**Chaffey College**

**COURSE SYLLABUS**

**HVACR 608**

**Troubleshooting**

**Instructors:** Larry Aandahl, Lecture & Lab

**Phone:** (909) 973-4076

**Email:** Larry.Aandahl@chaffey.edu

**Class Hours:** M-F 8:00 am to 3:20 pm

**Physical Location:** Chino Valley Adult School, 12970 3rd Street, Chino

**Meeting Location:** Online through Canvas

**Class Start**: May 4, 2020

**Class End**: May 18, 2020

**Office Hours:** Before class or by appointment

**Required Texts**

Title: Refrigeration & Air Conditioning Technology, 8th Edition

Authors: Tomczyk, Silberstein, Whitman, Johnson

ISBN: 978-1-305-578296

Title: The Complete HVAC Lab Manual, 8th Edition

Authors: Silberstein, Obrzut

ISBN: 978-1-337-39938-8

**Course Description:** This course introduces students to troubleshooting refrigeration systems, air conditioning systems, electric heating systems, gas heat systems, hydronic hot water heating systems and Ultra Low NOX gas heating systems.

This course is required for the HVACR Level I Certificate along with HVAC 601, 602, 603, 604, 605, 606, 607, 608 & 609, EPA Section 608 C.A.A. 1990 Universal and R410A Refrigerant Handling Safety.

**Student Course Learning Outcomes:**

Upon successful completion of the course students should be able to

1. Develop necessary skills to provide troubleshooting services.
2. Identify troubleshooting procedures for components common to heat pumps
3. Develop skills needed to troubleshoot gas fired furnaces including Ultra Low NOX burner technology, and various types of gas fired furnaces including horizontal, upflow and downflow types.
4. Identify components using construction and troubleshooting of hydronic boiler systems.
5. Develop variouo skills needed to troublshoot variouo air treatments and indoor air quality components used on HVAC units.
6. Develop troubleshooting skills for accessories vital to the future success of trainees in the HVAC/R trades.

**Course Format**

Class will be comprised of lecture, lab assignments, YouTube videos, demonstrations, internet instruction, skill building exercises, student-instructor conferences, computer assisted instruction and audio-visual presentations.

**Expectations of students**

**Attendance** – The student is expected to attend every class session for which they are enrolled. Prompt arrival and remaining though the entire class session is expected. Each class session has critical information that may not be repeated.

**Absences** – In the case of any absences, you are required to text the instructor.

**Participation** – Students are expected to contribute to class discussions and engage in class activities, simulations, and lab demonstrations to increase the development of critical thinking skills and mastery of technical skills.

**Respectful Conduct** - Free inquiry and expression are essential attributes of an educational community. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truths. The freedom to learn depends upon appropriate opportunities and conditions in the classroom and on campus. Diversity of views will be expressed by other students. When others are speaking, listen carefully and seek understanding of the ideas being shared. Students should endeavor to exercise their freedom with maturity and responsibility including the use of appropriate language and actions in the classroom.

**Class preparation** – Students are to come to class prepared by having read the materials and completing assignments within the given time frame.

**Cell phones** – Can only be used for class and learning assignments. Should you need to take an emergency call or text, you must leave the room. Texting in class is not permitted and is disruptive to the learning of other students.

**Video Taping and Recording** – Students are not allowed to record or video tape the class sessions, other students or the instructor without express written permission.

**Food/Drink** – Students are not permitted to eat or drink in the classrooms. Water bottles with lids are permitted. Smoking is prohibited in all District buildings.

**Non-enrolled visitors** – Only students enrolled in Chaffey College are allowed to attend class.

**Attire** – Students must be fully attired including long pants, shirts tucked in and closed toe, non-slip work shoes or boots. Professionalism and safety drive the appropriate attire in the technical trades and the industry as a whole.

**Safety** – Students are required to follow safety procedures at all times.  A serious workplace injury or death changes lives forever. In the workplace “horse play” cannot be tolerated as accidents can happen so quickly. Lack of focus, not attending to detail, being in a hurry or initialing activities that have not been taught may result in injury. The instructor reserves the right to prohibit use of equipment should a student not follow adequate safety precautions.

