Spring 2020

ID 341-002: Sustainable Materials & Processes (Revised for Remote Learning)

Matthew Negron

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ID 341 “Sustainable Materials & Processes” (3 Credit Hours – Lecture/Lab)

*The syllabus for this course has been modified for remote learning.

Course Description:

The student will be introduced to concepts that pertain to sustainable strategies, sustainable product design, and design for the environment concepts. Throughout the course we will evaluate sustainable principles and how they relate to global, ecological, urban, built, material, and cultural parameters. During the course, there will be ongoing discussions about climate, energy issues, behavioral change, and sustainable values.

As part of the class, we will not use ANY paper and everything will be assigned and turned-in through digital mediums.

Prerequisite(s): Junior level or higher.
Professor’s Name: Matthew Negron
Department: Industrial Design
Location: In-Person: CKB 226 / Remote: Google Meets
Time: Tuesdays from 8:30am - 11:20am
E-mail: mcn3@njit.edu
Office Hours: By appointment only

Attendance Policy:

There are no excused absences. The accumulation of two unexcused absences will result in a loss of one letter grade. The accumulation of three unexcused absences will result in the student’s failure for the class. If the student has excused absence it is his/her responsibility to catch up with the rest of the class and make sure to ask for any handouts or assignments that may have been missed.

Grading Standards:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Superior (4.0), Superior</td>
</tr>
<tr>
<td>B+</td>
<td>Excellent (3.5), Excellent</td>
</tr>
<tr>
<td>B</td>
<td>Very Good (3.0), Very Good</td>
</tr>
<tr>
<td>C+</td>
<td>Good (2.5), Good</td>
</tr>
<tr>
<td>C</td>
<td>Acceptable (2.0), Acceptable</td>
</tr>
<tr>
<td>D</td>
<td>Minimum (1.0), Minimum</td>
</tr>
<tr>
<td>F</td>
<td>Inadequate (0.0), Inadequate</td>
</tr>
</tbody>
</table>

Grading

- Attendance & Participation | 11%
- Article Review & Assignments | 20%
- Life Cycle Assessment Poster, Group | 17%
- Design a Sustainability Approach & Incentive | 17%
- Sustainability Group Presentation | 17%
- TED Talk | 18%

ID 341 – Sustainable Materials and Processes | Spring 2020
Projects

**Life Cycle Assessment Poster**
An illustration to show a life cycle assessment of a specific product that is sold to consumers in mass (high volume and high production).

**Design a Sustainability Approach**
Create your own sustainability approach/process to determine the process of selecting materials, vendors, transportation, and tooling. The approach/process chosen can be a blend of the various sustainability approaches/processes that you have learned throughout the class. The process chosen can be tailored to a specific industry/product, but preferably the approach should be layered and dynamic enabling a method that can be used throughout the market.

**Submittals**
- Slide presentation
- One page summary describing your incentive
- Class presentation

**Sustainability Group Presentation**
The class will be broken into groups where each group needs to identify a sustainability problem with a product and devise a solution to address the situation. The problem can be simple or complex, but I would advise on choosing a very specific issue, which has layers to unravel and solve without a straightforward solution. The issues can range from bananas being wrapped in plastic, cell phones being purchased every few months, or eliminating ziploc bags. The solution should be well thought out and address the core problem, and not only the surface of the problem. The problem can be economic, habitual, religious, and etc.

**TED Presentation**
Create your own 8 minute TED Talk, which takes a different perspective on sustainability, and/or climate change. The conversation should not be direct facts or statistics, but rather focus on an issue, how it can be addressed, and the impacts it will have on the community, region, and/or world.

**What is a TED Talk?**
The purpose of a TED Talk is to spread ideas and inspire and motivate its audience. TED talks are held on various disciplines like science, education, history, environmental issues, productivity tips, business, technology, etc. It brings together people from all corners of the world - people from all walks of life and from different cultures and places.
The speaker aims to talk about his vision or idea and helps the audience to entertain new thoughts, ideas, and perspectives. Therefore, TED Talks help in gaining new knowledge and ideas, and how they can be used to lead a better life.

Assignments

**Article Reviews, Bi-Weekly**

Articles/Podcasts for reading/listening and review will be assigned on a bi-weekly basis, which will need to be read in full and a three-page response is required to the article. The (3) pages should be double spaced, 12 point font, and 1” margins. The article reviews are open-ended, but should reflect and review the content of the article, and should provide agreements/disagreements with supporting research/facts. Opinions are welcomed but should have reasoning for the opinion. Each review should have a one to a two-paragraph summary of the article, an evaluation of the article, new insights offered, and how can the information, if possible, be applied to your career.

