

## HART 2436 Troubleshooting

**Please Note: Due to extenuating circumstances, including public health issues, course and testing delivery methods, instructional schedules, housing contracts, campus procedures and/or operating hours may be altered, interrupted and/or ceased for a limited or extended period of time. Such changes will be posted on the College website**

### GRAYSON COUNTY COLLEGE Course Syllabus HART 2436 Air Conditioning Troubleshooting

Professor Contact Information  
James Popplewell

Office: (903)463-8713 (Call for appointment)  
Email: popplewellj@grayson.edu  
Hours: Mon-Thurs 7:30 am - 10:00pm

**Course Pre-requisites:** YES

HART 1401-Electricity Principles for HVAC and HART 1407-Refrigeration Principles

### **Course Description**

HART 2436. Air Conditioning Troubleshooting (3-2-4).

An advanced course in the application of troubleshooting principles and use of test instruments to diagnose air conditioning and refrigeration components and system problems including conducting performance tests.

### **Student Learning Outcomes**

- The student will be able to apply systematic troubleshooting methods.
- The student will be able to practice system preventive maintenance procedures
- The student will be able to test and diagnose components, systems, and accessories.

### **Required Textbooks (ISBN # included) and Materials**

Refrigeration & Air Conditioning Technology; Whitman, Johnson, Tomczyk, Silberstein; 8th Edition ISBN13# 978-1-111-64447-5 Refrigeration & Air Conditioning Technology Lab Manual; Whitman, Johnson, Tomczyk, Silberstein; 8th Edition ISBN-13# 978-1-111-64448-2

MindTap Simulations

or

E-Book Mindtap, Refrigeration & Air Conditioning Technology; Whitman, Johnson, Tomczyk, Silberstein; 8th Edition ISBN13# 978-1-111-64447-5 Refrigeration & Air Conditioning Technology Lab Manual; Whitman, Johnson, Tomczyk, Silberstein; 8th Edition ISBN-13# 978-1-111-64448-2

Pen/pencil, notebook paper, calculator, Volt/Ohm meter, Ammeter, hand tools (list provided first class period)

### **Outline of Topics Covered**

- - Troubleshooting of air conditioning equipment
  - Mechanical troubleshooting
  - Electrical wiring diagrams
  - Electrical troubleshooting
  - Troubleshooting basic controls
  - Troubleshooting electric motors
  - Servicing systems
  - System preventive maintenance
  - Troubleshooting refrigeration systems

### **Required Assignments & Academic Calendar**

In the case of inclement weather, emergency closings, or other unforeseen disruptions to scheduled classes, student must log onto their CANVAS accounts for directions on where or how to continue their coursework.

### **Methods of Evaluation**

**More than 15 minutes late the student will be counted absent. At four absents the student's overall grade WILL be lowered by one letter grade and a conference with the Program Director will be required before the student is allowed to continue. More than four classes missed the student will be considered to have missed the maximum allowable hours to meet the minimum standards for the course and may be required to retake the course.**

The student will be evaluated on the basis of his/her achievement in the classroom and performance in the laboratory. Module tests will be given at the time the student completes each unit of instruction. Performance grades will be given at the completion

of each unit of instruction. The types of tests include objective, subjective and fill in the blank.

The final grade will be based on three grading methods Competency-Based Learning (COB), Performances, and the Traditional Learning approach. A letter grade will be assigned in accordance with the policy of Grayson County College as stated in the current College Catalog grade method.

The Competency-Based Learning Approach along with Performance Based Training and Traditional Learning has been designed to provide an overall feedback to the student two times through the course. This approach measures eight areas: Accountability & Dependability, Attention to Detail, Teambuilding, Decision Making, Development and Continual Learning, Ethics and Integrity, and Listening. If the overall evaluation of the student falls below a 90, the students' overall grade will be lowered one letter grade. This method of evaluation demonstrates a greater revelation into the overall mastery of the content for the course.

