# ELEC2420 Basic Electronics

<table>
<thead>
<tr>
<th><strong>Course Code:</strong></th>
<th>ELEC2420</th>
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<tbody>
<tr>
<td><strong>Course Title:</strong></td>
<td>Basic Electronics</td>
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<tr>
<td><strong>Required Course Or Elective Course:</strong></td>
<td>Required</td>
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<td><strong>Terms Offered (Credits):</strong></td>
<td>Fall (3 credits)</td>
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<td><strong>Faculty In Charge:</strong></td>
<td>Wing-Hung Ki</td>
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### Pre/Co-Requisites:
- Pre-requisites: MATH1014 / MATH1020 / MATH1024
- Co-requisites: PHYS1112 / PHYS1152

### Course Structure:
- Lecture – 2 1.5-hour lectures per week; Lab – 3 2-hour lab sessions per semester
  (1-hour tutorials are held on the weeks with no lab sessions)

### Textbook/Required Material:

### Bulletin Course Description:
1. Required course for BEng in Mechanical Engineering
2. Basic electronic concepts and components; DC and transient analyses of analog electronic circuits; operational amplifiers and circuits; digital electronics includes binary number systems, Boolean algebra, and combinational and sequential logic.

### Course Topics:
1. Basic electronic components such as resistors, capacitors and inductors
2. Basic DC analysis such as KCL, KVL, and equivalent circuits
3. Transient analysis of first order circuits
4. Operational amplifiers and circuits
5. Binary number systems
6. Fundamentals of Boolean algebra
7. Combinational logic
8. Sequential logic

### Course Objectives:
1. Basic training for MECH students in analog and digital electronics to partially fulfill Program Objectives.

### Course Outcomes:
On successful completion of this course, students will be able to:
- A. recognize basic concepts of electronic components and circuits;
- B. analyze DC and transient behaviors of electronic;
- C. recognize basic logic functions and logic gates;
- D. analyze and design combinational and sequential logic circuits;
- E. employ electronic instruments to perform.

### Assessment Tools:
- **Learning activities:**
  - **Lectures:**
    Introduce key concepts and theories, and teach analysis skills with worked examples. (A-D)
  - **Labs and Lab briefings:**
    1. Learn to use electronic instruments; (E)
    2. Learn to analyze, design and debug analog and digital circuits. (E)
- **Assessment:**
  - Homework sets, pop-up quizzes, midterm and final examinations: to test whether students have achieved outcomes A-D.
• Lab performance and lab reports: to test whether students have achieved outcome E.