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Office: ENGR E-0221
Office Phone: 453-7036

Office Hours: MWF 01:00-03:00 or by appointment.

STRUCTURE OF THE COURSE CONTENT AND GRADING:

The class material is divided into has 6 learning module as follows:

1. Power demand
2. Distribution Transformers
3. Design of Primary and Secondary Distribution Systems
4. Performance and Cost Analysis of Primary and Secondary Distribution Systems
5. Applications of Power Capacitors
6. Distribution System Protection

MODULES, LESSONS, QUIZZES, PROJECTS: Each module corresponds to one or more chapters from the textbook. At the beginning of a module there is a study guide listing the chapters and sections that must be studied from the book.

Each module has several lessons. The lessons consists of a video presentation of class material or of solved problems.

Each of the lessons is accompanied by an on-line quiz. There are two attempts allowed for each quiz. The best attempt is kept.

At the end of each module there is a drop-box containing a project. The project must completed within the dead line and submitted online following the guidelines below.

TIME WINDOWS: All work in this class must be complete within certain time windows. This includes the completion of each lesson, the taking of the on-line quizzes and the submission of the projects. More specifically, each lesson has a start and an end date and time. Within this time window, you must view the slide presentation, study the corresponding book chapters and complete the on-line quiz that goes with the lesson.
GUIDELINES FOR THE PROJECTS: The project report can be typed or hand-written. Reports must, then, be scanned or printed into a pdf file and submitted into D2L using the appropriate drop box submission process. No jpeg or pic files—please.

Reports can be hand-written including text, equations and figures.

The report must be clear and clean with a good organization to help the reader follow.

Do not squeeze the entire material into one or two pages. Give ample space for clarity and neatness.

Appropriate explanations should be provided to help the reader understand what was done.

**Substandard work will not be graded.**

**GRADING:**

The class grade consists of the following:

- **Quizzes (40%)**
- **Projects (60%)**

Each quiz is worth 1.5% of the total class grade. There will be approximately 30 quizzes. Points accumulated beyond the category defined weight (40%) are kept in the final grade as bonus (about 5%). Quizzes must be taken within the allowed time window. There are two attempts allowed for each quiz.

There will be six projects (one for each of the six modules). Each project is worth 10% of the total class grade.

- **Grading Scale:** A: 100-90; B: 89-80; C: 79-70; D: 69-55; F: 54-0.

**Class Policies:**

- **Online Class:** The class uses D2L where links to the content are provided. At all time, your total class grade (e.g. your progress to date) is available to you.

- **Late Submissions/Work Completion:** Generally are not allowed. An exemption can be made for a serious reason. A serious reason is one accepted by the university as such, e.g. verifiable illness, family issue, verifiable technical problem with the site, etc.
1. **Course number and name**: ECE 489 Electric Power Distribution.
2. **Credits and contact hours**: 3 credits, online.
3. **Course Committee**: C.J. Hatziadoniu


indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: None

**Professional Component (Credit Hours)**

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**Instructional Objectives (with SO’s)**

Upon completion of the course, the student should be able to:

Understand the terms and definitions used to describe components, parts and functions of the distribution system. (c)

Understand the technical and physical means by which power distribution is accomplished as well as the major architectural and design features of distribution systems.(c)

Be able to compute the electric performance of a small part of the distribution system or a system component.(e)

Be able to perform a preliminary cost-performance analysis of a small part of the distribution system.(e)

Be able to perform a preliminary design of a small part of the distribution system or a system component in order to achieve safe and economic operation.(c)

Understand basic system protection issues including fault types, thermal effects of fault currents, the operation of overcurrent protection devices, and the coordination of these devices in order to derive a reliable protection schemes.(c, e)

Be able to compute symmetric fault currents for three-phase and SLG faults on radial feeders and perform simple protection coordination.(c, e)
Brief list of topics (class, lab and project) to be covered (with hours)¹

Lectures

Introduction to the course, demand characteristics (3 hours)

Application of the distribution transformer, transformer connections and performance. (8 hours)

Overview of the design of the primary and secondary systems and distribution substations. (5 hours)

Performance computation of the primary and secondary systems, voltage drop, power loss, cost estimation. (11 hours)

