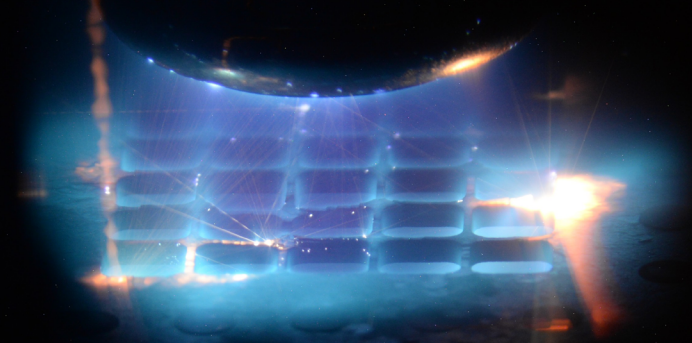




p3e.ttu.edu

RESEARCH: PAST & PRESENT

Plasma research at Texas Tech University began in 1966 with pioneering studies of harmonic ion cyclotron resonances in mirror machines and tokamaks, laser heating of magnetized plasmas, and pellet injection into hot, dense plasmas. Over time, the program expanded into theoretical investigations of wave propagation and turbulence while driving innovative applications in pulsed power technology, thin-film plasma synthesis, and electric space propulsion systems.

Pulsed power research at Texas Tech University emerged in the early 1970s through studies of high-beta controlled thermonuclear fusion. These efforts helped establish the need for a deeper understanding of the fundamental physics governing pulsed power systems and laid the foundation for a world-class research program. Today, Texas Tech is recognized for research in high-power switching, fast insulator breakdown, compact pulsed power drivers and power systems, advanced materials, and high-power microwave generation. Pulsed power has become the program's defining focus, enabling cutting-edge research at the intersection of extreme electromagnetic environments, plasma science, and advanced technologies.

The program is highly interdisciplinary, bringing together faculty and students from Electrical and

COURSE OVERVIEW

The course is designed for Electrical Engineers, Mechanical Engineers, Physicists, and any other professionals who are involved in the work of pulsed power and power electronics (P3E). In this course, you will be introduced to the basics of pulsed power technology.

This course will be presented in a lecture format by the faculty and research staff of the Center for Pulsed Power & Power Electronics at Texas Tech University. Following the course lectures, attendees are invited to take a tour of the Texas Tech Center for Pulsed Power and Power Electronics

COURSE TOPICS INCLUDE:

- Introduction to Pulsed Power
- Basic Circuits
- Electromagnetic Field Theory
- High Voltage Breakdown and Physics
- Charging Power Supplies
- Electromagnetic Field Simulations
- Solid State Switching
- High Power Vacuum and Gas Switches
- Pulse Generation
- Voltage Multipliers
- Diagnostics
- Grounding, Shielding, and Safety
- Computer Simulations
- Compact and Explosive Pulsed Power
- Applications

Each topic will be covered in a 1–3 hour lecture format.

Image left: Ablation of a pyrolytic graphite anode in a vacuum HPM source

Image right: Vacuum high-voltage surface flashover

Image (page 2): Vacuum high-voltage surface flashover

The Center for Pulsed Power & Power Electronics
Department of Electrical and Computer Engineering
Texas Tech University, Lubbock, TX 79409-3102
P 806.742.3468 | F 806.742.1281 | E p3e@ttu.edu
www.p3e.ttu.edu

A SHORT COURSE IN

PULSED POWER

JAN 5-7, 2027 | LUBBOCK, TX



CENTER FOR
PULSED POWER &
POWER ELECTRONICS

TEXAS TECH
Whitacre College of Engineering

GENERAL INFORMATION

LOCATION

The Merket-McKenzie Alumni Center on the Texas Tech University campus, Lubbock, Texas.

FEE

The fee for the course is \$2750. The fee includes short course notes, an electronic copy of the presentations, lunches, break refreshments, and a barbecue dinner.

