HOUSTON COMMUNITY COLLEGE

Course Syllabus
Basic Electricity for HVAC
HART 1301

Semester with Course Reference Number (CRN)	**HVAC 1301** **33460**
Instructor contact information (phone number and email address)	**Reynaldo Ner** **713-718-6869** **reynaldo.ner@hccs.edu**
Office Location and Hours	CENTRAL J.B. Whitely Building “By Appointment”
Course Location/Times	J.B. Whitley Building Monday & Wednesday 5:00-7:40PM
Course Semester Credit Hours (SCH) (lecture, lab) If applicable	Credit Hours: 3 Lecture Hours: 2 Laboratory Hours: 3 External Hours:
Total Course Contact Hours	80.00
Course Length (number of weeks)	6 Weeks
Type of Instruction	Lecture/Lab
Course Description:	Principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.
Course Prerequisite(s)	• **NA**
Academic Discipline/CTE	1. Demonstrate knowledge of safety rules and regulations. 2. Demonstrate the proper selection, use, and maintenance of hand

Program Learning Outcomes	and power tools and measuring instruments used in A/C and Refrigeration. 3. Demonstrate knowledge of HVAC and refrigeration controls 4. Maintain/service/repair A/C and Refrigeration equipment. 5. Troubleshoot A/C and Refrigeration equipment.
Course Student Learning Outcomes (SLO): 4 to 7	1. Discuss soft skills 2. Explain importance of safety in construction and industrial crafts 3. Demonstrate understanding of basic science 4. Demonstrate understanding of basic electricity 5. Identify and classify construction and electrical drawings 6. Operate electrical measuring instruments 7. Identify components and interpret symbols 8. Identify and interpret circuits
Learning Objectives (Numbering system should be linked to SLO - e.g., 1.1, 1.2, 1.3, etc.)	**Discuss soft skills** 1. Recall importance of employability and communication skills **Explain importance of safety in construction and industrial crafts** 1. Recognize and identify safety hazards and practice general and electrical safe work practices **Demonstrate understanding of basic science** 1. Demonstrate knowledge of basic principles of electricity **Demonstrate understanding of basic electricity** 1. Demonstrate understanding of electrical current **Identify and classify construction and electrical drawings** 1. Demonstrate understanding of blueprints and schematics **Operate electrical measuring instruments** 1. Measure voltage, current and resistance with appropriate meters **Identify components and interpret symbols** 1. Apply Ohm's law to perform electrical calculations **Identify and interpret circuits** 1. Examine series and parallel circuits
SCANS and/or Core Curriculum Competencies: If applicable	SCANS **Discuss soft skills** **Explain importance of safety in construction and industrial crafts** **Demonstrate understanding of basic science** **Demonstrate understanding of basic electricity** **Identify and classify construction and electrical drawings** **Operate electrical measuring instruments** **Identify components and interpret symbols** **Identify and interpret circuits**
Instructional Methods	Face to Face
Student Assignments	**Discuss soft skills** **Explain importance of safety in construction and industrial**

crafts
Demonstrate understanding of basic science
Demonstrate understanding of basic electricity
Identify and classify construction and electrical drawings
Operate electrical measuring instruments
Identify components and interpret symbols
Identify and interpret circuits

Student Assessment(s)

Assessments will be administered to determine understanding and comprehension of the course and to determine an appropriate grade. National Center for Construction Education and Research (NCCER) assessments administered, as applicable.

Discuss soft skills
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
Group and/or individual projects
Various assigned readings from textbooks

Explain importance of safety in construction and industrial crafts
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
Group and/or individual projects
Various assigned readings from textbooks

Demonstrate understanding of basic science
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
Group and/or individual projects
Various assigned readings from textbooks

Demonstrate understanding of basic electricity
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
Group and/or individual projects
Various assigned readings from textbooks

Identify and classify construction and electrical drawings
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
Group and/or individual projects
Various assigned readings from textbooks

Operate electrical measuring instruments
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay

Group and/or individual projects
Various assigned readings from textbooks

Identify components and interpret symbols
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
Group and/or individual projects
Various assigned readings from textbooks

Identify and interpret circuits
In-class discussions
Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
Group and/or individual projects
Various assigned readings from textbooks

Instructor's Requirements

<u>As your Instructor, it is my responsibility to:</u>

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through class activities, discussions, and lectures
- Description of any special projects or assignments
- Inform students of policies such as attendance, withdrawal, tardiness and make up
- Provide the course outline and class calendar which will include a description of any special projects or assignments
- Arrange to meet with individual students before and after class as required

<u>To be successful in this class, it is the student's responsibility to:</u>

- Attend class and participate in class discussions and activities
- Read and comprehend the textbook
- Complete the required assignments and exams *(including midterm and final)*:
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts and all assignments

*Student is required to bring to class all necessary tools, and dress according to lab safety requirements. Student must bring textbooks, notebooks, and other required supplies.

