



## Course Syllabus: Principles of Env.Sustainability - EnSE 205

<b>Division</b>	Biological and Environmental Sciences & Engineering Division
<b>Course Number</b>	EnSE 205
<b>Course Title</b>	Principles of Env.Sustainability
<b>Academic Semester</b>	Spring
<b>Academic Year</b>	2016/2017
<b>Semester Start Date</b>	01/22/2017
<b>Semester End Date</b>	05/18/2017
<b>Class Schedule</b> (Days & Time)	02:30 PM - 04:00 PM   Sun Thu

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Kim Choon NG	kim.ng@kaust.edu.sa	+966128084955	4232, 4, Al-Jazri (bldg. 4)	<b>15.30 to 17.00 pm, Daily.</b> Note: The first lesson of EnSE 205 begins on the week starting from 1 February, 2017.

Teaching Assistant(s)	
Name	Email
Dr Muhammad Wakil Shahzad, Dr Muhammad Burhan	muhammad.shahzad@kaust.edu.sa; muhammad.burhan@kaust.edu.sa

### Course Information

<p><b>Comprehensive Course Description</b></p>	<p>The course is general in nature, covering the general understanding of what constitutes to the rates of renewable resource harvest, pollution creation, and non-renewable resource depletion where these processes can be continued indefinitely, i.e., without sacrificing the needs of future generations. It is a course to better equipped students for making informed decisions and taking economically feasible actions now that are in the interests of protecting the natural world.</p> <p>We will be looking into the chronological activities of human activities by examining the quantifiable parameters such as the green-house gases, climate change, loss of agricultural land to erosion, etc. We want to generate awareness to the possible irreversible situations of the fragile world environment, with emphasis on preserving the capability of the environment to recover itself and not causing too much climate changes.</p> <p>Environment sustainability is an important topic at the present time, as seen by the current COP21 that is taking place in Paris in early December, 2015. Based on scientific evidence, we realize that damages to our world can be catastrophic if no appropriate actions are adopted now. For example, many human activities conducted hitherto can potentially be causing (i) damage rainforests and woodlands through logging and agricultural clearing, (ii) seawater pollution (acidification) and over-fishing of oceans, rivers and lakes, (iii) polluting the atmosphere through the burning of fossil fuels, (iv) damaging prime agricultural and cultivated land through the use of unsustainable farming practices, etc.</p> <p>With clear environmental policy and targets (e.g., the 2oC limit for average rise in the ambient temperature), there is a good chance that policy incorporated by countries to individual corporation can ensure indefinite growth in the businesses or economic growth without jeopardizing our environment and all countries can have GDP growth levels that are sustainable.</p> <p>Students are required to conduct three (3) assignments where they can exercise independent studies, either alone or in group of three. In these studies, they will propose solution(s) and articulate methodologies in solving problems of interest to our human activities that currently deemed "unsustainable".</p> <p><b>GOALS AND OBJECTIVES</b> Impart deeper undertsanding of environmental sustainability - a wiser use of resources in the context of economic, social and environment nexus.</p> <p><b>REQUIRED KNOWLEDGE</b> Basic engineering science knowlwdge, concern for environment, and open mind to project-based learning.</p> <p><b>REFERENCE TEXTS</b> As per prescription during the lectures.</p> <p><b>METHOD OF EVALUATION</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Percentages</td> <td style="width: 10%; text-align: center;">%</td> <td style="width: 60%;">Graded content (Assignments, Oral quizzes, Projects, Mid</td> </tr> <tr> <td>(80%)</td> <td></td> <td>Attendance and participation, etc)</td> </tr> <tr> <td>(10%)</td> <td></td> <td>Assignments</td> </tr> <tr> <td>(10%)</td> <td></td> <td>Attendance</td> </tr> <tr> <td></td> <td></td> <td>Participation in class</td> </tr> </table> <p><b>COURSE REQUIREMENTS</b> <b>Assignments</b> – A total of 3 assignments will be given. The first assignment is in February, 2nd assignment in March and 3rd assignment in April, 2017. Each assignment must be handed in after 4 weeks from the date of issue. Each assignment report can be based on an individual effort or a combined effort from a group of 2 or 3 students per assignment</p> <p>Reading materials are as prescribed in the lecture slides, open literature, etc.</p> <p><b>Course Policies</b> (Absences, Assignments, late work policy, etc.)</p> <p>Submission of assignments must be on time (typically 4 weeks) unless a good reason is offered.</p> <p><b>Additional Information</b> None.</p> <p><b>NOTE</b> The instructor reserves the right to make changes to this syllabus as necessary.</p>	Percentages	%	Graded content (Assignments, Oral quizzes, Projects, Mid	(80%)		Attendance and participation, etc)	(10%)		Assignments	(10%)		Attendance			Participation in class
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<p><b>Course Description from Program Guide</b></p>	<p>Fundamental aspects of sustainability, energy cycles and accounting. Carbon cycle, emissions and sequestration. Concepts of green design. Life-cycle analysis.</p>															
<p><b>Goals and Objectives</b></p>	<p>The objectives of this introductory course are to give awareness to students on the "stresses" created by human activities such as relentless economic developments with no regards to the environment. There is a finite limit the natural environemnet can withstand our dumping of green house gases through our quest for energy consumption.</p> <p>Student will learn about ways to protect our environment through 3 assignment problems.</p>															
<p><b>Required Knowledge</b></p>	<p>General readings from open literature.</p>															
<p><b>Reference Texts</b></p>	<p>No particular text book. Follow th eslides of professor.</p>															