Application of capacitors, benefit and cost calculations. (8 hours)

Distribution system protection, power system faults, protective devices. (10 hours)

**CAD and Computer Tools Used:** Spreadsheet

**Assessment of the Contribution to Student Outcomes**

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<th>Outcome</th>
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Student Outcomes (ABET criteria a-k) are quoted here:

(a) an ability to apply knowledge of mathematics, science, and engineering

(b) an ability to design and conduct experiments, as well as to analyze and interpret data

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(d) an ability to function on multidisciplinary teams

(e) an ability to identify, formulate, and solve engineering problems

(f) an understanding of professional and ethical responsibility

(g) an ability to communicate effectively

(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

(i) a recognition of the need for, and an ability to engage in life-long learning

(j) a knowledge of contemporary issues

¹ subject to change at the instructor’s discretion. Students are responsible for announcements made in class and on D2L.
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
University Policies

A. **Incomplete Grades:** An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within a time period designated by the instructor but not to exceed one year from the close of the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, not to exceed one year, or graduation, whichever comes first, the incomplete will be converted to a grade of F and the grade will be computed in the student’s grade point average. Students should not reregister for courses in which an INC has been assigned with the intent of changing the INC grade. Re-registration will not prevent the INC from being changed to an F.

B. **Academic Integrity:** You are expected to submit your original work and adhere to the academic policies as stated in the SIU Student Conduct Code: [http://srr.siu.edu](http://srr.siu.edu) (listed under Additional Links). Any act of academic dishonesty, cheating, or plagiarism in any form, including anonymous internet sources used in student papers, will be reported. These acts are taken seriously and the consequences may range from failing as assignment to expulsion from the university.

C. **SIU Email:** Your SIU email account is an official form of University communication. Your instructor will use SIU email as a primary means of electronic communication with students. Please make sure that you maintain a valid password and acquire the habit of regularly checking your SIU email account for important instructor and University announcements. You may view the official SIU Student Email Policy at: [http://policies.siu.edu/policies/email.html](http://policies.siu.edu/policies/email.html).

D. **Emergency Procedures:** SIU is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with SIU Emergency response Plan and building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT’s website at [http://www.bert.siu.edu/](http://www.bert.siu.edu/), the SIU Department of Public Safety’s website [www.dps.siu.edu](http://www.dps.siu.edu) (disaster dropdown and video, “Shots Fired”), and in the Emergency Response Guideline pamphlet. Know how to respond to each type of emergency. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. **It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.** The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

E. **Supplementary Assistance:** SIU is committed to assisting students with disabilities. With the cooperation of SIU’s Disability Support Services (DSS), each student who qualifies for reasonable supplementary assistance has the right to receive it. Students requesting supplementary
assistance must first register with DSS in Woody Hall, B-150, 618-453-5738 or 618-453-2293 (TTY), by email DSS@siu.edu, or http://disabilityservices.siu.edu/. Notice: If you have any type of special need(s) or disability for which you require accommodations to promote your learning in class, please contact me as soon as possible. The Office of Disability Support Services (DSS) offers various support services and can help you with special accommodations. You may wish to contact DSS to verify your eligibility and options for accommodations related to your special need(s) or disability.

Student Services

A. Learning Support Services: The Center for Learning Support Services (CLSS) assists students of all cultures, abilities, backgrounds and identities with enhancing their self-management and interdependent learning skills. Programs offered by CLSS include: group study sessions; math tutoring; academic coaching; early intervention program; and study skills seminars. For additional information please contact CLSS in Woody Hall, Room A-313, 618-453-2925, or www.tutoring.siu.edu.

B. Writing Center: The Writing Center offers free tutoring services and assistance with improving writing skills to all SIU undergraduate students and faculty. For center locations and hours, to schedule an appointment online, and to view information regarding the Online Writing Lab (OWL) contact the Writing Center at 618-453-1231 (Morris Library location); 618-453-2927 (Trueblood location), or www.write.siu.edu.

C. Saluki Cares: The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress-physical, emotional, financial or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. To make a referral to Saluki Cares click, call or send: http://salukicares.siu.edu/index.html; 618-453-5714, or siucares@siu.edu.