San José State University
Environmental Studies Department
Solar Home Design ENVS/DSIT 132, Spring 2017
#30244  #30245

Course and Contact Information

Instructor: Benoit Delaveau, MS, CEM, BEAP
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Office Hours: MoWe 1:00-2:30 PM (from 1/30 to 5/10) - ALWAYS email me.
Class Days/Time: TuTh 9:00AM - 10:15AM
Classroom: Clark Building 306

Faculty Web Page and MYSJSU Messaging
You are responsible for checking daily with the messaging system through MySJSU and Canvas. Course materials such as the syllabus, assignments, readings, and handouts are posted to canvas: https://sjsu.instructure.com. Log in with your SJSU One account info. For assistance see: http://www.sjsu.edu/at/ec/support/

Course Description
Americans use an inordinate amount of energy to realize the standard of living to which we all have come to enjoy. Not only do we enjoy this standard of living, we expect it. Yet, to live as we do require a tremendous amount of energy and resources.

The residential sector uses between one-fifth and one-fourth of all energy consumed in the United States. There are many ways to reduce this energy consumption and resource consumption without diminishing our comfort levels or “doing without”. This class will explore ways to live with environmental responsibility and integrity when it comes to our homes with design options ranging from smart architecture and orientation, passive solar options (fenestration, shading, overhang designs) and zero-net energy building options.
Course Goals
At the end of the semester student should demonstrate proficiency in these fields:

1. PASSIVE HEATING AND COOLING DESIGN FOR HOUSES: The basics of integral solar home design for heating and cooling, sunspace additions to homes, and direct gain for new construction and remodel.

2. HOME ENERGY EFFICIENCY: How to make a home more energy efficient than conventional homes improving heating/cooling systems, the building envelope, lighting, and appliances and working on occupant behaviors. How to decrease our impact on the environment through the way we live in our homes. Each student will perform a level 1 energy audit on his/her family house and write a final 10 pages report with personalized recommendations.


4. HEALTHY HOMES: Often, indoor air is more polluted that outside air. We will explore ways to prevent this.

Course Learning Outcomes (CLO)  See “Course Goals” above.

Required Texts/Readings


Other Readings (no need to purchase)
Articles and handouts are posted to canvas: https://sjsu.instructure.com/


Library Liaison
Peggy Cabrera, peggy.cabrera@sjsu.edu

Course Requirements and Assignments
Dropping and Adding: Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, … Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html

Grading: Use the percentages below and your scores to monitor your grade. Real time grade will be available along the semester on Canvas.

Credit-hour statement: This three-unit course requires a minimum of 9 hours per week to complete class-related readings and assignments (roughly 2.5 hours in class and 6.5 hours outside class per week.) Careful time management will help you keep up with readings and assignments and enable you to succeed in all your classes. More details about student workload can be found in University Policy S12-3 at http://www.sjsu.edu senate/docs/S12-3.pdf
Grading Information – Final Examination

20% Participation: It is expected that you will engage in class discussions as the class is formatted as a seminar. Share your thoughts about the readings when prompted in class, ask questions about lectures and readings, answer discussion prompts. Come to class having completed all of the assigned readings. Every article or chapter from the textbooks we read must be summarized or noted upon on your notebook. Hand written or printed reading notes are allowed to refer to during exams. Keeping good notes about the main points or views taken by authors of course readings is a good means to facilitate a sustained discussion, and be successful having a great participation grade. I will be collecting each class the reading notes this semester. Each reading note submission grade is approximately 1.5% of your final grade (participation points). *Current events in building science* Reply to the postings to the canvas website in the discussion section with a short description; and a link to an additional source related to the main article. Prepare a few remarks as we’ll want to know more than just the headline. You are expected to reply to a few online discussions over the semester to get full online participation points.

20% Field notes. Two field trips (10 points each) or video training (TBA). Keep notes on all field trips and speakers. Take pictures when applicable. Write down the date, what you saw, what building features were involved, function of the features, significance of the feature, what you learned. Polish and type your notes, turn the final document to your instructor for grading.

