



Electrical Systems Design-21313

ELPT-2343

RT 2022 Section 0001 3 Credits 01/18/2022 to 05/15/2022 Modified 01/24/2022

Course Meetings

Course Modality

In-person

Meeting Days

Mondays

Meeting Times

6:00-8:50 pm

Meeting Location

Room 201, JB Whiteley Building - Central Campus

Welcome and Instructor Information

Instructor: Mr. Heriberto Frias Rangel

Email: h.friasrangel@hccs.edu

Office: JB Whiteley Bldg. Rm 201

Phone: 713-718-6869

What's Exciting About This Course

One of the most exciting aspects of learning electrical wiring is understanding how electricity can be used safely. It is fascinating how devices can be controlled using electricity from turning on lights to regulating the speed motors to transmitting information.

My Personal Welcome

Welcome to class! I am excited about being your instructor this semester. I am thankful for the opportunity to contribute to your electrical training. I aim to provide you with meaningful activities that will allow you to apply the concepts that you need to master. This is an exciting class that comes with lots of challenges. It will take a lot of work to succeed. For those of you who find this class a challenge, I am available to support you. I take my job of ensuring your success while maintaining the necessary rigor very seriously. The fastest way to reach me is by my HCC email. The best way to really discuss issues is in person, so I will be available during my virtual office hours posted on Canvas > Cisco WebEx > Office Hours to tackle any questions you might have. Do not hesitate to contact me whenever you have a question.

Preferred Method of Contact

HCC email h.friasrangel@hccs.edu or Canvas messages

Office Hours

Please make your meeting request one day in advance to ensure proper scheduling.

Course Overview

Course Description

ELPT 2343 is a course dealing with Electrical design of commercial and/or industrial projects including building layout, types of equipment, placement, sizing of electrical equipment, and all electrical calculations according to the requirements of the National Electrical Code (NEC).

Requisites

There is no prerequisites for ELPT 2343.

Department Website

<https://www.hccs.edu/centers/architectural-design--construction/> (<https://www.hccs.edu/centers/architectural-design--construction/>)

Core Curriculum Objectives (CCOs)

ELPT 2343 is a building block class in your journey towards a qualified, skilled electrical worker, and this course should address the following core objectives:

- **Safety Above All:** Students will demonstrate the ability to choose the proper tool while practicing safety to ensure that all people in the surround work place area are safe from harm.
- **Communication Skills:** Students will demonstrate effective communication through visual, written, and spoken to develop themselves as qualified electrical workers
- **Critical Thinking:** Students will demonstrate critical thinking skills in choosing proper personal protection equipment and tools in order to accomplish tasks in a safe and proper manner.

Student Learning Outcomes and Objectives

Program Student Learning Outcomes (PSLOs)

Can be found at:

<https://www.hccs.edu/programs/areas-of-study/construction-industry--manufacturing/electrical-technology/>
(<https://www.hccs.edu/programs/areas-of-study/construction-industry--manufacturing/electrical-technology/>)

Course Student Learning Outcomes (CSLOs)

Upon completion of ELPT 2343, the student will be able to:

1. Strategically locate electrical equipment within a building;
2. Calculate electrical loading for a building;
3. Manipulate electrical loads to balance systems;
4. Size service equipment feeding a building;
5. Analyze the layout of materials and equipment for special or hazardous locations;
6. Calculate a Return on Investment including current funding options for energy efficient and renewable energy products.

Departmental Practices and Procedures

Department Specific Instructor and Student Responsibilities

Add Content Here

Program-Specific Student Success Information

Add Content Here

Instructional Materials and Resources

Instructional Materials

The [HCC Online Bookstore \(https://hccs.bncollege.com/shop/hccs-central/page/find-textbooks\)](https://hccs.bncollege.com/shop/hccs-central/page/find-textbooks) provides searchable information on textbooks for all courses. Check with your instructor before purchasing textbooks because the book might be included in your course fees.