REGISTRATION

For registration details please visit:

<https://www.p3e.ttu.edu/shortCourse27>

Deadline for registration is December 1, 2026. Registration will be closed as soon as all seats are taken! If registration is not paid by December 1st, the registration will be cancelled. This course will be canceled if there are insufficient registrants by this date.

CANCELLATIONS/REFUNDS

A full refund of your registration fee, less a \$100 processing charge, will be granted for refund requests received by December 1, 2026. Thereafter, only partial refunds can be granted, less \$1,000 processing charge.

HOTELS

Room blocks have been reserved for the Pulsed Power Short Course at the following hotels:

Overton Hotel
2322 Mac Davis Lane. Lubbock, TX, 79401
\$132/night, available until 12/14/2026
[Reservation link here](#)

Hyatt Place
2309 Mac Davis Lane, Lubbock, TX, 79401
\$111/night, available until 12/13/2026
[Reservation link here](#)

Woodrow House B&B
2629 19th Street, Lubbock, TX, 79410
Please call 806-793-3330 or text 806-281-2483 or email innkeeper@woodrowhouse.com to book
([Woodrow House B&B Website](#)).

COURSE SCHEDULE

TUESDAY 1/5

7:30–8:00am	Registration/Check In
8:00–8:30am	Introduction
8:30–12:00pm	Basic Circuits Energy Storage EM Fields Basics
12:00–1:00pm	Lunch
1:00–5:00pm	EM Simulation Breakdown Physics Charging Power Supplies

WEDNESDAY 1/6

8:00am–12:00pm	High Power Switching
12:00–1:00pm	Lunch
1:00–5:00pm	Pulse Generators Voltage Multipliers Grounding & Shielding
5:30–8:30pm	BBQ Dinner

THURSDAY 1/7

8:00am–12:00pm	Diagnostics Computer Simulations Compact & Explosive Pulsed Power
12:00–1:00pm	Lunch
1:00–5:00pm	Applications Laboratory Tour

Topic details and order subject to change

COURSE FACULTY

Dr. James Dickens: Charles Bates Thornton Professor of Electrical & Computer Engineering at Texas Tech University and Co-Director of the Center for Pulsed Power and Power Electronics. Research specialties include Photoconductive Pulsed Power Switching, Fast High Voltage Systems and Diagnostics, Wide bandgap and Ultrawide Bandgap Materials for Pulsed Power Applications.

Dr. Ben Esser: Assistant Professor of Electrical & Computer Engineering at Texas Tech University. Research specialties include Gaseous Discharge Physics, Electrostatic Discharges, High Power Microwaves, RF Systems, Antennas, and Electromagnetic Pulses and Interference/Compatibility.

Dr. Mike Giesselmann: Interim ECE Chair and Professor of Electrical & Computer Engineering at Texas Tech University. Research specialties include Gas Discharges, Electrical and Optical Diagnostics, HV Measurement Techniques, High Power Switching, Power Electronics.

Dr. John Mankowski: Professor of Electrical & Computer Engineering at Texas Tech University. Research specialties include Pulsed Power Technology, Electric Space Propulsion, Liquid and Gas Discharge Physics, Railgun Technology, Explosive Pulsed Power, and High Power Microwave Generation.

Dr. Andreas Neuber: Paul Whitfield Horn and AT&T Professor of Electrical & Computer Engineering at Texas Tech University and Co-Director of the Center for Pulsed Power & Power Electronics. Research specialties include Dielectric Surface Flashover, HV Electric Breakdown, High Power Microwaves, Pulsed Power Technology, Non-intrusive high speed plasma diagnostic (OSE, LIF, CARS, Raman).

Dr. Jacob Stephens: Associate Professor of Electrical & Computer Engineering at Texas Tech University. Research specialties include High Power Microwaves and Electromagnetics, Compact Pulsed Power, Large-Scale Pulsed Power, and Low Temperature Plasmas.

More Information:
806.742.3468 | p3e@ttu.edu