Residential Air Conditioning Systems Design (HART 2445)

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

LAMAR INSTITUTE OF TECHNOLOGY

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 totaling no more than 20% of class meetings

Approved: DG/8.25.2025

DROP POLICY

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 (DATES ARE SUBJECT TO CHANGE)

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
8.26.2025	**MODULE 1** -COURSE INTRODUCTION & SAFETY -REVIEW BASIC HEAT TRANSFER THEORY -REVIEW BLUE PRINTS LAYOUT -REVIEW BASIC GEOMETRY	**Bb→CONTENT→MODULE** **(1) Folder (hand-outs)** **Khan Academy** DUE 9.9.2025	Assignments, Quizzes, and Lab Projects handed out in Class DUE 9.9.2025
	MODULE 1 - EXAM		**EXAM 9.11.2025**
9.11.2025	**MODULE 2** -INTRODUCTION TO ACCA MANUAL J HEAT LOAD CALCULATION SOFTWARE -IDENTIFYING R-VALUES OF VARIOUS BUILDING MATERIALS & INSULATION -CONVERTING R & U VALUES & BTU HEAT GAIN AND LOSS -MANUAL J HEAT LOAD CALCULATION SOFTWARE	**Bb→CONTENT→MODULE** **(2) Folder (hand-outs)** **COMPUTER PROGRAM** DUE 10.16.2025	COMPUTER PROGRAM SOFTWARE PROJECTS With DUE 10.16.2025
	MODULE 2 - EXAM		**EXAM 10.18.2025**
10.18.2025	**MODULE 3** -IDENTIFYING AIR QUALITIES & CHARACTERISTICS -SIZING AIR DISTRIBUTION SYSTEM -DESIGNING AIR DISTRIBUTION SYSTEM	**Bb→CONTENT→MODULE** **(3) Folder (hand-outs)** DUE 11.20.2025	Assignments, Quizzes, and Lab Projects handed out in Class DUE 11.20.2025

11.20.2025	**MODULE 4** -FIBERGLASS DUCT BOARD SAFETY ORIENTATION -FABRICATING AIR DISTRIBUTION SYSTEM	**Bb→CONTENT→MODULE (4) Folder (hand-outs) NAIMA VIDEOS** DUE 12.4.2025	Assignments, Quizzes, and Lab Projects handed out in Class DUE 12.4.2025
	MODULE 3 - EXAM		**EXAM 12.9.2025**
	SPECIAL PROJECT		**DUE 12.9.2025**

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.

ARTIFICIAL INTELLIGENCE STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses

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.