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# ELEC 311: Electromagnetic Fields and Waves

September 2024

## Instructor:

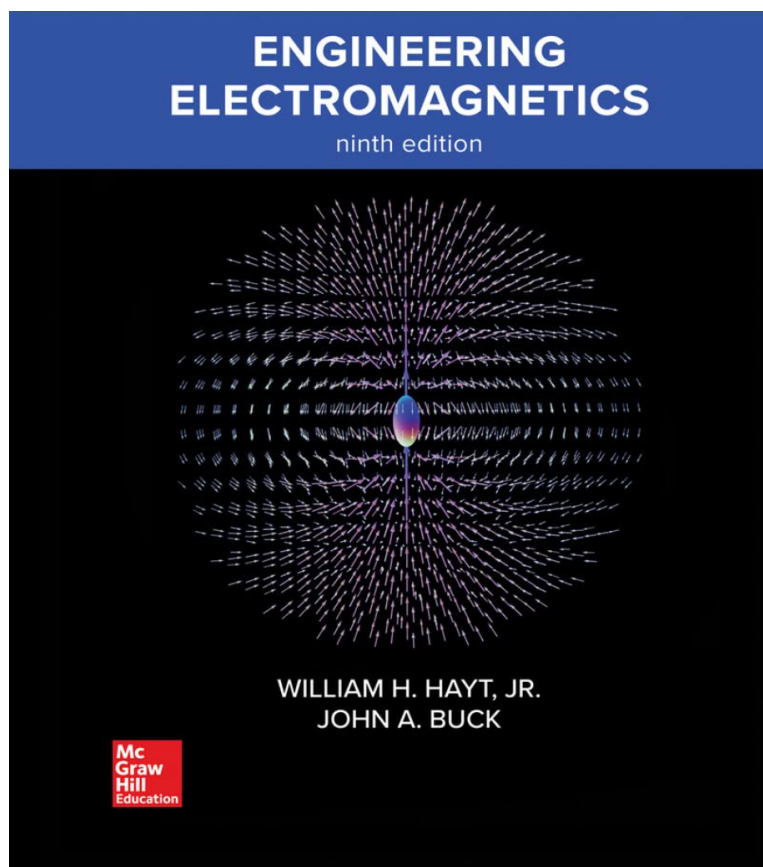
Prof. Konrad Walus

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## Textbook:

Engineering Electromagnetics, by William H. Hayt, Jr. and John A. Buck (Ninth Edition)



## Office hours:

TAs will be available for office hours before each assignment and test

Prof. Walus office hours –TBD

## Teaching Assistants:

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### Allocation of Grades:

On-Time Attendance	- 5%
Clickers Responses	- 5%
3 Quizzes	- 15%
3 Assignments	- 10%
Midterm	- 25%
Final Exam	- 40%
<b>Total</b>	<b>- 100%</b>

### Piazza

We will use the Piazza system to allow students to ask questions to each other and to the TA's. To sign up visit the following website and use the **Access Code bdf2**:

[https://piazza.com/the\\_university\\_of\\_british\\_columbia/fall2024/bdf2](https://piazza.com/the_university_of_british_columbia/fall2024/bdf2)

### Cloud Clicker:

<https://join.iclicker.com/XLUX>



### Topics

#### Review:

- Vector Analysis
- Electric Fields
- Magnetic Fields
- Maxwell's Equations

#### Transmission Lines

- Transmission Line Equations
- Characteristic Impedance
- Propagation and Losses
- Transient Analysis
- Standing Waves
- Smith Charts
- Matching

## **The Uniform Plane Wave**

- Wave Propagation in Free Space
- Propagation in Dielectrics
- Poynting's Theorem and Wave Power
- Skin Effect
- Polarization

## **Plane Wave Reflection and Dispersion**

- Reflection with Normal Incidence
- Boundary Conditions
- Standing Waves
- General Propagation and Reflection
- Index of Refraction
- Snell's Law
- Reflection/Transmission Coefficient
- Dispersion

## **Wave Guides**

- Parallel Plate Waveguide
- Comparisons to Transmission Lines
- TE and TM modes
- Cutoff Frequency
- Wave Motion and Velocity

## **Academic integrity**

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating will result in a mark of zero on the assignment or exam and more serious consequences may apply when the President's Advisory Committee on Student Discipline assesses the matter. Careful records are kept in order to monitor and prevent recurrences.

Link to the relevant UBC Calendar section:

<https://vancouver.calendar.ubc.ca/campus-wide-policies-and-regulations/academic-honesty-and-standards>