



## **AIRC -1080 HEAT PUMP AND RELATED SYSTEMS**

### **COURSE SYLLABUS Spring Semester 2018**

#### **COURSE INFORMATION**

Credit Hours/Minutes: 4/4500  
Class Location: Room Number 423  
Class Meets: Monday through Thursday, 10:45 am - 12:00 pm  
Course Reference Number (CRN): 40340

#### **INSTRUCTOR CONTACT INFORMATION**

Instructor Name: Vince Scott  
Office Location: Room Number 426  
Office Hours: Monday through Thursday, 3:30 -5:30 pm  
Email Address: [Vince Scott vscott@southeasterntech.edu](mailto:Vince.Scott@vscott@southeasterntech.edu)  
Phone: 912-538-3146  
Fax Number: 912-538-3156  
Tutoring Hours (if applicable): By appointment

#### **SOUTHEASTERN TECHNICAL COLLEGE'S (STC) CATALOG AND HANDBOOK**

Students are responsible for all policies and procedures and all other information included in Southeastern Technical College's [Catalog and Handbook](http://www.southeasterntech.edu/student-affairs/catalog-handbook.php) (<http://www.southeasterntech.edu/student-affairs/catalog-handbook.php>).

#### **REQUIRED TEXT**

Fundamentals of Heating Ventilation Air-conditioning and Refrigeration (HVACR) 3rd Edition by Carter Stanfield & David Skaves, published by Pearson ISBN: 978135125342.

#### **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.

#### **SAFETY**

Shop safety is of paramount importance. Unsafe practices of any kind will result in dismissal from class. Proper clothing must be worn at all times, NO open toe shoes, No baggy clothes. Baggy pants are unsafe to work in and showing your underwear is viewed as indecent exposure.

#### **COURSE DESCRIPTION**

This course provides instruction on the principles, applications, and operation of a residential heat pump system.

## **MAJOR COURSE COMPETENCIES**

Installation and servicing procedures, electrical components, geothermal ground source energy supplies, dual fuel, valves, and troubleshooting techniques.

## **PREREQUISITE(S) NONE**

## **COURSE OUTLINE**

1. Installation Procedures
2. Servicing Procedures
3. Electrical Components
4. Geothermal Ground Source Energy Supplies
5. Dual Fuel
6. Valves
7. Troubleshooting Techniques
8. Safety

## **GENERAL EDUCATION CORE COMPETENCIES**

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

- a. The ability to utilize standard written English.
- b. The ability to solve practical mathematical problems.
- c. 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 Catalog and Handbook.

## **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 \(hthomas@southeasterntech.edu\)](mailto:hthomas@southeasterntech.edu), 912-538-3126, 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 \(hthomas@southeasterntech.edu\)](mailto:hthomas@southeasterntech.edu), 912-538-3126.

### **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" (Withdrawn) 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" (Failing 0-59) 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 Marchked 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...)**

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 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" (Withdrawn Failing) 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>American With Disabilities Act (ADA)/Section 504 - Equity- Title IX (Students) – Office of Civil Rights (OCR) Compliance Officer</b>	<b>Title VI - Title IX (Employees) – Equal Employment Opportunity Commission (EEOC) Officer</b>
Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1 <sup>st</sup> Street, Vidalia Office 108 Phone: 912-538-3126 Email: <a href="mailto:hthomas@southeasterntech.edu">Helen Thomas</a> <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 Email: <a href="mailto:bwilcox@southeasterntech.edu">Blythe Wilcox</a> <a href="mailto:bwilcox@southeasterntech.edu">bwilcox@southeasterntech.edu</a>

### ACCESSIBILITY STATEMENT

Southeastern Technical College is committed to making course content accessible to individuals to comply with the requirements of Section 508 of the Rehabilitation Act of Americans with Disabilities Act (ADA). If you find a problem that prevents access, please contact the course instructor.

