

**Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018**

SEPP 2423-Mechanical Systems

Students will gain competency in the practical use, operation, and maintenance of mechanical equipment related to power generation facilities. Topics include basic mechanics, fans, blowers, pumps valves heat exchangers, conveying equipment, bearings, and lubricants.

Course Purpose:

The purpose of this course is to develop student competency to identify, operate, and troubleshoot typical equipment used in power plant facilities.

Type of Course: Theory

Credit Hours: 3

Total clock hours of theory per semester: 36;

Total clock hours of lab per semester: 12;

Total clock hours of clinical per semester: N/A.

Class Length: Full Semester

Class Format: Blended

Class Days and Times: Mon, Wed 8:00AM – 9:25AM (20253),
Tues, Thu 8:00AM – 9:25AM (20254)

Pre-requisites: SEPP1123 Introduction to Power Plants

Instructor Name: Robert Pope

Instructor Phone: (918) 916-3641

Office: Building 400 – 140D

Instructor email: bob.pope@okstate.edu

Contact: My preferred method of contact is text or call (leave voicemail if no answer). Please allow until the next weekday morning for acknowledgement/response time.

Instructors' Office Hours: Open door when I am in the office.

School and Division Name: School of Energy: Power Plant technology

School Main Phone: 918-293-3812

REQUIRED TEXT, REFERENCES, AND MATERIALS

Text: Process Technology Equipment and Systems 3rd Edition – Thomas, Charles.

(Cengage Learning, Publisher) ISBN-13: 978-1-4354-9912-6 or ISBN-101-4354-9912-3. Copyright 2011

GPI online classroom. Provided by OG&E, <https://ogelearning-greenlight.silkroad.com/>

References: none

Materials: Notebook, Flash drive

Uniform/Tools: N/A

Estimated Cost for Materials: \$150

Estimated Cost for Uniform/Tools: \$N/A

Optional Resources: N/A

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UNIVERSITY ASSESSMENT OF LEARNING

Selections of the course objective assessments may be used in the university's assessment of student learning. If this is the case, a superscripted note indicates this objective and associated assignments similarly noted in MODULE assignments are used. The student's grade for the assignments will be used in the university's assessment of student learning as follows: A 70% competency or higher receives a Pass rating for the University Assessment. While the percentage competency grade is factored into the course grade, the Pass/Fail rating is independent of the student's course grade. The absence of notations indicate the course is not used in the University Assessment.

COURSE OBJECTIVES

Upon completion of the course, students should:

| Course Objectives | Assessment of Objectives |
|--|---------------------------------|
| Become knowledgeable with equipment design, construction, and application to industrial systems. Identify equipment from picture, diagram, or sight. Describe equipment design principles and construction. Describe practices for installation in systems. | Exam & Final |
| Understand where equipment is used, its purpose/role, and proper installation, in a power plant system. Explain system design requirements and equipment applications in power plant systems. Explain installation details for equipment in power plant systems. | Exam & Final |
| Learn the operating characteristics (operating parameters and limitations) of equipment so that effective operations and maintenance practices are performed. Describe proper operation (startup, operation, shutdown, layup) of equipment in power plant systems. Explain causes and symptoms of abnormal operating conditions for equipment. | Exam & Final |

Objectives/Assessments noted with a superscript number are applicable to the University Assessment of Learning.

COURSE ACTIVITIES

In this course students will:

- Complete reading and research assignments.
- Participate in class discussions and activities.
- View videos that depict the various concepts.
- Compile a portfolio of work produced.
- Quizzes/Exams (open book and closed book).

