



**AIRC -1005 Refrigeration Fundamentals**  
**COURSE SYLLABUS**  
**FALL Semester 2017**

**COURSE INFORMATION**

Credit Hours/Minutes: 4/4500  
Class Location: Room # 423  
Class Meets: M/T/W/R 5:00 -6:15 pm  
CRN: 20392

**INSTRUCTOR CONTACT INFORMATION**

Instructor Name: Vince Scott  
Office Location: Room # 426  
Office Hours: M/T/W/R 4:00-5:00 pm  
Email Address: [vscott@southeasterntech.edu](mailto:vscott@southeasterntech.edu)  
Phone: 912-538-3146  
Fax Number: 912-538-3156  
Tutoring Hours: By appointment

**REQUIRED TEXT**

Fundamentals of HVACR 3rd Edition by Carter Stanfield & David Skaves, published by Pearson ISB: 0-13-401616-5

**REQUIRED SUPPLIES & SOFTWARE**

Safety glasses notebook for taking notes, 3 ring binder for hand-outs, and pen or pencil to use in class every day.

**NOTE: You must have textbook and notebook with pen or pencil with you each day for class.**

**COURSE DESCRIPTION**

Introduces the basic concepts, theories, and safety regulations and procedures of refrigeration. Topics include an introduction to OSHA, safety, first aid, laws of thermodynamics, pressure and temperature relationships, heat transfer, the refrigerant cycle, refrigerant identification, and types of AC systems.

**MAJOR COURSE COMPETENCIES**

Topics include an introduction to OSHA safety, first aid, laws of thermodynamics, pressure and, temperature relationships, heat transfer, refrigeration cycle, refrigerant identification, and types of A/C systems and work ethics.

## PREREQUISITE(S) NONE

### COURSE OUTLINE

1. Introduction to OSHA
2. Safety
3. First Aid
4. Laws of Thermodynamics
5. Pressure and Temperature Relationships
6. Heat Transfer
7. Refrigeration Identification
8. Refrigerant Cycle
9. Types of A/C Systems

### GENERAL EDUCATION CORE COMPETENCIES

STC has identified the following general education core competencies that graduates will attain:

1. The ability to utilize standard written English.
2. The ability to solve practical mathematical problems.
3. The ability to read, analyze, and interpret information.

All students pursuing a degree, a diploma, or a Technical Certificate of Credit with a General Education component will be required to pass the General Education Competency Exams prior to graduation.

### STUDENT REQUIREMENTS

Students are expected to complete all tests and comprehensive/Lab problems by the due dates. A ten point penalty will be assessed for each day a comprehensive problem is late. There are no makeup tests. Tests are made available for several days; therefore, there are no makeup tests. Students who miss a test will be assigned a grade of zero. Students are responsible for policies and procedures included in the *STC E-Catalog*.

### ATTENDANCE GUIDELINES

Class attendance is a very important aspect of a student's success. Being absent from class prevents students from receiving the full benefit of a course and also interrupts the learning process. Southeastern Technical College considers both tardiness and leaving early as types of absenteeism. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is required for student success. Students will be expected to complete all work required by the instructor as described in the individual course syllabus.

Instructors have the right to give unannounced quizzes/assignments. Students who miss an unannounced quiz or assignment will receive a grade of 0. Students who stop attending class, but do not formally withdraw, may receive a grade of F and face financial aid repercussions in upcoming semesters.

Instructors are responsible for determining whether missed work may be made up and the content and dates for makeup work is at the discretion of the instructor.

Students will not be withdrawn by an instructor for attendance; however, all instructors will keep records of graded assignments and student participation in course activities. The completion dates of these activities will be used to determine a student's last date of attendance in the event a student withdraws, stops attending, or receives an F in a course.

## SPECIAL NEEDS

Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact Helen Thomas, 912-538-3126, [hthomas@southeasterntech.edu](mailto:hthomas@southeasterntech.edu), to coordinate reasonable accommodations.

## SPECIFIC ABSENCES

Provisions for Instructional Time missed because of documented absences due to jury duty, military duty, court duty, or required job training will be made at the discretion of the instructor.

## PREGNANCY

Southeastern Technical College does not discriminate on the basis of pregnancy. However, we can offer accommodations to students who are pregnant that need special consideration to successfully complete the course. If you think you will need accommodations due to pregnancy, please advise me and make appropriate arrangements with Helen Thomas, 912-538-3126, [hthomas@southeasterntech.edu](mailto:hthomas@southeasterntech.edu).

## WITHDRAWAL PROCEDURE

Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to the 65% portion of the semester (date will be posted on the school calendar) must speak with a Career Counselor in Student Affairs and complete a Student Withdrawal Form. A grade of "W" is assigned when the student completes the withdrawal form from the course.

Students who are dropped from courses due to attendance (see your course syllabus for attendance policy) after drop/add until the 65% point of the semester will receive a "W" for the course. Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of 'F' being assigned.

