New Course Request

Check Appropriate Boxes: Undergraduate credit ☑ Graduate credit ☐ Professional credit ☐

1. School/Division: School of Engineering and Technology
2. Academic Subject Code: CNT
3. Course Number: 215 (must be cleared with University Enrollment Services)
4. Instructor:
5. Course Title: Mechanical and Electrical Systems
   Recommended Abbreviation (Optional): Mech & Electr Systems
   (Limited to 32 Characters including spaces)
6. First time this course is to be offered (Semester/Year): Spring 2007
7. Credit Hours: Fixed at 4 or Variable from ______ to ______
8. Is this course to be graded S-F (only)? Yes ☐ No ☑
9. Is variable title approval being requested? Yes ☐ No ☑
10. Course description (not to exceed 50 words) for Bulletin publication: CNT 215 Mechanical and Electrical Systems (4 cr.) Class 4. P: CNT 105, CNT 120, MATH 154
    Methods for design, construction, and inspection of mechanical & electrical systems for buildings. Emphasis on heating & cooling loads, equipment selection, duct & pipe sizing, codes, safety, installation, inspection, commissioning, & estimating. Responsibilities of the general contractor for HVAC (heating, ventilation, and air-conditioning) and plumbing systems work.
11. Lecture Contact Hours: Fixed at 4 or Variable from ______ to ______
12. Non-Lecture Contact Hours: Fixed at 0 or Variable from ______ to ______
13. Estimated enrollment: 30 of which 0 percent are expected to be graduate students.
14. Frequency of scheduling: Fall, Spring, Sum Will this course be required for majors? Yes
15. Justification for new course: Course developed to address current industry demands for CM majors, mech. & elect combined.
16. Are the necessary reading materials currently available in the appropriate library? Yes
17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.
18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.
19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by:

[Signature]

Date: 4/14/06

Department Chairman/Division Director

Dean of Graduate School (when required)

Approved by:

[Signature]

Date: 6/18/06

Dean

Chancellor/Vice-President

University Enrollment Services

Date

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

University Enrollment Services Final—White; Chancellor/Vice-President—Blue; School/Division—Yellow; Department/Division—Pink; University Enrollment Services Advance—White

UPS 724
Course Description: Methods for design, construction, and inspection of mechanical and electrical systems for buildings. Emphasis on heating and cooling loads, equipment selection, duct and pipe sizing, codes, safety, installation, inspection, commissioning, and estimating. Responsibilities of the general contractor for HVAC (heating, ventilation, and air-conditioning) and plumbing systems work.

Prerequisites: CNT 105, CNT 120, MATH 154

Day/Time/Location:

Instructor:

Office Hours:

Other Course Help:

Required Text:
Electrical Level One, NCCER from Contren Learning Series (Prentice Hall)

MECHANICAL CONSTRUCTION, By: ATP Publisher: AME058

Course Objectives: Upon completion of this course the student will be able to:

(a) Understand common terminology used in mechanical and electrical installations
(b) Determine heating and cooling loads for commercial and industrial facilities
(c) Understand the basic codes requirements for commercial and industrial installations
(d) Size components of plumbing, HVAC, and electrical systems
(e) Recognize installation sequence/methods for plumbing, HVAC, and power systems
(f) Determine the scope of work for mechanical and electrical contracts
(g) Determine the temporary power demands during construction
(h) Understand activities related to receiving, storing, installing, inspecting, commissioning, and balancing mechanical and electrical systems and equipment

IUPUI Principles of Undergraduate Learning (PUL) Objectives:
(a) The ability to comprehend, interpret and analyze mechanical electrical systems
(b) Demonstrate the depth of knowledge in the field of study
(c) Evaluate the logic, validity and relevance of information related to mechanical and electrical systems
(d) Solve quantitative problems related to mechanical and electrical systems.

ABET / TAC Learning Outcomes:

(a) Communicate effectively
(b) Develop a commitment to quality, timeliness and continuous improvement
(c) Identify, analyze and solve technical problems

Preparation of assignments and Projects:

All work will be prepared and submitted in a professional manner. All work should be handed in with all personal information, Name, Course Number, Course Title, Assignment name and other pertinent information.

