_SHORT COURSE DESCRIPTION_
Traditionally, industries have pursued smarter, faster, cheaper, and more productive performance rather than sustainability. This course will discuss about how the technology and society have changed and affected each other. Furthermore, with the lightning speed of technological evolution we will cover how we could run our technology and society with sustainability. Close collaborations between business sectors, OEMs, and suppliers could accelerate towards sustainable future. Industrial Ecology (IE) is an interdisciplinary field that focuses on the sustainable collaboration between environment, economy, and technology. The central idea is the analogy between natural and socio-technical systems. The word ‘industrial’ does not only refer to industrial complexes, but also more generally to how humans use natural resources in the design and production of goods and services. Ecology refers to the concept that our industrial systems should incorporate principles exhibited within natural ecosystems. Industrial ecology proposes not to see industrial systems (for example, a factory, an eco-region, or national/global economy) as being separated from the biosphere, but to consider it as part of an ecosystem based on infrastructural capital rather than on natural capital. As natural systems do not have waste in them, we should model our systems after natural ones to make them sustainable and to bring prosperity in our surrounding environments.

_READING MATERIALS_
Reading materials will be provided in advance during the course. All the lecture notes and other course materials will be provided in the class. Background readings include:

_COURSE REQUIREMENTS AND GRADING_
Attendance and active participation in class is very important for the completion of the course. Open discussions are encouraged and will be arranged on suitable topics. Academic dishonesty, plagiarism, poor team work, and less than 80% attendance (without prior information and professor’s consent) leads a student to fail.

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>ATTENDANCE</th>
<th>EXCURSION</th>
<th>CASE STUDY</th>
<th>PRESENTATION</th>
<th>GROUP WORK</th>
<th>PARTICIPATION</th>
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</thead>
<tbody>
<tr>
<td>WEIGHT</td>
<td>10%</td>
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<tr>
<td>NOTE</td>
<td>&lt; 80 % FAIL</td>
<td>Preparation, participation &amp; presentation</td>
<td>Based on the topic Innovating through Collaboration/Smart/Green Revolutions and projects around the world</td>
<td>Case study presentation</td>
<td>Group assignments</td>
<td>Active discussion &amp; behavior</td>
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</tbody>
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_COURSE SCHEDULE_

— WEEK I —

Thursday (27 June)
Introduction
Impact of technology on society
Types of impacts of technology
What is Industrial Ecology?
What is Sustainability?

Friday (28 June)
Why do we need Sustainability?
How to attain Sustainability?
What is Sustainable Manufacturing?

– WEEK II –

Monday (1 July)
Technology roles for Product Life Cycle Management
Bio-Mimicry
Eco-Industrial Parks
Understanding how stuff work

Tuesday (2 July)
Sustainable documentaries:
  • Tapped
  • The Future of Food
  • Gasland
  • Who killed the Electric Car
  • Blue Vinyl
Technology spectrum – where are we in the state of the art?

Wednesday (3 July)
Sustainable Transport System - Automobile Industry:
  • Smart and Green Cars
  • Case Studies on Honda, Toyota and Hydrogen cars
  • Design for the Environment
  • Design for Recycling
Bio Fuels

Thursday (4 July)
Visit to Samsung Innovation Museum / any other interesting site

– WEEK III –

Monday (8 July)
Eco City
Case study on five cities going green: Ulsan, Korea
Case study on smart cities: Pangyo, Korea
Case study on green transport in Korea
Case study on water resource management in Korea
Case study on Eco-Industrial Park in Korea

Tuesday (9 July)
Pollution Prevention
  • Pollution prevention approaches
  • Measuring pollution prevention
  • Pollution prevention tools and calculators
Waste Management
Plastic Bottles and sustainability
Role play
Wednesday (10 July)
Green buildings and sustainable infrastructure
Global warming
Deforestation
Teams/Groups Division
  • Preparation for next day’s Excursion

Thursday (11 July)
Sustainability Excursion:
  • How much aware we are?
  • Spreading Awareness

-- WEEK IV --

Monday (15 July)
Groups’ Discussion about the excursion
  • Presentation on the excursion and experience
Recycling Workshop

Tuesday (16 July)
Students’ Case Study
  • Innovating through Collaboration
  • Smart/Green Revolutions and projects around the world

Wednesday (17 July)
Various Smart and Green Revolutions and projects around the world
  • Automobile Industry
  • Electronics Industry
  • E-commerce
  • Service Industry
  • Fashion Industry

Thursday (18 July)
Students Presentations – I

Friday (19 July)
Students Presentations – II
Final Remarks/discussions and Wrap-up