

# SAM HOUSTON STATE UNIVERSITY

## Department of Engineering Technology ETDD 4369 (session 01) Building Systems Fall 2017

**Instructor:** Junkun Ma  
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**Lecture Time:** 13:00 – 16:50 Tuesday  
**Lecture Location:** WETL 101  
**Office Hours:** 13:00 ~ 15:00 Monday & Wednesday; 09:00 ~ 12:00 Tuesday  
Other time by appointment only

**The instructor reserves the right to make changes to the schedule, policies, assignments, and grading scale described in the syllabus in the event of extenuating circumstances or by mutual agreement between the instructor and the students.**

### **Course Description:**

This course provides an overview of refrigeration and air conditioning technology and associated systems. Topics include theory of heat, controls, electric motors, refrigeration and air-conditioning, chilled-water systems, domestic and commercial Heating, Ventilation, and Air Conditioning (HVAC) systems. Hardware and equipment such as condenser, compressors, evaporator and expansion devices, as well as Safety, tools, equipment, and shop practices will also be discussed.

### **Textbook:**

Refrigeration and Air Conditioning Technology (8th edition)  
John Tomczyk, Eugene Silberstein, Bill Whitman, Bill Johnson  
Wiley Publications ([www.wiley.com](http://www.wiley.com))  
ISBN-13 978-1305578296 Copyright 2016

### **Course Objectives:**

This course provides an overview of heat theory, refrigeration, and air conditioning with application from domestic appliances, residential and commercial HVAC systems. Emphasis throughout the semester is placed on the practical applications of the knowledge and skills that engineering technologists need to be productive in the refrigeration and air-conditioning industry. Efficient operation of the HVAC systems will also be discussed.

By the end of this course, students should be able to apply the following principles to solve practical problems:

- Fundamental concepts of heat, temperature, refrigeration, and air-conditioning
- Outline and broad perspective of modern refrigeration and air-conditioning systems including fundamental systems as well as their controls.

- Practical aspects including tools, equipment, shop practices, installation, testing, and maintenance etc.
- Application such as appliances, residential and commercial systems.

### **Lecture/Demonstrations:**

The scheduled class meeting time is used for instructional lectures, demonstrations, discussion and evaluation. Lectures will focus upon the essential procedures, techniques, and other information needed to understand manufacturing processes and related systems.

### **Attendance Policy:**

1. **Attendance:** Every student is expected to be present and ***on time*** for every lecture. You are tardy whether you come in late or leave early. Roll will be taken at the beginning of each lecture. In case you are absent, whether excused or unexcused, you are still responsible for the material covered.

#### Attendance Grade

|              |     |
|--------------|-----|
| 0 -3 absents | 10% |
| 4 absents    | 5%  |
| 5 absents    | 0%  |

2. Each student should be prepared for class by having carefully read and studied all assigned textbook readings and/or handouts. Each assignment is to be completed on an individual basis. Any assignment turned in late will be penalized. Absences do not exempt you from the responsibility of turning material/assignment in on time and they do not extend the due date of the assignment schedule.
3. There will be no makeup exams, quizzes, or assignments except for special events (documented illness and business trip on behalf of SHSU etc.) or by mutual agreement prior to the absences between the instructor and the student.

\*\*\*\*(Exempt attendance notification is the responsibility of the student and all info referring to the absent must be presented to the instructor prior to or within one week from the date in question. Therefore, the student should call or e-mail the instructor as soon as possible when becoming aware of the absence.)

### **Exam:**

Comprehensive mid-term and final examinations will be given. The date and content for the mid-term exam will be discussed as the semester proceeds. The final exam schedule will follow university academic calendar. Examinations are a part of the overall learning experience, and will contribute to the mastery of the body of knowledge you gain from the course. Content of examinations will be taken from assigned text readings, quizzes, and assignments.

### **Quizzes:**

The instructor reserves the right to schedule a quiz at any time that he/she feels it may be necessary. These can be planned and the instructor will notify the students one week in advance or they can be “pop” quizzes given without notice. Any students using a cell phone during these quizzes will receive a “zero” on the quiz (please refer to the cell phone policy listed below).