After the 65% portion of the semester, the student will receive a grade for the course. (Please note: A zero will be given for all missed assignments.)

There is no refund for partial reduction of hours. Withdrawals may affect students' eligibility for financial aid for the current semester and in the future, so a student must also speak with a representative of the Financial Aid Office to determine any financial penalties that may be assessed due to the withdrawal. All grades, including grades of 'W', will count in attempted hour calculations for the purpose of Financial Aid.

**Remember** - Informing your instructor that you will not return to his/her course does not satisfy the approved withdrawal procedure outlined above.

## WORK ETHICS

The Technical College System of Georgia instructs and evaluates students on work ethics in all programs of study. Ten work ethics traits have been identified and defined as essential for student success: appearance, attendance, attitude, character, communication, cooperation, organizational skills, productivity, respect, and teamwork. Students will be required to take a work ethics exam as marked in the lesson plan. A grade of 70 or better is required to complete the work ethics requirements for this class.

## MAKEUP GUIDELINES (TESTS, QUIZZES, HOMEWORK, PROJECTS, ETC...)

**(Tests, quizzes, homework, projects, etc...):** If a student misses a test, a grade of zero will be assigned. **Only students with extenuating circumstances (who contact the instructor on the day of the test regarding their absence) will be allowed to take a makeup test, which will replace the zero.** Extenuating circumstances are determined at the instructor's discretion. Unless otherwise scheduled with the instructor, it is expected that

the test will be taken the next day, scheduled outside of regular class time. Failure to follow this procedure will result in a grade of zero.

### ACADEMIC DISHONESTY POLICY

The STC Academic Dishonesty Policy states All forms of academic dishonesty, including but not limited to cheating on tests, plagiarism, collusion, and falsification of information, will call for discipline. The policy can also be found in the STC Catalog and Student Handbook.

### PROCEDURE FOR ACADEMIC MISCONDUCT

The procedure for dealing with academic misconduct and dishonesty is as follows:

**1. First Offense**

Student will be assigned a grade of "0" for the test or assignment. Instructor keeps a record in course/program files and notes as first offense. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus. The Registrar will input the incident into Banner for tracking purposes.

**2. Second Offense**

Student is given a grade of "WF" for the course in which offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Registrar will input the incident into Banner for tracking purposes.

**3. Third Offense**

Student is given a grade of "WF" for the course in which the offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of third offense. The Vice President for Student Affairs, or designee, will notify the student of suspension from college for a specified period of time. The Registrar will input the incident into Banner for tracking purposes.

### STATEMENT OF NON-DISCRIMINATION

The Technical College System of Georgia and its constituent Technical Colleges do not discriminate on the basis of race, color, creed, national or ethnic origin, sex, religion, disability, age, political affiliation or belief, genetic information, disabled veteran, veteran of the Vietnam Era, spouse of military member or citizenship status (except in those special circumstances permitted or mandated by law). This school is in compliance with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin; with the provisions of Title IX of the Educational Amendments of 1972, which prohibits discrimination on the basis of gender; with the provisions of Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap; and with the American with Disabilities Act (ADA).

The following individuals have been designated to handle inquiries regarding the nondiscrimination policies:

<b>ADA/Section 504 - Equity- Title IX (Students) - OCR Compliance Officer</b>	<b>Title VI - Title IX (Employees) - EEOC Officer</b>
Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1 <sup>st</sup> Street, Vidalia Office 108 Phone: 912-538-3126 <a href="mailto:hthomas@southeasterntech.edu">hthomas@southeasterntech.edu</a>	Blythe Wilcox, Director of Human Resources Vidalia Campus 3001 East 1 <sup>st</sup> Street, Vidalia Office 138B Phone: 912-538-3147 <a href="mailto:bwilcox@southeasterntech.edu">bwilcox@southeasterntech.edu</a>

### GRIEVANCE PROCEDURES

Grievance procedures can be found in the Catalog and Handbook located on STC's website.

## ACCESS TO TECHNOLOGY

Students can now access Blackboard, Remote Lab Access, Student Email, Library Databases (Galileo), and Banner Web via the my STC portal or by clicking the Current Students link on the [STC website](#).

