

South Plains College

SPC IMPROVES EACH STUDENT'S LIFE

Course Syllabus

ELPT- 1351-200

ELECTRICAL MACHINES

Spring 2020

Meeting Location and Time

Reese Center, Building 6

01/13/2020 to 05/07/2020

Tuesday 9:00 am to 12:50 pm CST

Instructor

Diana K. Malone

Bachelor of Arts, Texas Tech University

Specialization: TX Master Electrician, License # 462720

TX Electrical Contractor, License # 34910

Instructor Contact Information

Reese Center Building 6, 601

Phone: 806-716-2424

Email: dmalone@southplainscollege.edu

Office Hours: Monday-Wednesday: 8:00 am to 9:00 am

Thursday: 8:00 am -10:00 am and 1:00 pm to 5:00 pm

Friday: by appointment

Course Description/Objectives

Electrical Machines will introduce and expand the functional skills needed for entry-level electricians. The topics focus on electrical safety, overcurrent protection, relays, motors and controllers, and test equipment. The instructor's approach relies on the study of the power and control circuitry to operate electrical machinery with hands-on electrical work in the lab.

Required Apprenticeship Electrician License

One important regulation governing persons who choose to work in the electrical trades is Title 8, Texas Occupations Code, Chapter 1305, which, in short, is called the Texas Electrical Safety and Licensing Act effective September 1, 2003. The Act states, "A person shall not perform electrical work requiring a license" and defines the concept of "electrical work" as follows:

"Electrical work" means any labor or material used in installing, maintaining, or extending an electrical wiring system and the appurtenances, apparatus, or equipment used in connection with the use of electrical energy in, on, outside, or attached to a building, residence, structure, property, or premises. The term includes service entrance conductors as defined by the National Electrical Code" (Texas Occupations Code, 2020).

Another important regulation is the Texas Department of Licensing and Regulation (TDLR), which requires persons to obtain a license before performing electrical work (TDLR, 2020). Under the referenced guidelines, the work in this course is electrical work; **therefore, students must apply for and receive an apprentice license to perform the electrical work required in this course.**

The instructor assumes the responsibility to help guide the students to gain an apprentice license. Students are responsible for taking the necessary steps or actions to gain the license. The application and steps for the license are outlined on TDLR's website: <https://www.tdlr.texas.gov/>.

Students with police records may need to complete other paperwork. If needed, then the instructor can help these students through the process of submitting the extra paperwork.

Textbooks/Supplies

Textbooks/Supplies

- Electrical Control for Machines 7th Edition: by Diane Lobsiger, Peter Giuliani, and Kenneth Rexford; ISBN- 13: 978-1-133-69338-3
- Calculator: Texas Instruments T1-30Xa

Tools

- Hasp Lockout Device
Master Lock 421
- Fuse Puller Ideal ID
34016
- Digital Multi-meter
Amprobe 15XP-B

Student Learning Objectives

*At the conclusion of this course, the student will be able to complete the following tasks:

- construct a lockout and tagout system,
- use a multi-meter to test various equipment and devices,
- sketch a ladder diagram,
- build a basic motor control system, and
- conduct an analysis on an induction motor.

*Students may vary in their competency levels on these abilities.

*Students can expect to acquire these abilities if they honor course policies, attend class regularly, complete assigned work on time, and in good faith.

Course Competencies

The student will perform on a novice to intermediate level. A novice to intermediate level means that the student demonstrates a good grasp of the material and the ability to apply concepts at most levels.

Course Policies

Safety

The course safety policy intends to help protect students from electrical hazards. Such hazards include electrocution, electric shock, burns, arc flash/blast, or other injuries as a result of direct or indirect contact with electrical equipment, tools, or appliances. This policy applies to students working on or near SPC premises wiring; installations of circuit conductors, devices and equipment, and feeder circuit conductors in or on buildings, and structures. Students may not work with live electricity without the presence and permission of the instructor.

For this policy, a qualified versus an unqualified student is defined below.

