

Basic Course Information

Semester:	Fall 2019	Instructor Name:	Jose Caloca,
Course Title & #:	APP 107 Power Plant Operator VII	Email:	jmcaloca@iid.com
CRN #:	11442	Webpage (optional):	
Classroom:	EGCS Maintenance Room.	Office #:	
Class Dates:	August 19,2019 to Dec 14,2019	Office Hours:	6:00 a.m.- 6:00 p.m.
Class Days:	Tuesday	Office Phone #:	760 339-0522
Class Times:	4:00 p.m. to 8:15 p.m.	Emergency Contact:	Shift Supervisor on duty.
Units:	4.0		

Course Description

Instruction combine cycle principles, steam turbines, Electrical generators, Heat Recovery Steam Generators and associated mechanical and electrical equipment in the production of electrical energy. (Nontransferable, non-degree applicable).

Course Prerequisite(s) and/or Corequisite(s)

Successful completion of APPL106.

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge demonstrated by being able to:

- 1. Explain the different types of energy used in a gas turbine power plant. (IL01, IL02).**
- 2. Explain and analyze causes of combustion system failure in gas turbine generators. (IL02, IL03)**
- 3. Demonstrate proper procedures for cold unit, hot unit start up and shutdown. (IL02, IL04).**
- 4. Explain principles of control in modern utility gas turbine generators. (IL01, IL02).**

Course Objectives

Upon satisfactory completion of the course, students will be able to:

- 1. Practice standard safety procedures appropriated to the power plant industry standards.*
- 2. Practice proper use of personal protection equipment and of harnesses and safety belts.*
- 3. Understand combine cycle generation operations.*
- 4. Understand combine cycle principles and applications to energy production.*
- 5. Understand steam turbine generator, turbine control, and generator operation.*

6. Understand heat recovery steam generator, major components, flow paths, and critical inspection procedures.
7. Understand gas turbine generator, design characteristics, classification of gas turbines and plant digital control system.
8. Understand gas turbine accessory base module and configuration, gas turbine accessories, inlet and exhaust gas system flow, and dual fuel system.
9. Understand cooling and sealing air system, lubricating oil system, and Speedtronic Mark VI turbine control.

Textbooks & Other Resources or Links

Textbook: Steam Plant Operation (10 edition).

***Authors: Everett B. Woodruff; Herbert B. Lammers; Thomas F. Lammers; McGraw Hill
ISBN9780071667968.***

Course Requirements and Instructional Methods

Assignments are designed to elicit your demonstration of critical thinking, understanding and application of the course concepts, and your proficiency in the subject matter.

Required Activities or Assignments.

1. Quizzes (11).
2. Homework's, read and answer questions (12).
3. Exams (2).
4. Presentations (14).

Teaching methods: During this class you will have opportunity to participate in a variety of presentation and teaching methods. Lectures, including material not covered in your readings, class discussions requiring your active participation, student oral presentations, field trips will supplement your required readings.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

Course Grading Based on Course Objectives

Grading Criteria:

Letter grade only.

Grading policy;

The student's grade will depend on the following areas:

Homework's, read and answer questions. / Quiz 34% = 170 points.

Class presentation/ Attendance	16% = 80 points.
Mid-term Exam	25% = 125 points.
Final Exam	25% =125 points.
Total	100% = 500 points.

All grades are calculated by standard scale:

A = 100-90 %. B = 89 – 80 %. C = 79 – 70 %. D = 69 -60 %. F = 59 % and below.

The course grade is based on total points accumulated during the semester. There is a maximum of 500 points.

Final grades are calculated as follows:

Percentage.	Grade.	Points Grade.	
90 – 100 %.	A	450 – 500	A= Excellent.
80 – 89 %	B	400 – 449	B = Good.
70 – 79 %	C	350 – 399	C = Satisfactory.
60 – 69 %	D	300 – 349	D = Below Satisfactory.
Below 60 %	F	0 – 299	F = Fail.