## TCSG GUARANTEE/WARRANTY STATEMENT

*The Technical College System of Georgia guarantees employers that graduates of State Technical Colleges shall possess skills and knowledge as prescribed by State Curriculum Standards. Should any graduate employee within two years of graduation be deemed lacking in said skills, that student shall be retrained in any State Technical College at no charge for instructional costs to either the student or the employer.*

## GRADING POLICY

Assessment/Assignment	Percentage
Written Test	30%
Lab Work	15%
Work Ethics	5%
Lab Assignments	50%

## GRADING SCALE

Letter Grade	Range
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

## AIRC 1005 Refrigeration Fundamentals

### Fall Semester 2017 lesson plan

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
Aug 14-17	Unit 1 Unit 2 Unit 3	<b>Introduction to HVAC/R</b> Being a Professional HVAC/R Technician <b>Safety</b>	Review questions at end of chapter Safety Test	1 a, c
Aug 21-24	Unit 3	<b>Safety</b> <b>Introduction to OSHA Regulations</b> Applicable regulations Monitoring agencies Material Safety and Data Sheets Fire protection procedures	Review questions at end of chapter Identify monitoring agencies from which safety regulations can be requested Discuss the MSDS Right-to-Know Law Obtain MSDS information concerning the hazards of the workplace Identify types of fires, extinguishers, and protective clothing Identify the appropriate action for reporting fires and appropriate firefighting procedures	1, 2 a, c
Aug 28-31	Unit 4	General Shop Safety Tools, equipment, and protective apparel Safe use of tools Ladder and scaffold selection	Demonstrate proper procedures for handling selected materials Discuss safety zones and safety zone identification Identify types of chemical used by electricians and their particular safety requirements	1, 2 a, c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
Sept. 4-7	Unit 4	<b>Materials handling Environmental requirements</b>	Identify and discuss the importance of proper ventilation, lighting, heating, grounding, and communication requirements for work in confined spaces	1, 2 a, c
Sept. 11-14	Unit 3	<b>Safety apparel Soldering and Brazing Safety</b>	Identify and discuss the use of proper workplace clothing Demonstrate the proper use of flame-resistant clothing Change to clean clothing when clothing becomes soiled with oil or grease Select the proper shoe for the work site Check shoes for flapping soles, worn heels, or ripped upper/outer layers Wear a hard hat in designated areas Wear safety glasses/face shields in designated areas Wear appropriate work gloves in designated areas Explain appropriate safety practices for soldering and brazing operations Wear appropriate PPE for soldering and brazing	1, 3, a, c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
Sept. 18-21	Unit 6	<b>Electrical safety</b>	Identify electrical service protective clothing and equipment Identify and demonstrate grounding and circuit control box tagging procedures Mount a lock-out tag for use with a padlock Use a fuse puller to remove a fuse Select the appropriate flashlight for work site use	1, 2, 3,4 a, c
Sept 25-28	Unit 7	<b>Professional Societies and Organizations</b>	Discuss the use of the National Electrical Code for identifying safety requirements for electrical equipment installation Identify secondary sources of safety information related to industry	1, 2,3, a, c
Oct 2-5	Unit 8	<b>First Aid</b> CPR practices	Identify proper first aid and/or CPR practices List methods of preventing shock burns, fires and explosions Develop an emergency/first aid plan for the shop or work site	1, 2,3,4 a, c



<b>Date/Week</b>	<b>Chapter/Lesson</b>	<b>Content</b>	<b>Assignments &amp; Tests Due Dates</b>	<b>Competency Area</b>
Oct 9-12	Unit 10	<b>Laws of Thermodynamics</b> Definitions and terms	Identify definitions and terms used in the refrigeration industry Define pressure as it relates to refrigeration systems Define temperature as it relates to refrigeration systems Explain the relationship of temperature and pressure in a refrigeration system	1, 2, 3, 4 a, c
Oct 16-19	Unit 11	<b>Heat Transfer</b> Application	Solve problems related to heat and heat transfer in refrigeration systems	1, 2, 3, 4 a, c
Oct 23-26	Unit 11	<b>Refrigerant Identification</b> Current refrigerants	Differentiate among and recognize the properties of current refrigerants	1, 3, 4, 5 a, c
Oct 30,31 Nov 1,2	Unit 12	<b>Refrigeration Cycle</b> System components and refrigeration cycle	Identify refrigeration system components Explain or trace the basic refrigeration cycle	1, 3, 4, 5a, c
Nov 6-9	Unit 84,85,86,87	<b>Refrigeration Systems</b> Types <b>Types of AC Systems</b> Applications	Discuss mechanical compression cycle refrigeration Discuss the absorption cycle Discuss the evaporative cycle Identify types of air conditioning systems List human comfort conditions List the types of coils used on A/C systems	1, 8, 10 a, c
Nov 13-16 20,21	Units 1,2,3,4,5,6,7,8,9,10,11,12 84,85,86,87	Review for Finals <b>Work Ethics</b>	Review for Finals Homework due Work Ethics Test	1 - 8, a, c
Nov 22,23		HOLIDAY	HOLIDAY	Nov 22,23
Nov 27-30		Review	Review	Nov 27-30

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
Dec 5		AIRC 1005 <b>FINALS</b>	Final Exam	a, c

**Competency Areas:**

1. Safety Precautions
2. Introduction to OSHA Regulations
3. First Aid
4. Laws of Thermodynamics
5. Pressure and Temperature Relationships
6. Heat Transfer
7. Refrigerant Identification
8. Refrigeration Cycle
9. Refrigeration Systems
10. Types of AC Systems