### **Course Evaluation:**

Each student should be prepared for lecture by having carefully read and studied all assigned textbook readings and/or handouts. Each assignment is to be done on an individual basis, and

penalties will be assessed for work turned in past due date. The final grade for the course is based on the following grading scale:

**Grading Scale:**

|               |     |
|---------------|-----|
| Assignments   | 20% |
| Quizzes       | 20% |
| Attendance    | 10% |
| Mid-term Exam | 20% |
| Final Exam    | 30% |

| Percentage range | Grade |
|------------------|-------|
| 90 – 100         | A     |
| 80 – 89          | B     |
| 70 – 79          | C     |
| 60– 69           | D     |
| 0-59             | F     |

**Tentative Schedule:**

| Week | Date          | Assignment                               |
|------|---------------|------------------------------------------|
| 1    | 08/22 Tuesday | Review Course Syllabus<br>Theory of Heat |
| 2    | 08/29 Tuesday | Safety, Tools and Equipment              |
| 3    | 09/04 Tuesday | Shop Practices                           |
| 4    | 09/11 Tuesday | Automations and Controls                 |
| 5    | 09/18 Tuesday | Electric Motors                          |
| 6    | 09/25 Tuesday | Components for Refrigeration             |
| 7    | 10/02 Tuesday | Refrigeration applications               |
| 8    | 10/09 Tuesday | Heating and Humidification               |
| 9    | 10/16 Tuesday | ***Mid-term exam***                      |
| 10   | 10/23 Tuesday | Cooling                                  |
| 11   | 10/30 Tuesday | Refrigerators and Freezers               |
| 12   | 11/06 Tuesday | Room Air Conditioners                    |
| 13   | 11/13 Tuesday | Commercial Air-Conditioning              |
| 14   | 11/20 Tuesday | Chilled-Water Systems                    |
| 15   | 11/27 Tuesday | Alternative Energy Systems               |
|      | 12/01 Friday  | All Reports and Assignments Due          |

\*\*\*All Assignments DUE\*\*\*

\*\*\*\*\*No Assignments accepted after this date\*\*\*\*\*

**12/04 - 12/08**

**FINAL WEEK**

**Academic Dishonesty:**

When under the pressure of deadlines, some students may be tempted to copy another student's drawing and hand it in as their own. Before yielding to such temptation, the student should be aware of the University's policy statement on academic ethics, and that the instructor would consider failure for the course a more appropriate punishment. Students are expected to maintain

complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating, plagiarism, collusion, and abusing resource materials on an examination or other academic work, which is to be submitted.

### **Classroom Rules of Conduct:**

Students will avoid doing behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, obstructs the mission of the university. **Cellular telephones, earphones and pagers must be turned off before class begins.** Students are prohibited from eating and drinking in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

### **Student Absences on Religious Holy Days Policy:**

Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the students and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). This request must be made in the first fifteen days of the semester or the first seven days of a summer session in which the absence(s) will occur. The instructor will complete a form notifying the student of a reasonable timeframe in which the missed assignments and/or examinations are to be completed.

### **Tobacco Policy:**

In order to promote a healthy, safe, and aesthetically pleasing work, educational, and living environment, Sam Houston State University (SHSU) will endorse a smoke free and tobacco free environment. The primary purpose of this policy is to establish guidelines prohibiting smoking and the use of all tobacco products. Tobacco products include cigarettes, cigars, pipes, smokeless tobacco, and all other tobacco products.

### **Cell Phone Policy:**

The use by students of electronic devices that perform the function of a telephone or text messages during class-time may be prohibited if deemed disruptive by the instructor to the conduct of the class. Arrangements for handling potential emergencies may be granted at the discretion of the instructor. Failure to comply with the instructor's policy could result in expulsion from the classroom or with multiple offenses, failure of the course.

Any use of a telephone or text messages or any device that performs these functions during a test period is prohibited. These devices should not be present during a test or should be stored securely in such a way that they cannot be seen or used by the student. Even the visible presence of such a

device during the test period will result in a zero for that test. Use of these devices during a test is considered evidence of cheating and could result in a charge of academic dishonesty.

**Disabled Student Policy:**

It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic or Student Life program or activity. Disabled students may request help with academically related problems stemming from individual disabilities from their instructors, school/department chair, or by contacting the Chair of the Committee for Continuing Assistance for Disabled Students and Director of the Counseling Center, Lee Drain Annex, or by calling (936) 294-1720.

SHSU adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. If you have a disability that may affect adversely your work in this class, then I encourage you to register with the SHSU Counseling Center and to talk with me about how I can best help you. All disclosures of disabilities will be kept strictly confidential. **NOTE: no accommodation can be made until you register with the Counseling Center**

***No assignments will be accepted after the last day of lecture on Friday, Dec. 01, 2017***