Add Instructional Materials Here

Electrical Systems Based on the 2020 NEC®

Author: Michael I. Callanan, Bill Wusinich

Publisher: ATP

Edition: 1st

ISBN: 978-0826920355

Course Requirements

Assignments, Exams, and Activities

Type	Weight	Topic	Notes
Labs/Assignments	20%	Electrical circuits	In order to do the labs and assignments in this class, you will be responsible for purchasing all of the tools and other items from the "Tool List" for this class. Failure to have the proper items needed for this class will result in you not being successful in passing this class. It is imperative that you finish your lab assignments in the timeframe for which are due.
Quizzes	20%	Electrical circuits	There will be a number of quizzes based off of the textbook, the labs and assignments, the video, and the lectures from class. The purpose of quizzes is to make sure you learned everything that we go over in class so it is important for you to not miss any class or get with your instructor to find out what you missed so you can do well on the exams. There is no time limit for the quizzes, other than the due date, so start working on them early in the week. Quizzes will be available at the end of the live lecture and due right before next week's lecture.
Midterm Exam	20%	Chapters 1-7	Exams will be based off the textbook, the videos, and the lectures from class. As with the quizzes, you will be responsible for learning and knowing everything that we go over in class so it is important for you to not miss any class or get with your instructor to find out what you missed.
Final Exam	20%	Chapters 8-14	Exams will be cumulative based off the textbook, the videos, and the lectures from class. As with the quizzes, you will be responsible for learning and knowing everything that we go over in class so it is important for you to not miss any class or get with your instructor to find out what you missed.
Final Project	20%	Electrical System Design	This is a capstone class, which means that a practical final product must be designed. This design does not have to be built, but must be documented with schematics, calculations, a bill of materials and a cost estimate. Each student will have to use the knowledge that they have attained in this class in order to complete the design. You will have to submit your final project presentation in electronic or paper form. More to come on this subject later in the semester.

Grading Formula

Grade	Range	Notes
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Grade	Range	Notes
A	90-100	
B	80-89	
C	70-79	
D	60-69	
F	59 and below	

* Instructor's Practices and Procedures

Incomplete Policy

In order to receive a grade of Incomplete ("I"), a student must have completed at least 85% of the work in the course. In all cases, the instructor reserves the right to decline a student's request to receive a grade of Incomplete.

Missed Assignments/Make-Up Policy

There will be a 10-point penalty for each day an assignment, lab or quiz is late, with a maximum penalty of 40 points. This is to ensure that you will make your best effort to learn the material and complete the work. Quizzes have no time limit, so you can start them at any time, and ask your instructor or classmates if you need help. One quiz with the lowest score will be removed from grading (not including midterm or final exams). There will be no makeup exam so make sure not to miss the midterm or the final exams.

Academic Integrity

Here's the link to the HCC information about academic integrity (Scholastic Dishonesty and Violation of Academic Scholastic Dishonesty and Grievance):

<https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/>
[\(https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/\)](https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/)

Attendance Procedures

You are encouraged to attend each class since regular attendance correlates with good grades. Be on time and attend the entire class. If you must be absent, you are, of course, responsible for the material covered in class in your absence. Be advised that instructors must drop students who fail to attend class by the official date of enrollment ("Census Day"). In addition, instructors may drop students who miss four hours or 12.5% of class time.

If you miss the live lecture, you may watch the recording for that week, about one hour after class ends.

Student Conduct

I expect students to conduct themselves professionally in their communications with me, classmates, and college staff and administration, whether in email or in class. Behavior inappropriate to the collegiate setting (including but not limited to abusive/derogatory/threatening/harassing language directed at the instructor or towards other students, staff or administrators) will not be tolerated and may result in removal from the course if severe and/or repeated.

Instructor's Course-Specific Information

In order to receive full credit for labs and projects, students must demonstrate proper use of PPE for electrical safety and a professional behavior. Safe and proper lab attire does not include shorts or sweat pants, flip-flop or open-toed shoes. You must wear rubber-soled boots or sneakers. All conductive materials, including earrings, rings, necklaces, and other metallic items must be removed during labs. Also, safety glasses must be worn to protect your eyes.

The [Respondus Lockdown Browser \(https://download.respondus.com/lockdown/download.php?ID=355612798\)](https://download.respondus.com/lockdown/download.php?ID=355612798) will be required to take the Midterm and Final exams. It is mandatory that you download it. You must have a webcam or built-in camera to access computer-proctored exams. Click on the highlighted link to get to the download page.

Devices

No smart device is allowed during exams. This excludes quizzes. On proctored exams, students are allowed a scientific calculator only. You may purchase any scientific calculator you can afford. No other device may be used instead of an actual calculator.