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EVALUATION - GRADES WILL BE BASED ON THE QUALITY AND COMPLETION OF THESE TASKS: (NOTE-
Please indicate the course-specific evaluations. List assignment(s) used in the university's assessment of student learning as
separate line items and marked with an asterisk.)

| | |
|---------------------|-------------|
| Class Participation | 15% |
| Assignments | 30% |
| Unit Exams | 40% |
| Final Exam | 15% |
| Total | 100% |

| |
|--|
| OSUIT Grading Scale A = 90%-100% B = 80%-89% C = 70%-79% D = 60%-69% F = 59% & below |
|--|

- ! Class assignments and quizzes will be reviewed in the following class as a feedback/self-grade exercise.
- ! Equipment Experience and Application assignments will have a class review & discussion in the class period just before the due date of the assignment.
- ! Student are expected to stay current with the class schedule. Work delayed outside of the students control must be completed in parallel with current class work. Except in extreme cases, due dates will not be flexible.
- ! All evaluated work is submitted to a drop box in the online classroom environment before the due date.

Students are evaluated and assigned a grade for completed work assigned during the conduct of the course. In order to reach full marks for an assignment;

- It must reflect the best effort of the individual student. This is especially important for group work, whether it is formal or informal.
- It must be submitted on or before the due date. I strongly recommend work be submitted before the due date. Late work will not be accepted without prior arrangement with the instructor.
- It must adhere to instructions that may be included with the assignment.
- When a standard is provided, it must clearly reflect agreement/compliance with a grading standard.

- ! Assignments will have a preparatory discussion to establish relevance to course objectives and student evaluation.

- ! **With the exception of extreme cases, late work will not be accepted without notification and arrangement with the instructor**

RECOMMENDED STUDENT COMPETENCIES/SKILLS

- None

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AUTHORIZED TOOLS

- Microsoft Office 2013 Suite
 - (Access, Excel, Outlook, Power Point, Word, Visio, Project)
- Students may use any/all related materials, including books and notes, while participating in classroom activities. However, graded work should utilize authorized material posted or referenced in the online classroom. Although not required, the student assumes all risk for the accuracy and applicability of unauthorized material.
- All quizzes and written assignments are to be completed according to supplied instructions. When so instructed, no collaboration with classmates is permitted and suspicion such will be considered academic dishonesty. Instructor observation, documentation, and judgement carries the preponderance of weight in such matters.
- Course Text material
- Material Posted on Online Class
- Any material presented (handouts, note copies, cited sources) in class.
- Supplied tools and equipment.

LATE WORK

- All class absences require notification to the Instructor ASAP by text or voicemail. Notification must include Student Name, Course Name, Date of class missed, and why class will be missed.
- In cases of more than two consecutive absences, beyond the student's control, the student must notify (text with instructor reply), the instructor of the impact to student's participation in the course, (how long). Consequently, a meeting with the instructor must occur before return to class to schedule timely makeup work. It is the student's sole responsibility to notify and meet with the instructor. The student forfeits this accommodation for late work without meeting with the instructor prior to the student's next attendance.
- Class time is used to introduce, explain, and reinforce topics, review class schedule and progress, and administer exams. It is essential to successfully completing the course. Absences within the student's control are serious and cannot be compensated. Violating students will be first warned verbally, and subsequently warned in writing advising them of negative impact to their course grade and the possibility of an administrative withdraw from class.
- Missed assignments may draw similar warnings.

TESTING

All exams (including Final) will be given open and closed book or at the discretion of the instructor.

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OTHER LAB AND CLASSROOM POLICIES

General

- Students will be expected to manage their time and resources to stay current with topics covered by the course. Absence policy is described in late work.
- Students are expected to use time devoted for the class working on class topics, not on work for other classes. If class presentation, discussion etc. ends early and there is an active assignment for the class, the student is expected to use remaining class time on that assignment work. Student's use of this time will be considered in any arrangement for late work.
- If a learning difficulty is encountered by the student, they must communicate the problem and any recognized details to the instructor. This is encouraged to occur in the class meeting. Work within and outside of class are options to work through the difficulty.
- Students are expected to demonstrate a work ethic towards the class that shows organization, and desire for excellence. At a minimum this involves punctual and complete attendance of class sessions as well as neat, complete, and ordered work. Evaluations and grades will incorporate this perspective.
- Student participation in the class enhances learning through shared experiences with the instructor and other members of the class. Share discovered best practices!

