REGULAR COURSE SYLLABUS

School of: Professional Studies
Department: Engineering Technology
Prefix & Course Number: MET 4480 Crosslisted With*: N/A
Course Title: Air Conditioning/Refrigeration
Banner course title (30 characters): Air Conditioning/Refrigeration

Check All That Apply:  
- Required for Major:  
- Required for Minor:  
- Specified Elective:  
- Required for Concentration:  
- Elective: X  
- Service Course:  

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

**Federal Credit Hour Definition:** A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:
(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward the award of credit hours. 34CFR 600.2 (11/1/2010)

Credit Hours: 3(3+0)

Face-to-Face or Equivalent Hours per course:
- Lecture 45
- Lab____
- Internship ___
- Practicum ____
- Other (please specify type and hours):
  
  Additional Student Work Hours per course: 90

Schedule Type: L  Grade Mode: L

Variable topics umbrella course: No X Yes  
If Yes, number of credit hours allowed ___

Specified repeatable course: No X  Yes ___

APPROVED:

Department Chair OR Program Director
[Signature]  Date 01/29/2014

Dean OR Associate Dean
[Signature]  Date 01/31/14

Associate VP, Academic and Student Affairs
[Signature]  Date 03/3/14

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: MET 4480

Prerequisite(s): MET3110 and MET3125, with grades of "C" or better
Corequisite(s): ______
Prerequisite(s) or Corequisite(s): ______

Banner Enforced:
Prerequisite(s): MET3110 and MET3125, with grades of "C" or better
Corequisite(s): ______
Prerequisite(s) or Corequisite(s): ______

Registration restrictions: Level _____ Class _____ Program/Major _____ Student attribute ______

Catalog Course Description:
In this course, Thermodynamics and Heat Transfer principles to the analysis and design of refrigeration systems and comfort conditioning systems for buildings are introduced. Refrigeration cycles are studied. Operation and rating of system components are evaluated with specific emphasis on heat flow in condensers, evaporators, and cooling towers. Temperature and humidity control along with air handling equipment and ducting, are studied.

Specific Variable Topics Course Description (if applicable, umbrella course description included above):

Required Reading and Other Materials will be equivalent to:
McQuisten, F.C., Parker, J.D. Heating, Ventilating, and Air Conditioning (Analysis and Design, John Wiley & Sons.

Specific, Measurable Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:
1. Demonstrate an understanding of heating, air conditioning, and refrigeration system design and analysis, i.e., HVAC systems.
2. Relate heat transfer principles, thermodynamic laws and heat convection, conduction, and radiation principles to HVAC system analysis and design.
3. Analyze heat and mass transfer in A/C systems.
4. Examine various refrigeration and air conditioning systems used in present domestic and commercial applications and evaluate the advantage and disadvantage of each system.
5. Construct HVAC systems with emphasis on balancing for temperature and humidity control.
6. Categorize and design hydronic systems.

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):

I. Review of Thermodynamics, Fluid Flow, and Heat Transfer

II. Fundamentals of Refrigeration
   A. Heat
   B. Humidity
   C. Power
   D. Safety

III. Refrigeration System
   A. Domestic
   B. Commercial

IV. Air Conditioning
   A. Heating
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B. Cooling

V. Installation and Servicing
   A. Equipment
   B. Balancing

**Evaluation of Student Performance:**
1. Quizzes & Participation
2. Homework
3. Exams
4. Design report