

**LAREDO COMMUNITY COLLEGE
GENERAL COURSE SYLLABUS
Fall, 2013**

INSTRUCTOR:	Mauro Alaniz.
DEPARTMENT:	Industrial Technology – Heating, Air Conditioning & Refrigeration
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CAMPUS/OFFICE LOCATION: OFFICE HOURS:	MV213 Main
COURSE TITLE:	Basic Electricity for HVAC
COURSE NUMBER:	HART 1401
COURSE LEVEL:	Introductory
CONTACT HOURS (RANGE FOR STATE INFORMATION):	112hrs.
LAB:	Required *Note: Student will be required to have their own hand tools, wear Personal Protective Equipment (PPE) and appropriate work attire in order to participate in the lab portion of the course. Instructor will provide students with a list of hand tools, PPE and work attire to students.
TEXTBOOKS/MATERIALS:	Author: Whitman Air Conditioning System Design 7th edition Refrigeration & Air Conditioning Tech w/cengage – ISBN#978-1-111-64447-5 Units 12, 13, 14, & 15
CORE or NON-CORE Course:	Non-Core
COURSE DESCRIPTION:	Principles of electricity as required for HVAC, including proper use of test equipment, electrical circuits, and component theory and operation
END-OF-COURSE OUTCOMES:	Upon completion of this course, the student should be able to: 1. Demonstrate knowledge of basic principles of electricity, electrical current, circuitry, and air conditioning devices. 2. Apply Ohm's law to electrical calculations. 3. Perform electrical continuity voltage and current tests with appropriate meters. 4. Demonstrate electrical safety.
COURSE OBJECTIVES OR EXEMPLARY OBJECTIVES:	<ol style="list-style-type: none"> 1. Explain the characteristics that make certain materials good conductors and others good insulators. 2. List the units of measurement for electricity. 3. Define Ohm's law. 4. Name the reasons for using proper wire sizes. 5. Describe procedures for making electrical measurements. 6. Describe the rod and tube. 7. Describe fluid-filled controls. 8. Explain the thermocouple. 9. Explain the thermistor. 10. Discuss space temperature control. 11. Describe system overshoot and temperature swing. 12. Describe a high-pressure control. 13. Describe a low-pressure control.

	<ul style="list-style-type: none"> 14. Describe the functions of mechanical and electromechanical controls. 15. Describe and identify power-and non-power-consuming devices. 16. Describe how a voltmeter is used to troubleshoot an electrical circuit. 17. Describe how an ammeter is used to troubleshoot an electrical circuit. 18. Recognize the components in a heat-cool electrical circuit. 19. Differentiate between a pictorial and a line-type electrical wiring diagram.
GENERAL EDUCATION COMPETENCIES:	<p>Laredo Community College has identified four college-level general education competencies. They are:</p> <ol style="list-style-type: none"> 1. <u>Communication:</u> LCC students develop and express ideas through effective written, oral, and visual communication for various academic and professional contexts. <u>Expected Outcomes:</u> <ul style="list-style-type: none"> A. The student uses relevant content that conveys understanding. B. The student uses disciplinary conventions for organizing content and presenting content. C. The student uses communication tools appropriately and skillfully for academic and professional contexts. 2. <u>Critical Thinking:</u> LCC students use inquiry and analysis, evaluation and synthesis of information, and innovation and creative thinking. <u>Expected Outcomes:</u> <ul style="list-style-type: none"> A. Students pose vital questions and identify problems, formulating them clearly and precisely. B. Students consider alternative viewpoints, recognize and assess assumptions, and identify possible consequences. C. Students develop well-reasoned conclusions and solutions. D. Students apply creative ideas or approaches to achieve solutions or complete projects. 3. <u>Empirical and Quantitative Skills:</u> LCC students apply scientific and mathematical concepts to analyze and solve problems to investigate hypotheses. <u>Expected Outcomes:</u> <ul style="list-style-type: none"> A. Students identify problems or hypotheses and related quantitative components. B. Students select appropriate quantitative approaches to analyze and solve problems and investigate hypotheses. C. Students correctly apply quantitative approaches to analyze and solve problems and investigate hypotheses. D. Students summarize and reflect on their learning experiences. 4. <u>Teamwork:</u> LCC students consider different points of view and work effectively with others to support a shared purpose or goal. <u>Expected Outcomes:</u> <ul style="list-style-type: none"> A. The student makes a quality contribution to the Team Activity. B. The student treats fellow team members courteously with respect. C. The student models personal attributes that contribute teamwork.
QUALITY ENHANCEMENT PLAN (QEP)	The QEP is a long-term institutional commitment designed to improve student learning. The improvement of reading and reading

