Machinery Installation (INMT 2301)

Credit: 3 semester credit hours (2 hours lecture, 2 hours lab)

Prerequisite/Co-requisite: INMT 1305

Course Description

Students utilize skills acquired in previous studies. Machinery foundation, locations, installation, and alignment activities are practiced and tested. Emphasis is on the various methods of shaft alignment including laser shaft alignment.

Required Textbook and Materials

1. *Audel Millwrights & Mechanics Guide By Davis and Nelson 5th edition*
    a. ISBN number is 0-7645-4171-4
2. Equipment to be furnished by students:
    a. Hard Hat (red)
    b. Hearing protection (Ear plugs or Muffs 29 NRR)
    c. Fire retardant clothing (Nomex or equal)
    d. Safety Glasses (Z87+)
    e. Gloves (leather or equal)
    f. Shoes (substantial leather or equal w/ heels- no open toes)

Course Objectives

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

1. Perform field layouts for locating machinery; construct machine foundation according to machinery foundation prints.
2. Install machinery on to a foundation which includes leveling and securing.
3. Explain the applications of the various types of shaft couplings.
4. Align pump and motor shafts using the various methods of shaft alignment.

Course Outline

1. Introduction
    a. Introduce the Faculty
    b. Introduce the Subject
2. Safety-Lockout/Tagout, Work permits
    a. Discuss Safety in the Lab
    b. Discuss Work Permit in Industry
3. Machinery application
    a. Discuss the machinery to be used in class
    b. Discuss the Safety to be used in class
4. Machinery location
    a. Show students the machinery for class
    b. Show students the work environment
5. Machinery handling equipment
    a. Demonstrate load handling equipment
    b. Show students the work environment

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6. Machinery handling techniques and safety
    a. Demo some of the load handling equipment
    b. Discuss the safety required in the lab
7. Machinery setting and alignment
    a. Discuss the use of laser
    b. Discuss the safety concerns using the laser
8. Couplings
    a. Identify the different types of couplings
    b. Discuss the uses of each
9. Shaft alignments
    a. Practice alignment with indicators
    b. Practice alignment with laser
10. Inspection
    a. Discuss the need for inspections
    b. Demo the different ways to inspect equipment
11. Machinery function testing
    a. Discuss the different tests to apply
    b. Apply tests to machinery
12. Machinery operation/evaluation
    a. Operate Machinery
    b. Evaluation the operation

Grade Scale

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

Course Evaluation

Final grades will be calculated according to the following criteria:

Activity	***Percentage***
Major test	75%
Class participation	25%
Total	***100%***

Course Requirements

1. Tools used
2. Measuring Instruments used
3. Safely using Laser alignment devices
4. Installing rotating equipment
5. Aligning equipment

Attendance Policy

1. Students in a 2 day class are allowed 2 unexcused absences.
2. An absence, excused or unexcused is counted 6 pts. off final grade.
3. More than 2 unexcused absences can result in an “F” in the course.
4. Being tardy 3 times equals 1 absence. (2 pts. each)

5. Students in a 1 day class are allowed 1 unexcused absence.(12 pts. off final grade)

Course Policies

1. **Students must possess and present LIT ID to attend class.**
2. No food, drinks, or use of tobacco products in class.
3. No foul or harsh language will be tolerated
4. Turn off all cell phones during lectures
5. Headphones may be worn only upon Instructor approval
6. Do not bring children to class.
7. No Cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result from expulsion from LIT.
8. If you wish to drop a course, the student is 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.
9. **Proper Dress.** Any intentional display of undergarments will not be tolerated and can result in the student being removed from the class. Pants will be worn belted at the waist as to allow the student to walk, climb, stoop and bend as required. It is the student's responsibility to dress for work as if in an industrial environment, long pants, shirts with sleeves, substantial footwear (full leather shoes or boots with heels, composition oil resistant soles, no sandals, flip flops, cloth shoes). Safety glasses and hard hats will be necessary as the class requires.
10. Internet Usage
    a. Classroom computers have access to the internet.
    b. Student usage of the internet will be monitored.
    c. Proper usage of the internet will be allowed. Used for classroom research or as directed.
    d. Any unauthorized use of the internet will not be tolerated.
    e. Improper usage of the internet, such as profanity, pornography, gambling, etc… will result in disciplinary action not limited to expulsion from LIT.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

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 or obtained in print upon request at the Student Services Office.

Course Schedule

Week	Topic	Reference
1	Course introduction and policies • Lecture • Lab: Practice	Handouts
2	Arc Method of Installation • Lecture • Lab: Practice	Chapter 9
3	3-4-5 Method of Installation • Lecture • Lab: Practice	Chapter 9
4	Perpendicular Distance Method • Lecture • Lab: Practice	Chapter 9
5	Reinforced-Concrete Foundations • Lecture • Lab: Practice	Chapter 9
6	Vibration and Noise Prevention • Lecture • Lab: Practice	Chapter 9
7	Foundations • Lecture • Lab: Practice	Chapter 9
8-16	Methods of Alignment • Lecture • Lab: Practice	Lab