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student’s status will be the same as that of any other student who desires to add a class. It is the student’s responsibility to drop or officially withdraw from the class. See [General Catalog](#) for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as ‘excused’ absences.
- Absences: Not showing up to class during a regular class or make-up class meeting or arriving more than 20 minutes after the beginning of the class; or leaving 20 minutes before end of class. “Excused” absence will only be given if due to work schedule student cannot attend class or make-up class.

Classroom Etiquette

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed by the instructor.

- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the [General Catalog](#).
- Children in the classroom: Due to college rules and state laws, only students enrolled in the class may attend; children are not allowed.

Online Netiquette

This class is not offered on line.

Academic Honesty

Academic honesty in the advancement of knowledge requires that all students and instructors respect the integrity of one another's work and recognize the important of acknowledging and safeguarding intellectual property.

There are many different forms of academic dishonesty. The following kinds of honesty violations and their definitions are not meant to be exhaustive. Rather, they are intended to serve as examples of unacceptable academic conduct.

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to "cite a source" correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or plagiarizing will receive a zero (0) on the exam or assignment, and the instructor may report the incident to IID Human resources department, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the [IID policy and Procedures 4530](#) for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.

Additional Student Services

You are allowed to ask any journeyman operator questions pertaining to your homework or drawing or procedures which may be discussed in class.

Library Services: All technical manuals pertaining to the equipment covered in class is in #1 control-room.

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the [IID Human Resources Department](#) as soon as possible. Please contact them if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the IID Human Resources Department.

Veteran's Center

The mission of the [IVC Military and Veteran Success Center](#) is to provide a holistic approach to serving military/veteran students on three key areas: 1) Academics, 2) Health and Wellness, and 3) Camaraderie; to serve as a central hub that connects military/veteran students, as well as their families, to campus and community resources. Their goal is to ensure a seamless transition from military to civilian life. The Center is located in Building 600 (Office 624), telephone 760-355-6141.

Extended Opportunity Program and Services (EOPS)

The Extended Opportunity Program and Services (EOPS) offers services such as priority registration, personal/academic counseling, tutoring, book vouchers, and community referrals to qualifying low-income students. EOPS is composed of a group of professionals ready to assist you with the resolution of both academic and personal issues. Our staff is set up to understand the problems of our culturally diverse population and strives to meet student needs that are as diverse as our student population.

Also under the umbrella of EOPS our CARE (Cooperative Agency Resources for Education) Program for single parents is specifically designed to provide support services and assist with the resolution of issues that are particular to this population. Students that are single parents receiving TANF/Cash Aid assistance may qualify for our CARE program, for additional information on CARE please contact Lourdes Mercado, 760-355- 6448, lourdes.mercado@imperial.edu.

EOPS provides additional support and services that may identify with one of the following experiences:

- Current and former foster youth students that were in the foster care system at any point in their lives
- Students experiencing homelessness
- Formerly incarcerated students

To apply for EOPS and for additional information on EOPS services, please contact Alexis Ayala, 760-355-5713, alexis.ayala@imperial.edu.

Student Equity Program

- The Student Equity Program strives to improve Imperial Valley College’s success outcomes, particularly for students who have been historically underrepresented and underserved. The college identifies strategies to monitor and address equity issues, making efforts to mitigate any disproportionate impact on student success and achievement. Our institutional data provides insight surrounding student populations who historically, are not fully represented. Student Equity addresses disparities and/or disproportionate impact in student success across disaggregated student equity groups including gender, ethnicity, disability status, financial need, Veterans, foster youth, homelessness, and formerly incarcerated students. The Student Equity Program provides direct supportive services to empower students experiencing insecurities related to food, housing, transportation, textbooks, and shower access. We recognize that students who struggle meeting their basic needs are also at an academic and economic disadvantage, creating barriers to academic success and wellness. We strive to remove barriers that affect IVC students’ access to education, degree and certificate completion, successful completion of developmental math and English courses, and the ability to transfer to a university. Contact: 760.355.5736 or 760.355.5733 Building 100.
- The Student Equity Program also houses IVC’s Homeless Liaison, who provides direct services, campus, and community referrals to students experiencing homelessness as defined by the McKinney-Vento Act. Contact: 760.355.5736 Building 100.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and to due process of law. For more information regarding student rights and responsibilities, please refer to the IVC [General Catalog](#).