Reading: Gateway to Learning	comprehension was selected by the students, faculty, staff, and administration of LCC as the focus of our QEP. The diverse reading materials assigned in this course should help you to improve your basic reading and reading comprehension skills necessary to succeed in college.
SCANS COMPETENCIES:	Refer to attachment.
SCANS ASSESSMENT:	F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, F13, F14, F15, F16 C1, C5, C10, C11, C13, C16, C17, C18, C19, & C20
TEACHING STRATEGIES/METHODS OF INSTRUCTION:	Instructor's lectures, overhead projector, material shown thru DVD's, oral presentations by students, and drawings diagrams on board.
OUTCOMES ASSESSMENT:	Assignment, unit exams, quizzes, and a final written examination will be given to evaluate student retention of the material covered.
EXTERNAL ASSESSMENTS:	Students enrolled in this course may be randomly selected to participate in external assessments to determine educational gains. You may be asked to provide assignments which may be included in course portfolios and used for evaluation of General Education Competencies. In addition, you may be selected to participate in the completion of surveys and/or be selected to take tests which will gauge your overall improvement in reading, writing, critical thinking, and mathematics. These activities are designed to collectively monitor your overall progress as a higher education student.
METHODS AND CRITERIA FOR EVALUATION:	Grade determination will be used on the following: Class Assignment/Test Average.....40% Class Final Exam.....20% Lab.....40%100% No MAKE-UP Tests unless previous arrangements are made and approved by the instructor.
GRADING SCALE:	A Excellent, 100-90% B Good, 89-80% C Average, 79-70% D Poor, 69-60% F Fail, 59% or below F_ Failure, Non-Participatory I Incomplete W Withdrawal NC No Credit NC_ No Credit, Non-Participatory NC_DV .. No Credit, Developmental NCDV ... No Credit, Developmental, Non-Participatory P Pass NP No Pass AU Audit Students must access the Semester Progress Report and Final Grades through PASPort (http://pasport.laredo.edu). Instructors will notify students of the window of availability for grades.
ATTENDANCE REGULATIONS: Office of the Registrar • Fort McIntosh Campus - Memorial Hall Room 103 or call (956) 721-5887 • South Campus – Billy Hall Student Center	Attendance will be taken up until the official census date, which is the first 11 class days during the fall and spring semester, and for the first three days during the summer sessions. Students who attend at least one day of class leading up to the census date will be officially enrolled in the course, and faculty members will drop any students who have not attended at least one class day. Once the official census date for the semester or session has passed, no formal attendance will be required except for programs where the respective

<p>Room 113 or call (956) 794-4109</p> <p>Enrollment and Registration Services Center</p> <ul style="list-style-type: none"> • Fort McIntosh Campus - Memorial Hall Room 125 or call (956) 721-5109 or 5421 • South Campus – Billy Hall Student Center Room 113 or call (956) 794-4109 <p>Financial Aid Center</p> <ul style="list-style-type: none"> • Fort McIntosh Campus – Building P-24 or call (956) 721-5361. • South Campus – Billy Hall Student Center Room 123 or call (956) 794-4361. <p>Health Services Center</p> <ul style="list-style-type: none"> • Fort McIntosh Campus – Building P-4 or call (956) 721-5189. • South Campus – Billy Hall Student Center Room 208 or call (956) 794-4189. 	<p>accreditation agency requires attendance records.</p> <p>Students who do not intend to remain enrolled after attending at least one class day must initiate a drop request from any or all classes by submitting a drop slip to the Enrollment and Registration Services Center or through PASPort. Responsibility for class attendance rests with the student. Regular and punctual attendance is expected.</p> <p>It is advised that a student contact Financial Aid Center at either campus prior to dropping a course.</p> <p>Absence From Final Examinations: A student who is absent from a final examination receives a grade of "0" for the examination and a grade of "F" for the course. Any students authorized to be absent from a final examination receive a grade of "I" on their transcript until they take the final examination. Such students must take the final exam within four months. Final exams cannot be re-taken. The instructor will submit a Grade Change Form to change the previously submitted incomplete grade to an "F" if the student does not meet the 4 month deadline.</p> <p>Other Policies (LCC and State-Wide):</p> <p>A. 3-peat—If a student signs up for a class for a third time, even if he/she dropped or failed it before, the State will not provide funding for that student and the student will be required to pay an additional fee.</p> <p>B. 6 W's—Beginning Fall 2007, students cannot drop more than 6 classes throughout their college career. Any subsequent drops will become F's. The rule includes credits earned at all Texas colleges/universities, and W's will carry over when transferring to other institutions.</p> <p>C. Finishing on time—The State expects students to graduate on time. Students who obtain 90 or more credit hours at a Community College are no longer eligible for financial aid.</p> <p>D. Bacterial Meningitis Vaccination Requirement effective Spring 2012.</p> <ul style="list-style-type: none"> • Per Texas State Law (SB 1107), students who meet the criteria below, must provide proper documentation that they have received the bacterial meningitis vaccination within the last five years and at least 10 calendar days before the beginning of the semester. • All new or transfer students under age 30. • All returning students under the age of 30, who have experienced a break in enrollment of at least one fall or spring term. • Students enrolled in online courses that physically attend classes or come to campus within the semester. <p>Vaccination records must be submitted to LCC's Campus Nurse at the Health Services Center.</p>
<p>SPECIAL SERVICES CENTER:</p> <ul style="list-style-type: none"> • Fort McIntosh Campus - Building P-41 • South Campus – Billy Hall Student Center, Room 21 <p>Fort McIntosh and South Campus Phone Number: (956) 721-5137</p>	<p>A student with disabilities, including learning disabilities, who wishes to request special accommodations in this class, should notify the Special Services Center. The request should be made early in the semester so that appropriate arrangements may be made. In accordance with Federal Law, a student requesting accommodations must provide documentation of his/her disability to the Special Services Counselor. For additional information, call or visit the Special Services Center.</p>

