The Hong Kong University of Science and Technology

UG Course Syllabus

Basic Electronics

ELEC 2420

3 Credits

Pre-requisites: MATH 1014 OR MATH 1020 OR MATH 1024.
Co-requisite: PHYS 1111 OR PHYS 1112 OR PHYS 1312.
Exclusion: ELEC 2400.

Name: Abhishek Kumar SRIVASTAVA

Email: eeabhishek@ust.hk

Office Hours: Weekly office hours or by appointments

Course Description

Basic electronic concepts and components; DC, AC and transient analyses of analog electronic circuits; operational amplifiers and circuits; digital electronics includes binary number systems, Boolean algebra, and combinational and sequential logic. For non-ECE students only.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

ILO1. Recognize basic concepts of electronic components and circuits;

ILO2. Analyze DC, AC and transient behaviors of electronic circuits;

ILO3. Recognize basic logic functions and logic gates;

ILO4. Analyze and design combinational and sequential logic circuits;

ILO5. Employ electronic instruments to perform experiments.

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

Assessment Task	Contribution to Overall Course Grade (%)	Due Date
Lab	15%	Week 3 to Week 13
Homework	10%	Week 4 to Week 13
Mid-Term Examination	20%	Week 8
Final Examination	55%	After Week 13

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Mid-Term and Final Examinations	ILO1, ILO2, ILO3, and ILO4	This task assesses students' ability to understand and analyze electronic circuits.
Homework	ILO1, ILO2, ILO3, and ILO4	This task assesses students' ability to understand and analyze electronic circuits.
Lab	ILO5	This task assesses students' ability to employ instruments to conduct experiments and build electronic circuits.

Grading Rubrics

Homework and examinations will be graded based on the accuracy of the answers, the correctness of calculations, and the logical progression of steps, with the goal of accurately reflecting the students' understanding of the subject matter. Lab assignments will be graded on the completion and successful demonstration of tasks during lab sessions.

Final Grade Descriptors

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a thorough understanding of electronic concepts, comprehensive proficiency in solving circuit problems, and exceptional hands-on skills in analyzing, designing, and building practical electronic circuits.
B	Good Performance	Demonstrates a good understanding of electronic concepts, competence in solving circuit problems, and good hands-on skills in analyzing, designing, and building practical electronic circuits.
C	Satisfactory Performance	Demonstrates adequate understanding of basic electronic concepts, capacity in solving familiar circuit problems, and acceptable hands-on skills in analyzing, designing, and building practical electronic circuits.

D	Marginal Pass	Demonstrates threshold understanding of basic electronic concepts, limited capacity in solving familiar circuit problems, and inconsistent hands-on skills in analyzing, designing, and building practical electronic circuits.
F	Fail	Demonstrates insufficient understanding of basic electronic concepts, lacks the required skills to solve familiar circuit problems, and shows inadequate hands-on skills in analyzing, designing, and building practical electronic circuits. This may be further compounded by missing homework or lab submissions, or absence from examinations.

Communication and Feedback

Marks for individual assessment tasks will be posted on Canvas within two weeks of submission. Detailed feedback on assignments will be provided upon reasonable request. Students with further questions about the feedback or marks should consult the teaching associate or instructor.

Resubmission Policy

Late homework submissions will not be accepted. However, homework may be resubmitted before the due date, and only the most recent submission will be graded in the case of multiple submissions.

Required Texts and Materials

TextBook: on reserve in the library
D. V. Kerns and J. D. Irwin, *Essentials of Electrical and Computer Engineering*, Pearson, 2004.

Course AI Policy

The use of Generative AI is permitted, but not for the exams and homework.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.