



IMPERIAL VALLEY COLLEGE

**Note to Instructor: Replace the placeholder text beneath the headings with the appropriate information for your course. Please note that all sections, with the exception of "Other Course Information," are required elements.**

### Basic Course Information

Semester:	<b>Spring 2021</b>	Instructor Name:	<b>Jose Caloca.</b>
Course Title & #:	<b>APPL 105 Power Plant Operator V.</b>	Email:	<b>jmcaloca@iid.com</b>
CRN #:	<b>21717</b>	Webpage (optional):	<b>Imperial.edu</b>
Classroom:	<b>ECGS Operator</b>	Office #:	
Class Dates:	<b>Feb. 16,2021 to June 08,2021.</b>	Office Hours:	<b>6:00 a.m. to 6:00 p.m.</b>
Class Days:	<b>Tuesday.</b>	Office Phone #:	<b>760-339-0522</b>
Class Times:	<b>4:00 p.m. to 8:15 p.m.</b>	Emergency Contact:	<b>Shift Supervisor on duty.</b>
Units:	<b>4</b>	Class Format:	

### Course Description

[Paste in the course description from the Course Outline of Record (COR), located at <https://imperial.curricunet.com/Search>] Instruction operating and controlling distributed control system and heat recovery steam generator, steam turbines, generators, boilers and associated mechanical and electrical equipment in the production of electrical energy. (Nontransferable, nondegree applicable)

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

Successful completion of ETTL4-Electrical Trades IV with a "C" or better.

### Student Learning Outcomes

[Paste in the course student learning outcomes from the COR, located at <https://imperial.curricunet.com/Search>]

#### Outcome(s)

Students will receive positive apprentice evaluations on coursework, safety practices, and curriculum applications.

Students will be prepared to take the senior apprentice certification at the completion of one half of the program (ELTT 101-104) and the completion of 4,000 of the on-the-job training hours.

Students will be prepared through the completion of classroom instruction and 8,000 of the on-the-job training hours to successfully pass the State of California journeyman examination and receive the journeyman certification.

## Course Objectives

[Paste in the course objectives from the COR, located at <https://imperial.curricunet.com/Search>]

1. Give students working knowledge of Rankine Cycle electrical power generation plant.
2. Give students working knowledge of systems and auxiliary equipment necessary for the safe operation of Rankine Cycle electrical power generation plant.
3. Working knowledge of how to analyze and troubleshoot Rankine Cycle electrical power generation plant equipment and overall effect on the electrical grid.

## Textbooks & Other Resources or Links

Textbook: *Steam Plant Operation* ( 10<sup>th</sup> edition)

Authors: Woodruff, Everett; Lammers, Herbert; Lammers, Thomas; McGraw Hill ISBN9780071667698

## 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 (14)***
2. ***Exams (2)***
3. ***Drawings (17)***
4. ***Presentation (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:**

<b>homework assignments/quiz</b>	<b>34% =170 points</b>
<b>class presentation /attendance</b>	<b>16% = 80 points</b>
<b>mid-term</b>	<b>25% =125 points</b>
<b>Final exam</b>	<b>25%=125 points</b>
<b>Total</b>	<b>100% =500 points</b>

**All grades are calculated by the standard scale:**

<b>A=100-90%</b>	<b>B=89-80%</b>	<b>C=79-70%</b>	<b>D=69-60%</b>	<b>F=59% and below</b>
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**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:**

<b>Percentage</b>	<b>Grade</b>	<b>Points</b>	<b>Grade</b>
<b>90-100%</b>	<b>A</b>	<b>450-500</b>	<b>A</b>
<b>80-89%</b>	<b>B</b>	<b>400-449</b>	<b>B</b>
<b>70-79%</b>	<b>C</b>	<b>350-399</b>	<b>C</b>
<b>60-69%</b>	<b>D</b>	<b>300-349</b>	<b>D</b>
<b>Below 60%</b>	<b>F</b>	<b>0-299</b>	<b>F</b>

## **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 the Campus Disciplinary Officer, 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.

### 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.

### 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 Etiquette

- What is netiquette? Netiquette is internet manners, online etiquette, and digital etiquette all rolled into one word. Basically, netiquette is a set of rules for behaving properly online.
- Students are to comply with the following rules of netiquette: (1) identify yourself, (2) include a subject line, (3) avoid sarcasm, (4) respect others' opinions and privacy, (5) acknowledge and return messages promptly, (6) copy with caution, (7) do not spam or junk mail, (8) be concise, (9) use appropriate language, (10) use appropriate emoticons (emotional icons) to help convey meaning, and (11) use appropriate intensifiers to help convey meaning [do not use ALL CAPS or multiple exclamation marks (!!!!)].
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### 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](#).