	<p>The student who needs note-taking and/or test-taking accommodations must notify the faculty member prior to the first exam.</p> <p>A pregnant student is required to meet all course/ program outcomes, including attendance.</p> <p>There may be contaminants present in clinical area(s) that could adversely affect a fetus. It is advisable for the student to contact her obstetrician, once pregnancy has been confirmed, to ensure that there are no medical concerns/limitations to continuing her courses.</p>
<p>GRADE APPEAL:</p>	<p>A student who wishes to question the final grade earned in a course or class activity should first discuss the situation with the instructor who issued the grade. If the issue is not resolved, the student should contact the appropriate Department Chairperson to request a review of the grade.</p> <p>If the student is not satisfied with the Department Chairperson’s decision, the student may contact the appropriate Dean of Instruction for assistance related to the grade appeal. Established departmental procedures will be utilized to resolve student grade appeals. After all other avenues have been exhausted; the student may request a review of the grade by the Vice-President for Instruction. Student grades are an academic matter; therefore, there is no further appeal beyond the Office of the Vice-President for Instruction.</p> <p>Students have two weeks (10 working days) after a final course grade is issued to appeal it. Students have one week (five working days) after an activity grade is issued to appeal it. Exceptions require the approval of the Vice-President for Instruction.</p>
<p>CLASSROOM ETIQUETTE:</p> <p>Office of Dean of Student Affairs</p> <ul style="list-style-type: none"> • Fort McIntosh Campus – Memorial Hall Room 212 • Phone Number: (956) 721-5417 	<p style="text-align: center;">Code of Student Conduct & Discipline</p> <p>Each student is expected to be fully acquainted with all published policies, rules, and regulations of the College, copies of which shall be available to each student for review at LCC’s website at www.laredo.edu (Student Life/Student Handbook/Student Rights and Responsibilities) and the Office of the Dean of Student Affairs. Laredo Community College will hold each student responsible for compliance with these policies, rules, and regulations. The student is responsible for obtaining published materials to update the items in this Code. Students are also expected to comply with all federal, state, and local laws. This principle extends to conduct off campus which is likely to have an adverse effect on Laredo Community College or on the educational process.</p> <p style="text-align: center;">Student Misconduct</p> <p>Each student is expected to conduct him/herself in a manner consistent with the college's functions as an educational institution. Specific examples of misconduct and the disciplinary process are located at LCC’s website at www.laredo.edu (Student Life/Student Handbook/Student Rights and Responsibilities).</p> <p style="text-align: center;">Use of Personal Electronic Devices</p> <p>The use of an electronic device shall not interfere with the instructional, administrative, student activities, public service, and other authorized activities on College District premises. Unless prior authorization is obtained from the instructor or respective College District official, the use of an electronic device is expressly prohibited in classrooms, laboratories, clinical settings, and</p>

designated quiet areas on College District premises. Certain violations of this policy may be excused in the case of emergencies or other extenuating circumstances provided that prior approval is obtained from the instructor or respective College District official.

