

**Oklahoma State University Institute of Technology**  
**Course Syllabus**  
**Summer 2017**

**ETDE 2223 Electrical Power Distribution**

**Course Description:**

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.

**Type of course:** Theory/Lab  
**Total Credit Hours:** 3; Total hours of theory per semester: 50; Total hours of lab per semester: 25  
**Class length:** Full Semester  
**Class days & times:** TTR: 12:30 to 2.25 pm  
**Prerequisites:** 1263 **Co-requisite:** 1363

**Instructor Name:** Asif Hoque **Instructor Phone:** (918) 293-5375  
**Office:** ET bldg. A11, Room 15J **Instructor E-mail:** asif.hoque@okstate.edu  
**Contact:** My preferred method of contact is e-mail. Please allow 24-48 hours to return your correspondence during the normal work week.

**Instructor's Office Hours:** Monday, Wednesday, Friday: 10.30 am to 11.30 am  
Tuesday, Thursday: 12.30 pm to 1.30 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

**Upon completion of the course, students should be able to:**

<b>Course Outcomes</b>	<b>Assessment Methods</b>
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

Aspects of the course objective assessments may be used in the university's assessment of student learning. If applicable, an asterisk (\*) above indicates this course is used in the university assessment program.

*(Please asterisk the assignment above if utilized for the assessment assignment.)*

## **COURSE ACTIVITIES**

In this course students will:

- Establish Desire2Learn Account and Access the Online Course announcements, information, course documents, resources documents, resource links, lab assignments and projects
- Participate in class lectures and video with individual feedback and group discussion
- Complete outside project assignments and submit technical reports for evaluation
- Participate in individual and group presentations
- Incorporate research into assignments and reports
- Compile a resume of skills learned and work produced

## **EVALUATION – GRADES WILL BE BASED ON THE QUALITY AND COMPLETION OF THESE TASKS:**

2 Unit Exams.....	30%
Final .....	20%
Lab.....	30%
Pop Quiz.....	10%
Homework.....	10%
<b>Total</b> .....	100%

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

\*The student's grade for final exams 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.

All lab reports, others reports, homework, assignments, take home exam must be submitted within due date.

## **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 pdf 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 pdf format (after creating in a MicroSoft Excel or other professional software format) with the aid of team members and instructor advisement. All submissions must be submitted as **one** pdf document unless instructed otherwise. Documents that are not legible will be given a grade of zero. **NO EXCEPTIONS!**

## **Student Conduct and Other Lab and Classroom Policies**

Students are expected to cooperate in maintaining a classroom environment conducive to learning. **Courteous and respectful behavior will be expected from all students each day.** This is a BYOD allowed environment. You can bring your smart devices and laptops to class to be used as a learning tool during class time. If I determine that its use is disrupting class I will require you to turn it off. The use of tobacco in any form in University buildings is prohibited.

- Students are expected to maintain a clean and organized lab work place. After completion of a lab or at the end of the class period, components must be returned to the appropriate storage location they were obtained from. Instruments, test probes, and any items used to perform an experiment must also be returned to the appropriate storage location. All other instruments must be turned-off.
- Class computers are to be used for teaching/learning only. Do not use for entertainment or casual internet surfing or chatting.
- Students are expected to maintain a respectful manner during class-sleeping or otherwise assuming a laid down position will not be tolerated.
- Safety Glasses are required while in the lab setting. **NO EXCEPTIONS!**
- **NO FOOD OR DRINK IN LAB/COMPUTER AREA!**
- Students are expected to check D2L and e-mail for announcements and assignments on a regular basis.
- **All research assignments, written formal Lab Reports, project work, etc. must be submitted in the appropriate folder in the D2L dropbox.**

## **Dress Code**

1. Shoes must cover entire foot.
2. Clothing with obscene logos are not to be worn.
3. Hats may not be worn in the classroom setting.
4. Clothing that is saggy/baggy should not be worn for safety reasons.
5. Sunglasses are not permitted

## **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 1263, Fall 2014.**

## **LATE WORK**

- *No late work will be accepted unless it meets the requirements for an excused absence according to OSUIT policy or at instructor discretion.*
- **Quizzes and Group Activities** are in-class lecture assessments that cannot be made-up under any circumstances. Attendance is mandatory.
- **Research, Homework, Lab and Project** reports submitted before the posted due date and time on D2L or written assignment sheet is considered to be on time. Presentations **CANNOT** be made up.

- **Unit Exams and Final Exam** CANNOT be made up without strict approval and penalty! 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. 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 in class 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

### **UNIVERSITY & COURSE EXPECTATIONS**

It is the responsibility of each OSUIT student to read, abide by and maintain a copy of the syllabus for this course. Syllabi are available on the OSUIT website.

Students understand that excerpts or portions of their work may be utilized for institutional assessment purposes. The purpose of institutional assessment is for verification of student learning and program improvement. Every effort will be made to keep this information confidential.

