

**EENG 3314**  
**Power Electronics**  
**Fall 2023**  
**Syllabus**

Instructor: Dr. Mahdi Ghamkhari

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Class Location: ENG 3212

Office Hours: Wednesdays 2:00 pm to 3:00 pm Faculty Suite – 3100 H

Prerequisites: EENG 3306

**Course Description**

The use of solid-state components in power systems; rectifying devices; diode circuits and rectifiers; controlled rectifier circuits; AC Voltage controllers; Thyristor commutation techniques; DC choppers; speed torque characteristics of motors and loads; starting, braking and transient analysis of electric motors; introduction to HVDC.

**Textbook**

Muhammad H. Rashid, "Power Electronics: Devices, Circuits and Applications", Fourth Edition, Pearson, 2013, ISBN: 978-0133125900

**Note:** The fourth edition of the textbook will be used in the course.

**Link to purchase from Amazon**

[https://www.amazon.com/Power-Electronics-Circuits-Devices-Applications/dp/0133125904/ref=sr\\_1\\_6?keywords=Muhammad+H.+Rashid%2C+%E2%80%9CPower+Electronics%3A+Devices%2C+Circuits+and+Applications%E2%80%9D&qid=1692219371&sr=8-6](https://www.amazon.com/Power-Electronics-Circuits-Devices-Applications/dp/0133125904/ref=sr_1_6?keywords=Muhammad+H.+Rashid%2C+%E2%80%9CPower+Electronics%3A+Devices%2C+Circuits+and+Applications%E2%80%9D&qid=1692219371&sr=8-6)

**Course Components**

Assignments (Homework/Quizzes/Projects): 40%

Midterm Exam: 30%

Final Exam: 30%

**Conversion of the numerical grade to letter grade**

A: 90 – 100%

B: 80 – 89%

C: 70 – 79%

D: 60 – 69%

F: 0 – 59%

**Note:** Final grades will be rounded to the nearest whole number. For example, 81.5 or 81.6 would be rounded to 82, but 81.4 would be rounded to 81.

## Dates

Last Day to Drop without Creating a Record: September/13th

Last Day to Drop or Withdraw: November/3rd

## Guideline

- Students must have the required prerequisites of the course.
- Late submissions to the assignments are not accepted and a grade of zero will be allocated.
- Makeup exams will not be given to students who are absent from the exams.
- Canvas is the platform for course announcements and assignments.
- Announcements are made on Canvas.
- Assignments are posted on Canvas and students' responses to the assignments should be uploaded on Canvas.
- Students are highly recommended to configure their Canvas account so that they could be notified immediately once an announcement or assignment is posted.
- Students should communicate with the instructor using their UTPB Email address.
- Requests for re-grading must be received no later than one week following the return of the assignment.
- Students are encouraged to take notes from the materials presented in the class.

## UTPB Student Conduct and Discipline

<https://www.utpb.edu/life-at-utpb/student-services/dean-of-students/student-conduct-and-discipline-utpb-revised-2020-final.pdf>

## Attendance

Attendance in class is required.

## Students with Disabilities

The University of Texas Permian Basin in compliance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act provides "reasonable accommodations" to students with disabilities. Only those students, who an instructor has received an official Letter of Accommodation (LOA) sent by the office of ADA for students, will be provided ADA academic accommodations.

## ADA Office for Students

MR. Paul Leverington

Address: Mesa Building 4242, 4901 E. University, Odessa, Texas 79762

Phone: 4325524696

Email: [ada@utpb.edu](mailto:ada@utpb.edu)

Week 1:	Introduction
Week 2-3:	Power diodes and switched RLC circuits
Week 4-6:	Diode rectifiers
Week 7-9:	DC-DC converters

Week 10-12: DC-AC converters  
Week 13-14: Resonant Pulse Inverters  
Week 15: Power System Representation

### **Topics**

1. Introduction
2. Power Diodes and Switched RLC Circuits
3. Diode Rectifiers
4. DC-DC Converters
5. DC-AC Converters
6. Resonant Pulse Inverters

### **Disclaimer**

The subject matter and dates for the course may evolve slightly and should be considered tentative. Updates will be announced.

### **Version**

08/23/2023