

**WASHTENAW COMMUNITY COLLEGE  
COURSE-SYLLABUS APPROVAL FORM (CSAF)**

**APP 231**

**SECTION I. SUBMISSION INFORMATION**

**1. Course:**  
**Discipline/No:** APP 231      **Title:** Electrical Temperature Controls      **Start Term:** W03

**Division Code:** HAT      **Department Code:** CIND      **Org #:** 14725      **Don't publish:**  in College Catalog  in Time Schedule  on Web Page

<p><b>2. Type of Approval:</b></p> <p><input checked="" type="checkbox"/> Full Approval  <input type="checkbox"/> Conditional Approval</p> <p><input type="checkbox"/> This proposal previously received conditional approval for the term: _____</p>	<p><b>3. Reason for Submission:</b> This Course is being submitted for: (check all that apply)</p> <p><input type="checkbox"/> New Course Approval  <input type="checkbox"/> Five-year Syllabus Review    <input type="checkbox"/> No changes to course  <input checked="" type="checkbox"/> Major Change(s)  <input type="checkbox"/> Minor Change(s)*  <input type="checkbox"/> Reactivation of Inactive Course  <input type="checkbox"/> Inactivation</p> <p><small>*If requesting a change to a course that has conditional approval, please submit a complete syllabus.</small></p>
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**4. Change Information:**

<p><b>Minor Changes</b></p> <p><input type="checkbox"/> Course Discipline/Number (was _____)  <input type="checkbox"/> Course Title (was _____)  <input type="checkbox"/> Course Description  <input type="checkbox"/> Class Capacity (was: _____)  <input type="checkbox"/> Pre or Co-requisites  <input type="checkbox"/> Course Objectives (minor changes)  <input type="checkbox"/> Distribution of Contact Hours (contact hours were: lect: _____ lab _____ clin _____ other _____)  <input type="checkbox"/> Other _____</p>	<p><b>Major Changes</b></p> <p><input checked="" type="checkbox"/> Credit hours (credits were: <u>04</u>)  <input type="checkbox"/> Change in Grading Method  <input type="checkbox"/> Total Contact Hours (total contact hours were: _____)  <input type="checkbox"/> Approval for offering an Honors Section  <input type="checkbox"/> Approval for offering Distance Learning Sections  <input type="checkbox"/> General Education Distribution Course: Add <input type="checkbox"/> Remove <input type="checkbox"/>  <input type="checkbox"/> Pre or Co-requisites (that affect other departments)</p>
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**5. Rationale**      Changes are are being made in response to data from Assessment: yes  no   
 Align credit hours with local 190 third party billing and payment requirements.

**SECTION II. SIGNATURES**

**1. Department Review**  
 Will any new resources be required? No, none anticipated  Yes   
 You must consult all departments that may be affected by this course. List departments contacted below and attach relevant documents.

Does the department support approval of this course?     yes     no

Print: Scott Klapper      Faculty/Preparer      Signature Scott Klapper      Date: 10-15-02

Print: Scott Klapper      Department Chair      Signature Scott Klapper      Date: 10-15-02

**2. Division Review**  
 Is this a curricular priority for your division?     yes     no (Comment \_\_\_\_\_)  
 What is the estimated enrollment? \_\_\_\_\_

Recommendation     Yes     No      [Signature]      10/15/02  
 Dean's Signature      Date

**3. Curriculum Committee Review**  
 Recommendation     Yes     No      [Signature]      10/15/02  
 Curriculum Committee Chair's Signature      Date

**4. Vice President for Instruction and Student Services Approval**  
 Approval     Yes     No      [Signature]      2/26/03  
 Executive Vice President's Signature      Date

ACS Code \_\_\_\_\_ Entered in Banner \_\_\_\_\_ Entered in Access \_\_\_\_\_ Log File \_\_\_\_\_

Approved for General Education Area/Group \_\_\_\_\_ Syllabus Date \_\_\_\_\_

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**SECTION III. COURSE SYLLABUS**

**A. COURSE DETAILS**

**Discipline & No.:** APP 231      **Title:** Electrical Temperature Controls

**1. Description:**

This course will enable students to understand the theory of electrical temperature controls. This course will enable students to understand compound electrical circuits, resistance, inductance, and capacitance in A/C circuits. This course will enable students to understand impedance in A/C circuits, the 3 phase A/C systems, and the wye and delta connections. This course will teach the students to understand electrical controls, hermetic circuitry, safety, advanced wiring diagrams, advanced wiring troubleshooting, and lab work at bench stations with troubleshooting.

