Berkeley
UNIVERSITY OF CALIFORNIA

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ME 146: Energy Conversion Principles
Spring 2025
Format: In person
3 Units

Course Description:	This course covers the fundamental principles of energy conversion processes, followed by development of theoretical and computational tools that can be used to analyze energy conversion processes. The course also introduces the use of modern computational methods to model energy conversion performance characteristics of devices and systems. Performance features, sources of inefficiencies, and optimal design strategies are explored for a variety of applications, which may include conventional combustion-based and Rankine power systems, energy systems for space applications, solar, wind, wave, thermoelectric, and geothermal energy systems. Our first lecture will be on January 23rd, 2025.
Instructor:	Prof. Thomas Schutzius; email: tschutzius@berkeley.edu Office Hours and Location: Friday 12:00-1:00 pm, 6107 Etcheverry Hall. If there is demand additional office hours will be added. Please contact the instructor.
Teaching Support Staff	GSI Ashwath Bhat, email: ashwathbhat@berkeley.edu Office Hours: Friday, 11:00-12:00, 1171 Etcheverry Hall. Reader Dheer Baldua, dheerb@berkeley.edu Emails to course staff: Begin subject line with "ME146: …" Messages on Canvas are not regularly monitored. Email is best for communication.
Required Text:	Da Rosa, Aldo Vieira, and Juan Carlos Ordonez. *Fundamentals of renewable energy processes.* Academic Press, 2022. Other recent editions may be acceptable (e.g., 3rd), but it is your responsibility to determine the correct homework problems and readings if they do not match up.
Lecture:	Tuesday and Thursday from 12:30 pm–2:00 pm in Etcheverry Hall 1165
Discussion:	Wednesday 2:00 pm–3:00 pm in Etcheverry 1165
Website:	All teaching material is available for download from this link:

https://bcourses.berkeley.edu/courses/1543121

Grading:	Homework (weekly)	30%
	Quizzes	30% (lowest score dropped; we expect to do 4 quizzes)
	Final Exam	40% (one of the problems will be a take-home project)

Attendance: Attendance at lectures and discussions is expected not required.

Homework: We usually will use PrairieLearn for homework submission and grading, and for these homework, retakes are allowed with no penalty for number of attempts. Must submit a document that shows your work for full credit. Depending on the content, we may ask for handwritten homework to be submitted, and in this case, we will only grade a subset of the problems and retakes are not allowed.

Quizzes: 1 hour. Closed book and notes. We will do the quizzes either in the classroom or in the Computer-based Testing Facility (CBTF). For quizzes conducted in the classroom, you will be allowed to use your notes and a programmable calculator (non-transmittable). For CBTF please read their rules here.

See 2025_Spring_ME146-246_Schedule on bCourses for the dates.

You may be required to take the Computer-based Testing Facility (CBTF) Orientation Quiz before the exam.

Final: 3 hours. Open notes. Programmable calculator (non-transmittable) is permitted.

Regrades: Any serious concerns about grading should be addressed to the Instructor, not the GSI(s) or Reader, within seven days of receiving the graded homework, quiz, or exam. Please include a brief written explanation of your concern. Re-graded scores may increase, decrease, or remain the same. The instructor reserves the right to regrade the other problems on the homework, quiz, or exam too.

Absences, Late Work, and Make-ups: Lectures: Ask a classmate for the notes.

Homework: Homework may be turned in one week late for half credit.

Exams: Missing an exam will result in a zero grade for that exam unless alternative arrangements are made with the instructor prior to the exam. (Exceptions may be made for severe medical or family emergencies.) When granted, makeup exams may be oral or written.

Other Expectations:	Questions are encouraged. Silence your cellphones. Treat your colleagues, Reader, GSIs, and Instructor with respect. No food or drinks, except for water.
Cheating:	Please review the Berkeley Campus Code of Student Conduct.
Student with Disabilities	If you require course accommodations due to a physical, emotional, or learning disability, contact UC Berkeley's Disabled Students' Program (DSP). Notify the instructor and GSI through course email of the accommodations you would like to use. You must have a Letter of Accommodation on file with UC Berkeley to have accommodations made in the course. DSP accommodations for exams: If more than "Reduced Distraction" and "Extra time" are required, please apply with the DSP Proctoring Office to take the exam at their facility. Do this as early as possible. We have an Alternative Testing Agreement in place. DSP accommodations for homework: If "Extensions to Assignment Deadlines" is required, please email the instructor to inquire about the assignment deadline.
Other	Due to travel, several lectures may be pre-recorded and uploaded or someone else may deliver the lecture. You will be notified well in advance of those dates.
Parting Thought	Grades and penalties are not the purpose of this course. We genuinely just want you to learn. All of us are very excited to be teaching ME146 this semester and look forward to meeting such a large and enthusiastic group of students!