The use of electronic equipment capable of capturing still or moving images in any location where individuals may reasonably expect a right to privacy is not authorized on College District premises. Noncompliance with these provisions shall be considered a violation of Board adopted policy and shall warrant appropriate disciplinary action.

Academic Dishonesty

The College expects all students to engage in all academic pursuits in a manner that is beyond reproach. Students will be expected to maintain complete honesty and integrity in their experiences in the classroom. Any student found guilty of dishonesty in their academic work is subject to disciplinary action.

- (1) The College and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, the following:
 - A. **Scholastic dishonesty** includes, but is not limited to, cheating on academic work, plagiarism, and collusion.
 - B. **Cheating on academic work includes:**
 - a. Copying from another student's test paper or other academic work.
 - b. Using, during a test, materials not authorized by the person giving the test.
 - c. Collaborating, without authority, with another student during an examination or in preparing academic work.
 - d. Knowingly using, buying, selling, stealing, transporting, or soliciting, in whole or part, the contents of an unadministered test.
 - e. Substitution for another student, or permitting another student to substitute for oneself, to take a test or prepare other academic work.
 - f. Bribing another person to obtain an unadministered test or information about an unadministered test.
 - C. **Plagiarism** means the appropriation of another's work and the unacknowledged incorporation of that work in one's own written work offered for credit.
 - D. **Collusion** means the unauthorized collaboration with another person in preparing written work offered for credit.
- (2) Procedures for discipline due to academic dishonesty shall be the same as in student disciplinary actions, except that all academic dishonesty actions shall be first considered and reviewed by the faculty member. If the student does not accept the decision of the faculty member, he/she may appeal the decision to the appropriate Department Chairperson, Dean of Instruction, or the Vice President for Instruction. If the student does not accept the decision of the appropriate Department Chairperson, Dean of Instruction, or the Vice President for Instruction, the student may then follow the normal disciplinary appeal procedures for a

	<p>review of the decision.</p> <p>For additional information please refer to the: Student Policies - LCC Policy Manual</p> <p>The LCC Policy Manual is available online and includes all Federal, State, and Local Policies applicable to the College. Students may access the LCC Policy Manual through LCC's website at www.laredo.edu (About LCC/Manual of Policy).</p>
<p>EMERGENCY PROCEDURES:</p> <p>IN CASE OF EMERGENCY,</p> <p>From an LCC phone, dial 111.</p> <p>From a Cell phone, dial 911.</p> <p>LCC Campus Police Offices</p> <ul style="list-style-type: none"> • Fort McIntosh Campus – Building P-64 Room 102 • South Campus – Henry Cuellar Protective Services Center Room 130 	<p>LCC Alert System: Safety and security for LCC is paramount. When an emergency arises, LCC will provide students with information as rapidly and as efficiently as possible. Students must register for the LCC Alert system at www.laredo.edu/lccalert.</p> <p>Emergencies: In case of an emergency, contact Campus Police. Campus Police will then dispatch a police officer to the site and alert emergency personnel. If it is determined that a notification needs to be sent out after an emergency is reported, the notification will provide information on what to do.</p> <p>When a person calls 111 or 911, Campus Police strongly encourages the caller to provide the following information: name, the location from where they are calling, the location of the emergency, and the type of emergency. The caller is to remain on the phone with the dispatcher until emergency responders arrive.</p>
<p>DISCLAIMER:</p>	<p>Every attempt has been made to make the contents of this syllabus informative and accurate. Content of the syllabus is subject to revision and change in the event of extenuating circumstances. Changes will be made available to you electronically.</p>

The updated official version of the LCC Catalog is the on-line catalog and can be found at www.laredo.edu (Admission/College Catalog).

ADDITIONAL COURSE INFORMATION

SCANS COMPETENCIES

ENCLOSURE

The Secretary's Commission on Achieving Necessary Skills (SCANS) has identified foundation skills and workplace competencies for students. Foundation Skills are defined in three areas: basic skills, thinking skills, and personal qualities. Basic Skills includes Reading, Writing, Arithmetic and Mathematical Operations, Listening, and Speaking effectively. Thinking Skills include a worker must think creatively, make decisions, solve problems, visualize, know how to learn, and reason effectively. Personal Qualities include a worker must display responsibility, self-esteem, sociability, self-management, integrity, and honest. Work Place Competencies include resources, interpersonal skills, information, systems, and technology.

