

Residential Air Conditioning Systems Design (HART 2445)

CREDIT: 4 semester credit hours (2 hours lecture, 6 hours lab)

MODE OF INSTRUCTION

Face to Face

PREREQUISITE/CO-REQUISITE: HART 1441

COURSE DESCRIPTION

Study of the properties of air and results of cooling, heating, humidifying or dehumidifying; heat gain and heat loss calculations including equipment selection and balancing the air system.

COURSE OBJECTIVES

Upon completion of this course, the student will be able to:

1. Calculate heat loss and heat gain.
2. Design a complete duct system.
3. Size heating and cooling equipment to the structure.
4. Perform a load calculation using Manual J or other load calculation forms.
5. Balance air flow on a duct system.

INSTRUCTOR CONTACT INFORMATION

Instructor: Darrell Grissom

Email: dgrissom@lit.edu

Office Phone: 409.839.2903

Office Location: Tommy William Building ITC 2 room 102

Office Hours: 5-530PM Tuesday & Thursday

REQUIRED TEXTBOOK AND MATERIALS

Provided by the HART Program

ATTENDANCE POLICY

Absences no more than 20% of class meetings

DROP POLICY

Approved: DG/8.18.2023



**LAMAR INSTITUTE
OF TECHNOLOGY**

If you wish to drop a course, you are responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an “F” in the course.

COURSE CALENDAR

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
Week 1	Introduction & Safety Orientation	Lecturer Notes & Hand-Outs	
Week 2	Review of Basic Heat Transfer Theory	Lecturer Notes & Hand-Outs	Assignment
Week 3	Reading Basic Blue Print Layouts	Lecturer Notes & Hand-Outs	Lab Project
Week 4	Review of Basic Geometry	Lecturer Notes & Hand-Outs	Written Exam
Week 5	Identifying R-Values of Various Building Materials & Insulations	Lecturer Notes & Hand-Outs	
Week 6	Converting R-Values into U-Values & calculating BTU Heat Gain/Loss	Lecturer Notes & Hand-Outs	Assignment
Week 7	Calculating BTU Heat Gain/Loss	Lecturer Notes & Hand-Outs	Lab Project
Week 8	Calculating Manual J Heat Gain/Loss by Hand	Lecturer Notes & Hand-Outs	Written Exam
Week 9	Calculating Manual J Heat Gain/Loss by Load Calculation Software	Lecturer Notes & Hand-Outs	
Week 10	Identifying Air Qualities & Characteristics & Measuring FPM/CFM	Lecturer Notes & Hand-Outs	Assignment
Week 11	Sizing an Air Distribution System	Lecturer Notes & Hand-Outs	Lab Project
Week 12	Designing an Air Distribution System	Lecturer Notes & Hand-Outs	Written Exam
Week 13	Fiberglass Duct Board Safety Orientation	NAIMA Videos	
Week 14	Fabricating an Air Distribution System	NAIMA Videos	Assignment
Week 15	Fabricating an Air Distribution System	Lecturer Notes & Hand-Outs	Lab Project
Week 16	Fabricating an Air Distribution System	Lecturer Notes & Hand-Outs	Written Exam

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

- HOMEWORK/ASSIGNMENTS 30%
- EXAMS 30%
- LAB/PROJECTS 40%

GRADE SCALE

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

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

Course Requirements

1. Homework assignments
2. Hands on lab activities
3. Use of Blackboard and other Web based platforms and resources
4. It is require to complete a safety policy form

Course Policies

1. No horse playing tolerated, always maintain a safe learning environment.
2. No open foot shoes, sandals, or flip-flops: closed foot shoes *only*.
3. No smoking, eating, or sleeping will be tolerated during class; LIT is a tobacco free campus
4. No rings or other jewelry and lanyards worn exterior that can be a lab hazard.
5. No unauthorized use of cell phones and computers during class.
6. Safety glasses or goggles and gloves are required while working in the lab
7. No make-up for missed exams; but lowest written exam score will be dropped from final grade
8. Due dates are *final*, acceptance of late work will be instructor's discretion
9. Two times tardy will result in an absence; always notify the instructor for excused absences
10. Executed completion of the HVAC Safety Policy and Procedure Form required before working in Lab.
11. Instructor will reply to student's emails within 2 business days.