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. The IVC [Library Department](#) provides numerous [Information Literacy Tutorials](#) to assist students in this endeavor.

Anticipated Class Schedule/Calendar

Week/date	Subject	Homework, read. Answer questions.	Assignment due date.
Week #1 08/20/2019	CLASS SYLLABUS Tab 1 MS7001 “EA” Gas Turbine equipment data Combined cycle fundamentals course test. Power Plant Safety Procedures(PPSP) and Personal Protection Equipment (PPE),	CHAPTER one OF TEXTBOOK question 1 thru 3 Archive procedure unit #2	08/27/2019

Week #2 08/27/2019	MS7001Gas turbine functional Description, turbine control device system. Quiz.	CHAPTER one OF TEXTBOOK questions 4 and 5	09/03/2019
Week #3 09/03/2019	Tab 3 Gas Turbine Inlet and Exhaust Systems Flow. System start-up normal operation and shutdown. Quiz.	CHAPTER two OF TEXTBOOK Questions 1,2	09/10/2019
Week #4 09/10/2019	Tab 4 Gas Turbine Dual Fuel System, Fuel Gas system, Liquid Fuel System, Fuel Oil (liquid) Forwarding System. Quiz	CHAPTER two OF TEXTBOOK questions 3	09/17/2019
Week #09/17/2019	Tab 5 CTG starting Means System, Tab 6 Variable Inlet Guide Vane System. Quiz.	Chapter 3 of textbook Questions 1,2	09/24/2019
Week#6 09/24/2019	Tab 7 CTG Cooling and Sealing Air System, Control Air Systems, Atomizing Air System Purge Air System. Quiz	CHAPTER three OF TEXTBOOK questions 3	10/01/2019
Week #7 10/01/2019	Tab 8 Lubricating oil System Hydraulic oil System. Quiz	Chapter four of text book.	10/08/2019
Week #8 10/08/2019	MID-TERM EXAM	Chapter four of textbook Questions 1 &2	10/15/2019
Week #9 10/15/2019	Tab 9 CTG Cooling Water System. Steam Injection System. Steam Power Augmentation System. Compressor/Turbine Water Wash System. Quiz.	Chapter 5 of textbook questions 1 thru 9.	10/22/2019
Week 10 10/22/2019	Tab 10 Compartment Heating and Ventilation System. Fire Protection System Tab 11 Speedtronic mark VI control System. Quiz.	CHAPTER five OF TEXTBOOK questions 10 thru 17	10/29/2019
Week #11 10/29/2019	Tab 12 Mark Vie Control Maintenance. Tab 14 Generator Mechanical. Quiz.	CHAPTER six OF TEXTBOOK	11/05/2019
Week #12 11/05/2019	Tab 15 CTG Generator and Excitation Control. Load equipment System package. Potential source excitation system. Quiz	Chapter six of textbook questions 1 thru 4	11/12/2019
Week #13 11/12/2019	Tab 16. Totally enclosed, water-To-Air – cooled Generator with Static Excitation. Tab17 Station Auxiliaries & Services. Quiz	Line-up, lite off, raising steam, synchronization combine cycle plant.	
Week # 14 11/19/2019	Tab 18 Operation. Lite-off and shut down#2 CTG	Shut down combined cycle plant	
Week #15 12/03/2019	Casualty control drills plant restoration, final review		

Week #16 12/10/2019	Final exam		
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*****Tentative, subject to change without prior notice*****