



Sustainable Energy Interdisciplinary minor

The Interdisciplinary Minor in Sustainable Energy exists for students who recognize the need to break down the traditional barriers that separate the science and engineering of energy from the social, economic and political dimensions. These courses offer undergraduate students, regardless of their major, an opportunity to gain a deeper knowledge of the many dimensions of sustainable energy.

THE FUNDAMENTAL CONCEPTS OF ENERGY

People in all walks of life make choices about energy that have profound implications for society and for the planet. And yet, the basic concepts and vocabulary of energy remain out of reach for most. Students in this minor will gain a common language of energy basics that will enable the interdisciplinary teamwork and problem solving needed to lead the transition to a sustainable energy future.

ENERGY RESOURCES—WHAT ARE OUR OPTIONS?

Fossil energy has allowed our technological society to innovate and grow at a spectacular pace. But, what is the future of fossil energy as a resource? How do we understand the limits, benefits and trade-offs of fossil versus other forms of energy such as nuclear, wind, solar and biomass? How do we assess these questions while avoiding the polarizing hyperbole that often surrounds them? These are questions that Sustainable Energy Minor students will be able to tackle.

RETHINKING ENERGY— WHAT IT MEANS TO BE SUSTAINABLE

The transition to sustainable energy involves much more than shifting from fossil to renewable resources. Sustainability requires understanding energy as a humandirected system—from extraction and production to consumption—that operates within the constraints of human society and Earth's ecosystems.

In the capstone course for the minor, students will develop skills and use tools for systems thinking such as life cycle assessment, techno-economic analysis and system dynamics modeling as part of their own efforts to analyze options for sustainable energy.

[Student Sustainability Center](#), and the [Energy Club](#) have even more ways for you to connect.

CONTACT INFORMATION

See more information regarding the minor on our website [Undergraduate Offerings](#) page.



Interdisciplinary Minor in Sustainable Energy Checklist

The Energy Institute and the School of Sustainable Futures are proud to offer a minor in Sustainable Energy providing students with a background in sustainable energy in all its dimensions – the social, economic, physical and biological, and technological.

Required Core Courses

9 CREDITS REQUIRED

KEY – F: FALL, S: SPRING, (E)/(O) EVEN/ODD YEARS, SS: SUMMER SESSION, O: MAY BE OFFERED ONLINE

COURSE CODE	COURSE NAME	OFFERED	CREDITS	PREREQUISITES
☐ GES 101	Foundations of Env. Sustainability	F,S,O	3	
☐ GES 141	Introduction to Sustainable Energy	F	3	
☐ GES 441	Analysis of Sustainable Energy Solutions	S	3	GES 141

Group A. Social and Economic Issues (Choose 2)

6 CREDITS MINIMUM, 3-6 CREDITS MUST BE UPPER DIVISION

KEY – F: FALL, S: SPRING, (E)/(O) EVEN/ODD YEARS, SS: SUMMER SESSION, O: MAY BE OFFERED ONLINE

COURSE CODE	COURSE NAME	OFFERED	CREDITS	PREREQUISITES
☐ AREC202 or ECON 202	Principles of Microeconomics (AUCC 3C)	F,S,SS	3	(MATH 117 – May be taken concurrently) or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160
☐ AREC/ECON 240	Issues in Environ. Economics (AUCC 3C)	F,S,SS	3	
☐ AREC/ECON 444	Economics of Energy Resources	S,(O)	3	AREC/ECON 306
☐ E/LB 482A	Study Abroad – Energy Transitions in Europe	SS	3	CO 150, Sophomore standing. Registration is through the Office of International Programs. Credit not allowed for both E 482A and LB 482A.
☐ ESS 542	Greenhouse Gas Policies	S	2	ESS 524
☐ NR 320	Natural Resources History and Policy	F,S	3	
☐ POLS 101	American Gov't and Politics (AUCC 3C)	F,S,SS	3	
☐ POLS 364	Air, Climate, & Energy Policy Analysis	F(E)	3	POLS 101

Group B. Science and Technology

6 CREDITS MINIMUM, 3-6 CREDITS MUST BE UPPER DIVISION

KEY – F: FALL, S: SPRING, (E)/(O) EVEN/ODD YEARS, SS: SUMMER SESSION, O: MAY BE OFFERED ONLINE

COURSE CODE	COURSE NAME	OFFERED	CREDITS	PREREQUISITES
☐ ATS 150	Science of Global Climate Change	S	3	
☐ ATS 350 and ATS 351	Intro. to Weather and Climate \ Intro. to Weather and Climate Lab	F	2 1	
☐ ATS 555	Air Pollution	S(O)	3	CHEM 113 & (MATH 261 OR 340) & (PH 122 OR 142)