Qualified Student:

A qualified student is a licensed apprentice trained to avoid electrical hazards when working on or near exposed energized parts. Also, the student demonstrated electrical theory principles showing that the apprentice understands electron theory.

A qualified student can avoid electrocution and reduce the possible risks of electric shock, burns, or other injuries as a result of direct or indirect contact with electrical equipment, tools, or appliances.

Unqualified Student:

A student who is not qualified.

Responsibilities

The instructor is responsible for providing students training in the identification of potential electrical hazards and the means to protect themselves from those hazards. The students are responsible for complying with the safety policy and safety procedures covering specific tasks.

Testing

Only qualified students shall perform tasks such as testing, troubleshooting, and voltage measuring on electrical equipment operating at voltages equal to or greater than 50 volts.

Personal Protective Equipment (PPE)

PPE—for this course, means hard-hats, safety glasses, and gloves. Students, at a minimum, shall wear the referenced PPE in areas where electrical hazards are present.

Insulated Tools and Equipment

When testing energized circuits, students must use insulated tools and equipment. Also, the students shall use tools rated for the required voltages.

Portable Ladders

Portable ladders shall have nonconductive side rails and shall meet the requirements of ANSI Standards for ladders. Students shall not leave tools on top of ladders or overhead places while working on ladders.

Other Precautions:

Students shall not reach blindly into areas — or around devices — that contain or might contain energized parts.

Attendance

The instructor expects students to attend class on time every day. Regular attendance and punctuality demonstrate dependability. Moreover, dependability is one of the most important characteristics an electrician must possess. Arriving late, being tardy, or absence causes disruptions and demonstrates unreliability. Therefore, students must show up on time and contribute.

Nevertheless, the instructor understands things happen; students or their children get sick, friends or family might pass, or cars break down. Therefore, the instructor grants students three (3) personal days off (PTO). If a student is absent two (2) days beyond the allotted PTO, then the instructor may administratively drop the student. The instructor shall assign the dropped student's final grade as "X."

Students must clock in and out to help provide evidence of attendance if or when a random TDLR audit occurs. If the student seeks hours for on-the-job training, then the student is responsible for clocking in and out for the day. At the end of the course, students' unused PTO is added to the time clock as time worked.

Academic Integrity and Plagiarism

Academic integrity is a form of intellectual trait worthy of development. At the college level, academic integrity refers to providing credit to other people when using their words or ideas. In simplest terms, it requires acknowledging the contributions of other people through the proper use of citations. Failure to provide such acknowledgment is considered plagiarism, which goes against SPC policy.

Therefore, the instructor provides many opportunities for students to cultivate academic integrity through mindfully acknowledging the contributions of other people's work. The instructor encourages students to take advantage of SPC's Writing Centers located on each campus. The Writing Center, on the Reese Center, is located in Building 3, Room 307 E, and help is free and fantastic.

Assignments

Assignments are due on the date and time provided by the instructor. The instructor holds sole discretion whether late work is acceptable. The instructor considers the student's circumstance with state, federal, and SPC policies as a guide for making such determinations.

Grading

The instructor determines grades using four strategies. The instructor assesses the student's electrical work, observes and notes the student's application of the feedback on how to improve their work, grades exams, and counts lab injuries. Notably, one grade-level increase is earned for no injuries during work; one grade-level is decreased for lab injuries requiring an ER visit.

Core Values

SPC Disability Statement

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) & Lubbock Center 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

Diversity Statement

In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

Campus Concealed Carry

Subject to applicable Texas or federal laws and rules adopted by the College, individuals holding a valid Texas Concealed Handgun License (CHL), or the new state designation for the same, License to Carry (LTC), are legally permitted to carry a concealed handgun onto SPC campuses.

Nonetheless, SPC prohibits the open carrying of handguns on all South Plains College campuses. Therefore, report violations to the College Police Department at 806-716-2396 or call 911.

Visit the following webpage for a detailed list of excluded campus areas:
<http://www.southplainscollege.edu/campuscarry.php>.