**Design a Sustainability Incentive**

Create an incentive to encourage companies or countries to act in a sustainable way. Companies and companies can be forced to comply with a fine or regulation, but there are other potential incentives to have to cooperate and encourage entities to act in the best interest of future generations. This is an open-ended environment and your solution can be written, visualized, modeled, and etc. Please be prepared to present this to the class. There should be a visual synopsis that encompasses your incentive.

Class Schedule

<table>
<thead>
<tr>
<th>Class #</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01/21</td>
<td><em>Class Introduction</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Syllabus Review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Discussion</td>
</tr>
<tr>
<td>2</td>
<td>01/28</td>
<td><em>Submit the following:</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>● <a href="#">Carbon Footprint Calculator</a></td>
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<tr>
<td></td>
<td></td>
<td>● <a href="#">Secondary Carbon Footprint Calculator</a></td>
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<tr>
<td></td>
<td></td>
<td>● <a href="#">Project Sunroof</a></td>
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</tbody>
</table>
|         |        | *Review the “California King Tides Project”*
|         |        | *Class Discussion*                        |
|         |        | ● Review the submitted articles and “California King Tides Project” with open discussion. |

ID 341 – Sustainable Materials and Processes | Spring 2020
Discuss the Sea Level Rise
Life Cycle Assessment

Submit the following:
- Greenhouse Gas Protocol, Scope 3 Evaluator

Article Review Due:
What are the economic impact and design implications of the diminishing resources throughout the world? What practices can be implemented to stretch the natural resources and replace them long-term?
- Podcasts
  1) Planet Money, Episode 965: Das Green Old Deal
  2) TED Talk, How supply chain transparency can help the planet
  3) TED Talk, Climate change will displace millions. Here’s how we prepare.

Class Discussion
- Review of Podcasts
- Slide Desk
  - Cradle-to-Cradle
  - BIFMA level
  - Sustainable everyday products
  - Cradle-to-Cradle
  - Design for the environment

John Cays, Guest Lecturer, Class Starts at 8:45 AM

Article Review Due
- CCG BIFMA Demystifying Presentation (Read the Presentation)
- The 6 Ways Business Leaders Talk About Sustainability

Design a Sustainability Incentive

LCA Diagram Due / Presentation of Diagram

No Class

CCG BIFMA Demystifying Presentation
9  03/17  No Classes, Spring Break

10  03/24  TED Talk Concept Submission
  ● (3) paragraph summary of your TED Talk
  ● (1) page outline showing the flow of your talk

Peer Review of LCA Diagram Due
  ● To find out who you are reviewing check the spreadsheet inside
    ID 341, Class Folder, Spring 2020 > Articles & Podcasts Review >
    Due on 03/24, LCA Peer Review

11  03/31  Sustainability Approach Due (see above and examples in folder)
  ● This will be presented on Google Meets along with open
    discussion with peers.

12  04/07  Article Review Due
  ● The Fastest Growing Cause for Shareholders is Sustainability
  ● 3M’s Sustainability Innovation Machine
  ● Luxury Brands Can No Longer Ignore Sustainability

13  04/14  Sustainability Incentive Due (see above and examples in folder)
  ● This will be presented on Google Meets along with open
    discussion with peers.

14  04/21  Article Review Due
  ● Supply Chain, Not Sustainability, Should Manage Your Carbon
    Footprint
  ● How Our Company Connected Our Strategy to Sustainability
    Goals
  ● A Better Scorecard for Your Company’s Sustainability Efforts

Group Presentation Due (see above)
  ● Slideshow should be submitted in Google Drive
  ● The presentation will be presented via Google Meets

15  04/28  TED Talk Presentation
  ● Submit a final outline on Google Drive, which should be (3)
    pages
  ● Submit a final (5) paragraph summary on Google Drive of your
    TED Talk
  ● The TED talk will be presented virtually in class through Google
    Meets, which should be 7 - 10 minutes

16  05/05  Friday Classes Meet

ID 341 – Sustainable Materials and Processes | Spring 2020
*Note: Course Change Policy: Schedule subject to change at the discretion of the Professor and to benefit the class. Changes will be communicated in class and updates to the shared Google Drive folder.

Extra Help Session (s):
As necessary and by appointment.

Right to Use Artwork:
The college reserves the right to use student work and photographs or videotapes of students and their work for display, documentation, instruction and publications or other materials about the college. Only NJIT faculty or authorized staff may remove work from walls or displays.

Academic Conduct and Honesty:
Each student is responsible for reading and conducting within the parameters of NJIT University Code on Academic Integrity. Please refer to NJIT website for the text of the policy.