

Energy Resources at UNC: Courses and Beyond

Brought to you by the UNC Renewable Energy Special Projects Committee (RESPC)

Fall 2017 Energy Courses (non-comprehensive list)

ENEC 490- Special Topics: "Energy Economics" - Advanced topics from diverse areas of environmental science and/or environmental studies are explored - Taught by Andy Yates (may be completed 4 times for 12 total credit hours)

***ENEC 490- Special Topics: "Energy Analytics"** - Advanced topics from diverse areas of environmental science and/or environmental studies are explored - Taught by Jordan Kern (may be completed 4 times for 12 total credit hours)

BUSI 507H- "Sustainable Enterprise and Social Entrepreneurship" - Examines what it means to pursue business success as measured by the triple-bottom line of people, planet, and profit - Taught by Carol Hee (3 credit hours)

PHYS 118- "Introductory Calculus-based Mechanics and Relativity" - Mechanics of particles and rigid bodies (pre-req: MATH 231; pre- or co-req: MATH 232) (4 credit hours)

PHYS 119- "Introductory Calculus-based Electromagnetism and Quanta" - Unification of the laws of electricity and magnetism; electromagnetic waves; the particle-wave duality; fundamental principles and applications of quantum mechanics (pre-req: MATH 232 + PHYS 118; pre- or co-req: MATH 233) (4 credit hours)

PHYS 311- "Electromagnetism I" - Brief treatment of DC and AC circuit theory (co-req: PHYS 358) (3 credit hours)

PHYS 351- "Electronics I" - DC and AC circuit analysis. Diodes, transistor amplifiers, analog devices and signal conditioning (pre-req: MATH 233 and one of PHYS 105, 115, 117, 119) (4 credit hours)

****Spring 2018 Energy Courses (non-comprehensive list)**

PHYS 108 – "Climate Change and Energy Systems" – This new inter-disciplinary course will be taught by Gerald Cecil. There will be more information on the course closer to Spring 2018. (4 credit hours)

ENEC 210- "Energy in a Sustainable Environment Seminar" - This seminar series will provide a general introduction to energy sources, resources, technologies, and societal use from a sustainability perspective – Taught by Greg Gangi (1 credit hour)

ENEC 307- "Energy and Material Flows in the Environment and Society" - This course is designed to give students conceptual knowledge and analytic tools for understanding life cycle impacts and short term operations of electric power systems from a financial, economic and engineering perspective, and assess the impacts of nascent market and policy driven changes in this industry. A lecture topic guide for ENEC 307 can be found [here](#). – Taught by Jordan Kern (3 credit hours)

GEOL 076- “First-Year Seminar: Energy Resources for a Hungry Planet” - Discussions are centered on the most pressing issues of our time: environmental deterioration and construction of a sustainable (livable) world during and after the depletion of traditional energy resources (3 credit hours)

GEOL 215- “Energy Resources” - Considers the distribution, extraction, economics, and demand for mineral resources (3 credit hours)

BUSI 590- “Carolina Sustainability Consulting” - Selected topics in business administration presented in seminar format with students engaged in individual and team study under the supervision of a member of the faculty (may be completed 2 times for 6 total credit hours)

Additional Energy Opportunities

Physics Major, B.A. - Energy Option

Environmental Science, B.S. - Quantitative Energy Systems Track

Tour the Cogeneration plant: The Co-gen plant provides electricity and steam for heating for UNC. Touring the facilities teaches you the history of the plant and changes/progressions made, and their trials with using biomass. http://www.unc.edu/community/cogeneration_plant_sup.html

Tour Energy Management (EMCS): EMCS remotely monitors energy usage and HVAC systems on campus.

Tour the Landfill gas generator: UNC’s largest renewable project is actually a landfill gas generator which is located on Carolina North. Methane gas from Orange County Landfill waste is flared and used to generate electricity <http://sustainability.unc.edu/news/2013/05/29/carolina-north-generator-produces-electricity-from-landfill-methane-gas/>

Sustainable Triangle Field Site: The Institute for the Environment at The University of North Carolina at Chapel Hill offers the Sustainable Triangle Field Site (STFS) as an urban field experience located on and near the UNC campus. <http://ie.unc.edu/education/field-sites/stfs/>

Join UNC Renewable Energy Special Projects Committee (RESPC): RESPC is a student organization, funded by student fees which cumulates to about \$200,000/yr. This group completes renewable energy, energy efficient, and energy education projects. Check out their website at <http://respc.web.unc.edu/>

Additional resources can be found at <http://sustainability.unc.edu/>

*NOTE: 490 courses are special topics designations and the rule about taking them 4 times for 12 credits max applies to the general number, not the specific course. In other words, you can not take energy economics 4 times for 12 credits. You can take four different special topics courses for credit.

**These courses will *most likely* be offered during the Spring of 2018, but this has not been confirmed