

REQUIREMENTS FOR THE ISEN CERTIFICATE: *REVISED JANUARY 2015* (added)

- **ISEN 200-level sequence (3)**
ISEN 210 – *Introduction to Sustainability*
ISEN 220 – *Introduction to Energy Systems for the 21st Century*
ISEN 230 – *Climate Change and Sustainability: Political, Economic and Ethical Dimension*
(Note: these courses are non-sequential and can be taken in whatever order best fits the student's schedule)
- **Electives (4)**
- **At least 3 at the 300 level.**
- **At most 2 from any department or program.**
- **Only 1 approved study abroad course can be counted**
- **Relevant "Special Topics" courses may be counted more than once, with a change in topic.**
- **GPA requirements**
- **3.0-average or better within the ISEN 200-level sequence**
- **3.0-average or better across all seven requisite courses**

Natural Science

Biological Sciences

BIOL_SCI 313/PBC 435 – *Quantitative Methods for Ecology and Conservation*
BIOL_SCI 334 – *Soils and the Environment*
BIOL_SCI 335 – *Critical Topics in Ecology and Conservation*
BIOL_SCI 346 – *Field Ecology*
BIOL_SCI 347 – *Conservation Biology*

Chemistry

CHEM 306 – *Environmental Chemistry*
CHEM 393 – *Green Chemistry*
CHEM 445 – *Advanced Physical & Analytical Chemistry: Chemistry of Alternative Energy*

Earth and Planetary Science

EARTH 310 – *Introductory (Aqueous) Geochemistry*
EARTH 312 – *Stable Isotope Geochemistry*
EARTH 314/CIV_ENV 314 – *Organic Geochemistry*
EARTH 316 – *Earth's Changing Climate*
EARTH 342/ISEN 410 – *Topics Contemporary Energy & Climate Chng*
EARTH 390 – *Special Topics (when relevant, e.g., GIS Applications for Earth and Environmental Science)*

Environmental Sciences

ENVR_SCI 201/CIV_ENV 201 – *Earth: A Habitable Planet*
ENVR_SCI 202/CIV_ENV 202 – *The Health of the Biosphere*
ENVR_SCI 203/CIV_ENV 203 – *Energy and the Environment*
ENVR_SCI 390 – *Special Topics (when relevant, e.g., GIS Applications for Earth and Environmental Science, Soils & The Environment, etc.)*
ENVR_SCI 398-1 – *Environmental Research Seminar*

Other natural sciences

PHYSICS 238 – *Energy and Nuclear Power*
PBC 435/BIOL_SCI 313 – *Quantitative Methods for Ecology and Conservation*

Engineering, continued

Project Management

PROJ_MGMT 441 – *Sustainability in Construction*
PROJ_MGMT 443 – *Sustainability Strategies in Organizations*
PROJ_MGMT 445 – *Sustainability Policy and Regulatory Context*
PROJ_MGMT 446 – *System Thinking for Sustainable Design*

Other Engineering courses

CHEM_ENG 307 – *Kinetics and Reactor Engineering*
CHEM_ENG 365 – *Sustainability, Technology and Society*
CHEM_ENG 367 (formerly 395) – *Quantitative Methods in LCA*
ENTREP 430/ISEN 430 – *NUvention: Energy*
MAT_SCI 381-1 – *Materials for Energy-Efficient Technology*
MAT_SCI 395 – *Special Topics: Fuel Cells*
MECH_ENG 367 (formerly 395) – *Quantitative Methods in LCA*
MECH_ENG 395 – *Special Topics (when relevant, e.g., Combustion/Energy Systems; Fundamentals of Nuclear Reactor Physics; Energy and Society)*

Social Science

Anthropology

ANTHRO 302 – *Agriculture: Origins, Environ Impacts, & Social Transformations*
ANTHRO 383 – *Environmental Anthropology*

Economics

ECON 370 – *Environmental & Natural Resource Economics*

Environmental Policy and Culture

ENVR_POL 390 – *Special Topics in EPC (always relevant, e.g., Conservation in a Changing World: Humans & Animal Behavior)*
ENVR_POL 394 – *Professional Linkage Seminar (always relevant, e.g., International Environmental Organizations)*
ENVR_POL 395 – *Special Topics Seminar (always relevant, e.g., Climate Change and Public Health)*

