

Oklahoma State University Institute of Technology
Course Syllabus
Fall 2017

ETDE-2223 Electrical Power Distribution

Students study the physical properties of electromagnetic and electromechanical energy conversion devices and their application to conventional rotating machines. Electrical energy generation, transmission and distribution and relay technology are also covered.

Course Purpose:

The purpose of this is course to familiarize students with three phase distribution system and to get them introduced different protection system used in distribution system

Type of course: Theory/Lab.

Credit Hours: 3;

Total hours of theory per semester: 30;

Total hours of lab for the semester: 45;

Class length - Full Semester

Class days and times: MWF 12:30- 1:55 PM

Prerequisites: ETDE 1263 **Co-requisites:** ETDE 1363

Instructor Name: Asif Hoque

Instructor Phone: (918) 293-5375

Office: ETDE Building -Room 15J

Instructor email: asif.hoque@okstate.edu

Instructor's Office Hours: Monday, Wednesday, Friday: 3.00 pm to 4.00 pm

Tuesday, Thursday: 10.30 pm to 11.30 pm

Division Name: Engineering Technologies

Division Phone: (918) 293-5150

REQUIRED TEXT, REFERENCES, AND MATERIALS

Text(s): **Power Distribution Systems.**

References: None

Materials: Note Taking Materials, flash drive, scientific/engineering calculator

Tools: Electrical drawing template (In bookstore); AutoCad Software

Estimated Cost for Materials: NA

Estimated Cost for Tools: NA

Optional Resources: N/A

Upon completion of this course, students should demonstrate the ability to:

Course Outcomes	Assessment Methods
1. Safely apply fundamental circuits' laws and codes to electrical power distribution including sizing of conductors and raceway.	Homework, Tests
2. Explain different power production system and its components.	Homework
3. Solve balanced 3-phase power problems	Homework, Test
4. Analyze different types of 3-phase transformer connections used in power distribution systems	Lab, Quiz
5. Explain the fundamental differences between leading and lagging power factors and utilize their knowledge to improve power factor.	Test, Quiz
6. Explain the effect of resistive and reflective load in a transformer and demonstrate an understanding of voltage regulation & efficiency in transformer.	Test, Quiz
7. Demonstrate the ability to distinguish between current transformers, potential transformers, and power transformers and their applications.	Homework
8. Demonstrate an understanding of load factor and capacity factor	Homework, Test
9. Demonstrate the ability to read power distribution engineering drawings and identify electrical power distribution components on one line diagrams, three line diagrams, and schematics.	Lab
10. Demonstrate an understanding of power system protection equipment.	Lab, Test

COURSE ACTIVITIES

In this course students will:

- *Participate in class discussions and activities.*
- *View videos that depict the various concepts.*
- *Contribute to a course Service Learning project.*
- *Participate in group and individual presentations.*
- *Compile a portfolio of work produced.*
- *Take examinations.*
- *Complete reading assignments.*
- *May be required to do quizzes.*

EVALUATION - GRADES WILL BE BASED ON THE QUALITY AND COMPLETION OF THESE TASKS:

The final course grade will be calculated with the following weights:

2 Unit Exams.....	30%
Final*	20%
Lab.....	30%
Quiz.....	10%
Homework.....	10%
Total	100%

OSUIT Grading Scale
A = 90%-100%
B = 80%-89%
C = 70%-79%
D = 60%-69%
F = 59% & below

*The student’s grade for this assignment will be used in the university’s assessment of student learning. A 70% competency or higher receives a Pass rating. This Pass/Fail rating is independent of the student’s course grade.

Daily and/or weekly quizzes, small weekly assignments and similar type projects: Normal return time to student by next class meeting or no later than one (1) week.

Extensive assignments, large lab projects, extensive quizzes, exams and similar type projects: Normal return time to students in one (1) to two (2) weeks.

RECOMMENDED STUDENT COMPETENCIES/SKILLS

N/A

AUTHORIZED TOOLS

Instructors Policy to Submit Work

To provide students with improved feedback, technical documents shall be submitted electronically via D2L unless approval is received for other methods. To ensure students learn to submit documents electronically, students are required to submit work in Microsoft Word format and follow a pre-define template and format. Students will be asked to meet a goal in data recording and analysis by submitted data plots in Microsoft Word format (after creating in a Microsoft Excel or other professional software format) with the aid of team members and instructor advisement. All individual submissions must be submitted as **one** Microsoft Word or PDF document unless instructed otherwise. Documents that are not legible will be given a grade of zero. NO EXCEPTIONS!

