition
- Programming and AI
- Design and Simulation