Power Generation Fundamentals: Lecture / ELMT 2451

LAMAR INSTITUTE OF TECHNOLOGY

INSTRUCTOR CONTACT INFORMATION

Instructor: **Amit Biswas**

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Office Phone:

Office Location: 855 E Lavaca St, Beaumont, TX 77701

Office Hours: By appointment

CREDIT

3:3:3 Semester Credit Hours (3 hours lecture, 3 hours lab)

MODE OF INSTRUCTION

Face to Face

PREREQUISITE/CO-REQUISITE: None

COURSE DESCRIPTION

Fundamental of Power Generations provides coverage of Electrical power production including identification and function of power plan equipment. Topics include the introduction of power plant operations to include basic power plant cycles, basic power plant systems, boilers, turbines, generators, field devices and instrumentation, control and electrical systems.

COURSE OBJECTIVES

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

- Develop and understanding of the different engineering disciplines
- Explain the steam production and it's importance
- Describe the function of Boiler and Design and construction of Boiler.
- Identify and analyze the combustion of fuel
- Evaluate operation and Maintenance of Boiler.
- Understand the different types of pumps
- Explain the difference of Turbine, Condenser and Cooling tower.

REQUIRED TEXTBOOK AND MATERIALS

1. Scientific calculator
2. Laptop
3. **Textbook: "Steam Plant Operation. Everett B. Woodruff. McGraw Hill Education. ISBN- 978-1-25-964134-3**

ATTENDANCE POLICY

The campus policy mandates that students attend 80% of their scheduled instructional days. Class attendance is critical for understanding the topics. This will be tracked in Starfish via student access in Blackboard and participation during specified meeting times. Excessive unexplained absences will result in a ten-point penalty from the final semester grade (at the discretion of the instructor).

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the Academic Calendar. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Homework and Classwork	20%
Assignments	20%
Quiz:	20%
Exam:	40%

GRADE SCALE

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

LIT does not use +/- grading scales.

STUDENT EXPECTED REQUIREMENT

For every hour in class (or unit of credit) students should expect to spend at least two to three hours per week studying and completing assignments. For 3 credit hour class students should prepare to allocate approximately six to nine hours per week outside of class in a 16 week session or approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face-to-face class.

ACADEMIC DISHONESTY

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution's Academic Dishonesty Policy available in the Student Catalog & Handbook at http://catalog.lit.edu/index.php

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 Wi-Fi 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

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 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.

COURSE ASSESSMENT

Quiz: A quiz will be given every other week. The duration of the quizzes will be 15 to 20 minutes. We will continue the class sessions after the quizzes. It is to make sure that the students are students are studying the class materials on a regular basis.

Optional Homework: Students will regularly receive optional homework assignments. These assignments will not be graded. The purpose of the homework is to support the students' learning process.

Extra Credits: Extra credit opportunities will be announced during class lectures. The extra credits will be reflected on students overall grade points at the end of the semester.

Exams: Instructions and dates will be announced at least one week in advance. The calendar in the syllabus shows tentative dates.

ADDITIONAL COURSE POLICIES/INFORMATION

1. Any assignment that Blackboard considers late will be manually graded with a deduction of 20 points.

2. The Final Exam cannot be late for ANY reason. The semester ends when the Final Exam is due.

3. Changes will be made to the calendar's topics and assignments because of any unanticipated circumstances.

SYLLABUS SCHEDULE

The schedule below is the tentative semester schedule which is subject to revision.

Week	Topic	Reference
Week 1,2	Chapter 1 • Steam and its importance	Chapter 1 Problems and Questions
Week 3,4	Chapter 2 • Boilers • Steam Generation	Chapter 2 Problems and Questions
Week 5	Chapter 3 • Design and Construction of Boilers	Chapter 3 Problems and Questions
Week 6	Chapter 4 • Compound Wound DC Generator	Chapter 4 Problems and Questions
Week 7	Chapter 5 • Boiler Settings • Combustion Systems • Auxiliary Equipment	Chapter 5 Problems and Questions
Week 8	Chapter 6 • Boiler Accessories	Chapter 6 Problems and Questions

Week 9,10	Chapter 7 • Operation and Maintenance of Boilers	Chapter 7 Problems and Questions
Week 11, 12	Chapter 8 • Pump Types	Chapter 8 Problems and Questions
Week 13	Chapter 9 • Steam Turbine • Condenser • Cooling Tower	Chapter 9 Problems and Questions
Week 14	Chapter 10 • Operation and Maintenance Steam Turbine	Chapter 10 Problems and Questions
Week 15,16	Chapter 11 • Auxiliary Steam Plant Equipment	Chapter 11 Problems and Questions

Notes:

- This schedule is tentative and subject to change