## IVC Student Resources

IVC wants you to be successful in all aspects of your education. For help, resources, services, and an explanation of policies, visitor click the heart icon in Canvas.

## Anticipated Class Schedule/Calendar

*[Provide a tentative overview of the readings, assignments, tests, and/or other activities for the duration of the course. A table format as in the example below may be used for this purpose.]*

Date or Week	Activity, Assignment, and/or Topic	Homework; Read, answer questions.
<b>Week #1</b> <b>02/16/2021</b>	<b>Class syllabus</b> <b>Power Plant Safety Procedures.</b> <b>General Knowledge Boiler Operation Test.</b>	<b>Chapter one of textbook questions 1 thru 15</b>
<b>Week #2</b> <b>02/23/2021</b>	<b>Raw water system, Circulating water system, service water system Rankine cycle plant</b>	<b>Chapter one questions 16 thru 30</b>
<b>Week #3</b> <b>03/02/2021</b>	<b>Condensate System, feed-water system, main steam system Rankine cycle plant</b>	<b>Chapter two of textbook questions 1 thru 20</b>
<b>Week #4</b> <b>03/09/2021</b>	<b>Saturated Steam Sys. Extraction Steam System</b> <b>Turbine Gland Sealing steam System</b>	<b>CHAPTER TWO OF TEXTBOOK questions 21 thru 43</b>
<b>Week #5</b> <b>03/16/2021</b>	<b>Oil Fuel System Gas Fuel System Combustion Air Sys.</b> <b>SCR and Ammonia Sys</b>	<b>CHAPTER THREE OF TEXTBOOK questions 1 thru 17</b>
<b>Week #6</b> <b>03/23/2021</b>	<b>COMBUSTION PRINCIPLES</b> <b>AIR POLLUTION FUNDAMENTALS</b>	<b>CHAPTER THREE OF TEXTBOOK questions 18 thru 35</b>
<b>Week #7</b> <b>03/30/2021</b>	<b>COMBUSTION PROCESS</b> <b>Automatic Combustion Controls.</b> <b>Review of Mid-Term Exam.</b>	<b>CHAPTER FOUR OF TEXTBOOK questions 1 thru 22</b>
<b>Week #8</b> <b>04/13/2021</b>	<b>MID TERM EXAM</b>	
<b>Week #9</b> <b>04/20/2021</b>	<b>Steam Boiler and Steam Turbine line-up for normal operations.</b> <b>Main Gas Regulator Procedure</b>	<b>CHAPTER FOUR OF TEXTBOOK questions 23 thru 44</b>
<b>Week #10</b> <b>04/27/2021</b>	<b>Main steam Boiler control and Automatic Turbine Start-up. DCS navigation systems</b>	<b>CHAPTER FIVE OF TEXTBOOK questions 1 thru 29</b>

<b>Date or Week</b>	<b>Activity, Assignment, and/or Topic</b>	<b>Homework; Read, answer questions.</b>
<b>Week #11 05/04/2021</b>	<b>Turbine Hydraulic system steam Turbine Generator Lube oil System</b>	<b>CHAPTER FIVE OF TEXTBOOK questions 30 thru 58</b>
<b>Week #12 05/11/2021</b>	<b>Steam Turbine Generator Hydrogen Gas Sys. Gland Oil Sys. Steam Turbine and Steam Boiler operation parameters</b>	<b>Chapter six of textbook questions 1 thru 20</b>
<b>Week #13 05/18/2021</b>	<b>13.8KV and 2400v Electrical Sys. 480V Electrical Sys. EX-2100 Regulator Control Operation. Rack in and Rack out 2400 KV and 480 V. Breakers.</b>	<b>CHAPTR SIX OF TEXTBOOK questions 21 thru 39</b>
<b>Week #14 05/25/2021</b>	<b>D.C. System and Emergency Lighting. Switching station Service from Star-up Bus. 92 KV and 13.8 KV disconnect operation. Review of Final Exam.</b>	<b>Lineup, Lite -off, Raising Steam, Synchronization Rankine Cycle Plant</b>
<b>Week #15 06/01/2021</b>	<b>Lite-off and shut-down Steam Boiler and Steam Turbine including synchronization with trip scenarios and recovery.</b>	
<b>Week #16 06/08/2021</b>	<b>FINAL EXAM.</b>	