



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	ACR
Course Number:	34
Descriptive Title:	HVAC Customer Service and Industry Certifications
Division:	Industry and Technology
Department:	Air Conditioning and Refrigeration
Course Disciplines:	Air Conditioning and Refrigeration, Heating
Catalog Description:	This is a course in Heating, Ventilation Air Conditioning and Refrigeration (HVACR) customer service. Topics include communication skills, problem solving, interview skills, refrigerant recovery and recycling, laws, regulations and energy efficiency. Students learn vital workplace skills through designed exercises as well as how employers evaluate these skills. Students are introduced to preparatory resources for the Environmental Protection Agency (EPA) Section 608 and Section 609 Technician Certifications, and North American Technician Excellence (NATE) certifications.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	Air Conditioning and Refrigeration 21
Enrollment Limitation:	
Hours Lecture (per week):	1
Hours Laboratory (per week):	0
Outside Study Hours:	2
Total Course Hours:	18
Course Units:	1
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	01/18/2005
Transfer UC:	No
Effective Date:	
General Education: ECC	
Term:	
Other:	
CSU GE:	

	Term:
	Other:
	IGETC:
	Term:
	Other:
Student Learning Outcomes:	<p>SLO #1 Irate Customer</p> <p>After reading the textbook and participating in class discussions, students will apply their knowledge of appropriate communication skills to calm down an irate customer who is complaining that it took too long for the technician to arrive and it is very hot due to an air conditioning system not cooling.</p> <p>SLO #2 Air Conditioning Estimate</p> <p>After participating in classroom discussions, students will apply their knowledge of appropriate communicating skills to estimate an air conditioning job with labor, parts, and taxes including an explanation of all costs to the customer.</p> <p>SLO #3 Selling a PM Plan</p> <p>After participating in classroom discussions, students will apply their knowledge of appropriate communicating to sell a PM plan to a customer with all the positives of a PM. Students must know the difference in plans for the different seasons.</p>
Course Objectives:	<ol style="list-style-type: none"> 1. Demonstrate effective communication with HVACR customers, employees and suppliers. 2. Role play the scenario of a difficult customer and demonstrate techniques to resolve the issue with the difficult customer. 3. Identify possible roadblocks to effective communication given a scenario in a group setting where one of the team members is a service provider and the other members represent unsatisfied customers. 4. Apply active listening skills. 5. Compare and contrast customer needs and expectations. 6. Identify what solutions are needed to deal with irate and demanding customers. 7. Understand the steps required to receive EPA Section 608, Section 609 and NATE student level certifications.
Major Topics:	<p>I. COMMUNICATION SKILLS (6 hours, lecture)</p> <p style="padding-left: 40px;">A. Speaking B. Listening</p> <p>II. MAINTAINING A QUALITY SERVICE ATTITUDE (4 hours, lecture)</p> <p style="padding-left: 40px;">A. Levels of satisfaction B. Attitudes chosen C. Facial expressions D. Posture E. Appearance</p> <p>III. DIFFICULT SERVICE SITUATIONS (6 hours, lecture)</p>

	<p>A. Indifferent customers B. Irate customers C. Demanding customers</p> <p>IV. EPA SECTION 608, SECTION 609 AND NATE CERTIFICATION PREPARATION (2 hours, lecture)</p> <p>A. Refrigerant recovery and recycling B. Laws and regulations C. Energy efficiency</p>
Total Lecture Hours:	18
Total Laboratory Hours:	0
Total Hours:	18
Primary Method of Evaluation:	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	It's now 4:30 pm and you have just arrived at the job site to fix a cooling problem that the customer called in at 7:30 am. The customer is irate because you have arrived nine hours after the call. Demonstrate to the class the approach you might use to calm the irate customer.
Critical Thinking Assignment 1:	In a one-page written report, formulate three questions that are appropriate to ask every customer when making a service or repair call. Submit report to the instructor.
Critical Thinking Assignment 2:	You have been scheduled for an interview with a local employer whose advertising mantra is "Our Goal is Customer Delight". In the interview, the employer will ask you the following question: If I hire you, how will you help my company delight our customers? Compose a two-page report which answers this question and submit to the instructor.
Other Evaluation Methods:	Class Performance, Completion, Matching Items, Multiple Choice, Other Exams, Performance Exams, Quizzes, True/False, Written Homework
Instructional Methods:	Demonstration, Discussion, Guest Speakers, Lecture, Role play/simulation
If other:	
Work Outside of Class:	Answer questions, Problem solving activity, Required reading, Skill practice, Study
If Other:	
Up-To-Date Representative Texts:	<p>Andrew Althouse, Carl Turnquist, A.F. Bracciano, D. C. Bracciano and G. M. Bracciano. <u>Modern Refrigeration and Air Conditioning</u>. 22nd edition. Goodheart Willcox. 2025</p> <p>The textbook is now available in printed text and digital formats.</p>
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	Notebook
Requisite:	
Category:	

Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	Air Conditioning and Refrigeration 21
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	Basic understanding of refrigeration and air conditioning system functions. ACR 21 - Define air conditioning and methods of achieving it. ACR 21 - Compare and contrast refrigeration and air conditioning.
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Vic Cafarchia
Date:	09/01/2004
Original Board Approval Date:	01/18/2005
Last Reviewed and/or Revised by:	Henry Der Antonian
Date:	02/20/2024
Last Board Approval Date:	11/18/2024
Effective Term:	FALL 2025