

PRO-GREEN CERTIFICATE/ DIPLOMA IN GREEN TECHNOLOGIES

PRGR 602 Green Technologies: Systems Approach to Sustainability and Management

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Course Description:

This course addresses the system approach to emerging sustainable technologies and its applications in the building industry in twelve modules. A number of modules are focused on the knowledge base for the current technologies, the challenges, risks and suitability while few modules are focused on the application side of the technology using analysis tools. Each module will be followed by a brief assignment or exercise which is due at the start of the following class. A final project will take place at the completion of the 12th module.

Required Texts:

“Fundamentals of Integrated Design for Sustainable Building”, by Marian Keeler and Bill Burke. ISBN: 978-0470152935.

Optional readings:

1. *“Active and Passive Control Systems”*, by Vaughn Bradshaw. ISBN: 978-0471689653.
2. *“Heating, Cooling, Lighting: Sustainable Design Methods for Architects”* by Norbert Lechner. ISBN: 978-0470048092.
3. *“Cradle to Cradle: Remaking the Way We Make Things”* by William McDonough. ISBN: 978-0865475878.

Prerequisites:

Bachelor’s degree in Science or Engineering.

Course Requirements:

As a student in this course, it is expected that you will actively participate in the weekly online discussion boards (a minimum of two postings a week) and complete assignments on time. Assignments are due no later than the assigned due date.

Exceptions to this policy will require explicit permission of the instructor *in writing*.

Course Expectations:

- Students in this course are expected to be active learners and participants, requiring all students to take an active role in their own learning and to share the learning process with the class. Evidence of active learning includes:
 - **Reading all assigned materials** and making note of questions, areas of interest, and connections you find to other readings.
 - **Active participation in weekly discussions**, allowing each student to test his or her own assumptions about student development as well as expand the worldview of others in the class. Each member has an equally important story to share based on his or her own experiences and student will benefit from the viewpoints of their classmates.

- **Critical thinking** to the presented materials and arguments and the development of a personal opinions that are backed by factual data and validated information.

Grading & Assignments:

Value	Task	Due Date
30%	(5x) Assignments	As shown in schedule
10%	(5x) Active participation in discussion postings	Each week
30%	(5x) Assessments	Bi-weekly
10%	(1x) Pre-Final Project presentation (Group Feedback)	Week 11
20%	(1x) Final Project Presentations	Week 12
100%	Total Points	
Grading Scale	A = 100-93 A- = 92-90 B+ = 89-87 B = 86-83 B- = 82-80 C+ = 79-77 C = 76-73 C- = 72-70 F = 62 and below	

- **Evaluation:** All graded activities will require students to perform against the standard of professionalism, which implies (at least): accuracy, neatness, correct written and spoken form and style, punctuality, resourcefulness, and creativity.
- **Online Postings/Discussions:** All course materials will be posted online at the beginning of each week. Students are required to participate in weekly online discussions on BB as part of their attendance. The online discussions will involve providing your opinion on a specific topic, debates, role plays, research, etc
- **APA:** All submitted papers must be double-spaced, 12 point font and in proper APA style. Students are required to follow the *Publication Manual of the American Psychological Association, 5th edition (2001)*.
- **Due Dates:** Assignments are due the date listed. Late assignments will receive a point penalty equivalent to one letter grade. After one week the assignment will not be accepted and a zero grade will be recorded.

Course Learning Outcomes:

This course offers the opportunity to understand the impact of sustainable design & technologies in shaping the built environment. Through the use of different learning methods such as peer to peer discussion boards, assignments, research and readings - each student should be able to:

1. Describe the fundamentals of integrated building design, history and emergence of green buildings
2. Understand the sources of chemicals in the environment, humans and buildings, IAQ and IEQ issues.
3. Understand the basic energy principles and energy efficient building design
4. Understand the resource use and efficiencies in buildings, material selection and certification, water quality and conservation

5. Evaluate case studies in sustainable neighborhoods, renewable energy technologies, and green building
6. Analyze the different types of rating Systems and calculators and understand the basics of Life Cycle Assessment (LCA)
7. Understand waste Impacts, construction demolition and waste management
8. Apply the knowledge gained using a project relevant to your organization.

Course objectives

The objectives of this course are:

1. To provide students with a general overview to the fundamentals of integrated design for sustainable buildings.
2. To help students understand the basics of specific issues such as energy, water and building in advance of their specialization.
3. To develop hands on experience through the evaluation of case studies, applied learning and projects relevant to the student's background.