

Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018

SEPP2563 Plant Controls & Permissive

A focused study on the instruments and systems used to operate Power Plant equipment and systems. Technology for pressure, temperature, flow, and level sensing and control is studied along with calibration and troubleshooting. Control loop integration with systems and related interpretation of documentation and human-machine interfaces is also explored.

Course Purpose:

The purpose of this course is for the student to achieve a detailed understanding of the technology (principles of operation, application, and equipment) used to start, operate, and shutdown a typical power plant.

Type of Course: (Theory/Lab)

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 2:00PM – 4:25PM in class. Student schedule online.

Prerequisites: SEPP23xx Plant Operations

Instructor Name: Bob Pope

Instructor Phone: (918) 916-3641

Office: Bldg. 400 Room #140D

Instructor Email: bob.pope@okstate.edu

Contact: My preferred method is text or call (Leave voicemail if no answer). Please allow to the next weekday morning hours for acknowledgement/response time.

Instructor's Office Hours: Open door when I am in my office.

School Name: Energy Technology

School Main Phone: 918-293-3812

REQUIRED TEXT, REFERENCES, AND MATERIALS

Texts: Industry Material posted in online class

References: N/A

Materials: Notebooks, writing utensils, data storage stick,
Computer with access to OSUIT Online Class and Microsoft Office 2013

Uniform/Tools: N/A

Estimated Cost for Materials: \$ 25 minus computer

Estimated Cost for Uniform/Tools: N/A

Optional Resources: Simtronics Power Plant Simulator available in computer lab in Bldg. 400.

Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018

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 % 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
Given a typical control system the student will be able to identify and describe potential problems areas related to mechanical wear and tear.	Analysis report, Exam questions
The student will be able to describe the hardware structure of a typical plant DCS.	Term recitations, Exam questions
The student will demonstrate the characteristics of modern GT, ST, and BOP control on a simulator.	Demonstration/Troubleshooting, Exam questions
The student will be able to describe considerations and priorities for restoring auxiliary power to an isolated power plant.	Project report, Exam questions
The student will be able to describe the relationships between plant control and environmental air pollution management.	Exam questions

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).

Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018

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.)

Participation	10%
Exams	45%
Project Models	10%
Simulation Projects	20%
Class Log	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 is expected to be completed in parallel with current class work. Except in extreme cases, due dates will not be flexible.
- ! All evaluated work will be presented to a drop box in the online classroom environment before the due date. Drop boxes will close on the due date.
- ! Students will be 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 COMPENTENCIES/SKILLS

- Working knowledge of plant piping and instrument diagrams
- Working knowledge of power plant startup and operating procedure.

Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018

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.

Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018

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.

Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018

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

Oklahoma State University Institute of Technology
Online Common Syllabus
Spring 2018

Course Outline Schedule	Topic	Assignment
Week 1	I&C Basics - pressure	Automation studio model
Week 2	I&C Basics - temperature	Automation studio model
Week 3	I&C basics - flow	Automation studio model
Week 4	I&C Basics - level	Automation studio model Exam
Week 5	Turbine Controls – gas	Simulator model
Week 6	Turbine Controls – gas	Simulator model
Week 7	Turbine Control - steam	Simulator model
Week 8	Turbine Control - steam	Simulator model Exam
Week 9	Generator Operation	Research questions
Week 10	Generator Operation	Research questions
Week 11	Generator Operation	Research questions Exam
Week 12	Duct Burner / Boiler	Study questions
Week 13	Duct Burner / Boiler	Study questions Exam
Week 14	DCS	
Week 15	Review	Final Exam

Schedule is subject to change at instructor discretion.

