Instructor: Dr. Michael B. Schwebel is a Lecturer and Adjunct Faculty in The Johns Hopkins University Energy Policy and Climate Program. He can be contacted via mschweb4@jhu.edu. E-mails received will be answered within 24 hours. Usually, emails received in the morning or early afternoon will be answered the same day; ones received later in the day usually will be answered the following morning.

Course Description:
The Capstone Project enables students to apply and synthesize the material learned in other courses, develop expertise on a specific topic related to climate change science or policy, work closely with experts in the field of study, and improve professional writing and presentation skills. In the semester prior to conducting the project, students must identify a proper topic and mentor who is both familiar with the chosen topic and willing to guide and oversee the project. The mentor can be a faculty member teaching in the program, a supervisor from the student’s place of work, or any expert with appropriate credentials. Formal proposals must be submitted at least two weeks prior to the start of the semester in which the project be completed. Prior to the enrollment in the course, the pro must be reviewed and accepted by the course instructor.
**Teaching Style:**
The course will be delivered through lectures, discussion, and to a large extent, individual attention in a research project of the student’s choice. One of the primary goals of this course is for all students to gain a good grasp of underlying scientific methodology in developing and carrying through a research project including: taking measurements / data collection, validation, analyzing and drawing conclusions. All this will be done in the context of a research project in the domain of energy and climate policy.

**Grading:**
Grades will be based upon class participation, one milestone report (1-page), and of course the final paper. Students are expected to follow appropriate ethics and honor codes. Class assignments that are submitted after deadline will automatically be downgraded by one half grade for each day of lateness. JHU-AAP uses the full range of the lettered grading scale for consistency between courses: 98–100% A+; 94–97% A; 90–93% A-; 88–89% B+; 84–87% B; 80–83% B-; 70–79% C; <70% F.

<table>
<thead>
<tr>
<th>Subject</th>
<th>% Final Grade</th>
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<tbody>
<tr>
<td>Class Participation &amp; Assignments (blogs are not mandatory but can be done if you have a topic and would like to publish on the JHU site; see instructor if interested.)</td>
<td>15 points</td>
</tr>
<tr>
<td>Final Project</td>
<td>85 points</td>
</tr>
<tr>
<td>- Introduction / background</td>
<td>- 20 pts</td>
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<tr>
<td>- Literature review &amp; citations</td>
<td>- 15 pts</td>
</tr>
<tr>
<td>- Data collection / measurements</td>
<td>- 15 pts</td>
</tr>
<tr>
<td>- Methods (Analysis)</td>
<td>- 20 pts</td>
</tr>
<tr>
<td>- Discussion, conclusions, summary</td>
<td>- 15 pts</td>
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</table>

For further instruction, see Capstone guidelines [here](#).

**Participation:**
This class will include significant discussion; missing class not only detracts from your own experience but deprives your classmates of your insights into the material. With this in mind, I expect you to attend all class meetings, do all readings, and actively participate in class. If you have trouble thinking of things to say, take notes on the readings – this will often bring you to class with thoughts or questions that can then be used to help jump-start discussion. A blackboard (BB) discussion platform will be available so that online discussions can be hosted.

**Course Readings:**
We will use one required text in the course, *Research methods: A Process of Inquiry*, by Graziano and Roulin. This text has been written for psychology students, but there is a great deal that we can take away in terms of research. I will follow these topics according to the text and bring in additional material relevant to energy and climate policy whenever possible and appropriate.

**Required text.**

Other references


Crowther D., Lancaster G., Research Methods, A concise introduction to research in management and business consultancy. (Available at reader.eblib.com)

Quantitative and Statistical Research Methods: From Hypothesis to Results. Martin William E; Bridgmon Krista D, 2012 | Wiley Series: Research Methods for the Social Sciences, V. 42 (available at jhu.eblib.com)


Purpose of the Course:
The purpose of the course is threefold: 1) to provide the student with a relevant research topic that involves a certain level of research and hands-on experience with the data and analysis techniques, 2) to provide student with a set of skills necessary to develop and conduct a short research project (skills that will be transferable to large projects) and 3) to provide the student with the ‘soft’ skills necessary in the evaluation, peer review, defense and presentation of research.

Learning Objectives:
Students will learn important skills and concepts that enable leadership on energy policy and climate. Apart from the skills acquired in assembling a project (see ‘Purpose of the Course’).

