

**San José State University**  
**Environmental Studies Department**  
**Energy & the Environment ENV5/ENGR 119, Spring 2019**

**Course and Contact Information**

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<b>Office Hours:</b>	W 1:30-2:30PM and Th 12:15-1:15PM WSQ115A - <u>ALWAYS</u> email me.
<b>Class Days/Time:</b>	See your section Canvas site (from 1/23 to 5/13)
<b>Classroom:</b>	See your section Canvas site
<b>Prerequisites:</b>	Passing the WST <a href="http://testing.sjsu.edu/wst/">http://testing.sjsu.edu/wst/</a>
<b>GE/SJSU Studies Category:</b>	Area R: Earth & Environment <a href="http://info.sjsu.edu/static/catalog/sjstudies.html">http://info.sjsu.edu/static/catalog/sjstudies.html</a>

**Faculty Web Page and MYSJSU Messaging**

You are responsible for **daily** checking 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**

In this course you will be introduced to the nexus of social, technical, and environmental challenges to providing sustainable energy supplies and patterns of use. You will learn physical principles underlying power generation, conventional forms of energy and their social and environmental impacts, sources of renewable energy, and means to transition to more sustainable energy sources. The political, economic, cultural, historical, and policy dimensions of energy procurement, generation, and consumption will show how energy issues are entangled in deeper social and environmental contexts. Human civilization cannot continue using fossil fueled based energy at our present rate of consumption; we must look for ways to decrease and decarbonize our energy use.

This course is divided into five parts. Part I reviews energy generation and consumption patterns and the scientific principles related to energy, heat, and work. Part II of this course explores various sources of energy from conventional forms of energy generation and their social and environmental impacts. Part III focuses on renewables including solar, wind, biomass, wave, tidal, hydroelectric, and geothermal. Part IV centers on questions about making infrastructure more sustainable: food systems, transportation, and buildings. In part V, we will synthesize planning efforts and proposals for making sustainable energy transitions.

## Course Goals

At the end of this course, students should be able to:

- Understand the nexus of energy challenges and relevant economic, social, and environmental issues.
- Describe the physical principles related to the energy, heat, power, and work
- Complete basic calculations / conversions in energy, heat, power, and work
- Describe the scientific properties and spatial distribution of conventional and renewable energy sources
- Analyze the relative energy use in U.S. to other nations, and the forces that shift the mix of energy sources over time
- Describe basic principles to improve efficiency and design of energy delivery, recognize opportunities to reduce energy consumption, and promote sustainability;
- Assess basic economic, government policy, and social equity dimensions of energy options
- Utilize tools to evaluate an energy option and assess alternatives.

## GE Learning Outcomes (GELO)

SLO1: Students will be able to demonstrate an understanding of the methods and limits of scientific investigation. SLO 1 will be assessed in assignments 1, 2, 3 and the final research report.

SLO2: Students will be able to distinguish science from pseudo-science. SLO 2 will be assessed in assignments 2, 3, and 4.

SLO3: Students will be able to apply a scientific approach to answer questions about the earth and environment. SLO 3 is assessed in the final research report and assignments 2, 3, and 5.

## Course Learning Outcomes (CLO)

See “Course Goals” above.

## Required Texts/Readings

Textbook: Energy for Sustainability: Technology, Planning, Policy 2nd Edition by John Randolph PhD, Gilbert M. Masters ISBN-13: 978-1597261036 ISBN-10: 1597261033 – Available at the university store or Amazon.com <http://a.co/3UHwc5e>

Other Readings: Articles and handouts are posted to canvas: <https://sjsu.instructure.com/>

Library Liaison

**Kate Barron** <[kate.barron@sjsu.edu](mailto:kate.barron@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**

10% in class participation. It is expected that you will engage in class discussions. Come to class having completed all of the assigned readings. Every article or chapter from the text book we read must be summarized or noted upon on your notebook. Hand written or printed personal notes may be allowed to refer to during exams.

We may have up to 5 quizzes in class this semester based on assigned readings (2% of your final grade for each quiz)

10% online participation. Reply to the articles “Current events in energy” posted on Canvas 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 at least 10 discussions over the semester to get full online participation points (1% of your final grade for each posting).

20% Assignments: As part of the activities in this class, you will complete five graded assignments.

Assignment 1 – Unit conversions, power energy, energy/GHGs (SLO 1)

Assignment 2 – Energy and GHG problem sets (SLO 1 & 2)

Assignment 3 – Carbon footprint calculator (SLO 1, 2, & 3)

Assignment 4 – Energy policy review (SLO 2 & 3)

20% Midterm: 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 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.

20% Final Research Paper: Students will individually write a research paper related to renewable or conventional energy technologies. More details on this assignment will be available on the course website.

20% Comprehensive Final Exam: There will be a comprehensive final exam. Same rules as Midterm exam (see above).

## **Determination of Grades**

The course grade will be determined based on a total 100 possible points. Accumulated points that fall within the grade scale below determine your semester grade.

A+ 97–100

A 92–96

A- 89–91

B+ 86–88

B 81–85

B- 79–80

C+ 76–78

C 72–75

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 1<sup>st</sup> week of delay. -20% of the assignment’s grade after 2<sup>nd</sup> week of delay. Not accepted after more than 14 days of delay (grade will be null)

## **Grading Information for upper division GE courses (R, S, V)**

“Passage of the Writing Skills Test (WST) or ENGL/LLD 100A with a C or better (C- not accepted), and completion of Core General Education are prerequisite to all SJSU Studies courses. Completion of, or co-registration in, 100W is strongly recommended. A minimum aggregate GPA of 2.0 in GE Areas R, S, & V shall be required of all students.”

## **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](#) 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](#) website for more information.

See here for other campus wide policies <http://www.sjsu.edu/gup/syllabusinfo/>