



ENGR-065: Circuit Theory Lecture 0: Introduction

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Figure 2: UAV-mobile sensing system above eddy covariance tower in Alaskan peatland bog.



Methane sniffing drones



Introduction

Contact Info and Office Hours

Name	Email	Office Hours
Derek Hollenbeck	dhollenbeck@ucmerced.edu	Thur: 2:30-4:30pm
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Introduction

This course has

- 24 lectures and 2 reviews (describe in detailed in the syllabus)
- 10 labs (Create teams, and submit lab reports in Labs/Assignments/CatCourses before due dates)
- 6 Homeworks (2 assignments per homework)
(Complete on papers with your name, the homework number on the top of the first page. The size of papers is letter size of 8.5 by 11 inches. The papers can have strips, grids, or are just blank. Upload PDF to Assignments/Assignments/CatCourses before due dates)

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Introduction

- 5 pop quizzes (5 multiple-choice questions, 5 minutes, randomly give in class, take on Quizzes/CatCourses)
- 2 quizzes (10 multiple-choice questions, 30 minutes, give at the end of class, will announce on CatCourses, in class, take on Quizzes/CatCourses)
- 1 midterm exam (Multiple-choice and free-response questions, June 20 or 22, 75 minutes, in class, take on Quizzes/CatCourses)
- Final exam (Multiple-choice and free-responses, Aug 12th, 11:30 pm – 2:30 pm in class, take on Quizzes/CatCourses)

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Introduction

The lectures will cover:

- *Three laws:*
 - Ohm's law
 - Kirchhoff's current law (KCL)
 - Kirchhoff's voltage law (KVL)
- *Four quantities:*
 - current,
 - voltage
 - power
 - energy

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Introduction

- *Five basic ideal circuit elements:*
 1. Resistors,
 2. Capacitors,
 3. Inductors,
 4. Current sources, and
 5. Voltage sources
- *Six circuit analysis techniques*
 1. Series and parallel combinations or simplifications
 2. Kirchhoff's current and voltage laws, and Ohm's law
 3. The node-voltage and mesh-current method
 4. The source transformation
 5. The Thévenin and Norton equivalents
 6. The superposition (linear circuits)

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Introduction

- *One mathematical tool:*
 - Laplace Transform
- *All above topics will be applied into*
 - DC and AC circuits
 - Transient and steady-state responses of circuits (for circuits having inductors and capacitors)

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Questions