Faculty Statement about Student Success

Expect to spend at least twice as many hours per week outside of class as you do in class studying the course content. Successful completion of this course requires a combination of the following:

- Reading the textbook
- Attending class in person and/or online
- Completing assignments
- Participating in class activities

There is no short cut for success in this course; it requires reading (and probably re-reading) and studying the material using the course objectives as your guide. Please use your instructor's available office hours to request help as early as possible.

Faculty-Specific Information Regarding Canvas

This course section will use Canvas (<https://eagleonline.hccs.edu> (<https://eagleonline.hccs.edu>)) to supplement in-class assignments, exams, and activities.

HCCS Open Lab locations may be used to access the Internet and Canvas. For best performance, Canvas should be used on the current or first previous major release of Chrome, Firefox, Edge, or Safari. Because it's built using web standards, Canvas runs on Windows, Mac, Linux, iOS, Android, or any other device with a modern web browser.

Canvas only requires an operating system that can run the latest compatible web browsers. Your computer operating system should be kept up to date with the latest recommended security updates and upgrades.

Respondus LockDown Browser and Monitor are required. Software can be downloaded [here](https://download.respondus.com/lockdown/download.php?ID=355612798) (<https://download.respondus.com/lockdown/download.php?ID=355612798>). Virtual proctoring with Respondus Monitor also requires a webcam connected to your computer.

Social Justice Statement

Houston Community College is committed to furthering the cause of social justice in our community and beyond. HCC does not discriminate on the basis of race, color, religion, sex, gender identity and expression, national origin, age, disability, sexual orientation, or veteran status. I fully support that commitment and, as such, will work to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. In this course, we share in the creation and maintenance of a positive and safe learning environment. Part of this process includes acknowledging and embracing the differences among us in order to establish and reinforce that each one of us matters. I appreciate your suggestions about how to best maintain this environment of respect. If you experience any type of discrimination, please contact me and/or the Office of Institutional Equity at 713-718-8271.

HCC Policies and Information

HCC Grading System

HCC uses the following standard grading system:

Grade	Grade Interpretation	Grade Points
A	Excellent (90-100)	4
B	Good (80-89)	3
C	Fair (70-79)	2
D	Passing (60-69), except in developmental courses.	1
F	Failing (59 and below)	0
FX	Failing due to non-attendance	0
W	Withdrawn	0
I	Incomplete	0
AUD	Audit	0
IP	In Progress. Given only in certain developmental courses. A student must re-enroll to receive credit.	0
COM	Completed. Given in non-credit and continuing education courses.	0

Link to Policies in Catalog and Student Handbook

Here's the link to the HCC Catalog and Student Handbook: <https://catalog.hccs.edu/> (<https://catalog.hccs.edu/>)

In it you will find information about the following:

- Academic Information
- Academic Support
- Attendance, Repeating Courses, and Withdrawal
- Career Planning and Job Search
- Childcare
- disAbility Support Services
- Electronic Devices
- Equal Educational Opportunity
- Financial Aid TV (FATV)
- General Student Complaints
- Grade of FX
- Incomplete Grades
- International Student Services
- Health Awareness
- Libraries/Bookstore
- Police Services & Campus Safety
- Student Life at HCC
- Student Rights and Responsibilities
- Student Services
- Testing

- Transfer Planning
- Veteran Services

Link to HCC Academic Integrity Statement

<https://www.hccs.edu/student-conduct> (<https://www.hccs.edu/student-conduct>) (scroll down to subsections)

Campus Carry Link

Here's the link to the HCC information about Campus Carry:

<https://www.hccs.edu/campuscarry> (<https://www.hccs.edu/campuscarry>)

HCC Email Policy

When communicating via email, HCC requires students to communicate only through the HCC email system to protect your privacy. If you have not activated your HCC student email account, you can go to [HCC Eagle ID \(https://www.hccs.edu/email\)](https://www.hccs.edu/email) and activate it now. You may also use Canvas Inbox to communicate.

