

## Environmental Sustainability - Course Syllabus

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**Course Number:** ENSE 205

**Course Title:** Environmental Sustainability

**Academic Semester:** Spring

**Academic Year:** 2015/ 2016

**Semester Start Date:** Jan, 24, 2016

**Semester End Date:** May, 19, 2016

**Class Schedule:** Monday and Wednesday

**Classroom Number:**

**Instructor(s) Name(s):** Prof. Kim Choon Ng

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**Office Location:** Bldg 4 level 4 Rm4232.

### COURSE DESCRIPTION FROM PROGRAM GUIDE

Fundamental aspects of sustainability, energy cycles and accounting. Carbon cycle, emissions and sequestration. Concepts of green design. Life-cycle analysis.

### COMPREHENSIVE COURSE DESCRIPTION

EnSE 205 Principles of Environmental Sustainability (3-0-3)

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.

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.

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.

With clear environmental policy and targets (e.g., the 2<sup>o</sup>C 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.

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”.

## GOALS AND OBJECTIVES

Impart deeper understanding of environmental sustainability - a wiser use of resources in the context of economic, social and environment nexus.

## REQUIRED KNOWLEDGE

Basic engineering science knowledge, concern for environment, and open mind to project-based learning.

## REFERENCE TEXTS

As per prescription during the lectures.

## METHOD OF EVALUATION

Percentages %	Graded content (Assignments, Oral quizzes, Projects, Midterm exam, Final Exam, Attendance and participation, etc)
(80%)	<b>Assignments</b>
(10%)	<b>Attendance</b>
(10%)	<b>Participation in class</b>

## COURSE REQUIREMENTS

**Assignments** – A total of 3 assignments will be given. The first assignment is in February, 2<sup>nd</sup> in March and 3<sup>rd</sup> in April, 2016. Each assignment must be handed in after 3 to 4 weeks from the date of issue.

Reading materials are as prescribed in the lecture slides, open literature, etc.

### **Course Policies**

Submission of assignments must be on time (typically 3 to 4 weeks) unless a good reason is offered.

### **NOTE**

The instructor reserves the right to make changes to this syllabus as necessary.