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

COURSE OUTLINE

ACHP 415 – COMMISSIONING of MECHANICAL SYSTEMS

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CANINO SCHOOL OF ENGINEERING TECHNOLOGY
MECHANICAL AND ENERGY TECHNOLOGY
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A. TITLE: Commissioning of Mechanical Systems

B. COURSE NUMBER: ACHP 415

C. CREDIT HOURS: 3

D. WRITING INTENSIVE COURSE: NA

E. WEEKS PER SEMESTER: 15

F. SEMESTER(S) OFFERED: Fall/Spring

G. HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:
3 – 1 hour lectures per week

H. CATALOG DESCRIPTION:

This course explores the modern building practice of implementing a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies. Students develop and analyze the owner's project requirements and translate these requirements into a commissioning plan. Students will transform the commissioning plan into an operational and maintenance plan for the building owner and operators.

I. PRE-REQUISITES/CO-COURSES: Pre-requisite: ACHP 324, HVAC Load Calculation & Energy Code

J. STUDENT LEARNING OUTCOMES: Students will be able to:

Course Objective	*Institutional SLO*
a. Evaluate building requirements and translate into a commissioning plan	2. Crit. Thinking 3. Prof. Competence
b. Articulate the roles of management and team members in commissioning	1. Communication 3. Prof. Competence
c. Determine the cost and savings based on a commissioning plan	2. Crit. Thinking 3. Prof. Competence
d. Demonstrate in a portfolio all documentation necessary to commissioning a building	1. Communication 3. Prof. Competence

K. TEXTS: Instructor developed material

L. REFERENCES: 2014 ASHRAE Handbook - Applications, ASHRAE, 2014

ASHRAE. 2005. The commissioning process. ASHRAE *Guideline* 0-2005.

ASHRAE. 1993. Preparation of operating and maintenance documentation for building systems. ASHRAE *Guideline* 4-1993.

Claridge, D.E., C.H. Culp, M. Liu, S. Deng, W.D. Turner, and J.S. Haberl. 2000. Campus-wide continuous commissioning of university buildings. *Proceeding of the ACEEE 2000 Summer Study on Energy Efficiency in Buildings*, Pacific Grove, CA, pp. 3.101-3.112.

Claridge, D.E., W.D. Turner, M. Liu, S. Deng, G. Wei, C.H. Culp, H. Chen, and S.Y. Cho. 2004. Is commissioning once enough? *Energy Engineering*101(4):7-19.

Haasl, T. and T. Sharp. 1999. *A practical guide for commissioning existing buildings*. ORNL/TM-1999/34. Portland Energy Conservation, OR, and Oak Ridge National Laboratory, Oak Ridge, TN.

M. EQUIPMENT: Technology enhanced classroom

N. GRADING METHOD: A – F

O. MEASURE CRITERIA/METHODS:

- Homework
- Exams
- Oral Presentation/ Research Paper/Research Project
- Portfolio

P. DETAILED TOPICAL OUTLINE:

I. Commissioning objectives
   A. Building owners requirements
   B. Occupant requirements
   C. Operator/ maintenance requirements
   D. Verifying design compliance
II. Management and responsibilities
   A. Pre design
   B. Construction
   C. Team members and roles
   D. Post construction
III. Commissioning Phases
   A. Pre-design phase activities
   B. Design phase activities
   C. Construction phase activities
   D. Occupancy and operation phase activities
IV. Cost of commissioning
   A. Design phase
   B. Construction phase

C. Occupancy phase

V. Existing Building re-commissioning or retro-commissioning
   A. Process
   B. Documentation
   C. Cost
   D. Objectives for older buildings

VI. Case Studies
   A. Discussions of problems and successes in commissioned building
   B. Student developed commissioning plan for new building
   C. Student developed plan for older buildings
   D. Guest lectures by practicing engineers who perform commissioning
   E. Field trips to see commissioning in action