EENG 4580/5580 Power Electronics
Fall 2025 – Syllabus

Instructor Information

Instructor: King Man Siu
- Office: NTRP B233
- Tel: (940) 369-7890
- Email: Kingman.siu@unt.edu
- Office Hours: Tuesday and Thursday 1:00 – 2:00 PM
- Additional appointments can be requested by email using your my.unt.edu account.

TA: Nguyen, Huy
- Office: NTRP B245
- Email: huy.nguyen4@unt.edu
- Office Hours: Monday and Wednesday 3:00 – 4:00 PM

Course Description

The aims of this course are to present the use of electronic devices to control and convert electric power. The basic principle of power conversion techniques and their applications will be introduced. Students will obtain the fundamental knowledge to simulate and model of different power electronics converters.

Credit hours: 3 hrs.

Course Information

Course Prerequisites
EENG 3520 Electronics II

Course Co-requisites
None

Class Schedule
Tuesdays and Thursdays 11:30 - 12:50 PM
Classroom: B142

Reference Text
Recommended: Ned Mohan, Tore M. Undeland, and William P. Robbins, 2002, *Power Electronics: Converters, Applications, and Design,* 3rd Edition, Wiley.

Attendance
Attendance is required and will be recorded in each class. Students aware of an authorized absence (religious observance, military service, official university function, etc.) should notify the

instructor as soon as possible according to UNT Policy 15.2.5. Students are expected to communicate to the instructor any issue regarding their performance in class ahead of time.

Homework

Students have one week to submit the assignment after it is released. The homework submission is through the portal on Canvas. Only ***PDF or Word*** format is accepted. Please check Canvas regularly for the specific deadlines. Other than the group project, students should work independently (see the announcement on Canvas for details).

- Homework needs to be uploaded to Canvas at the due date/time.
- Homework turned in late will be penalized 50%. No homework is accepted after 24 hours.
- Students have one week to contest any grade once the grade is posted.

Grading Elements and Weights

Homework	25%
Final Project	25%
Mid-term 1	25%
Mid-term 2	25%

Grade Distribution

Points	Letter Grade
90.0% - 100%	A
80.0% - 89.9%	B
70.0% - 79.9%	C
60.0% - 69.9%	D
59.9% & Below	F

Tentative Course Outline

- Introduction to Power Electronics Systems
- AC-DC Rectifiers
- DC-DC Converters
- DC-AC Inverters
- Power Semiconductor Switches
- Basic Electrical and Magnetic Circuit Concepts
- Cooling System and Thermal Model
- Modeling of Power Electronic Converters
- Fundamentals of Feedback Control
- Practical Converter Design Considerations
- Applications of Power Electronic Converters

Student Evaluation of Instruction

SPOT is a requirement for all organized classes at UNT. The survey will be made available at the end of the semester.

Course Technology and Skills Required for this Class

Students will need access to a set of minimum technological resources and skills to succeed in this class.

Minimum Technology Requirements

The students are required to have:

- Computer
- Reliable internet access and web browser
- Canvas Technical Requirements (https://clear.unt.edu/supported-technologies/canvas/requirements)

Computer Skills and Digital Literacy

Course-specific technical skills learners must have to succeed in the course:

- Using Canvas for accessing materials and grades, as well as submitting files if needed
- Converting files to PDF
- Using email with attachments
- Downloading and installing software
- Using spreadsheet programs
- Using software tools to conduct system-level simulation, such as PLECS

UNT Policies

ODA Policy

UNT makes reasonable academic accommodations for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member before implementation in each class. For additional information see the ODA website (https://disability.unt.edu/).

Academic Integrity Policy

According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)

The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs

and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.