Dear Students,
Second mid-term will be project based. Each group, consisting of maximum three students, must construct one of the following projects. Deadline is 13 May 2016.

Project 1. Analog Voltmeter
This is a simple voltmeter having an analog needle as an indicator.
- Each part must be designed and constructed by students.
- Your device must be able to measure and well calibrated for the voltage range [0 V, 16 V].

Project 2. Basic Telescope
The telescope is used to view distant objects.
- Each part must be designed and constructed by students.
- The telescope contains only one positive thin lens which can be a simple spherical eye-glass whose power can be $P = +2.5$ Diopter for example (focal length is given by $f = 1/P = 40$ cm). You can get the eyeglass from any optician shop.
- The telescope must have its own case and tripod.
- Optical data must be collected by a Web-cam to visualize the image on a PC or laptop.
- Web-cam position must be adjustable.
- Note that it is strongly suggested that the Web-cam lens can be removable from its case.

P3. Basic Microscope
The microscope is used to magnify small objects.
- Each part must be designed and constructed by students.
- The microscope contains only one positive lens whose focal length must be less than $f = +1$ cm. You can get the lens from a simple laser pointers or from a second hand photograph machine.
- The microscope must have its own case and illumination.
- Optical data must be collected by a Web-cam to visualize the image on a PC or laptop.
- Web-cam position must be adjustable.
- Note that it is strongly suggested that the Web-cam lens can be removable from its case.