- Identify and evaluate the clarity of the problem statement
- Identify the specific research question under investigation
- Determine the theoretical or logical rationale of the research problem
- Acquire knowledge for methodology
- Understand the risks and data insufficiencies
- Understand the relevant analysis techniques
- Determine whether the research question is stated in terms amenable to investigation
- Provide a project assessment, synthesis, alternative interpretations and conclusion
- Appraise the thoroughness and relevance of the literature review and determining if the literature review establishes the need for conducting the research
- Establish the credibility of the research and assess the theoretical perspectives and/or a priori assumptions of the researchers
- Evaluate the appropriateness of the research methodology for the study
- Assess the clarity and consistency of the results
- Identify the limitations of the study
- Discuss implications of the study in view of the strengths and weaknesses of the research
- Distinguish between quantitative and qualitative research designs and methods.
Conduct a peer reviewing analysis of a paper.
Present and argue a research topic with peers.
Feedback from the instructor:
As your instructor, I will provide feedback on your work at all stages of the development of your paper. It is essential that the student initiate these conversations. I will make a general announcement that a draft be sent to me one week before the end of the semester so that I may give a thorough review of your paper and provide feedback that will complement your mentor’s feedback.

II. Syllabus and Readings

General Comment
This is a fully online course. Its main focus is to guide the student to develop an excellent research paper. The first part of the course will focus on issues that directly impact the different sections of the paper. The second have will provide individual meeting times to work on specific research points. Blackboard instructional facilities will be available throughout the course to facilitate instruction, discussion and exchange of information.

Class 1 (Module 1): Introduction - Characteristics of research (Complete from Wednesday 4th of September – Tuesday 10th of September while contributing to discussion during week)

What is scientific research? We must have a curiosity about us in order to do research. The class provides some insight into the type of thinkers and an overview of scientific research.

Reading: Research Methods, Chapters 1. pp. 1 – 12 (required) and 12 - 17 (optional)

Discussion and presentation: short introduction to research, exploring a research article (part 1)

Class 2 (Module 2): Putting the together a research paper and the process of inquiry (Complete from Wednesday 11th of September – Tuesday 17th of September while contributing to discussion during week)

What is scientific research? We must have a curiosity about us in order to do research. The first part of the class provides some insight into the type of thinkers and an overview of scientific research. The second part will cover the process of inquiry. We will build a table of research topic that will serve as discussion anchors for the rest of the semester. Other topics will include devising an investigation, and planning a research project, generating and refining a research question.

Reading: Research Methods, Chapters 2. pp. 30 – 34 (required) and 34 -36 (optional), 36 – 52 (required).

Discussion and presentation: short introduction to research, exploring a research article (part 1)

Class 3 (Module 3): Developing the research plan – A to Z (Asking the right questions) (Complete from Wednesday 18th of September – Tuesday 24th of September while contributing to discussion during week)
What are the right and relevant questions that should be asked in your research project? This must be answered first in your work. We will discuss relevant research question – how to pose them and good strategies.

Reading: Research Methods, Chapters 3. pp. 58 – 69 (required)

Discussion and presentation: short introduction to research, exploring a research article (part 2)

Class 4 (Module 4): Introduction and Methods (part I) - Measurement / Data collection
(Complete from Wednesday 25th of September – Tuesday 1st of October while contributing to discussion during week)

This class provides an overview of the introduction as well as Methods - measurement and data collection as it pertains to the projects of the semester.

Reading: Research Methods, Ch 4.
Discussion and presentation: TBA

Class 5 (Module 5): Methods (part II) - Statistical Analysis and Results (Complete from Wednesday 2nd of October – Tuesday 8th of October while contributing to discussion during week)

This class provides an overview of basic statistical and correlation methods as they pertain to the projects of the semester.

In this class we will go into more depth on how to test the validity of your hypothesis in your research project and how to analyze your data.

Reading: Research Methods, Chapters 5. pp. 97 – 114 (required) and 114 - 120 (optional - more for psychology research, but none-the-less useful)

Research Methods, Chapters 8. pp. 168 – 186 (Caution! This chapter is designed for psychology / behavioral students, not energy / climate policy. However, there are concepts that we can take away). 

Additional material:
- The National Institute of Standards series of validation notes. [How can I fit my data?](#)

This class provides an overview of basic statistical and correlation methods as they pertain to the projects of the semester.

Discussion and presentation: TBA
Class 6 (Module 6): Discussion and Conclusions (Complete from Wednesday 9th of October – Tuesday 15th of October while contributing to discussion during week)

In this class we will go into more depth on how to wrap-up your paper – via discussion and concluding remarks, strategies, etc.

