

# ESYS 011L: SOLAR SITE PLANNING PROJECT LAB

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**Originator**

rgalicia

**Co-Contributor(s)****Name(s)**

Brown, George

**Justification / Rationale**

This course provides training in applying the principles and techniques of solar surveying and planning to residential building projects. This project based workshop supports lectures from ESYS-011 by providing students a hands on approach surveying multiple buildings and making energy recommendations base on current California's energy code. This course is developed to meet the goals of the California Energy Efficiency Strategic Plan (CEESP) which mandates that 100 percent of all new homes in California will be Zero Net Energy starting in 2020 and 50 percent of commercial buildings by 2030. California has acknowledged the shortage of qualified and available workforce to meet these new mandates. Solar site planning project, the course is designed to develop the highly trained technical workforce necessary to meet the goals of the California Energy Efficiency Strategic Plan (CEESP). This course covers computer modeling methods, using compliance software as approved by the California Energy Commission (CEC), to show performance compliance with the California Building Energy Efficiency Standards, and as specified in the Alternative Calculation Methods (ACM) Reference Manuals.

**Effective Term**

201930

**Credit Status**

Credit - Degree Applicable

**Subject**

ESYS - Energy Systems Technology

**Course Number**

011L

**Full Course Title**

Solar Site Planning Project Lab

**Short Title**

SOLAR SITE PROJECT

**Discipline****Disciplines List**

Industrial Technology (Foundry occupations)

Air Conditioning, Refrigeration, Heating (Solar energy technician)

Construction Technology

**Modality**

Face-to-Face

**Catalog Description**

This course provides training in applying the principles and techniques of solar surveying and planning to residential building projects. This project-based workshop supports lectures from ESYS 011 by providing students a hands-on approach surveying multiple buildings and making energy recommendations based on current California's energy code.

**Schedule Description**

This course provides training in applying the principles and techniques of solar surveying and planning to residential building projects. This project-based workshop supports lectures from ESYS 011 by providing students a hands-on approach surveying multiple buildings and making energy recommendations based on current California's energy code. Advisory: ESYS 011

**Lab Units**

1

**Lab Semester Hours**

54

**In-class Hours**

54

**Out-of-class Hours**

0

**Total Course Units**

1

**Total Semester Hours**

54

**Prerequisite Course(s)**

Advisory: ESYS 011

**Required Text and Other Instructional Materials****Resource Type**

Web/Other

**Open Educational Resource**

Yes

**Description**

Open Source books. Electrical and mechanical plans will be provide by instructor. California energy commissioning is available for free online.

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**Class Size Maximum**

20

**Entrance Skills**

Identify types of Photovoltaic systems (utility-interactive, standalone, direct-coupled, etc.).

**Prerequisite Course Objectives**

ESYS 011-Identify types of Photovoltaic systems (utility-interactive, standalone, direct-coupled, etc.).

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**Entrance Skills**

Identify safety hazards of Photovoltaic systems and state code equipment requirements.

**Prerequisite Course Objectives**

ESYS 011-Identify safety hazards of Photovoltaic systems and state code equipment requirements.

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**Entrance Skills**

Define basic electrical units and terminology.

**Prerequisite Course Objectives**

ESYS 011-Define basic electrical units and terminology.

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**Entrance Skills**

Calculate electrical panels minimum and maximum electrical loads to determine electrical safety factors.

**Prerequisite Course Objectives**

ESYS 011-Calculate electrical panels minimum and maximum electrical loads to determine electrical safety factors.

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**Lab Content**

1. Go offsite to survey multiple types of residential properties.
2. Analyze data from survey, design and select solar systems.
3. Edit solar electrical code specifications to assist installers, inspectors, and city plan reviewers.

**Course Objectives**

Objectives	
Objective 1	Model and document buildings from construction plans using the latest energy compliance software.
Objective 2	Be better prepared to earn industry-recognized credentials e.g. Certified Energy Analyst North American Board of Certified Energy Practitioners (NABCEP).
Objective 3	Use energy terminology appropriately when discussing energy trade-offs.
Objective 4	Understand the dangers of not backchecking and scaling final energy calculation results.
Objective 5	Explain the two common solar building design methods, prescriptive and performance to comply with California energy code.
Objective 6	Evaluate the solar needs of a residential site and create a solar installation plan.

**Student Learning Outcomes**

Upon satisfactory completion of this course, students will be able to:	
Outcome 1	Apply the principles and techniques of solar surveying and planning to residential building projects.

**Methods of Instruction**

Method	Please provide a description or examples of how each instructional method will be used in this course.
Activity	Draw control diagrams, check equipment clearance, evaluate battery systems for solar systems
Collaborative/Team	Students will measure home dimensions and bring back to class to develop an energy survey and a solar layout plan.
Participation	Reading assigned chapters. Complete chapter reviewed questions and discussed next class session in a group setting.

**Methods of Evaluation**

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Tests/Quizzes/Examinations	True/False online and/or written quiz covering chapter material	In Class Only
Mid-term and final evaluations	Written multiple choice examination covering material discussed throughout the course.	In Class Only

**Assignments**
**Other In-class Assignments**

1. Reading assignments
2. Quizzes
3. Tests
4. Discussion of energy models.
5. Students will design and create a solar installation plan for a residential homesite

**Other Out-of-class Assignments**

1. Practice tutorial energy models.
2. Read the assigned text.
3. Assigned worksheets.
4. Evaluate an energy bill.
5. Evaluate energy rebates and incentives.
6. Prepare for in-class discussions on specific energy topics
7. Students will design and create a solar installation plan for a residential homesite

**Grade Methods**

Letter Grade Only

**MIS Course Data****CIP Code**

15.0505 - Solar Energy Technology/Technician.

**TOP Code**

094610 - Energy Systems Technology

**SAM Code**

C - Clearly Occupational

**Basic Skills Status**

Not Basic Skills

**Prior College Level**

Not applicable

**Cooperative Work Experience**

Not a Coop Course

**Course Classification Status**

Credit Course

**Approved Special Class**

Not special class

**Noncredit Category**

Not Applicable, Credit Course

**Funding Agency Category**

Not Applicable

**Program Status**

Program Applicable

**Transfer Status**

Not transferable

**Allow Audit**

No

**Repeatability**

No

**Materials Fee**

No

**Additional Fees?**

No

**Files Uploaded**

**Attach relevant documents (example: Advisory Committee or Department Minutes)**

ZNE Meeting Minutes 031618.docx

ZNE Meeting Minutes 012017.docx

ZNE Meeting Minutes 012216.docx

ESYS 011L Approval Letter.pdf

## Approvals

**Curriculum Committee Approval Date**

10/02/2018

**Academic Senate Approval Date**

10/11/2018

**Board of Trustees Approval Date**

11/14/2018

**Chancellor's Office Approval Date**

11/26/2018

**Course Control Number**

CCC000598473

**Programs referencing this course**

Building Energy Systems Professionals (BESP) AS Degree (<http://catalog.collegeofthedesert.eduundefined?key=202>)

Residential Solar (<http://catalog.collegeofthedesert.eduundefined?key=204>)

Residential Solar Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined?key=205>)

Air Conditioning Refrigeration AS Degree (<http://catalog.collegeofthedesert.eduundefined?key=51>)