

### Basic Course Information

Semester	<b>Fall 2014</b>	Instructor	<b>Ray Rose</b>
Course Title & #	<b>Power Plant Operator 107</b>	Email	<b>RA Rose@IId .com</b>
CRN #	<b>CCRN #10884</b>	Website	
Room	<b>ECGS Maintenance building lunch room</b>	Office	<b>Imperial Irrigation District</b>
Class Dates	<b>Aug.20,2014 thru Dec.13, 2014</b>	Office Hours	
Class Days	<b>Wednesday</b>	Phone #	<b>760-356-4518 760-339-0522</b>
Class Times	<b>4:00 P.M. to 8:30 P.M.</b>	Contact for absence or emergency	

### Course Description

Instruction operating and controlling distributed control system, steam turbines, Electrical generators, Heat Recovery Steam Generators and associated mechanical and electrical equipment in the production of electrical energy. (Nontransferable, non-degree applicable)

### Student Learning Outcomes

1. 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 fossil fuel electrical power generation.
  2. Explain energy transfer in the electrical power generation combined plant cycle.
  3. Explain and analyze causes of failure in fossil fuel combined cycle electrical power plants.
  4. Explain principles of control in modern fossil fuel combined cycle electrical power generation.

### Course Objectives

1. Give students the understanding of Combined Cycle Power Generation Plant operation and the equipment associated with the successful operation and maintenance of Combined Cycle electrical power Generation plants.

### Textbooks & Other Resources or Links

1. Textbook: Combined-Cycle Gas & steam Turbine Power Plants, Authors: Rolf Kehlhofer, Bert Rukes, Franz Stirnmann, Frank Hanneman

### Course Grading Based on Course Objectives

Grading Criteria:

Letter grade only

Grading policy:

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

homework assignments/quiz                      34% =170 points

class presentation /attendance                  16% = 80 points

mid-term    25% =125 points

Final exam    25%=125 points

Total    100% =500 points

All grades are calculated by the 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
80-89%	B	400-449	B
70-79%	C	350-399	C
60-69%	D	300-349	D
Below 60%	F	0-299	F

**Grading Rubrics:** In addition to the percentages and points listed above the following grading rubric (standards expected) will be used when grading student assignments. The description that best fits your work will be the assigned grade.

Grade	Rubric or Standard Expected
<b>A</b>	Focused and clearly organized. Contains advanced critical thinking and analysis. Convincing evidence is provided to support conclusions. Clearly meets or exceeds assignment requirements.
<b>B</b>	Generally focused with some development of ideas, but may be simplistic or repetitive. Evidence is provided to support conclusions. Occasional grammatical errors. Meets assignment requirements, but does not exceed.
<b>C</b>	Unfocused, underdeveloped, or rambling, but has some coherence. Minimal evidence is provided to support conclusions. Several grammatical errors. Meets minimum assignment requirements.
<b>D</b>	Unfocused, underdeveloped, and/or rambling. Limited evidence is used to support conclusions. Serious grammatical errors that impede overall understanding. Does not address the assignment requirements
<b>F</b>	Unfocused, underdeveloped, and/or rambling. Incomplete or too brief. No evidence is used to support conclusions. Serious grammatical errors that block overall understanding. Does not meet assignment requirements. Minimal to no student effort.

7. Late assignments will not be accepted. Student will hand in assignment the week it is due.

8. Students will not be allowed to take missed, quizzes, mid-term exam or final exam.

### Course Assignments 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 (13)
2. Exams (2)
3. Drawings (10)
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 and group 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. Out of class assignments for this course includes reading assignments, study time for exams/quizzes, and completion of required course assignments. Students should actively read the assignment prior to class, bring any questions to class, and take careful notes during class.

### Attendance

- A student who fails to attend the first meeting of a 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.
- 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. Students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- ABSENCES- What constitutes an absence? Not showing up to class during a regular class meeting or arriving more than 20 minutes after the beginning of the class, or leaving 20 minutes before end of class. If class is missed because of work schedule student will attend class on Thursday from 9:00a.m. to 1:30p.m. (Or shall confer with instructor to schedule make-up class in the same week). Otherwise student will be marked absent from class for that week.
- 

### Academic Dishonesty

- Plagiarism is to take and present 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 clearly understand how to correctly 'cite a source', 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, or assisting others in using materials, which are prohibited or inappropriate in the context of the academic assignment in question. Anyone caught cheating will receive a zero (0) on the exam or assignment, the incident will be reported to Apprenticeship program coordinator, and a document may be placed in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to the following:
  - plagiarism
  - copying or attempting to copy from others during an examination or on an assignment;
  - communicating test information with another person during an examination;
  - allowing others to do an assignment or portion of an assignment
  - use of a commercial term paper service

### Classroom Etiquette

- 1. Students are expected to be actively involved the learning process so failure is not a good choice; apply yourself, study, attend class regularly, ask for help if needed, and always do your best.
- 2. Students will attend class meetings regularly. After second absence the apprenticeship coordinator for IID will be notified.
- 3. Homework: the purpose of homework is to provide students with additional practice to reinforce concepts and to get ready for class. For each chapter in the text book you will answer questions at the end of the chapter each homework assignment is due the following scheduled class meeting.
- 4. Electronic Devices: Cell phones and electronic devices must be turned off and put away during class. These disruptions are considered disrespectful behavior to others in the class and the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception.