30% Exams: One mid-term (15 points) and one final exams(15 points)
Both the midterm and the final exams will be open notebook (your personal typed or handwritten notes). The exams will include short answers and essay questions. Your notebook should contain lecture notes and short annotations on the readings. If you take notes in the margins of your readings, make sure to transfer important ones to your notebook. You must bring a calculator to the examinations. You will not have access to any online electronic devices (other than a calculator). To study for the tests, you should review the readings, course lecture notes, homework, and learning objectives well in advance of the test date. The midterm will include material covered during the first portion of the class. We will include both multiple choice and problems related to the scientific principles of energy, heat, and work. You are encouraged to review the problems sets before the midterm.

30% Your home Energy Audit (level 1):
1 - Your home energy use (5 points)
2 - Floor plan Assignment (5 points)
3 - Direct Gain Assignment (5 points)
4 - Your home Energy Use Index and Energy Cost Index (5 points)
5 - Your home Energy Audit (5 points)
6 - Your home Energy Conservation Plan and final report (5 points)

Determination of Grades
The course grade will be determined based on a total 100 possible points.
A+ 97–100
A 92–96
A- 89–91
B+ 86–88
B 81–85
B- 79–80
C+ 76–78 C 72–76
C- 69–71
D+ 67–68
D 64–66
D- 60–64
F < 60

NO Extra Credit available (given the work load to deal with in this class).
Penalty for late or missed work: -10% of the assignment’s grade after 1st week of delay. -20% of the assignment’s grade after 2nd week of delay. Not accepted after more than 14 days of delay (grade will be null)

**Classroom Protocol**
You are expected to come to every class on time. Class time starts with attendance check (not reflected in your final grade). However, classroom participation and results on the quizzes will be reflected in your final grade. No cell phone, emailing, or text messaging during class. If you need to make a phone call or send an email, or work on anything else that class material please excuse yourself from class or your instructor will ask you to leave the classroom.

**University Policies**

**Academic integrity**
Your commitment, as a student, to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy F15-7](http://www.sjsu.edu/gup/syllabusinfo/) requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. Visit the [Student Conduct and Ethical Development](http://www.sjsu.edu/gup/syllabusinfo/) website for more information.

See here for other campus wide policies [http://www.sjsu.edu/gup/syllabusinfo/](http://www.sjsu.edu/gup/syllabusinfo/)
Course Schedule

This schedule is subject to change with fair notice. If necessary, the electronic schedule available on Canvas will be updated along the semester on a week to week basis.

1/26 Introduction – #1 Energy, the big picture, units
Readings: Handouts (article on Negawatts)

1/31-2/2 - #2 Passive Solar Home
Readings: Read chapters 1-3 in Chiras
Assignment #1: Your home energy use report due (see example in lecture slides).

2/7-2/9 First field trip or video/professional training session (TBA)
Readings: Handout regarding the home you will be visiting

2/14-2/16 - #3 Passive Solar Home (2)
Readings: Read chapter 4-6 in Chiras
Assignment #2: Your home floorplan assignment due (see example in lecture slides).
Field trip #1: Your field note report

2/21-2/23 - #4 Overhangs design and efficiency
Readings: Read chapter 1 in A,W,&A

2/28-3/2 - #5 Home Performance / Analyzing Utility Data
Readings: Read chapters 2 and 3 in A,W,&A
Assignment #3: Direct gain assignment due. due (see example in lecture slides).

3/7-3/9 - #6 Space Heating/cooling
Readings: Read chapters 4 and 5 in A,W,&A
Assignment #4: Your home EUI/ECI due (see example in lecture slides).

3/14 - Mid-term in-class Open notebook; bring a calculator! –

3/16 - #7 Sustainable Lighting
Readings: Read chapters 11 in A,W,&A

3/21 - #7 Appliances and Smart controls
Readings: Read chapters 7 to 14 in A,W,&A

3/23 – 3/28 – 3/30 No Class

4/4-4/6 - #8 Home Energy Audits
Readings: Handouts
4/11-4/13 - #9 Renewable Energy and Zero net energy buildings
Readings: Read chapters 8 in Chiras
Assignment #5: Your draft home energy audit report due (see example in lecture slides).

4/18-4/20 - #10 Healthy Homes
Readings: Handouts

4/25-4/27 - #11 Water use and energy
Readings: Read chapters 6 in A,W,&A

5/2-5/4 – Working group sessions on Assignment #6: Your FINAL home energy audit report with ECP due (see example in lecture slides).

5/9-5/11 – #12 Study session and field trip #2 or video (TBA)

5/23 - Final Exam Tuesday, May 23 0715-0930AM