Reading: See Mod 6 page.

Discussion and presentation: TBA

Class 7 (Module 7): Writing a research report & other research skills (Complete from Wednesday 16th of October – Tuesday 22nd of October while contributing to discussion during week)

We will look at ‘soft’ research skill, including collaborative skills, networking, providing research feedback to your peers and how to debate research.

Discussion and presentation: TBA
Reading: Research Methods, Appendix B, Research Methods, pp. 346 – 343
Discussion and presentation: TBA

Class 8 (Modules 8) Individual project work / meet with instructor
Review of the research data. Individual meetings online – see for module for instructions.

Class 9 (Modules 9) Individual project work / meet with instructor
Review of the research data. Individual meetings online – see for module for instructions.

Class 10 (Modules 10) Individual project work / meet with instructor
Review of the research data. Individual meetings online – see for module for instructions.

Class 11 (Modules 11) Individual project work / meet with instructor
Review of the research data. Individual meetings online – see for module for instructions.

Class 12 (Modules 12) Individual project work / meet with instructor
Review of the research data. Individual meetings online – see for module for instructions.

Class 13 (Modules 13) Individual project work / meet with instructor
Review of the research data. Individual meetings online – see for module for instructions.

Class 14: Capstone presentation (online students will send in an audio-ppt file to instructor via BB)
The Capstone presentation will be presented on a designated date near the end of the semester (Normally on the last Thursday of class). Each project will be presented, and time will be allowed for questions.

A Capstone Symposium Day will be held in May for all semester to present. We will invite faculty to this event. If you have colleague who would like to attend, please let me know so that we can arrange the room.

**Class 15: Reflection**

Reflection on what you’ve learned throughout this course.

<table>
<thead>
<tr>
<th>Action</th>
<th>Fall Project</th>
<th>Spring Project</th>
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</thead>
<tbody>
<tr>
<td>Initial communication with Program Director</td>
<td>June 1</td>
<td>November 1</td>
</tr>
<tr>
<td>Submit name of proposed Project Mentor with CV or Resume if new to JHU</td>
<td>June 7</td>
<td>November 7</td>
</tr>
<tr>
<td>Approval of proposal Project Mentor by EPC Director</td>
<td>June 10</td>
<td>November 10</td>
</tr>
<tr>
<td>Commitment from Project Mentor</td>
<td>June 30</td>
<td>November 30</td>
</tr>
<tr>
<td>Draft Project Proposal – please send to EPC Director, include name, title on paper and file.</td>
<td>August 15</td>
<td>December 15</td>
</tr>
<tr>
<td>Approval of Final Project Proposal by EPC Director or Request for Revisions</td>
<td>August 25</td>
<td>January 9</td>
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</tbody>
</table>

In class

- **Progress Report** - ½ page to 1 page general update
  - Week 9 of class
  - Week 9 of class
- **Draft Report** (submission, via email, to Project Mentor and EPC Director) Final Report (submission, via email, to Project Mentor and EPC Director)
  - Week 13 of class
  - Week 13 of class
- **Final Report** (submission, via email, to Project Mentor and EPC Director)
  - Last day of class (draft, one week before end of semester)
  - Last day of class (draft, one week before end of semester)
- **EPC Capstone Project Symposium (Capstone Day)**
  - None – see spring event
  - End of Spring Semester (generally in May)
III. University Policies

General

This course adheres to all University policies described in the academic catalog. Please pay close attention to the following policies:

Students with Disabilities

Johns Hopkins University is committed to providing reasonable and appropriate accommodations to students with disabilities. Students with documented disabilities should contact the coordinator listed on the Disability Accommodations page. Further information and a link to the Student Request for Accommodation form can also be found on the Disability Accommodations page.

Ethics & Plagiarism

JHU Ethics Statement: The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. Report any violations you witness to the instructor.

Read and adhere to JHU’s Notice on Plagiarism.

Dropping the Course

You are responsible for understanding the university’s policies and procedures regarding withdrawing from courses found in the current catalog. You should be aware of the current deadlines according to the Academic Calendar.

Getting Help

You have a variety of methods to get help on Blackboard. Please consult the resource listed in the "Blackboard Help" link for important information. If you encounter technical difficulty in completing or submitting any online assessment, please immediately contact the designated help desk listed on the AAP online support page. Also, contact your instructor at the email address listed in the syllabus.

