	Academic Year:	2019/2020	Term:	Spring 2020	
	Department:	Biomedical Eng. and Systems	Course Code:	(SBE 303B)	
	Date:	May 5th 2020	Course Title:	Medical Electronics and Measurements (MC part)	
	Duration	33 days **Submission due:** June 2nd- 6 PM (Cairo Time)			

Research Project
(Digital Filtering using C8051F020)

Description

In groups (3-5 members), you are requested to design a real-time digital filtering module using the C8051F020 kit with the following requirements:

- The module receives noisy analog signals (up to 2) simultaneously via its channels.
- The module shall have, at least, 3 types of digital filters including low-pass (Fc=150 Hz), high-pass filter (1 Hz), and notch (50 Hz) filters.
- Users have the capabilities to select the type of digital filters applied to signals received from each channel.
- After filtration, digital signals shall be converted into analog again and accessed via the C8051F020 pins.
- Please make sure you apply safety precautions to avoid burning any component while interfacing with external analog signals.

Deliverables:

- A working simulation mimicking real scenario with source codes.
- A report including:
  1. Circuit schematic and diagrams.
  2. Design description including the modes of ADC and/or DAC, timers, …
  3. Brief description for the digital filters used along with equations.

Compress your project materials and send to the following email shrief.s.abdelazeez@eng1.cu.edu.eg. Don't forget to include your names. Title of the email shall be "Research Project SBE303B"

The evaluation criteria will be based on how much you achieve the requirements, your understanding reflected in the design, and deliverables.

Should you have any question, please do not hesitate to contact me or Eng. Shrief.

Good Luck 😊
Ahmed M. Ehab Mahmoud