Code of Conduct (classroom, labs, field trips)

- Classroom;
 - Students are expected to cooperate in maintaining a classroom environment conducive to learning. Courteous and respectful behavior will be expected from all students each day. All pagers, cellular phones, CD and MP3 players should be turned off. The use of tobacco in any form in University buildings is prohibited. Consumption of food must occur outside of class time.
- Equipment Experience, Projects;
 - Students must strictly comply with any instructions provided with class projects, even if they are off topic with the class content. (Ex: safety/environmental concerns)
- Field Trips
 - Students are the guests of the business or organization hosting the field trip.
 - Students must recognize that the needs of the business and compliance of the plant, are above the educational experience of the student. Students will comply with directions provided by the designated representative(s) involved with the trip.
 - Since the purpose of the trip is to enrich the educational material of the course, students are encouraged to be inquisitive within the context of the trip and the course.
 - Students will be polite and respectful to personnel hosting the trip.

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OTHER LAB AND CLASSROOM POLICIES cont'd

Online Course Support

- Students are already auto-enrolled in online course support. The student should fill out your “profile” on the home page of the course. Be sure to add your mobile number, this is useful for you to contact classmates. If there are any last minute events, I can contact you by text or email. This is a credit requirement for the participation grade.
- Online course support is used to announce course activities and news, post reference material, manage assignments (define, collect, and evaluate), conduct exams, and post grades. Online course support exists to keep students current on requirements outside of the classroom environment.
- When utilizing online course support, consider the computer requirements and the internet connection speed. Most any university computer connected to the on-campus high-speed network will operate efficiently. Access to a printer is required to make hardcopies of most assignments. The university does not provide any free printer access.
- It is strongly recommended that students find a reliable and efficient study location. On campus facilities have the best resources to accomplish this.

ONLINE COURSE INTERACTION

OSUIT requires all online courses to include interaction between students, peers and instructors.

Our online courses use a variety of tools to build a community of learners and strengthen engagement between students and their peers, as well as between students and the instructor. Communication tools used in courses may include Discussion, News, and Email. Read the syllabus completely to determine which of these methods you, your classmates and your instructor will use for interaction.

General guidelines for student conduct while interacting within an online course include: (1) Use proper language in all communications; (2) Harassment of any type will not be tolerated; (3) No jokes, insults or threats of an offensive nature.

For more information, go to: <http://osuit.edu/center/netiquette>

SYLLABUS ATTACHMENT

View the Syllabus Attachment, which contains other important information, by visiting http://osuit.edu/center/student_syllabus_information

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| Course Outline Schedule | Topic | Assignment |
|--------------------------------|---|---------------------|
| Week 1 | Basic Technology, Principles, Bolts, Fasteners, Tanks, Piping | |
| Week 2 | Foundations, Valves | Questions |
| Week 3 | Couplings, Alignment, Gearboxes | Exam |
| Week 4 | Bearings, Lubrication, Shaft seal | Questions |
| Week 5 | Pumps, pressure & flow | Questions, modeling |
| Week 6 | Field Trip | Report, Questions |
| Week 7 | Compressors, Turbines - cycles | Exam |
| Week 8 | Heat Exchangers, heat transfer | Questions |
| Week 9 | Cooling Tower, Evaporative Coolers | Exam |
| Week 10 | Hydraulics | Questions, Modeling |
| Week 11 | Hydraulics | Exam |
| Week 12 | Pneumatic systems | Questions |
| Week 13 | Steam | Exam |
| Week 14 | Field trip or Electric mechanisms | Report, Questions |
| Week 15 | Review | Final |

Schedule is subject to change at instructor discretion.