History

HIST 300 – *New Lectures in History (when relevant, e.g. American Environmental History)*
HIST 376 – *Global Environments and World History*
HIST 392 – *Topics in History (when relevant, e.g. History of the Environment: Science, Technology and Culture, Environment and Energy in the Middle East, Energy in American History, etc)*

ISEN (non-core) courses

ISEN 390 – *Special Topics in Energy and Sustainability (always relevant)*
ISEN 410 – *Topics in Contemporary Energy & Climate Change*
ISEN 430/ENTREP 430 – *NUvention: Energy*
ISEN 495 – *Special Topics in Energy and Sustainability (always relevant)*

Philosophy

PHIL 268 – *Ethics and the Environment*
PHIL 270 – *Note – this is a cross-list of ISEN 230, and therefore is NOT eligible for elective credit*

Political Science

<p>Engineering</p> <p><u>Civil and Environmental Engineering</u></p> <p>CIV_ENV 201/ENVR_SCI 201 – <i>Earth: A Habitable Planet</i></p> <p>CIV_ENV 202/ENVR_SCI 202 – <i>The Health of the Biosphere</i></p> <p>CIV_ENV 203/ENVR_SCI 203 – <i>Energy and the Environment</i></p> <p>CIV_ENV 216 – <i>Mechanics of Materials</i></p> <p>CIV_ENV 250 – <i>Introductory Soil Mechanics</i></p> <p>CIV_ENV 260 – <i>Fundamentals of Environmental Engineering</i></p> <p>CIV_ENV 303/ENVR_POL 390-22 – <i>Environmental Law and Policy</i></p> <p>CIV_ENV 304 – <i>Civil & Environmental Engineering Systems Analysis</i></p> <p>CIV_ENV 314/EARTH 314 – <i>Organic Geochemistry</i></p> <p>CIV_ENV 330 – <i>Construction Management</i> CIV_ENV 332 – <i>Building Construction Estimating</i></p> <p>CIV_ENV 336 – <i>Project Scheduling</i></p> <p>CIV_ENV 340 – <i>Fluid Mechanics II</i></p> <p>CIV_ENV 361-1 – <i>Environmental Microbiology</i></p> <p>CIV_ENV 361-2 – <i>Public & Environmental Health</i></p> <p>CIV_ENV 363 – <i>Environmental Engineering Applications: Air & Land</i></p> <p>CIV_ENV 364 – <i>Environmental Engineering Applications II: Water</i></p> <p>CIV_ENV 365 – <i>Environmental Laboratory</i></p> <p>CIV_ENV 367 – <i>Aquatic Chemistry</i></p> <p>CIV_ENV 368 – <i>Sustainability: Issues and Actions Near and Far</i></p> <p>CIV_ENV 371 – <i>Introduction to Transportation Planning and Analysis</i></p> <p>CIV_ENV 376 – <i>Transportation System Operations</i></p> <p>CIV_ENV 385-1,2,3 – <i>Architecture Engineering and Design</i></p> <p>CIV_ENV 395 – <i>Special Topics (when relevant, e.g., Environmental Justice: Environmental Protection and Social Equity)</i></p>	<p>POLI_SCI 349 – <i>International Environmental Politics</i></p> <p>POLI_SCI 390 – <i>Special Topics (when relevant, e.g Civic Participation and the Environment, Environmental Politics of the Middle East)</i></p> <p>POLI_SCI 395 – <i>Professional Linkage Seminar (when relevant, e.g. Global Climate Change: Policy and Society)</i></p> <p><u>Sociology</u></p> <p>SOCIOL 212 – <i>Environment and Society</i></p> <p>SOCIOL 311 – <i>Food, Politics and Society</i></p> <p>SOCIOL 312 – <i>Social Basis of Environmental Change</i></p> <p><u>Other Social Science courses</u></p> <p>MENA 390-4/HIST 392 – <i>Advanced Topics in Middle East & North African Studies: Environment & Energy in the Middle East</i></p> <p>PSYCH 332 – <i>Native Americans and Environmental Decision Making</i></p> <p><u>Study Abroad Options</u></p> <p>Bonn Summer Program: “Renewable Energy: Policy and Development”</p> <p>Wanxiang Summer Program (ISEN 390-SA)</p> <p>Others (must be pre-approved)</p>
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