STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
AREA 424 – SUSTAINABLE BUILDG RATINGS AND CERTIFICATIONS

Created by: Cullen Haskins

Updated by:

Canino School of Engineering Technology

Department: MECHANICAL ENGINEERING TECHNOLOGY

Semester/Year: FALL 2020

A. **TITLE**: SUSTAINBLE BUILDING RATINGS AND CERTIFICATIONS

B. **COURSE NUMBER:** AREA 424

C. **CREDIT HOURS: 3 credit hour(s) per week for 15 weeks**

☒ One hour (50 minutes) of lecture per week 3
☐ Two to three hours of lab or clinical per week
☐ Two hours of recitation per week
☐ 40 hours of internship

D. **WRITING INTENSIVE COURSE**: Yes ☐ No ☒

E. **GER CATEGORY: None:** ☒ **Yes:** GER
***If course satisfies more than one*:** GER

F. **SEMESTER(S) OFFERED: Fall** ☒ **Spring** ☐ **Fall & Spring** ☐

G. **COURSE DESCRIPTION:**

This course explores popular sustainable building rating and certification systems comparing their requirements, pros, and cons. The vitality and viability of these systems will be analyzed, compared, and discussed. Students will work as a group to perform a conceptual implementation and documentation of one of the rating systems. Examples of these ratings or certification systems include Energy Star, LEED, Green Globes, Living Building Challenge, Net Zero Energy, and Passive House Institute US.

H. **PRE-REQUISITES: None** ☐ **Yes** ☒ **If yes, list below:**

AREA 324/CMGT 324 Sustainable Construction

CO-REQUISITES: None ☒ **Yes** ☐ **If yes, list below:**

I. STUDENT LEARNING OUTCOMES: *(see key below)*

By the end of this course, the student will be able to:

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER*** *[If Applicable]*	***ISLO & SUBSETS***	
A. Demonstrate an ability to communicate detailed knowledge of sustainable building rating and certification systems, and make and justify design decisions			1-Comm Skills 2-Crit Think ISLO	W PS Subsets Subsets
B. Demonstrate an ability to qualify and quantify the quality of a rating system and make recommendations based on client interest(s)			2-Crit Think ISLO ISLO	CA Subsets Subsets Subsets
C. Demonstrate an ability to apply core concepts or requirements of a rating or certification system to a real or conceptual building project			5-Ind, Prof, Disc, Know Skills ISLO ISLO	Subsets Subsets Subsets Subsets
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KEY	Institutional Student Learning Outcomes [ISLO 1 – 5]
ISLO #	ISLO & Subsets
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

*Include program objectives if applicable. Please consult with Program Coordinator

J. APPLIED LEARNING COMPONENT: Yes ☒ No ☐

If YES, select one or more of the following categories:

- ☒ Classroom/Lab
- ☐ Internship
- ☐ Clinical Placement
- ☐ Practicum
- ☐ Service Learning
- ☐ Community Service
- ☐ Civic Engagement
- ☐ Creative Works/Senior Project
- ☐ Research
- ☐ Entrepreneurship (program, class, project)

K. TEXTS:

L. REFERENCES:

LEED Reference Guide

Living Building Challenge

Passive House Institute

M. EQUIPMENT: None ☒ Needed:

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Primarily Project Based. Possibly Also Homework, Quizzes, & Exams

P. DETAILED COURSE OUTLINE:

1. Sustainable Building Codes or Certifications
- **a. Energy Star Rating**
- **b. Leadership in Energy and Environmental Design (LEED)**
- **c. Green Globes**
- **d. Living Building Challenge (LBC)**
- **e. Net Zero Energy Building (NZEB)**
- **f. Passive House Institute US (PHIUS)**

2. Location of Project
- **a. Which rating or certifications care**
- **b. How to satisfy these requirements**

3. Water Use
- **a. Which rating or certifications care**
- **b. How to satisfy these requirements**

4. Energy Use
- **a. Passive House cares about this and nothing else**

i. Discussion of Passive Solar Building Principles
b. NetZero cares about this and nothing else
c. All codes focus on using less energy – key is how much less
d. How to satisfy these requirements
e. Design Optimization to minimize energy usage

5. Indoor Environment
   a. Which rating or certifications care
   b. How to satisfy these requirements
6. Materials Use and Sourcing
   a. Which rating or certifications care
   b. How to satisfy these requirements
7. Miscellaneous Concerns
   a. Certification of existing building (major retrofits…)
   b. Other areas of rating system concern not covered above
8. When you're spending your money…
   a. Which codes or certifications are worth bothering with?
   b. Is this location/project specific?
   c. Do any of these ratings or certifications put us on track for the Paris Climate Agreement?
9. Rating System Application (multiple options)
   a. Analyze an existing building under a specific rating system
   b. Optimize an existing building to meet a specific rating system
   c. Design a project from scratch to meet a specific rating system

Q. LABORATORY OUTLINE: None ☒ Yes ☐