

PROJECTS FOR BONUS
ElecEng 2FL3
Prof. Nikolova
Winter 2020

INSTRUCTIONS AND GUIDELINES

OBJECTIVE: To encourage work with hardware, experiential learning and critical thinking among engineering students in support of their education in the theory and practice of electromagnetism.

NOTE: The participation in the Practice Project component is NOT MANDATORY. Students who participate will receive a bonus toward their final course grade. Thank you to all participants and their feedback on this activity!

TIMELINE AND PROCEDURES

TASK	TIMELINE
1. Announcement to students in class, posting on course webpage and A2L.	Feb. 3 to Feb. 5, 2020
2. Project proposals and feedback from instructor and TAs.	Feb. 10 to Feb. 17, 2020
3. Final modifications and adjustments to projects if necessary.	Feb. 17 to March 16, 2020
4. Work on projects, preparation of videos and posting on YouTube.	March 16 to Apr. 7, 2020
5. Evaluation of videos by instructors.	Apr. 8 to Apr. 10, 2020

DETAILED INSTRUCTIONS

A. Subject and Scope of the Projects

- The projects must involve *practical work resulting in a hardware demonstration*. Software, reviews, theoretical developments and discussions are out of scope.
- The hardware must demonstrate the conversion of electrical, or magnetic, or electromagnetic energy into some sort of mechanical motion (translational, rotational, or vibrational) which must be clearly visible during the demonstration. The reverse transformation of mechanical motion into any visible electromagnetic effect is equally suitable.
- Reproducing a demonstration already posted on the web is admissible.

B. Maximum Bonus Mark and Team Work

- The maximum bonus mark is 5% toward the course final grade.
- Team work is allowed. *However*, the bonus awarded to a project will be split equally among the team members.

C. Time Commitment by Students

- The students are expected to spend anywhere between 1 and 2 days on this activity.

D. Submitting Bonus Project Proposals

- Submit your proposals through A2L. The drop box for proposal submissions is named ***Bonus Project Proposals – Initial***.

- **The deadline for proposal submission is FEBRUARY 10 MONDAY AT 5 PM.** The drop box will remain open until midnight on that day. Since proposals are not marked, there is no penalty for late submission.
- No proposals will be accepted after the drop box closes.
- Describe briefly your proposed project in less than 250 words. Schematics, drawings, and sketches are encouraged.
- If you plan to reproduce a demonstration already posted on the web, please provide the link.
- The recommended format of the proposals is PDF.
- For team proposals, only one team member can submit the proposal, which must clearly identify ALL team members with their names and student IDs.

E. Feedback from Instructors

- The instructors will review the project proposals and will provide feedback through A2L by the deadline specified in the Table above.
- The feedback will inform the students of the maximum bonus mark their proposed project can bring. This mark is referred to as *estimated bonus mark* (EBM). The EBM will be clearly stated in the instructors' feedback on A2L. EBM can be anywhere between 0% and 5%.
- The students are free to change or modify their project if they wish to improve their EBM. Modifications must be completed and re-submitted through the A2L drop box ***Bonus Project Proposals – Revised*** by the respective deadline. Re-submission of bonus project proposals, which are NOT changed or modified, to this drop box is not necessary.

F. Demonstration of Completed Project

- Project demonstration will be done through a recorded video. The length of the video is limited to FOUR MINUTES.
- The video must show at least for a brief period the names and student ID of the participant(s) embedded as text. Alternatively, in the beginning of the video, the participant(s), whose face(s) must be clearly visible, can introduce themselves with their name(s) and student IDs.
- The video must be posted on *YouTube* so that it can be easily accessed by the instructors. It is strongly recommended that the “private” or “unlisted” mode of *YouTube* is used. We will open a submission drop box on A2L to all participants so that they can provide the link to the video in a secure manner.
- The submission document must be submitted as a PDF to the A2L drop box ***Bonus Project Submission***. It should include public/private link of the video as well as the names and student numbers of the team members.
- Please ensure that the private video links are working by using a computer not logged into your *YouTube* account. A submission with a video link that does not work will be ignored leading to a bonus mark of zero.

G. Evaluation

- Upon successful demonstration, the project will be awarded the full EBM.
- If the video does not allow to identify the participants, the project will be awarded 0% bonus.
- If the video does not demonstrate clearly the results promised in the project proposal, the bonus mark will be less than the EBM as per the discretion of the instructors.
- The projects will be evaluated as per the following rubric: 20% for an explanation of how the project relates to the course and what it demonstrates, 40% for the explanation of how the setup works, 20% for the quality of the demo's hardware.

H. Point of Contact

- Have questions? Please email the **Project Coordinator**:
Cyrille Goldstein goldstec@mcmaster.ca
with a copy to Prof. Nikolova, nikolova@ieee.org.
- Have suggestions for improving this activity? Please email Prof. Nikolova, nikolova@ieee.org.

I. Examples with Videos of Suitable Demonstrations

NOTE: These projects can bring you an EBM anywhere between 2% and 5%.

<http://rimstar.org/equip/electroscope.htm>

<https://www.youtube.com/watch?v=9EiHz5zRRYI>

<https://www.youtube.com/watch?v=HcPDc23ZLEs>

<https://www.youtube.com/watch?v=hX7TKEBGUXk>

<https://www.youtube.com/watch?v=eIFUJNodXps>

<https://www.youtube.com/watch?v=Ux-QGhbJOA0>

<https://www.youtube.com/watch?v=WKklyuzghQg>

<https://www.youtube.com/watch?v=Qlw3C84a5zM>

<https://www.youtube.com/watch?v=rop6JIOY1H0>

https://www.youtube.com/watch?v=VMdS65_E_X4

J. Safety

Project Participants will be working at home without supervision. Therefore, they must be mindful of safety every time they work with electricity. Many videos on the web involve high-voltage sources. Do NOT pursue projects involving voltages higher than 60 V as these pose a risk of injury or an unpleasant shock. DO NOT COMMENCE WORK ON THE PROJECT BEFORE YOU RECEIVE APPROVAL FROM THE INSTRUCTORS! We will do our best to provide you with our first round of feedback as soon as we receive your proposals and no later than the date indicated in the Table above.