

Course Syllabus – **DRAFT**  
VERSION 1.1

**ISEN 414 - Innovation in Energy & Sustainability (0.5 credit)**

**Northwestern University**

**Instructors:**

TBD

**Possible Faculty Sponsors:**

<https://www.mccormick.northwestern.edu/research-faculty/directory/profiles/benz-holly.html>

<https://www.mccormick.northwestern.edu/research-faculty/directory/profiles/werwath-mark.html>

**Guest Lecturers:**

<https://www.linkedin.com/in/yann-de-vries-468134/>

<https://www.linkedin.com/in/robday/>

<https://www.linkedin.com/in/lagarrigue/>

<https://www.linkedin.com/in/yannkulp/>

<https://www.linkedin.com/in/dana-gunders/>

**Office Hours:** By appointment

**Class Room:** TBD

**Class Timing:** Required MSES Core - only offered in Spring Quarter

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**Course Synopsis:** This half-credit course is a special seminar to ensure that students have insight into the top trends in energy & sustainability innovation. This course content will be extremely dynamic and content & speakers will be updated just before the course is listed, however, the students will learn how to remain up to date on new trends and to determine their relevance for their area of specialization.

**Course Goals:**

- Gain a fresh perspective on the biggest innovations today and on the near horizon in energy & sustainability markets. At the time of initial syllabus draft, topics might include:
  - **Energy** - Blockchain & P2P
  - **Food** - Rise in Plant Based Food, Indoor Agriculture
  - **Water** - Desalination Technology
  - **Transportation** - On Demand Air Taxi
  - **Cross Industry** - Data analytics / AI/machine learning; IoT / ubiquitous sensors
- Build the ability to have a functional / working knowledge of the “new” without being expert
- Establish familiarity with frameworks that allow students to assess the importance of new trends for their market / business / areas of interest
- Determine what resources can be used to stay up to date on the latest innovations

**Grading/Assessment:**

Grading will be based on the following rubric:

Component	Weight	Details	Due
Effort and Attendance	20%	<p>Effort will be graded through attendance and class participation. <b>Attendance is required.</b> Students who miss one class (unexcused) cannot earn higher than a C in the course. Students with two unexcused absences will fail the course.</p> <p><i>10% of the course grade will be allocated based on the student effort in the "Bring Your Own Trend" topic in Week 4 / 5 of the class</i></p>	Ongoing
Opinion Papers	40%	Written, individual submissions. Students will submit a paper on the selected topic.	Week #2,3
Innovation Monitoring Plan	10%	<p>Students will be asked to provide a one page outline on how they will monitor, evaluate and act upon market innovations as they move into the working world. Students should identify specific goals and resources that will be used on an ongoing basis (considering the demands of full time work) to remain in touch with the latest in their market of choice.</p> <p>A sample plan will be provided but is only ~1 page in length.</p>	Week #5
Final Paper	30%	<p>Final papers will be short form (2-3 page) analyses of a trend from the point of view of a particular stakeholder. Students will draw their stakeholder from a preselected set of choices and will select a relevant trend to analyze.</p> <ul style="list-style-type: none"> <li>Stakeholder profiles will be specific – with a job title, organization and some basic data about the organization. Students are expected to research their “stakeholder” and then they should apply the frameworks covered in class to assess a trend.</li> <li>A set of potential trends to consider will be offered for each stakeholder. Students are able to agree an alternate trend with the instructor if desired.</li> </ul>	Week #5



### Grading Policy:

- Grades will be assigned based on all the work you have completed during the semester following the traditional practice of A=90-100, B=80-89, C=70-79, D=60-69, F<60.

### Course Readings:

- Will be provided to students in the weeks before class is offered based on latest trends
- In addition to readings, students will be required to either read newsletters and / or subscribe to podcasts. All students will be expected to sign up for the Bloomberg "Good Business" Newsletter (<https://login.bloomberg.com/newsletters>) or propose their own equivalent. In addition, they should select 2-3 relevant podcasts or newsletters that they will keep up on. Some suggestions are below. It is strongly recommended that at least one NEW
  - <https://www.greentechmedia.com/podcast/the-interchange>

## CLASS OUTLINE

Weekly Topic	Description
<b>1: Sustainability Trends (Part 1)</b>	<ul style="list-style-type: none"> <li>• Introduction to course logistics, grading and syllabus.</li> <li>• Guest Speaker(s) on biggest trends in Food &amp; Water (x3, 40 min)</li> <li>• Each guest speaker will have 25 min to cover:                             <ul style="list-style-type: none"> <li>○ What is the trend?</li> <li>○ Who is it relevant for? Why?</li> <li>○ How big could its impact be?</li> <li>○ What are the biggest risks &amp; opportunities?</li> <li>○ Who are the key players (individuals, countries, organizations) in this trend?</li> <li>○ How does it impact business, society, environment?</li> <li>○ Q&amp;A – 15 min</li> </ul> </li> </ul> <p><i>Timing allocations will vary depending upon instructor determination of relevance. The above categories are illustrative.</i></p>
<b>2: Sustainability Trends (Part 2)</b>	<ul style="list-style-type: none"> <li>• Guest Speakers on biggest sustainability trends in Energy, Transportation &amp; "Other"</li> <li>• Each guest speaker will have 25 min to cover:                             <ul style="list-style-type: none"> <li>○ What is the trend?</li> <li>○ Who is it relevant for? Why?</li> <li>○ How big could its impact be?</li> <li>○ What are the biggest risks &amp; opportunities?</li> <li>○ Who are the key players (individuals, countries, organizations) in this trend?</li> <li>○ How does it impact business, society, environment?</li> <li>○ Q&amp;A – 15 min</li> </ul> </li> </ul> <p><i>Timing allocations will vary depending upon instructor determination of relevance. The above categories are illustrative.</i></p> <p><b>Stakeholder Persona for Final Paper Assigned</b></p>



<p><b>3: Keeping up on Trends</b></p>	<ul style="list-style-type: none"> <li>● Introduction to critical tools (blogs, podcasts, conferences, magazines, online resources etc) to keep up on trends</li> <li>● Discussion on how to weed out noise / “Managing your feed”</li> <li>● In person networks – their importance, how to cultivate them</li> <li>● Guest speaker(s) for part of this course</li> </ul> <p><b>Trend for Final Paper Agreed with Instructor</b></p>
<p><b>4: Strategic Frameworks / BYO Trend</b></p>	<ul style="list-style-type: none"> <li>● Overview of strategic frameworks that can be deployed to evaluate relevance of trend for your company / area of focus</li> <li>● Application of frameworks in case sample</li> <li>● (Second 90 min of class time) Each student will be required to present on either their top information source or their top sustainability trend (randomly assigned). They will need to introduce their source and explain why they think it is the most important. (10 min each). The purpose is to spark debate &amp; discussion.</li> </ul>
<p><b>5: BYO Trend</b></p>	<ul style="list-style-type: none"> <li>● Continuation of class discussion. Each student will be required to present on either their top information source or their top sustainability trend (randomly assigned). They will need to introduce their source and explain why they think it is the most important. (10 min each). The purpose is to spark debate &amp; discussion.</li> </ul> <p><b>Innovation Monitoring Plan Due at end of Week #5</b> <b>Final Paper Due</b></p>