Spring 2021

EVSC 325-102: Energy and Evironment

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NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

EVSC 325 Energy and Environment
Syllabus
Spring 2021

- Class Website: https://njit.instructure.com/courses/16752
- Class Meeting Time (Synchronous online): 6:00 pm - 8:50 pm each Monday evening from Jan 25, 2020 to May 3, (Except for Spring Break)
- Location: Online only via Webex
- Instructor: Michael Hornsby
- E-mail: hornsby@njit.edu Cell Phone: 609-529-6875
- Instructor profile: https://www.linkedin.com/in/mikehornsby
- Office Hours: Feel free to request phone or Zoom virtual office meetings

COURSE INFORMATION

I. Course Description and Objectives Summary:

The course is a study about energy production and use, and the resulting climate and other environmental impacts. The class will examine:

- International and national energy production and usage trends
- Primary forms of energy production: coal, oil, natural gas, nuclear and renewable energy (solar, offshore wind and renewable natural gas)
- Transmission, distribution, and electric utilities
- New Jersey energy programs
- Energy and climate policies
- Microgrids, energy storage and fuel cells
- Energy efficiency
- Electric vehicles
- Building electrification, including geothermal
- Transportation electrification

- Energy storage
- Microgrids
- Waste to energy
- Fuel cells
- Climate change science, policy, and carbon pricing
- Climate resilience
- Sustainability
- Redeveloping landfills and brownfields with solar power
- Perspectives from industry and environmental groups
- The future of energy

Number of Credits: 3 Credits

Prerequisites: EVSC 125. Fundamentals of Environmental Sciences and CHEM 125: General Chemistry I

Textbook: All materials will be available on the class website.

University-wide Withdrawal Dates: Withdrawal dates are posted on the NJIT academic calendar: https://www5.njit.edu/registrar/

II. Learning Outcomes: Student learners will:

- Understand baseline energy and environmental conditions
- Understand the science and physics of energy
- Understand how energy is produced and used, and its resulting environmental impacts
- Understand the need to electrify everything, and the means to produce clean energy
- Understand transportation electrification
- Understand the several forms of climate resilience
- Understand the gravity of climate change and their ability to address it
- Understand technological and policy solutions
- Understand the institutions, politics and people in the energy field
- Understand that it is possible to build a career around solving the worlds greatest problems
- Learn about the future of energy

POLICIES

All EVSC students must familiarize themselves with, and adhere to, all official university-wide student policies. EVSC takes these policies very seriously and enforces them strictly.

Grading Policy: The final score in this course will be as follows:

Assignments	12%
Quizzes	20%
Participation	8%
Midterm Exam	30%
Final Exam	30%
Extra Credit	0%

Participation: 0 to 8 points will be awarded by instructor, based on:

- The quality and quantity of your engagement in live class discussions
- The quality and quantity of your engagement in online discussions
- Your attendance

The final course grade will be determined as follows:

Final Grade	Overall Academic Performance (100%)
A	Above 90
B+	85-89
B	80-84
C+	75-79
C	70-74
D	60-69
F	Below 60

Attendance Policy: Attendance at classes will be recorded and is mandatory.

Homework Assignments Policy: Homework is an expectation of the course. The homework assignments set by the instructor are used in class discussions which comprise in part the determination of the score for "participation". Late assignments are automatically subjected to a 5% per day late penalty.

Exams: There will be two quizzes, a midterm exam and one final exam. Refer to the class website for exam dates and times.

Makeup Exam Policy: There will normally be NO MAKE-UP QUIZZES OR EXAMS during the semester. In the event that a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the CES Department Office/Instructor that the exam will be missed If a make up is allowed, it will be more substantially difficult than the original quiz or exam, and a 15% late penalty will be applied.

Cellular Phones: All cellular phones must be silenced switched off during class times.

Schedule

- See the Pages section within each weekly online Module for details including: Introduction, Agenda, Learning Objectives, Assignments and Files/References
- Leading experts in every aspect of Energy and Environment will provide guest lectures.

