

# EE1002

## Principles of Electronic Engineering

<http://www.cityu.edu.hk/ug/current/course/EE1002.htm>

# Teaching Staff

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# Objective

This course is aimed at providing students with an understanding of the concepts, impacts, and basic principles of electronic engineering.

# Course Intended Learning Outcomes

1.	<b>Describe the basic principles and characteristics of charge transport in passive and active electron devices.</b>
2.	<b>Apply Kirchhoff's laws to simple circuit analysis.</b>
3.	<b>Recognize the importance of integration technology and device downsizing on the development of modern electronics.</b>
4.	<b>Identify different bands of the electromagnetic spectrum and the corresponding applications.</b>
5.	<b>Describe the basic properties and the applications of electromagnetic waves.</b>
6.	<b>Analyze the propagation of electromagnetic waves in space or media for communication applications.</b>

# Keyword Syllabus

## **Charges and devices**

Atomic structure and electric charge, conductors, insulators, and semiconductors, electric field and magnetic field, electric current, resistance, potential, Ohm's law, series and parallel networks, Kirchhoff's laws

Charge carriers and charge transport in semiconductors, pn junction and diode, MOSFET and modern integrated circuit technology, Moore's Law and scaling

## **Electromagnetic (EM) waves and applications**

Attributes of EM waves: frequency, wavelength, speed, phase, and polarization

Basic properties of EM waves: reflection, refraction, total internal reflection, diffraction, and interference

EM spectrum and applications: propagation of radio waves, modulation of EM waves, radio and television broadcasting, mobile communication, satellite communication, and optical fibre communication

# Teaching and Learning Activities

<b>Lecture and Tutorials</b>	<b>Lectures on various fundamental knowledges and concepts in the field of electronic engineering.</b>
<b>Tests</b>	<b>To test the students' understanding on the lecture materials.</b>

# Assessment Tasks/Activities

<b>Tests and Assignments</b>	<b>40%</b>
<b>Final Examination</b>	<b>60%</b>

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