MAY SELECT FROM ONE OF THE FOLLOWING:

☐ BZ 104 & BZ 105	Basic Concepts of Plant Life (AUCC 3A)	F,S,SS	4	
☐ BZ 120	Principles of Plant Biology (AUCC 3A)	F,S	4	
☐ LIFE 102	Attributes of Living Systems (AUCC 3A)	F,S	4	

☐ BZ 332	Introduction Phycology	F(E)	4	BZ 120 OR LIFE 103
☐ BZ 440	Plant Physiology	S	3	BZ 120 or LIFE 103
☐ CBE 210	Thermodynamic Process Analysis	S	3	CBE 201 & MATH 261
☐ CHEM 103	Chemistry in Context (AUCC 3A)	F,S,SS	3	

MAY SELECT FROM ONE OF THE FOLLOWING:

☐ CHEM 107	Fundamental of Chemistry (AUCC 3A)	F,S, SS	4	MATH 117 or (MATH 141, may be taken concurrently), or concurrently with MATH 155, 160, 161, 229, or 261
☐ CHEM 111	General Chemistry I (AUCC 3A)	F,S, SS	4	MATH 118, 141, 155, 160, 161, 229 or MATH 261 & CHEM 105
☐ CHEM 117	General Chemistry I for Chemistry Majors	F	3	MATH 118, 141, 155, 160, 161, 229 or 261

☐ CON 476	Sustainable Practices-Design & Const.	F	3	
☐ ECE 465	Electrical Energy Generation Technologies	S	3	ECE 202 with a min grade of C
☐ ESS/GR 210	Physical Geography	F,S	3	
☐ ESS 311	Ecosystem Ecology	F	3	(PH 121 or PH 141) and LIFE 320
☐ ESS 353	Global Change Impacts, Adaptation, Mitigatio	S	3	LAND 220 or LIFE 220 or LIFE 320
☐ ESS 524	Foundations for Carbon/ Greenhouse Gas Management	F	3	BZ 300 to 499 or ECOL 300 to 499 or CHEM 300 to 499



MAY SELECT FROM ONE OF THE FOLLOWING:

☐	GEOL 120	Exploring Earth: Physical Geology (AUCC 3A)	F,S,SS	3	
☐	GEOL 122	Geology of Our Environment (AUCC 3A)	F,S,SS	3	
☐	GEOL 150	Physical Geology for Scientists & Engineers (AUCC 3A)	F	4	

☐	LIFE 320	Ecology	F,S	3	(BZ 101 or BZ 104 or BZ 110 or BZ 120 or LIFE 102) and (MATH 141 or MATH 155 or MATH 160)
☐	MECH 337	Thermodynamics	F,S	4	MATH 261 and PH 141
☐	MECH 403	Energy Engineering	F	3	CBE 310 or MECH 237 or MECH 337 or PH 361
☐	MECH 463	Building Energy Systems	S	3	MECH 344
☐	MECH 575	Solar and Alternative Energies	S	3	MECH 337 & 342 & 344

MAY SELECT FROM ONE OF THE FOLLOWING:

☐	PH 110	Descriptive Physics (AUCC 3A)	F,S	3	
☐	PH 121	General Physics I (AUCC 3A)	F,S,SS	5	MATH 125 or 155 or 157 or 160, may be taken concurrently
☐	PH 141	Physics for Scientists and Engineers (AUCC 3C)		5	MATH 126 & (MATH 155, 159 or 160)

☐	PH 361	Physical Thermodynamics	S	3	MATH 261 and PH 142
☐	SYSE 530	Overview of Systems Engineering Processes	F,S	3	ECE 303 or STAT 303 or STAT 315
☐	SYSE/ECE 532	Dynamics of Complex Engineering Systems	F	3	ECE 501 or ENGR 501 or SYSE 501

*TO COMPLETE THE MINOR, A TOTAL OF AT LEAST 12 CREDITS MUST BE UPPER DIVISION COURSEWORK (300 OR ABOVE).

About the Energy Institute

The Energy Institute is a cross-campus, interdisciplinary collaboration administered by the Office of the Vice President for Research that spans all eight colleges and extends off campus to a global network of public and private partners. It serves as a convening and collaboration hub for faculty, staff, students, donors, sponsors, alumni, and other stakeholders and is under-pinned by over 160 faculty involved in all aspects of energy research, education, outreach, and entrepreneurship.

About the School of Sustainable Futures

The School of Sustainable Futures (formerly the School of Global Environmental Sustainability, SoGES) is Colorado State University's interdisciplinary hub for sustainability. The School connects people and ideas across CSU to turn climate and sustainability knowledge into action-- through applied learning, research support, and partner collaboration.