Grading:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Semester Paper</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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</tbody>
</table>

Homework, Project, and Exams: Late assignments will not be accepted. Exams can not be made up if the instructor is not notified before the exam. Homework will be due at the beginning of the period. Further details on each assignment will be handed out in class.

Attendance Policy: Students are expected to attend regularly. If a class is missed, it is the student’s responsibility to make up the work for knowledge. Please ask other students for notes, as the instructor will not always have copies available of class discussion.

Guest Speakers: Students are expected to be courteous and professional when speakers are attending the class. Please be prepared for information and ask questions to show interest. This will be included in the participation grade.

Field Trips: As field trips are scheduled throughout the semester. Students may have dress code requirements for sites. Usually long pants, close-toed, and hard-soled shoes are required for field trips. Details will be announced for each field trip. Not participating in the field trip will result in loss of points for the course.
Topics Covered

Plumbing Materials, Components and Systems
Code requirements
Water piping design
Drainage, PVC, CI and Fittings
Installation, Testing and Inspection of Plumbing Systems
HVAC Types and Systems ( Forced Air, Hydronic, Heat Pumps)
Refrigeration principles
Heating and Cooling Loads
Psychometrics
Control Systems
Electrical Theory
Distribution Network
Electrical Control and Test Equipment
National Electrical Code (NECA)
Installation and Inspection Issues
Electrical Safety
Estimating
**Department of Construction Technology**

**Effective Session:** Spring 2007

**INSTRUCTIONS:** Please check the items below which describe the purpose of this request.

- New course with supporting documents
- Add existing course
- Expire a course
- Change in course number
- Change in course title
- Change in course credit type
- Change in course attributes
- Change in instructional hours
- Change in course description
- Change in course requisites
- Change in semesters offered
- Transfer from one department to another

**PROPOSED:***

- **Subject Abbreviation:** CNT
- **Course Number:** 215
- **Long Title:** MECHANICAL AND ELECTRICAL SYSTEMS
- **Short Title:** Mech & Elect Systems

**EXISTING:**

- **Subject Abbreviation:**
- **Course Number:**

**TERMS OFFERED:**

- Check all that apply:
  - Summer
  - Fall
  - Spring

**CAMPUS(ES) INVOLVED:**

- Calumet
- Indianapolis
- W. Lafayette
- Tech Statewide

**CREDIT TYPE:**

- Fixed Credit: Cr. Hrs.: 4
- Variable Credit Range: Minimum Cr. Hrs.: [ ]
- (Check One) To [ ] Or [ ]
- Maximum Cr. Hrs.: [ ]
- Equivalent Credit: Yes [X] No [ ]
- Thesis Credit: Yes [X] No [ ]

**COURSE ATTRIBUTES:**

- Pass/Not Pass Only
- Satisfactory/Unsatisfactory Only
- Repeatable
- Maximum repeatable credit: [X]
- Credit by Examination
- Designator Required
- Special Fees

**Instructional Type:**

- Lecture: 100
- Recitation: 2
- Presentation: 16
- Laboratory: 100
- Lab Prep: [ ]
- Studio: [ ]
- Distance: [ ]
- Clinic: [ ]
- Experiential: [ ]
- Research: [ ]
- Ind. Study: [ ]
- Pract/Observe: [ ]

**Weeks Offered:**

- 100

**Delivery Method:**

- Asyn. Or Syn: 100

**Delivery Medium:**

- Audio, Internet, Live, Text-Based, Video

**COURSE DESCRIPTION (INCLUDE REQUISITES):**

CNT 215 - Mechanical and Electrical Systems (4 cr.), Class 4. P: CNT 105, CNT 120, MATH 154

Methods for design, construction, and inspection of mechanical and electrical systems for buildings. Emphasis on heating and cooling loads, equipment selection, duct and pipe sizing, codes, safety, installation, inspection, commissioning, and estimating. Responsibilities of the general contractor for HVAC (heating, ventilating, and air-conditioning) and plumbing work.

**Cross-Listed Courses:**

- [ ]

**Office of the Registrar**