Wk	Date	Logo	Topic	Speaker	Organization & Website	Time (PM)
1	25-Jan	NJIT	Introduction & Brief Recent History of Energy	Mike Hornsby	NJIT NJIT.EDU	6:00 to 8:50
1	25-Jan	NJIT	The National Energy Picture	Mike Hornsby	NJIT NJIT.EDU	7:30 to 8:50
2	1-Feb	Citizens' Climate Lobby	Carbon Fee and Dividend	Mike Aucott	https://citizensclimatelobby.org	6:00 to 7: 20
2	1-Feb	NJIT	Energy Overview	Mike Hornsby	NJIT NJIT.EDU	7:30 to 8:50
3	8-Feb	Business Network for Offshore Wind	Offshore Wind	Brandon Burke – Policy & Outreach Director	The Business Network for Offshore Wind https://www.offshorewindus.org/	6:00 to 7:20
3	8-Feb	Sustainable Princeton	Municipal Climate Action Plans	Christine Symington, Program Director	Sustainable Princeton SustainablePrinceton.org	7:30 to 8:50
4	15-Feb	TESLA	Electric Transportation	Patrick Bean, Charging and Energy Policy Lead	Tesla Tesla.com	6:00 to 7:20
4	15-Feb	Covanta Energy	Waste to Energy	Jyoti T. Agarwal, PhD, Environmental Manager (Invited)	Covanta Covanta.com	7:30 to 8:50
5	22-Feb	Chemistry Council of New Jersey	An Industry Perspective on Energy and the	Dennis Hart, Executive Director	Chemistry Council of New Jersey https://www.chemistrycouncil	6:00 to 7:20
5	22-Feb	CS Energy	Solar Energy Development on Brownfields and Lanfills	Kevin Magayah, Vice President, Business Development (invited)	CS Energy	7:30 to 8:50
6	1-Mar	ESA Energy Storage Association	Energy Storage	TBD (Invited)	Energy Storage Association https://energystorage.org/	6:00 to 7:20
6	1-Mar	PPPL	Fusion	Andrew Zwicker, Head, Office of Communications and Public Outreach (invited)	Princeton Plasma Physics Laboratory https://www.pppl.gov	7:30 to 8:50
7	8-Mar		Climate Resilience: Swiftwater/Flood Rescue Team	Brian Doel, Deputy Chief	Princeton Junction Volunteer Fire Company PJFD.COM	6:00 to 7:20
7	8-Mar	Trenton Renewables	Renewaable Natural Gas	Brian Blair, Chief Operating Officer (invited)	Trenton Renewables https://trentonrenewables.com/	7:30 to 8:50

Wk	Date	Logo	Topic	Speaker	Organization & Website	Time (PM)
8	15-Mar	Spring Recess!				
9	22-Mar	DANDELION	Geothermal Energy	Kathy Hannum, President & Cofounder (Invited)	Dandelion Energy https://dandelionenergy.com/	6:00 to 7:20
9	22-Mar	BloombergNEF	New Energy Outlook 2020	TBD (invited)	BloombergNEF bnef.com	7:30 - 8:50
10	29-Mar	Bloomenergy	Fuel Cells	TBD (invited)	Bloom Energy https://www.bloomenergy.com/	6 PM - 7:20
10	29-Mar	edf renewables	Distributed energy,energy policy and clean	Thomas Leyden, Senior Director Distributed Solutions	EDF Renewables www.edf-re.com	7:30 to 8:50
11	5-Apr	pjm	Electricity Transmission	Andrew Levitt, Sr. Business Solution Architect, Applied Innovation	PJM Interconnection https://www.pjm.com/	6:00 to 7:20
11	5-Apr	JERSEY	Sustainability	Randall Solomon, Executive Director	Sustainable Jersey http://www.sustainablejersey.	7:30 to 8:50
12	12-Apr		Green Buildings - Energy Efficiency	Jason Kliwinski, AIA, LEED Fellow	Green Building Center http://www.greenbuildingcenter.com/	6:00 to 7:20
12	12-Apr	PSEG	Electric Generation (fossil and	Mark Scorsolini (Invited)	PSEG Energy Resources & Trade, LLC PSEG.COM	7:30 to 8:50
13	19-Apr	New Jersey Natural Gas	Natural Gas	Anne-Marie Peracchio, Director Conservation and Clean Energy (invited)	New Jersey Natural Gas	6:00 to 7:20
13	19-Apr	Munich RE	Insurance Industry Perspective on Climate Change	Mark Bove, Natural Catastrophe Solutions Manager (invited)	Munich Reinsurance America, Inc. https://www.munichre.com/en.	7:30 to 8:50
14	26-Apr	PSEG	Gas & Electricity Transmission & Distribution	Paul Drake, Regional Public Affairs Manager	Public Service Electric & Gas Company	6:00 to 7:20
14	26-Apr	MICROGRID KNOWLEDGE	Microgrids	Elisa Wood, Editor-in-Chief (invited)	Microgrid Knowledge https://microgridknowledge.co	7:30 to 8:50
15	3-May	NJIT	Review for Final Exam	Mike Hornsby	NJIT NJIT.EDU	6:00 to 7:20
15	3-May	NJIT	Review for Final Exam	Mike Hornsby	NJIT NJIT.EDU	7:30 to 8:50

ADDITIONAL RESOURCES

Accommodation of Disabilities: Office of Accessibility Resources and Services (*formerly known as Disability Support Services*) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director at the Office of Accessibility Resources and Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Office of Accessibility Resources Services office authorizing your accommodations will be required.

For further information regarding self-identification, the submission of medical documentation and additional support services provided please visit the Accessibility Resources and Services (OARS) website at:
http://www5.njit.edu/studentsuccess/disability-support-services/

Statement on Academic Integrity

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"