COURSE OUTLINE, CONTENT GOALS AND ACTIVITIES

9/11 – 9/13 OHMS Law Lecture

OHMS Law Lab

9/18 – 9/20 Series Loads

Parallel Loads

Series/Parallel Loads

Lecture/Lab

9/25 – 9/27 Circuit Study/Lab

Electrical Characteristics

in HVAC Circuits

Installation and Schematic Diagrams

10/2 – 10-4 Test on Actual HVAC Circuits

10/9 – 10/11 Troubleshooting Actual HVAV Circuits

Lecture/Labs

10/16 – 10/18 FINALS

HCC Grading Scale:

A = 100- 90
B = 89 - 80:
C = 79 - 70:
D = 69 - 60:
59 and below = F

FINAL GRADE OF FX: Students who stop attending class and do not withdraw themselves prior to the withdrawal deadline may either be dropped by their professor for excessive absences or be assigned the final grade of "FX" at the end of the semester. Students who stop attending classes will receive a grade of "FX", compared to an earned grade of "F" which is due to poor performance. Logging into a DE course without active participation is seen as non-attending. Please note that HCC will not disperse financial aid funding for students who

have never attended class.

Students who receive financial aid but fail to attend class will be reported to the Department of Education and may have to pay back their aid. A grade of "FX" is treated exactly the same as a grade of "F" in terms of GPA, probation, suspension, and satisfactory academic progress.

To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect GPA.

Instructional Materials

(REQUIRED) ELECTRICITY FOR REFRIGERATION, HEATING, AND AIR CONDITIONING Russell E. Smith Athens Technical College, Athens 9th Edition ISBN-13: 978-1285179988 ISBN-10: 1285179986 and
(OPTIONAL) CORE CURRICULUM TRAINEE GUIDE NCCER 5th Edition ISBN-10: 0-13-413098-7 or
(OPTIONAL) CAREER AND TECHNICAL WORKBOOK(S) EEI Publishing www.certifyin7.org/resources.html

EGLS3 -- Evaluation for Greater Learning Student Survey System

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time near the end of the term, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and department chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term.

Student Services Policies

http://www.hccs.edu/district/about-us/procedures/student-rights-policies--procedures/

HCC Policy Statement: *Discrimination and Accommodations Due to a Qualified Disability*

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 Houston, TX 77266-7517 or
Institutional.Equity@hccs.edu

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including 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 http://www.hccs.edu/district/students/disability-services/

HCC Policy Statement: *Sexual Misconduct*

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

HCC Online *and/or* Continuing Education Policies

All students are responsible for reading and understanding the HCC Online Student Handbook, which contains policies, information about conduct, and other important information. For the HCC Online Student Handbook click on the link below or go to the HCC Online page on the HCC website.

The HCC Online Student Handbook contains policies and procedures unique to the online student. Students should have reviewed the handbook as part of the mandatory orientation. It is the student's responsibility to be familiar with the handbook's contents. The handbook contains valuable information, answers, and resources, such as HCC Online contacts, policies and procedures (how to drop, attendance requirements, etc.), student services

	(ADA, financial aid, degree planning, etc.), course information, testing procedures, technical support, and academic calendars. Refer to the HCC Online Student Handbook by visiting this link: http://www.hccs.edu/media/houston-community-college/distance-education/student-services/HCC-Online-Student-Handbook.pdf
Campus Carry	At HCC the safety of our students, staff, and faculty is our first priority. As of August 1, 2017, Houston Community College is subject to the Campus Carry Law (SB11 2015). For more information, visit the HCC Campus Carry web page at http://www.hccs.edu/district/departments/police/campus-carry/.
Special Statement Regarding Impact of Hurricane Harvey	Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. Furthermore, please notify the professor if you are comfortable in doing so.