<b>2. Credit Hours:</b> <u>03</u> If Variable credit, Give Range: _____ to _____ credits  If repeatable for credit, how many times _____	<b>3. Contact Hours per Semester:</b> Lecture: <u>30</u> Lab: <u>30</u> Clinical: _____ Other: _____ Total Contact Hours: <u>60</u>	<b>4. Class Capacity:</b> <u>24</u>	<b>5. Course Options:</b> <input type="checkbox"/> Distance learning  <input type="checkbox"/> Honors  <input type="checkbox"/> P/NP Grading
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6. Prerequisite(s) and/or "( Course	Min Grade	*Concurrent Enrollment	Test Name	Min. Score	**Level "Y"	I II	Other Prerequisites
<input type="checkbox"/> <u>APP 111</u>	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> <u>APP 112</u>	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> <u>APP 113</u>	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____

Consent Required

**7. Corequisites:**  
 \_\_\_\_\_  
 \_\_\_\_\_

<b>8. Course Purpose:</b> <input checked="" type="checkbox"/> Program Requirement <input type="checkbox"/> General Education <input type="checkbox"/> Program Support <input type="checkbox"/> Basic Skills/Developmental <input type="checkbox"/> Transfer <input type="checkbox"/> Industry/Professional Dev <input type="checkbox"/> Enrichment	<b>If a program requirement, specify the program(s)</b> <u>Local 190 apprenticeship program</u> _____ _____	<b>Please send syllabus for Transfer evaluation to:</b> <input type="checkbox"/> EMU <input type="checkbox"/> UM <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____	<b>Accepted for transfer:</b> <input type="checkbox"/> EMU <input type="checkbox"/> UM <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
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9. Terms Course will be offered:		Day	Eve	Even years only	Odd years only
<b>Terms</b>	<b>Session Length</b> (e.g. 15 weeks, 1 <sup>st</sup> 7½ weeks, etc.)				
<input checked="" type="checkbox"/> Fall	<u>15 weeks</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Winter	<u>15 weeks</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Spr/Summer	<u>15 weeks</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**B. MAJOR INSTRUCTIONAL UNITS**

1. Electrical Temperature Controls

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**C. INSTRUCTIONAL OBJECTIVES**

**Unit #1 Electrical Temperature Controls**

The student will

1. Describe compound electrical circuits
2. Describe resistance, inductance, and capacitance in A/C circuits
3. Describe impedance in A/C circuits
4. Describe the 3 phase in A/C circuits
5. Describe wye and delta connections
6. Describe the use of transformers
7. List motor terminology
8. Describe phase rotation, starting current
9. Describe motor controls, starter, overloads
10. Explain electrical wiring diagrams and diagnosis of controls
11. Describe electrical controls-pressure switches, thermal switches, current devices, sequencers, starter, relays, coils, transformers, capacitors, solenoids, compressors, fuses, variable resistors, rheostats, potentiometers
12. Describe hermetic circuitry
13. Describe and demonstrate safety
14. Describe advanced wiring diagrams
15. Describe advanced wiring troubleshooting
16. Perform lab work at bench stations with troubleshooting