Office of Institutional Equity

Use the following link to access the HCC Office of Institutional Equity, Inclusion, and Engagement: <https://www.hccs.edu/eeo> (<https://www.hccs.edu/eeo>)

Ability Services

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including long and short term conditions, mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to <https://www.hccs.edu/accessibility> (<https://www.hccs.edu/accessibility>)

Title IX

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

David Cross
Director EEO/Compliance
Office of Institutional Equity & Diversity
3100 Main
(713) 718-8271
Houston, TX 77266-7517 or Institutional.Equity@hccs.edu (<mailto:Institutional.Equity@hccs.edu>)

<https://www.hccs.edu/titleix> (<https://www.hccs.edu/titleix>)

Office of the Dean of Students

Contact the office of the Dean of Students to seek assistance in determining the correct complaint procedure to follow or to identify the appropriate academic dean or supervisor for informal resolution of complaints.

<https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-complaints/speak-with-the-dean-of-students/> (<https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-complaints/speak-with-the-dean-of-students/>)

Student Success

Expect to spend at least twice as many hours per week outside of class as you do in class studying the course content. Additional time will be required for written assignments. The assignments provided will help you use your study hours wisely. Successful completion of this course requires a combination of the following:

- Reading the textbook
- Attending class in person and/or online
- Completing assignments
- Participating in class activities

There is no short cut for success in this course; it requires reading (and probably re-reading) and studying the material using the course objectives as a guide.

Canvas Learning Management System

Canvas is HCC's Learning Management System (LMS), and can be accessed at the following URL:

<https://eagleonline.hccs.edu> (<https://eagleonline.hccs.edu>)

HCCS Open Lab locations may be used to access the Internet and Canvas. For best performance, Canvas should be used on the current or first previous major release of Chrome, Firefox, Edge, or Safari. Because it's built using web standards, Canvas runs on Windows, Mac, Linux, iOS, Android, or any other device with a modern web browser.

Canvas only requires an operating system that can run the latest compatible web browsers. Your computer operating system should be kept up to date with the latest recommended security updates and upgrades.

HCC Online Information and Policies

Here is the link to information about HCC Online classes, which includes access to the required Online Information Class Preview for all fully online classes: <https://www.hccs.edu/online/> (<https://www.hccs.edu/online/>)

Scoring Rubrics, Sample Assignments, etc.

Look in Canvas for the scoring rubrics for assignments, samples of class assignments, and other information to assist you in the course. <https://eagleonline.hccs.edu/> (<https://eagleonline.hccs.edu/>)

Instructor and Student Responsibilities

As your Instructor, it is my responsibility to:

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through learner-centered instructional techniques
- Provide a description of any special projects or assignments
- Inform students of policies such as attendance, withdrawal, tardiness, and making up assignments
- Provide the course outline and class calendar that will include a description of any special projects or assignments
- Arrange to meet with individual students during office hours, and before and after class as required

As a student, it is your responsibility to:

- Attend class in person and/or online
- Participate actively by reviewing course material, interacting with classmates, and responding promptly in your communication with me
- Read and comprehend the textbook
- Complete the required assignments and exams
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts, and all assignments

- Be aware of and comply with academic honesty policies in the [HCCS Student Handbook \(https://www.hccs.edu/studenthandbook\)](https://www.hccs.edu/studenthandbook)

Sensitive or Mature Course Content

In this college-level course, we may occasionally discuss sensitive or mature content. All members of the classroom environment, from your instructor to your fellow students, are expected to handle potentially controversial subjects with respect and consideration for one another's varied experiences and values.

EGLS3

The EGLS³ ([Evaluation for Greater Learning Student Survey System \(https://www.hccs.edu/egls3\)](https://www.hccs.edu/egls3)) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS³ surveys are only available for the Fall and Spring semesters. -EGLS3 surveys are not offered during the Summer semester due to logistical constraints.

<https://www.hccs.edu/egls3> (<https://www.hccs.edu/egls3>)

Housing and Food Assistance for Students

Any student who faces challenges securing their foods or housing and believes this may affect their performance in the course is urged to contact the Dean of Students at their college for support. Furthermore, please notify the professor if you are comfortable in doing so.

This will enable HCC to provide any resources that HCC may possess.

Student Resources

Tutoring

HCC provides free, confidential, and convenient academic support, including writing critiques, to HCC students in an online environment and on campus. Tutoring is provided by HCC personnel in order to ensure that it is contextual and appropriate. Visit the [HCC Tutoring Services \(https://www.hccs.edu/tutoring\)](https://www.hccs.edu/tutoring) website for services provided.