Foundation Skills

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks.

- F1. **Reading:** Locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.
- F2. **Writing:** Communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flowcharts.
- F3. **Arithmetic:** Performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques.
- F4. **Listening:** Receives, attends to, interprets, and responds to verbal messages and other cues.
- F5. **Speaking:** Organizes ideas and communicates orally.

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons.

- F6. **Creative Thinking:** Generates new ideas.
- F7. **Decision Making:** Specific goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.
- F8. **Problem Solving:** Recognizes problems and devises and implements plan of action.
- F9. **Seeing Things in the Mind's Eye:** Organizes and processes symbols, pictures, graphs, objects, and other information.
- F10. **Knowing How To Learn:** Uses efficient learning techniques to acquire and apply new knowledge and skills.
- F11. **Reasoning:** Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, integrity, and honesty.

- F12. **Responsibility:** Exerts a high level of effort and perseveres toward goal attainment.
- F13. **Self-Esteem:** Believes in own self-worth and maintains a positive view of self.
- F14. **Sociability:** Demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings.
- F15. **Self-Management:** Assesses self accurately; sets personal goals, monitors progress, and exhibits self-control.
- F16. **Integrity/Honesty:** Chooses ethical course of action.

Workplace Competencies

Resources

- C1. **Allocates Time:** Selects relevant, goal-related activities, ranks them in order of importance, allocates time to activities, and understands, prepares, and follows schedules.
- C2. **Allocates Money:** Uses or prepares budgets, including making cost and revenue forecasts, keeps detailed records to track budget performance, and makes appropriate adjustments.
- C3. **Allocates Material and Facility Resources:** Acquires, stores, and distributes materials, supplies, parts, equipment, space, or final products in order to make the best use of them.
- C4. **Allocates Human Resources:** Assesses knowledge and skills and distributes work accordingly, evaluates performance, and provides feedback.

Interpersonal

- C5. **Participates as a member of a team:** Works cooperatively with others and contributes to group with ideas, suggestions, and effort.
- C6. **Teach Others New Skills:** Helps others to learn.
- C7. **Serves Clients/Customers:** Works and communicates with clients and customers to satisfy their expectations.

- C8. **Exercises Leadership:** Communicates thoughts, feelings, and ideas to justify a position, encourages, persuades, convinces, or otherwise motivates an individual or groups: including responsibly challenging existing procedures, policies, or authority.
- C9. **Negotiates to Arrive at a Decision:** Works toward an agreement that may involve exchanging specific resources or resolving divergent interests.
- C10. **Works with Cultural Diversity:** Works well with men and women and with a variety of ethnic, social, or educational backgrounds.

Information

- C11. **Acquires and Evaluates Information:** Identifies need for data, obtains it from existing sources or creates it, and evaluates its relevance and accuracy.
- C12. **Organizes and Maintains Information:** Organizes, processes, and maintains written or computerized reports and other forms of information in a systematic fashion.
- C13. **Interprets and Communicates Information:** Selects and analyzes information and communicates the results to others using oral, written, graphic, pictorial, or multi-media methods.
- C14. **Uses Computers to Process Information:** Employs computers to acquire, organize, analyze, and communicate information.

Systems

- C15. **Understands Systems:** Knows how social, organizational, and technological systems work and operates effectively within them.
- C16. **Monitors and Corrects Performance:** Distinguishes trends, predicts impact of actions on system operations, diagnoses deviations in the function of a system/organization, and takes necessary action to correct performance.
- C17. **Improves and Designs Systems:** Makes suggestions to modify existing systems to improve products or services, and develops new or alternative systems.

Technology

- C18. **Selects Technology:** Judges which set of procedures, tools, or machines, including computers and their programs will produce the desired results.
- C19. **Applies Technology to Task:** Understands the overall intent and the proper procedures for setting up and operating machines, including computers and their programming systems.
- C20. **Maintains and Troubleshoots Technology:** Prevents, identifies, or solves problems in machines, computers, and other technologies.

LAREDO COMMUNITY COLLEGE
COURSE SYLLABUS
STUDENT ACKNOWLEDGEMENT FORM

I have read and understood the information and requirements of the course syllabus for

_____, _____
Course & Number Semester

Student Name (Please Print)

Palomino ID

Date

Admission into and/or graduation from a program does not guarantee employment, a particular salary level, and/or passage on any licensure examinations.

Student Signature _____

Faculty Name _____
(Please Print)