### 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 BannerWeb via the mySTC portal or by clicking the Current Students link on the [Southeastern Technical College \(STC\) Website \(www.southeasterntech.edu\)](http://www.southeasterntech.edu).

### TECHNICAL COLLEGE SYSTEM OF GEORGIA (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	20%
Lab Assignments	50%

### GRADING SCALE

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

## AIRC 1080 Heat Pump and Related Systems

### Spring Semester 2018 Lesson Plans

<b>Date/Week</b>	<b>Chapter/Lesson</b>	<b>Content</b>	<b>Assignments &amp; Tests Due Dates</b>	<b>Competency Area</b>
January 8-11	Chapter 3	Safety System safety	Discuss the safety concerns that the technician will adhere to while working on electric heating systems Safety Test	8 a, c
January 15-18	Chapter 59	Installation Procedures Theory and applications	Discuss heat pump theory Identify and discuss the types of heat pumps used in the industry Identify the reversing valve on a heat pump and explain its purpose Properly evacuate and charge a heat pump system with the correct amount of refrigerant	1,2 a, c
January 22-25	Chapter 59	Theory and applications	Identify and explain components found in heat pumps Discuss heat pump thermostats and how they differ from conventional thermostats	1,2 a, c
January - February 29-1	Chapter 60	Servicing Procedures Theory and installation	Install an electric furnace with a capacity of 150,000 BTU or less Remove or replace an electric furnace with a capacity of 150,000 BTU or less Install heating blowers	1,2,3 a, c
February 5-8	Chapter 60	Theory and installation	Install insulating materials on ducts Connect heating outlets on ducts Lubricate heating blowers	1,2,3, a, c
February 12-15	Chapter 61	Electrical Components Theory	Identify and explain the various electrical components in the heat pump cycle	1,2,3,4 a, c
February 19-22	Chapter 61	Application	Install a humidistat Install a relay Install a safety control Install a starting or running capacitor	1,2,3,4 a, c

Date/Week	Chapter/Lesson	Content	Assignments & Tests Due Dates	Competency Area
February-March 26-1	Chapter 64	Geothermal Ground Source Energy Supplies Theory and application	Discuss the theory of geothermal ground sourcing energy supplies Identify and explain the various components associated with this application	1,2,3,4, 5 a, c
March 5-8	Chapter 65	Dual Fuel Theory and application	Discuss the theory of dual fuels Identify and explain the various components associated with this application	1,2,3, 4,5,6 a, c
March 19-22	Chapter 61	Valves Types	Identify and explain the purpose of TX, reversing, and check valves in the heat pump cycle.	1,2,4,5,6,7 a, c
March 26-29	Chapter 66	Troubleshooting Techniques Theory and application	Test skill level in finding problems in Heat pumps in lab setting	1,2,3,4, 5,6,7,8 a, c
April 2-5	Spring Break	Spring Break		
April 9-12	Chapter 66	Theory and application	Test skill level in finding problems in Heat pumps in lab setting	1,2,3,4, 5,6,7,8 a, c
April 9-12	Chapter 66	Theory and application	Test skill level in finding problems in Heat pumps in lab setting	1,2,3,4,5,6,7,8 a, c
April 16-19	Chapter 66	Theory and application Review for Finals	Test skill level in finding problems in Heat pumps in lab setting. Review for Finals	1-8 a, c
April 23-26	Chapter 59,60,61, 62,63,64, 65,66	<b>FINALS</b>	Final Exam AIRC 1080	1-8 a, c

**COMPETENCY AREAS:**

1. Installation Procedures
2. Servicing Procedures
3. Electrical Components
4. Geothermal Ground Source Energy Supplies
5. Dual Fuel
6. Valves
7. Troubleshooting Techniques
8. Safety

**GENERAL CORE EDUCATIONAL COMPETENCIES:**

- a) The ability to utilize standard written English.
- b) The ability to solve practical mathematical problems.
- c) The ability to read, analyze, and interpret information.