Copyright Policy

All course material are the property of JHU and are to be used for the student's individual academic purpose only. Any dissemination, copying, reproducing, modification, displaying, or transmitting of any course material content for any other purpose is prohibited, will be considered misconduct under the JHU Copyright Compliance Policy, and may be cause for disciplinary action. In addition, encouraging academic dishonesty or cheating by distributing information about course materials or assignments which would give an unfair advantage to others may violate AAP's Code of Conduct and the University's Student Conduct Code. Specifically, recordings, course materials, and lecture notes may not be exchanged or distributed for commercial purposes, for compensation, or for any purpose other than use by students enrolled in the class. Other distributions of such materials by students may be deemed to violate the above University policies and be subject to disciplinary action.

Code of Conduct

To better support all students, the Johns Hopkins University non-academic Student Conduct Code has been integrated and updated to include all divisions of the University. In addition, it is important to note that all AAP students are still accountable for the Code of Conduct for Advanced Academic Programs.

Title IX

Confidentiality and Mandatory Reporting
As an instructor, one of my responsibilities is to help create a safe and inclusive learning environment on our campus. I also have mandatory reporting responsibilities related to my role as a Responsible Employee under the Sexual Misconduct Policy & Procedures (which prohibits sexual harassment, sexual assault, relationship violence and stalking), as well as the General Anti-Harassment Policy (which prohibits all types of protected status based discrimination and harassment). It is my goal that you feel able to share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings. I will seek to keep information you share private to the greatest extent possible. However, I am required to share information that I learn of regarding sexual misconduct, as well as protected status based harassment and discrimination, with the Office of Institutional Equity (OIE). For a list of individuals/offices who can speak with you confidentially, please see Appendix B of the JHU Sexual Misconduct Policies and Laws.

For more information on both policies mentioned above, please see: JHU Relevant Policies, Codes, Statements and Principles. Please also note that certain faculty and other University community members also have a duty as a designated Campus Safety Authority under the Clery Act to notify campus security of certain crimes, as well as a duty under State law and University policy to report suspected child abuse and/or neglect.

2019 Fall Academic Calendar:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, June 17</td>
<td>Start of Registration: Fall Semester</td>
</tr>
<tr>
<td>Sunday, August 25</td>
<td>Last day of self-registration: Fall Term</td>
</tr>
<tr>
<td>Monday, August 26</td>
<td>Late Registration: 14-Week and First 7-Week Fall Semester</td>
</tr>
<tr>
<td>Tuesday, September 3</td>
<td>Last day to drop with 100% Tuition/Technology Fee Refund: 14-Week and First 7-Week Fall Semester</td>
</tr>
<tr>
<td>Wednesday, September 4</td>
<td>First day of class: 14-Week and First 7-Week Fall Semester</td>
</tr>
<tr>
<td>Tuesday, September 10</td>
<td>Last day to add classes: First 7-Week Fall Semester</td>
</tr>
<tr>
<td>Sunday, September 15</td>
<td>Last day to add classes: 14-Week Fall Semester</td>
</tr>
<tr>
<td>Friday, October 11</td>
<td>Last day to withdraw/audit courses: First 7-Week Fall Semester</td>
</tr>
<tr>
<td>Monday, October 14</td>
<td>Late Registration: Second 7-Week Fall Semester</td>
</tr>
<tr>
<td>Tuesday, October 22</td>
<td>Last day of class: First 7-Week Fall Semester</td>
</tr>
<tr>
<td>Tuesday, October 22</td>
<td>Last day to drop with 100% Tuition/Technology Fee Refund: Second 7-Week Fall Semester</td>
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<tr>
<td>Tuesday, October 23</td>
<td>First day of class: Second 7-Week Fall Semester</td>
</tr>
<tr>
<td>Tuesday, October 29</td>
<td>Last day to add classes: Second 7-Week Fall Semester</td>
</tr>
<tr>
<td>Thursday, October 31</td>
<td>Start of Registration: Spring Semester</td>
</tr>
<tr>
<td>Friday, November 15</td>
<td>Last day to withdraw/audit courses: 14-Week Fall Semester</td>
</tr>
<tr>
<td>Monday, November 25</td>
<td>No Classes – Thanksgiving Break</td>
</tr>
<tr>
<td>Sunday, December 1</td>
<td>Last day to withdraw/audit courses: Second 7-Week Fall Semester</td>
</tr>
<tr>
<td>Friday, November 29</td>
<td>Last day of class: 14-Week and Second 7-Week Fall Semester</td>
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<tr>
<td>Tuesday, December 17</td>
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