- Disruptive Students: Most of you are here to learn, but some students are not as serious. To preserve a productive learning environment, students who disrupt or interfere with a class may be sent out of the room and told to meet with the apprenticeship coordinator, before returning to continue with coursework. Disciplinary procedures will be followed as outlined in IID policy and Procedure 4350.

### Additional Help

- You are allowed to ask any journeyman operator questions pertaining to your homework or drawings 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)

Non-applicable

### Student Counseling and Health Services

Refer to IID Policy and Procedures

### Student Rights and Responsibilities

Students have the right to experience a positive learning environment; students who disrupt that environment can be asked to leave the class. Faculty and students also have the right of due process. For further information regarding student rights and responsibilities please refer to the IVC General Catalog available online at [www.imperial.edu](http://www.imperial.edu)

### Class Schedule

Below is a list of weekly activities and assignments that will assist you in meeting the course objectives and the Student Learning Outcomes. Please review carefully and often as the list may include reading assignments, exams, field trips, projects, presentations, etc.

DATE	SUBJECT	Homework READ,ANSWER QUESTIONS	ASSIGNMENT DUE
8/20/2014 Week 1	CLASS SYLLABUS Tab 1 MS7001 “EA” Gas Turbine equipment data Combined cycle fundamentals course test.	CHAPTER one OF TEXTBOOK question 1 thru 15 Archive procedure unit #2	8/27/2014
8/27/2014 Week 2	Tab 2 MS7001 “EA” Unit Description, Gas Turbine Cycle Description, MS7001Gas turbine functional Description, turbine control device system Quiz	CHAPTER one OF TEXTBOOK questions 16 thru 30	9/3/2014
9/3/2014 Week 3	Tab 3 Gas Turbine Inlet and Exhaust Systems Flow. System start-up normal operation and shutdown. Quiz	CHAPTER two OF TEXTBOOK questions 1 thru 15	9/10/2014

Imperial Valley College Course Syllabus – APPL107

---

9/10/2014 Week 4	Tab 4 Gas Turbine Dual Fuel System, Fuel Gas system, Liquid Fuel System, Fuel Oil (liquid) Forwarding System. Quiz	CHAPTER two OF TEXTBOOK questions 16 thru 30	9/17/2014
9/17/2014 Week 5	Tab 5 CTG starting Means System, Tab 6 Variable inlet Guide vane System. quiz	CHAPTER three OF TEXTBOOK questions 1 thru 15	9/24/2014
9/24/2014 Week 6	Tab 7 CTG Cooling and Sealing Air System, Control Air System, Atomizing Air System, Purge Air System. Quiz	CHAPTER three OF TEXTBOOK questions 16 thru 30	10/1/2014
10/1/2014 Week 7	Tab 8 Lubricating oil System. Hydraulic oil System. Quiz	CHAPTER four OF TEXTBOOK questions 1 thru 15	10/8/2014
10/8/2014 Week 8	MID-TERM EXAM	Chapter four of textbook questions 16 thru 30	10/15/2014
10/15/2014 Week 9	Tab 9 CTG Cooling Water System. Steam Injection System. Steam Power Augmentation System. Compressor/Turbine Water Wash system. Quiz	CHAPTER five OF TEXTBOOK questions 1 thru 15	10/22/2014
10/22/2014 Week 10	Tab 10 Compartment Heating and Ventilation System. Fire Protection System. Tab 11 Speedtronic mark VI control System. Quiz	CHAPTER five OF TEXTBOOK questions 16 thru 30	10/29/2014
11/5/2014 Week 11	Tab 12 Mark Vie Control Maintenance. Tab 14 Generator Mechanical. Quiz	CHAPTER six OF TEXTBOOK questions 1 thru 15	11/12/2014
11/12/2014 Week 12	Tab 15 CTG Generator and Excitation Control. Load equipment System package. Potential	Chapter six of textbook questions 16 thru 30	11/19/2014

Imperial Valley College Course Syllabus – APPL107

---

	source excitation system. Quiz		
11/19/2014 Week13	Tab 16. Totally enclosed, water-To-Air –cooled Generator with Static Excitation. Tab17 Station Auxiliaries & Services. Quiz	Line-up, lite off, raising steam, synchronization comb. Cycle plant	
11/26/2014 Week 14	Tab 18 Operation. Lite-off and shut down #2 CTG	Shut down combined cycle plant	
12/3/2014 Week 15	Casualty control drills plant restoration	SDSU Brawley campus power plant simulator	
12/10/2014 Week 16	Final exam		