Libraries

The HCC Library System consists of 9 libraries and 6 Electronic Resource Centers (ERCs) that are inviting places to study and collaborate on projects. Librarians are available both at the libraries and online to show you how to locate and use the resources you need. The libraries maintain a large selection of electronic resources as well as collections of books, magazines, newspapers, and audiovisual materials. The portal to all libraries' resources and services is the HCCS library web page at <https://library.hccs.edu> (<https://library.hccs.edu/>).

Supplementary Instruction

Supplemental Instruction is an academic enrichment and support program that uses peer-assisted study sessions to improve student retention and success in historically difficult courses. Peer Support is provided by students who have already succeeded in completion of the specified course, and who earned a grade of A or B. Find details at <https://www.hccs.edu/supplemental-instruction> (<https://www.hccs.edu/supplemental-instruction>)

Resources for Students:

<https://www.hccs.edu/covid19students> (<https://www.hccs.edu/covid19students>)

Basic Needs Resources:

<https://www.hccs.edu/support-services/counseling/hcc-cares/basic-needs-resources/> (<https://www.hccs.edu/support-services/counseling/hcc-cares/basic-needs-resources/>)

Student Basic Needs Application:

<https://www.hccs.edu/basicneeds> (<https://www.hccs.edu/basicneeds>)

COVID-19

Here's the link to the HCC information about COVID-19:

<https://www.hccs.edu/covid-19> (<https://www.hccs.edu/covid-19>)

Instructional Modalities

In-Person (P)

Safe, face-to-face course with scheduled dates and times

Online on a Schedule (WS)

Fully online course with virtual meetings at scheduled dates and times

Online Anytime (WW)

Traditional online course without scheduled meetings

Hybrid (H)

Course that meets safely 50% face-to-face and 50% virtually

Hybrid Lab (HL)

Lab class that meets safely 50% face-to-face and 50% virtually

Copyright Statement

In order to uphold the integrity of the academic environment and protect and foster a cohesive learning environment for all, HCC prohibits unauthorized use of course materials. Materials shared in this course are based on my professional knowledge and experience and are presented in an educational context for the students in the course. Authorized use of course materials is limited to personal study or educational uses. Material should not be shared, distributed, or sold outside the course without permission. Students are also explicitly forbidden in all circumstances from plagiarizing or appropriating course materials. This includes but is not limited to publically posting quizzes, essays, or other materials. This prohibition extends not only during this course, but after. Sharing of the materials in any context will be a violation of the HCC Student Code of Conduct and may subject the student to discipline, as well as any applicable civil or criminal liability. Consequences for unauthorized sharing, plagiarizing, or other methods of academic dishonesty may range from a 0 on the specified assignment and/or up to expulsion from Houston Community College. Questions about this policy may be directed to me or to the Manager of Student Conduct and Academic Integrity.

Course Calendar

Syllabus Modifications

The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.

Week	Dates	Topic/What's due
1	1/18-1/24	Syllabus Canvas Introduction Chapter 1 Research Lab 1

2	1/25-1/31	Chapter 2 Research Lab 2
3	2/01-2/07	Chapter 3 Research Lab 3
4	2/08-2/14	Chapter 4 Research Lab 4
5	2/15-2/21	Chapter 5 Project Lab 1
6	2/22-2/28	Chapter 6 Project Lab 2
7	3/01-3/07	Chapter 7 Project Lab 3
8	3/08-3/14	Midterm Exam
9	3/21-3/27	Chapter 8 Project Lab 4
10	3/28-4/03	Chapter 9 Project Lab 5
11	4/04-4/10	Chapter 10 Project Lab 6
12	4/11-4/17	Chapter 11 Project Lab 7
13	4/18-4/24	Chapter 12 Project Lab 8
14	4/25-5/01	Chapter 13 Project Lab 9
15	5/02-5/08	Chapter 14 Project Lab 8
16	5/09-5/15	Final Project and Final Exam

Additional Information

Departmental/Program Information

<https://www.hccs.edu/programs/areas-of-study/construction-industry--manufacturing/electrical-technology/>
(<https://www.hccs.edu/programs/areas-of-study/construction-industry--manufacturing/electrical-technology/>)

Process for Expressing Concerns about the Course

If you have concerns about any aspect of this course, please reach out to your instructor for assistance first. If your instructor is not able to assist you, then you may wish to contact the Department Chair.

Aurelio Aguilar
713-718-5284
aurelio.aguilar@hccs.edu