**Plagiarism and Cheating** - Student work should be original. Any time you use the work of another person and do not give credit, it is considered plagiarism. Copying the work of another person whether an essay or answers to a test, is considered plagiarism. A student who plagiarizes or cheats on a test or assignment will receive an “F” or no credit on that assignment or test. If this is repeated, you will fail the course and in serious cases you can be expelled from the college.

**Student Rights and Responsibilities -** Any student who disrupts the orderly operation of a District campus, or who violates the standard of student conduct, is subject to disciplinary action:

1. Verbal warning
2. Written reprimand to be placed on a student’s record with specific steps to correct the inappropriate conduct.
3. Temporary suspension invoked by a classroom instructor due to student misconduct in the classroom.

A student may be removed from class the day of the occurrence and the subsequent class period. If such suspension occurs, the instructor will immediately notify the appropriate department chairperson and/or campus dean of Student Services.

**Disability Services**– If you have a physical, emotional/psychiatric, medical, or learning disability that may impact your ability to carry out assigned course work, you should contact the staff in Disability Programs and Services. They will review your concerns and determine, with you, what accommodations are necessary and appropriate. All information and documentation is confidential.

**Criteria for Pass/Fail of the Course**

**Item Weights**

30% Homework and Projects

30% Exams

20% Quizzes

10% Skills

10% Professionalism

An overall total score of 70% or more is required to receiving a pass in the course.

Any student who receives an overall score of 69% or less will not pass the course.

**Assignment Policy** – Assignments are to be turned in on the due date. Missed deadlines for homework and projects will affect your points earned by a 10% reduction for each class session that the document is late.

**Missed Exams**– If a student will be absent the date of the exam the student must make prior arrangements with the course instructor to take the exam. Should a last-minute emergency occur the student must text the instructor and provide proof of the emergency situation. The instructor reserves the right to determine whether a make-up exam can or should be permitted.

**HVACR 608 CLASS SCHEDULE**

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| **Date** | **Topic** | **Student Assignments** |
| Monday05/04/20 | Introduction to Commercial Refrigeration Troubleshooting, Unit 29 Powerpoint | * Read Unit 29,
* pages 770 – 810
* MindTap homework
 |
| Tuesday05/05/20 | Review for Quiz on Unit 29Commercial Refrigeration TroubleshootingTips on Service Calls | * Quiz #1, Unit 29
* Lab assignments
* MindTap homework
 |
| Wednesday05/06/20 | Electric HeatUnit 30 powerpoint/lecture | * Read Unit 30
* Pages 818 – 835
* Lab assignments
* MindTap homework
 |
| Thursday05/07/20 | Review Unit 30Tips on Service Calls | * Quiz #2, Unit 30
* Lab assignments

MindTap homework |
| Friday05/08/20 | Gas HeatUnit 31 powerpoint | * Read Unit 31
* Pages 836 – 901
* Lab assignments
* MindTap homework
 |
| Monday05/11/20 | Gas Heat Review, Unit 31Tips on Service Calls | * Quiz #3
* Lab assignments
* MindTap homework
 |
| Tuesday05/12/20 | Ultra Low NOX Gas Heat FurnacesGoodman powerpoint | * Quiz #4
* Lab Assignments

MindTap homework |
| Wednesday05/13/20 | Hydronic Heat/Hot Water BoilersUnit 33 powerpoint | * Read Unit 33
* Pages 967 – 1020
* Lab assignments
* MindTap homework
 |
| Thursday05/14/20 | Hydronic Heat/Hot Water Boilers ReviewTips on Service Calls | * Quiz #5
* Lab assignments
* MindTap homework
 |
| Friday05/15/20 | Review Units 29, 30, 31 and 33 | * Review for final exam
 |
| Monday05/18/20 | Final ExamUnits 29, 30, 31, and 33 |  |