## **ATTENDANCE POLICY FOR FACE-TO-FACE COURSES**

A primary component of OSUIT's Mission is *"to prepare and sustain a diverse student body as competitive members of a world-class workforce."* Regular and consistent attendance not only aids in academic success, dependable attendance is a requirement in today's real-world employment; therefore, regular and consistent attendance is a requirement in all OSUIT courses.

### **Definitions:**

Absent: Failing to attend all or a significant portion of a class or lab session.

- A. Students may not be marked as absent if missing class for situations such as, but not limited to
  1. participating in a required university activity such as a field trip;
  2. fulfilling a military obligation;
  3. a mandatory court appearance;
  4. death in the immediate family;
  5. extreme illness or accident to oneself or immediate family. Instructors, at their discretion, may require proof of such events.
- B. It is the responsibility of the student to contact and inform the instructor and/or department in advance of such excused absences whenever possible.

Tardy: Arriving late to class as defined by the individual class instructor. Faculty, at their discretion, may equate three tardies to equal one absence.

### **Procedures:**

#### Early Intervention

- A. Any student who misses 10% of an individual course (or earlier at faculty discretion) during a regular fifteen-week semester, or the equivalent portion of time in a shorter session, will have their name submitted by that course instructor to the OSUIT Early Alert System for retention intervention.
- B. At the point the Early Alert is issued, the student *must* meet with their assigned faculty advisor or designated faculty/staff member within seven (7) academic calendar days for counseling on how to improve their attendance and academic success.

#### Excessive Absences

- A. The University reserves the right to administratively withdraw any student from an individual course who misses 20% of that course, whether excused or unexcused, and, in the opinion of the instructor, the student does not have a reasonable opportunity to be successful in the course.
- B. Students should be aware any of the following may impact their financial aid:
  1. being administratively withdrawn from a course
  2. dropping a course
  3. their last date of attendance in a course

Please see OSUIT Policy 2-021 for full details and procedures.

## **ACADEMIC DISHONESTY**

Academic dishonesty or misconduct is neither condoned nor tolerated at OSUIT. Any student found guilty of academic dishonesty or misconduct shall be subject to disciplinary action.

Academic dishonesty and/or misconduct includes, but is not limited to, the following actions:

(1) Plagiarism: the representation of previously written, published, or creative work as one's own; (2) Unauthorized collaboration on projects; (3) Cheating on examinations; (4) Unauthorized advance access to exams; (5) Fraudulent alteration of academic materials; (6) Knowing cooperation with another person in an academically dishonest undertaking. Students are required to actively protect their work against misuse by others. For details, refer to The OSUIT Student Handbook (Student Rights and Responsibilities Governing Student Behavior) available online at [http://www.osuit.edu/academics/forms/student\\_rights\\_responsibility.pdf](http://www.osuit.edu/academics/forms/student_rights_responsibility.pdf).

## **Americans with Disabilities ACT (ADA)**

According to the Americans with Disabilities Act, each student with a disability is responsible for notifying the University of his/her disability and requesting accommodations. If you think you have a qualified disability and need special accommodations, you should notify the instructor and request verification of eligibility for accommodations from the Office of Academic Accommodations/LASSO Center. Please advise the instructor of your disability as soon as possible, and contact The LASSO Center, to ensure timely implementation of appropriate accommodations. Faculty have an obligation to respond when they receive official notice of a disability but are under no obligation to provide retroactive accommodations. To receive services, you must submit appropriate documentation and complete an intake process during which the existence of a qualified disability is verified and reasonable accommodations are identified. The LASSO Center is located on the 3<sup>rd</sup> floor of the Noble Center. You may call 918.293.4855 for more information or fax documentation to 918.293.4853.

<b>Course Outline Schedule</b>	<b>Topic</b>	<b>Assignment</b>	<b>Due Date</b>
<i>Week 1</i>	Electrical Safety		
<i>Week 2</i>	Electrical Safety		
<i>Week 3</i>	Single phase and Three phase circuit	Homework 1	05/18/17
<i>Week 4</i>	Single Phase and Three Phase circuit	Lab 1	05/25/17
<i>Week 5</i>	Power Factor correction	Exam 1	06/01/17
<i>Week 6</i>	Power Factor correction	Homework 2	06/08/17
<i>Week 7</i>	Power System Fundamentals	Lab 2	06/15/17
<i>Week 8</i>	Transformer	Homework 3	06/22/17
<i>Week 9</i>	Transformer	Lab 3	07/13/17
<i>Week 10</i>	Insulators and Conductors in distribution system	Exam 2	07/20/17
<i>Week 11</i>	Distribution System Protection	Homework 4	07/17/17
<i>Week 12</i>	Distribution System Protection	Lab 4	08/03/17
<i>Week 13</i>	Distribution System Considerations	Homework 5	08/10/17
<i>Week 14</i>	Distribution System Considerations		
<i>Week 15</i>	Review	Final Exam	08/24/17

\*Schedule is subject to change at instructor discretion.