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**D. INSTRUCTIONAL METHODS, EVALUATION CRITERIA, AND ASSESSMENT**

**1. Instructional Methods:**

<input checked="" type="checkbox"/> Lecture/Discussion _____ <input type="checkbox"/> Clinical Instruction _____ <input checked="" type="checkbox"/> Laboratory Assignments _____ <input type="checkbox"/> Internet Assignments _____ <input type="checkbox"/> Computer Simulations _____ <input type="checkbox"/> On-Site Work Experience _____ <input type="checkbox"/> Team Assignments _____ <input type="checkbox"/> Demonstrations _____	<input type="checkbox"/> Performances _____ <input type="checkbox"/> Group Critiques _____ <input type="checkbox"/> Field Trips _____ <input type="checkbox"/> Telecourse _____ <input type="checkbox"/> ITV Course _____ <input type="checkbox"/> Self-Paced Instruction _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
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**2. Evaluation Criteria:**

<input checked="" type="checkbox"/> Attendance _____ <input checked="" type="checkbox"/> Class Discussion _____ <input checked="" type="checkbox"/> Papers _____ <input type="checkbox"/> Portfolios _____ <input type="checkbox"/> Projects _____ <input type="checkbox"/> Reports _____ <input type="checkbox"/> Clinical Assignments _____ <input checked="" type="checkbox"/> Home Work _____	<input checked="" type="checkbox"/> Quizzes _____ <input checked="" type="checkbox"/> Tests _____ <input type="checkbox"/> Midterm _____ <input checked="" type="checkbox"/> Final Exam _____ <input type="checkbox"/> Presentations _____ <input type="checkbox"/> Individual Performance _____ <input type="checkbox"/> Group/Team Performance _____ <input type="checkbox"/> Other _____
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**3. Assessment of Student Achievement:**

<input type="checkbox"/> Departmental Exam _____ <input type="checkbox"/> Follow-on Tracking _____ <input type="checkbox"/> Standardized Test _____ <input type="checkbox"/> Portfolio Assessment _____	<input type="checkbox"/> Pre-test/Post-test _____ <input type="checkbox"/> Simulations _____ <input type="checkbox"/> Comprehensive Project _____ <input type="checkbox"/> Other _____
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**F. EQUIPMENT, FACILITIES, TEXTS, MATERIALS, AND SUPPLIES**

**1. Special Equipment/Facilities :**

<input checked="" type="checkbox"/> Lab equipment _____ <input checked="" type="checkbox"/> Computer Lab _____ <input checked="" type="checkbox"/> CD ROM's _____ <input checked="" type="checkbox"/> Data Projector/Screen _____ <input checked="" type="checkbox"/> VCR _____ <input checked="" type="checkbox"/> TV Monitor _____	<input type="checkbox"/> ITV Classroom _____ <input type="checkbox"/> Off-Campus Sites _____ <input type="checkbox"/> Testing Center _____ <input checked="" type="checkbox"/> Other Supplied by Local 190 _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
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**2. Texts:**

Title: UA materials supplied by Local 190

Author: United Association Copyright Yr: \_\_\_\_\_

Publisher: \_\_\_\_\_ Est. Cost: \_\_\_\_\_

Title: \_\_\_\_\_

Author: \_\_\_\_\_ Copyright Yr: \_\_\_\_\_

Publisher: \_\_\_\_\_ Est. Cost: \_\_\_\_\_

Title: \_\_\_\_\_

Author: \_\_\_\_\_ Copyright Yr: \_\_\_\_\_

Publisher: \_\_\_\_\_ Est. Cost: \_\_\_\_\_

Title: \_\_\_\_\_

Author: \_\_\_\_\_ Copyright Yr: \_\_\_\_\_

Publisher: \_\_\_\_\_ Est. Cost: \_\_\_\_\_

Additional Texts:

**3. Supplies and/or Uniforms students will have to Acquire: (e.g. calculators, uniforms, tools, etc.)**

Descriptions	Cost Estimates
_____	_____
_____	_____
_____	_____

**4. Reference Materials that will be used: (e.g. journals, books, manuals, maps, LRC reserves, etc.)**

Title/Name	Location
_____	_____
_____	_____

**5. Computer Software that will be used:**

Title/Name	Location
_____	_____
_____	_____

**6. Audio/Visual Materials that will be used: (e.g. films, video tapes, slides, audio tapes, CDs, etc.)**

Title/Name	Location
_____	_____
_____	_____