

Imperial Valley College
Industrial Technology Division
BLDC 155 Solar Thermal and Water efficiency
Fall 2012

Instructor: Mr. Velasquez
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IVC EXT #6758
Office: 2100BLDG.

Office Hours

Monday 3:00pm- 4:30 pm
Tuesday 4:00pm- 6:00pm
Wednesday 3:00pm- 4:30 pm
Friday 9:00am-11:30 pm

By appointments only

Monday 4:00pm- 5:30pm
Tuesday 1:00pm- 4:00pm
Wednesday 3:00pm- 5:00pm
Thursday 4:00pm- 6:00pm

Division Office: 10

Division Coordinator: Jose Lopez (760) 355-6361 Fax: (760) 355-6552

Units: 3

Semester: Fall 2012 August 20- December 8

Class: Fridays 8:30am- 9:35am Lecture
 Fridays 9:35am – 4:30pm Laboratory

Location: Room 402

I. Course Description

This course is an introductory study in solar thermal concepts, water conservation, water efficiency retrofits, California Energy Codes. Instruction will be based on solar thermal collector installation and operation and water saving devices and equipment. Included will be the discussion on energy saving opportunities with the use of various types of collectors such as storage or tank-type and tankless systems. Cost and benefit analysis will be studied of various water heating systems along with energy conservation and conversion. Learning opportunities will be enhanced through a combination of lecture and laboratory activities. (Nontransferable, AA/AS degree only)

II. Course Objectives

Upon successful completion of this course, the students will:

- A. Study and understand different types of collectors .
- B. Study water saving opportunities and understand water saving equipment.
- C. Compare and contrast initial energy consumption before and after installation of a solar collector.
- D. Critically evaluate and asses longevity of solar thermal equipment and water saving devices.
- E. Understand Installation guidelines for solar thermal equipment and water saving devices.

Course Outcomes

1. Interpret performance evaluation and develop a remediation plan. (critical thinking skills)
2. Demonstrate positive work ethics and demonstrate ability to work well with others and perform group tasks in a timely manner. (personal Responsibility)
3. Differentiate between Infiltration and Ex-filtration. (critical thinking skills)

III. Course instructional schedule

Week 1.	Introduction	
	Unit 1	Principles of Water Usage
Week 2	Unit 1	
	Unit 2	Calculating Water pressure/distribution
Week 3	Unit 2	
Week 4	Unit 3	Water Heater Types
	Unit 3	
Week 5	Unit 4	Demand and Tankless Water heaters
	Unit 4	
Week 6	Unit 5	Solar Collectors
	Unit 5	
Week 7	Unit 6	Thermosiphon Systems
	Unit	Midterm
Week 8	Unit 7	Water Conservation
	Unit 7	
Week 9	Unit 8	Water Flow Controls
	Unit 8	
Week10	Unit 9	Energy Saving Equipment
	Unit 9	
Week 11	Unit 10	Energy Saving Analysis
	Unit 10	
Week 12	Case Study #1 Review and Remediation Plan	
Week13	Case Study #2 Review and Remediation Plan	

Week 14	Case Study #3 Review and Remediation Plan Standards
Week 15	Title 24 Standards
Week 16	Title 24 Standards Final Exams

Grading System:

- A= 90%-100%
- B= 80%-89%
- C= 70%-79%
- D= 60%- 69%
- F= 59% & Below

The course grade will be determined by various factors such, as class participation, classroom assignments, Lab Participation & Case Study review essay, midterm & final exams. The grading range is as follows:

Class Participation	10%
Lab Participation	15%
Case Study Review Essay	25%
Midterm	25%
Final Exam	25%

Attendance, Late Assignments:

Absences and tardiness provide an opportunity to miss valuable instruction presented by the instructor, guest speakers, and site administrators. Tardiness will contribute to lower scores on assignments and subsequently a lower course grade. All assignments are due on the specified completion dates and all students have the same and equal time to complete all assignments as per the course calendar. Considerations will be given to those late assignments accompanied by a written medical statement from a physician. 25% of possible points will be penalized for late work. Any assignment can be turned in prior to the due date!

Course Text

Residential Energy: Cost Savings and Comfort for Existing Buildings
John Krigger & Chris Dorsi 5th Edition

