

**San José State University**  
**Environmental Studies Department**  
**Energy & the Environment ENVS/ENGR 119**

**Course and Contact Information**

<b>Instructor:</b>	Benoit Delaveau, M.S, CEM, BEAP
<b>Office Location:</b>	WSQ115A (Not opened - COVID-19 campus policy)
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<b>Office Hours:</b>	Office Hours: ALWAYS book me on: <a href="https://calendly.com/benoit-delaveau">https://calendly.com/benoit-delaveau</a>
<b>Class Days/Time:</b>	See your section on Canvas
<b>Classroom:</b>	See your section on Canvas
<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. All course materials such as the syllabus, calendar, 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 under Climate Change and resource scarcity pressures.
- 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>

Link to SJSU library reserve:

[https://sjsu-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=01CAL5\\_ALMA71454831110002901&context=L&vid=01CAL5\\_SJO&search\\_scope=EVERYTHING&tab=everything&lang=en\\_US](https://sjsu-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=01CAL5_ALMA71454831110002901&context=L&vid=01CAL5_SJO&search_scope=EVERYTHING&tab=everything&lang=en_US)

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

## Library Liaison

Peggy Cabrera <Peggy.Cabrera@sjsu.edu> [https://libguides.sjsu.edu/prf.php?account\\_id=41832](https://libguides.sjsu.edu/prf.php?account_id=41832)

## 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.

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.) More details about student workload can be found in University Policy S12-3 at <http://www.sjsu.edu/senate/docs/S12-3.pdf>

Academic integrity: As part of the GE program, strict enforcement of SJSU Academic integrity rules will be enforced. See the University Policy at [https://ischool.sjsu.edu/sites/main/files/file-attachments/academic\\_integrity\\_policy\\_f15-7\\_0.pdf?1539701808](https://ischool.sjsu.edu/sites/main/files/file-attachments/academic_integrity_policy_f15-7_0.pdf?1539701808)

### **Online tools and conduct**

Technology Requirements: Students are required to have an electronic device other than a smartphone like a laptop, desktop or tablet, with a camera and a microphone. SJSU has a free equipment loan program available for students. Students are responsible for ensuring that they have access to reliable Wi-Fi during tests. If students are unable to have reliable Wi-Fi, they must inform the instructor, as soon as possible are at the latest one week before the test date to determine an alternative. See Learn Anywhere website for current Wi-Fi options on campus.

Proctoring Software and Exams: Exams and Quizzes will be proctored in this course through Respondus Monitor and LockDown Browser. Please note it is the instructor's discretion to determine the method of proctoring. If cheating is suspected the proctored videos may be used for further inspection and may become part of the student's disciplinary record. Online Exams

### Testing Environment Setup:

- No earbuds, headphones, or headsets.
- The environment is free of other people besides the student taking the test.
- If students need scratch paper for the test, they should present the front and back of a blank scratch paper to the camera before the test.
  - No other browser or windows besides Canvas opened.
  - A workplace that is clear of clutter (i.e., reference materials, notes, textbooks, cellphone, tablets, smart watches, monitors, keyboards, gaming consoles, etc.)
  - Well-lit environment. Can see the students' eyes and whole face. Avoid having backlight from a window or other light source opposite the camera.
  - Personal calculators are permitted.

Students must:

- Remain in the testing environment throughout the duration of the test.
- Keep full face, hands, workspace including desk, keyboard, monitor, and scratch paper. Stay in full view of the webcam

Recording Zoom Classes: This course or portions of this course (i.e., lectures, discussions, student presentations) will be recorded for instructional or educational purposes. The recordings will only be shared with students enrolled in the class through Canvas. The recordings will be deleted after 10 days per SJSU Zoom contract. All recordings are only available to registered students in the class.

Students are not allowed to record without instructor permission: Students are prohibited from recording/taking screen captures of all class activities (including class lectures, office hours, advising sessions, etc.), are prohibited of distributing class recordings, or posting class recordings. Materials created by the instructor for the course (syllabi, lectures and lecture notes, presentations, etc.) are copyrighted by the instructor. This university policy (S12-7) is in place to protect the privacy of students in the course, as well as to maintain academic integrity through reducing the instances of cheating. Students who record, distribute, or post these materials will be referred to the Student Conduct and Ethical Development office. Unauthorized recording may violate university and state law. It is the responsibility of students that require special accommodations or assistive technology due to a disability to notify the instructor.