<b>Method of evaluation</b>	10.00% - Presentation 10.00% - Oral presentation 80.00% - Homework /Assignments
<b>Nature of the assignments</b>	3 written assignments are to be submitted within 3/4 weeks from the date of issue. The report can be an individual effort or a combined effort by a group up to 3 students.
<b>Course Policies</b>	A zero mark will be given to non-submission of written report. (i) Assignment 1 - 25% (2) Assignment 2 - 25% (3) Assignment 3 - 30% Attendance in class (presentation)- 10% Participation in class discussion (oral presentation) - 10%.
<b>Additional Information</b>	None.

### Tentative Course Schedule

*(Time, topic/emphasis & resources)*

Week	Lectures	Topic
1	Sun 01/22/2017 Thu 01/26/2017	No class.
2	Sun 01/29/2017 Thu 02/02/2017	No class on 29th Jan 2017. Class commences on 2nd Feb, 2017. Chapter 1
3	Sun 02/05/2017 Thu 02/09/2017	Introductory lecture (Chapter 1) Assignment #1 (Problem statement)
4	Sun 02/12/2017 Thu 02/16/2017	Discussion on Assignment #1. Chapter 2
5	Sun 02/19/2017 Thu 02/23/2017	Chapter 2 Discussion on Assignment #1.
6	Sun 02/26/2017 Thu 03/02/2017	Chapter 3 Presentation of assignment # 1 - 10 minutes per group.
7	Sun 03/05/2017 Thu 03/09/2017	Presentation from groups on Assignment # 1. Chapter 3. Assignment #2 (problem statement) Chapter 4
8	Sun 03/12/2017 Thu 03/16/2017	Chapter 4 Discussion of assignment # 2
9	Sun 03/19/2017 Thu 03/23/2017	Discussion of assignment #2 Chapter 4. Presentation of assignment #2
10	Sun 03/26/2017 Thu 03/30/2017	Presentation of assignment 2
11	Sun 04/02/2017 Thu 04/06/2017	Assignment # 3 (problem statement) Chapter 5
12	Sun 04/09/2017 Thu 04/13/2017	chapter 5 Discussion on assignment #3.
13	Sun 04/16/2017 Thu 04/20/2017	Chapter 5
14	Sun 04/23/2017 Thu 04/27/2017	Free time to work on assignment #3 Discussion of Assignment # 3
15	Sun 04/30/2017 Thu 05/04/2017	Group presentation for assignment #3.
16	Sun 05/07/2017 Thu 05/11/2017	Group presentation for assignment #3 - each group has 15 minutes.
17	Sun 05/14/2017 Thu 05/18/2017	Class ends.
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**Note**

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