# General Physics Laboratory I

## Week 10: Report Guideline

Experiment 9. Faraday's Law of Induction

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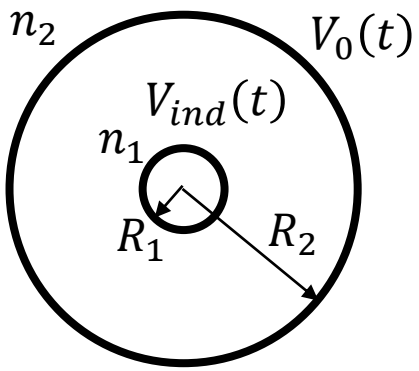
# General Report Guideline

1. You can use either Korean or English.
2. I suggest you to write a report with a language with which you can write rigorously. (There is no need to be shy about writing in Korean)
3. However, do not mix two languages. (ex: newton's law는 다음과 같이… → X)
4. No more than 5 pages. The font size must be greater than 9 pts.
5. Only *.doc, *.docx, *.hwp extensions are allowed.
6. Do not make a cover page.
7. **Do not repeat the details in the manual.**
8. Make the report simple but it should contain rigorous answers. / **You should merge different data in one plot.**
9. **If you suggest the origin of the error, please show your systematic justification. (No explanation → No points)**
10. You have to cite every source of theory and information beyond the manual.
11. Clarify a theme and a purpose of each part.

# 9. Faraday's law of induction

1. Abstract (5pts, < 300 words)
2. Introduction (10pts): Show your conceptual understanding about the subject.
3. Theoretical Background (10pts)
   - ✓ (5pts) Give general equation of faraday's law of induction and explain it.
   - ✓ (5pts) Give equation for the experimental situation. Derive the relationship between turn ratio, frequency, induced emf.

$\frac{n_1}{n_2}$ $f$ $V_{ind}$




4. Methods (5pts): Please write down the experimental parameters which you used in the report.
5. Results (20pts)
   - ✓ (5pts) Plot the traces of output voltage (sine, triangle, rectangle) and their induced EMF signals each. (See the poster at the end of the video lecture)
   - ✓ (5pts) Choose one period of the EMF signal of 2000 turn detector coil from the triangular output voltage with 1000 Hz. → Find an amplitude.
   - ✓ (10pts) Repeat for the frequencies 1500 – 3000 Hz (2000 turn detector), and 2000 – 4000 Hz (400 turn detector). → Summary with a proper table.
   - ✓ Each graph should include **the axis labels**. When you introduce trendlines, you should show **equations and R square values**.
6. Discussion (30pts)
   - ✓ (10pts) Plot EMF vs frequency graphs (2000, 400 turn) like the poster shown at the end of the video lecture.
   - ✓ (10pts) Are the graphs linear? If not explain why. If you suggest an error mechanism, you should calculate how much is the error with the mechanism.
   - ✓ (10pts) If we change the generating coil from 200 turn to 1000 turn, how the experimental results will change?
   - ✓ (Additional) Discuss about your own question and analysis.
7. Conclusion (10pts): Summarize the report effectively.
8. References (10pts)