### **Online Classroom Protocol**

- You are expected to come to every class on time.
- Only SJSU registered students are allowed in the Zoom classroom (use your MySJSU Zoom account)
- Your profile name must be the first name, family name that match SJSU record
- Camera ON is strongly recommended.
- Mic should be OFF.
- Classroom participation gives 2pts in participation grade. If you choose to not participate verbally, you can use the Canvas discussion board opened for the week and ask your question in writing.
- To participate, please use the "raise the hand" on Zoom and wait for the instructor to give you the floor.
- Inappropriate, un respectful, offensive, slur... comments or chat entries will be sanctioned appropriately.
- No cell phone, no side playing on your computer, no emailing, or text messaging during class. If you need to be engaged in these activities, please disconnect from the Zoom session and excuse yourself. You may later on refer to the session recording to get the lecture content.

## 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/>

### Grading – Exams

10% weekly Quizzes (about 12 mini-exams, in class, Canvas based and proctored) Quizzes are based on key concepts from either (1) the lecture slides (2) the assigned chapter of the text book (3) the assigned readings. Quizzes takes a maximum of 10 minutes of class time, and are always proctored using a Lockdown browser, with the student camera ON during class time.

10% participation. The class will meet 30 times over the semester on Zoom. Each session, students are eligible to earn two (2) participation points by asking a question once a week, bringing a comment to the class discussion, or being the “voice” of their working group. The recording of the lecture will be the proof material regarding the fairness of these points distribution. Follow you class participation grade after each lecture and make sure you are rewarded for doing your part. If you choose to not participate live during the Zoom lecture, **you can also get you two points participation grade per week by writing your entry on the week Canvas discussion board (or replying to another student entry).**

20% Assignments: As part of the activities in this class, you will complete 3 graded assignments. Late assignments are ALWAYS accepted following these penalty rules: 1 week after due date of unexcused delay -25%, 2 weeks after due date -50%.

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)

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 could contain lecture notes and short annotations on the readings, but all will have to be printed out as the exam proctor software will ban access to all of your computer content. You must bring a calculator to the examinations. You will not have access to any electronic devices (other than a calculator and your Zoom locked down computer for proctor). 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 Exam: There will be a comprehensive final exam. Same rules as Midterm exam (see above).

20% Final Research Paper: Students will individually write a research paper related to a book review related to renewable or conventional energy technologies. Each student are choosing a book of their choice from list available at the start of the semester. More details on this assignment will be available on the course website.

### **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 workload to deal with in this class).

### **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.”

### **Primary sources for your Final Paper**

(choose one book to read over the semester - most can be checked at SJSU library)

“Big Coal, The Dirty Secret Behind America’s Energy Future” by Jeff Goodwell

“Dark Money, The Hidden History of the Billionaires Behind the Rise of the Radical Right” by Jane Mayer

“Energy, The Making of the Atomic Bomb, a Human History” by Richard Rhodes

“The Water Will Come, Rising Sea, Sinking Cities and the Remaining of the Civilized World” by Jeff Goodwell

“Cadillac desert: The American West and it’s Disappearing Water” by M. Reisner

"Colossus. Hoover Dam and the Making of the American Century" by Michael Hiltzik

“Green Illusions, the Dirty Secret of Clean Energy and the Future of Environmentalism” by Ozzie Zehmer

“Autonomy, The Quest to Build the Driverless Car and How it Will Reshape our World” by Lawrence D. Burns

"Faster, Higher, Farther. The (Clean Diesel) Volkswagen Scandal" by Jack Ewing

"High Voltage. The Fast Track to Plug-in the Auto Industry" by Jim Motavalli

"Bottled Lightning. Superbatteries, Electric cars and the New Lithium Economy" by Seth Fletcher

“The Great Transition, Shifting from Fossil Fuels to Solar and Wind Energy” by Lester R. Brown

"Reinventing Fire. Bold Business Solutions for the New Energy Era" by Amory B. Lovins

“Solar Power. Innovation, Sustainability and Environmental Justice” by Mulvaney

"A fierce Green Fire" by Philip Shabecoff

"Toward a Zero Energy Home. A complete Guide to Energy Self-Sufficiency at Home" by David Johnston & Scott Gibson

"Let it Shine, The 6,000-year Story of Solar Energy" by John Perlin

## **Course Schedule**

Due to the possibility of changes, always refer to the electronic schedule on Canvas