LATE WORK

Labs/Project: Submitting your complete and properly-executed work early is always acceptable. Lab report must be submitted in D2L. Lab report should include signed off (Instructor Sign) page. Late work will get 25% penalty.

Unit exam and Final Exam: If you miss an exam, it cannot be made up unless your absence meets the requirements for an approved absence. Make-up exams may be different from the exam given in class and may be more difficult. Unit Exams and Final Exam CANNOT be made up without strict approval and penalty! If you know in advance that you will miss an exam, special arrangements to re-schedule the exam may be possible for hardship circumstances.

TESTING

The following guidelines will be enforced during proctored exams:

- All materials not required for the exam must be placed off the desk
- Scientific/Engineering Calculators are allowed unless otherwise noted
- Once testing has started you are not allowed to leave the room until you have completed the test. Doing so will immediately end the test for you.
- All material associated with the exam must be submitted upon completion.
- All tests will have a defined time for completion.
- Exceptions may be made to these rules at the instructor's discretion.
- Tests will be proctored by the LASSO center on the OSUIT campus.

OTHER LAB AND CLASSROOM POLICIES

The college environment is one in which various ideas, philosophies, and sensitive topics are explored. The open and respectful pursuit of knowledge will require that each person be allowed to share opinions that may not be popular or accepted by all. Language or gestures that are non-inclusive, derogatory, or disrespectful of diverse backgrounds, cultures, ethnicities, religions, genders, and/or sexual orientations will not be tolerated.

- The use of tobacco in any form is not permitted in the building.
- Cell phones must be turned off unless there is a medical need.
- Audio equipment is not permitted.
- Food and beverage is permitted but not around the equipment. Only liquids with screw type closures are allowed.
- Lab computers are to be used for teaching/learning only. Do not use for entertainment or casual internet surfing or chatting. This is especially true during class.
- Students are expected to maintain a respectful manner during class-sleeping or otherwise assuming a laid down position will not be tolerated.
- Tests will not be given early.
- The lab is considered an industrial environment, therefore you must adhere to proper safety and operations protocols. Do not endanger yourself or others.

Dress Code

1. **Shoes must cover entire foot.**
2. **Shorts/Dresses must cover the knees.**
3. **Tank tops/muscle shirts are not to be worn.**
4. **Clothing with obscene logos are not to be worn.**

5. Clothing that is distracting may not be worn in the classroom setting.
6. Clothing that is baggy should not be worn for safety reasons. Jewelry should be removed in the lab setting.
7. Safety glasses must be worn when appropriate.

E-Mail Communication Standards

Students are encouraged to use e-mail when communicating personal issues with their instructor. E-mail corruption is a significant problem and unidentified e-mails are simply purged. Therefore a strict standard is necessary to identify a legitimate student communication. The “message line” of student e-mails must contain in order – Subject, Name, Course, and Trimester. Example:

Missing Assignment, John Smith, ETDE 3513, Spring 2017.

SYLLABUS ATTACHMENT

View the Syllabus Attachment, which contains other important information, by visiting http://osuit.edu/center/student_syllabus_information

Course Schedule			
Course Outline Schedule	Topic	Assignment	Due Date
<i>Week 1</i>	Electrical Safety		
<i>Week 2</i>	Electrical Safety		09/15/17
<i>Week 3</i>	Single phase and Three phase circuit	Homework 1	09/22/17
<i>Week 4</i>	Single Phase and Three Phase circuit	Lab 1	09/29/17
<i>Week 5</i>	Power Factor correction	Exam 1	
<i>Week 6</i>	Power Factor correction	Homework 2	10/13/17
<i>Week 7</i>	Power System Fundamentals	Lab 2	10/20/17
<i>Week 8</i>	Transformer	Homework 3	10/27/17
<i>Week 9</i>	Transformer	Lab 3	11/03/17
<i>Week 10</i>	Insulators and Conductors in distribution system	Exam 2	11/10/17
<i>Week 11</i>	Distribution System Protection	Homework 4	11/17/17

<i>Week 12</i>	Distribution System Protection	Lab 4	11/27/17
<i>Week 13</i>	Distribution System Considerations	Homework 5	12/01/17
<i>Week 14</i>	Distribution System Considerations		12/13/17
<i>Week 15</i>	Review	Final Exam	

*Schedule is subject to change at instructor discretion.