#### *Mastery Level of the course*

An "A" in this course means that the student has "Mastered" all of the required subject matter with a grade of 94 or better, has mastered the Competency-Based Learning, Performances, and mastered all Traditional Learning requirements set by the instructor.

A "B" in the course means that the student has an "*above average*" understanding of the subject matter with a grade of 84 to 93, has demonstrated most of the Competency-Based Learning, Performances, and Traditional Learning requirements set by the instructor.

A "C" in the course means the student demonstrates "acceptable" competency of the subject matter with a grade of 74 to 83, has demonstrated some of the Competency-Based Learning, Performances, and Traditional Learning requirements set by the instructor. Students with concurrent enrollment for high school and college credit must maintain a minimum grade of "C" in the course.

A "D" in the course means the student demonstrates "*unsatisfactory or minimal*" competency of the subject matter with a grade of 64 to 73, has not met most of the Competency-Based Learning, Performances, and Traditional Learning requirements set by the instructor. The grade of "D" is considered unsatisfactory in a student's major field of study, and this grade generally does not transfer.

An "F" in the course means the student "*did not meet the minimal*" competency requirements of the subject matter with a grade of 63 or below, did not meet the required Competency-Based Learning, Performances, and Traditional Learning requirements set by the instructor. No credit is given for the grade of "F."

#### Grading Categories Percentage

#### Attendance

More than 15 minutes late the student will be counted absent. At four absents the student's overall grade WILL be lowered by one letter grade and a conference with the Program Director will be required before the student is allowed to continue. More than four classes missed the student will be considered to have missed the maximum allowable hours to meet the minimum standards for the course and may be required to retake the course.

3 Exams/Quizzes/Performance 50%

MindTap/Textbook Home Work 40%

Performance Labs 10%

Competency-Based Evaluation

	<b>Name:</b>	<b>Range:</b>
A	100%	to 94%
B	< 94%	to 84%
C	< 84%	to 74%
D	< 74%	to 64%
F	< 64%	to 0%

Late work will not be accepted after the due date. It is the student's responsibility to ensure all work, discussions, lab performances are completed on time and given to the instructor before the due date/time. Online work will not be accepted late and will not be reopened.

### **Quizzes & Tests**

Any student not scoring at a minimum of at least a 65 on any exam may re-take a similarly written unit exam between 5 pm and 6 pm at next class session.

### **Methods of Instruction**

Methods of instruction include lecture, discussion, demonstration, student performance and research. The student is required to read text assignments, perform applied arithmetic and mathematical operations, listen and participate in discussions in class.

Instructional aids include Related lab equipment, tape slide presentations, transparencies, computer systems, multimedia instructional packages, and product cutaways.

### **Course & Instructor Policies**

More than 15 minutes late the student will be counted absent. At four absents the student's overall grade WILL be lowered by one letter grade and a conference with the Program Director will be required before the student is allowed to continue. More than four classes missed the student will be considered to have missed the maximum allowable hours to meet the minimum standards for the course and may be required to retake the course.

Students are expected to maintain classroom decorum that includes respect for other students and the instructor, prompt and regular attendance, and an attitude that seeks to take full advantage of the educational opportunity. Each student must have a current textbook or E-Book as required in the course. The classroom instructor will provide text requirements during the first-class period orientation. Each student must obtain personal hand tools as required in the course. The classroom instructor will provide tool lists and obtainment dates during the first-class period orientation.

Students will not be allowed to participate in lab functions without personal hand tools. Student cell phones will not be used by students during the lecture time, no exception. Please program all pagers and cell phones to the "silent" mode and put away during class lecture periods.

Due to the hazardous nature of your career training, safety is a priority. Horseplay and any conduct that might jeopardize your safety or others around you are prohibited. When using torches, soldering, sawing, filing, using the hammer etc., gloves and safety glasses will be worn by the student. When using refrigerant or other pressurized substances, the student will wear safety glasses and gloves.

Grayson County College has policies governing possession and use of narcotics, alcohol and hallucinatory drugs. These policies will be strictly enforced. Non-compliance with the above-listed policies will be grounds for administrative withdrawal from the HART program.

Class Attendance Academic success is closely associated with regular classroom attendance and course participation. All successful students, whether on campus or online, are expected to be highly self-motivated. All students are required to participate in courses regularly and are obliged to participate in class activities and complete and submit assignments following their professors' instructions.

Responsibility for work missed because of illness or school business is placed upon the student and acceptance of late work is at the discretion of the instructor.

In accordance with the College's Developmental Education Plan, students withdrawing from their only developmental course may be withdrawn from all academic courses. In addition, students' eligibility to receive financial aid or live in a College dormitory can be affected by withdrawal from courses. When administrative withdrawal occurs, any tuition refund would be made in accordance with state regulations. Withdrawal from Class The administration of this institution has set deadlines for withdrawal from any college-level courses. These dates and times are published in that semester's schedule of classes.

Administrative procedures must be followed. It is the student's responsibility to handle student-initiated withdrawal requirements from any class. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled (see GCC College Catalog for details).

### **Academic Integrity**

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic Dishonesty, any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give an unfair advantage to a student or the attempt to commit such acts. Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the college's policy on plagiarism (see GCC Student Handbook for details). Grayson County College subscribes to turnitin.com, which allows faculty to search the web and identify the plagiarized material. The instructors of this department do not condone and highly discourage any of the above activities. If caught in the act, the following actions may be taken: -

- **First offense:** The removal of the assignment from the student(s) and a Zero for the assignment with no chance to make up.
- **Second offense:** The removal of the student(s) from the class with a failing grade for the course.
- **Copyright Notice** The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act.

### TITLE IX

GC policy prohibits discrimination on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex, sexual orientation, spousal affiliation and protected veterans status.

Furthermore, Title IX prohibits sex discrimination to include sexual misconduct: sexual violence (sexual assault, rape), sexual harassment and retaliation.

For more information on Title IX, please contact:

Dr. Regina Organ, Title IX Coordinator (903-463-8714)

Mr. Brad Bankhead, Title IX Deputy Coordinator- South Campus (903) 415-2601

Mr. Mike McBrayer, Title IX Deputy Coordinator (903) 463-8753

Website: <http://www.grayson.edu/campus-life/campus-police/title-ix-policies.html> (Links to an external site.)

GC Police Department: (903) 463-8777- Main Campus) (903) 415-2501 - South Campus)

GC Counseling Center: (903) 463-8730

For Any On-campus Emergencies: 911

Grayson College campus-wide student policies may be found on our Current Student Page on our website: <http://grayson.edu/current-students/index.html> (Links to an external site.)

Financial Aid Effective July 1, 2000, students receiving Title IV funds (Pell, Federal Grants, and Student Loans), who subsequently withdraw from classes, will be required to return a portion of the federal financial aid received. Only the percentage of aid earned (determined by the percentage of time attended) will be eligible for retention on the student's behalf. Any aid that is not earned must be returned to its source. If there is a student account balance resulting from these adjustments, the student is responsible for payment. Further details can be obtained from the Office of Financial Aid. Drop Rule Under section 51.907 of the Texas Education Code, "an institution of higher education may not permit a student to drop more than six courses, including any course a transfer student has dropped at another institution of higher education." This statute was enacted by the State of Texas in spring 2007 and applies to students who enroll in a public institution of higher education as first-time freshmen in fall 2007 or later. Any course that a student drops is counted toward the six-course limit if (1) the student drops a course after census date or (2) the student is not dropping the course in order to withdraw from the institution. Some exemptions for good cause could allow a student to drop a course without having it counted toward this limit, but it is the responsibility of the student to establish that good cause before the drop. Students with questions should contact the Counseling Office or the Office of Admissions & Records for more information before dropping a course!

Grayson County College is not responsible for illness/injury that occurs during the normal course of classroom/lab/clinical experiences. These descriptions and timelines are subject to change at the discretion of the Professor.

