WASHTENAW COMMUNITY COLLEGE
COURSE-SYLLABUS APPROVAL FORM (CSAF)

APP 251

SECTION I. SUBMISSION INFORMATION

1. Course:
Discipline/No: APP 251 **Title:** Commercial Air Conditioning Systems **Start Term** W03

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

2. Type of Approval:
- ☒ Full Approval
- ☐ Conditional Approval

☐ This proposal previously received conditional approval for the term: _____

3. Reason for Submission: This Course is being submitted for: (check all that apply)
- ☐ New Course Approval
- ☒ Five-year Syllabus Review ☐ No changes to course
- ☒ Major Change(s)
- ☐ Minor Change(s)*
- ☐ Reactivation of Inactive Course
- ☐ Inactivation

*If requesting a change to a course that has conditional approval, please submit a complete syllabus.

4. Change Information:

Minor Changes
- ☐ Course Discipline/Number (was _____)
- ☐ Course Title (was _____)
- ☐ Course Description
- ☐ Class Capacity (was: ____)
- ☐ Pre or Co-requisites
- ☐ Course Objectives (minor changes)
- ☐ Distribution of Contact Hours (contact hours were: lect: _____ lab _____ clin _____ other _____)
- ☐ Other

Major Changes
- ☒ Credit hours (credits were: 04)
- ☐ Change in Grading Method
- ☐ Total Contact Hours (total contact hours were: _____)
- ☐ Approval for offering an Honors Section
- ☐ Approval for offering Distance Learning Sections
- ☐ General Education Distribution Course: Add ☐ Remove ☐
- ☐ Pre or Co-requisites (that affect other departments)

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 _____ Dean's Signature Date 10/16/02

3. Curriculum Committee Review

Recommendation ☒ Yes ☐ No Ruth A. Hadeler Curriculum Committee Chair's Signature 3.20.03 Date

4. Vice President for Instruction and Student Services Approval

Approval ☒ Yes ☐ No _____ Executive Vice President's Signature 3/20/03 Date

ACS Code _____ **Entered in Banner** 3/21 **Entered in Access** 3/27 **Log File** 3/27

Approved for General Education Area/Group _____ **Syllabus Date** 200301

WASHTENAW COMMUNITY COLLEGE
COURSE-SYLLABUS APPROVAL FORM (CSAF)

APP 251

SECTION III. COURSE SYLLABUS
A. COURSE DETAILS

Discipline & No.: APP 251 **Title:** Commercial Air Conditioning Systems

1. Description:

This course will enable the students to understand what is commercial air conditioning. This course will teach students the different types of systems, different system controls and single and multiple compressor systems. This course will demonstrate constant and variable air systems, multizone systems, direct expansion split systems and chilled water air conditioning systems. This course will introduce students to chillers, absorber and cetrifugal chillers. This course will teach students the basic absorber operation and basic centrifugal operations.

2. Credit Hours: 03
If Variable credit, Give Range: ____ to ____ credits
If repeatable for credit, how many times ____

3. Contact Hours per Semester:
Lecture: 30
Lab: 30
Clinical:
Other:
Total Contact Hours: 60

4. Class Capacity: 24

5. Course Options:
☐ Distance learning
☐ Honors
☐ P/NP Grading

6. Prerequisite(s)

and/or	"("	Course	Min Grade	*Concurrent Enrollment	Test Name	Min. Score	")"	**Level I II
		APP 111		☐				☐☐
☐☐		APP 112		☐				☐☐
☐☐		APP 113		☐				☐☐
☐☐				☐				☐☐
☐☐				☐				☐☐
☐☐				☐				☐☐
☐☐				☐				☐☐
☐☐				☐				☐☐

Other Prerequisites

Consent Required ☐

7. Corequisites:

8. Course Purpose:
☒ Program Requirement
☐ General Education
☐ Program Support
☐ Basic Skills/Developmental
☐ Transfer
☐ Industry/Professional Dev
☐ Enrichment

If a program requirement, specify the program(s)
Local 190 apprenticeship program

Please send syllabus for Transfer evaluation to:
☐ EMU
☐ UM

Accepted for transfer:
☐ EMU
☐ UM

9. Terms Course will be offered:

Terms	Session Length (e.g. 15 weeks, 1st 7½ weeks, etc.)	Day	Eve	Even years only	Odd years only
☒ Fall	15 weeks	☐	☒	☐	☐
☒ Winter	15 weeks	☐	☒	☐	☐
☒ Spr/Summer	15 weeks	☐	☒	☐	☐

B. MAJOR INSTRUCTIONAL UNITS

1. Commercial Air Conditioning

C. INSTRUCTIONAL OBJECTIVES

Unit #1 Commercial Air Condtioning

The student will:

1. Describe what is commercial air conditioning
2. Describe different types of systems
3. Describe different systems controls
4. Describe single and multiple compressor systems
5. Describe constant and variable air systems
6. Describe multizone systems
7. Describe direct expansion split systems
8. Describe chilled water air conditioning systems
9. Describe introduction into chiller
10. Describe absorber and centrifugal chillers
11. Describe basic centrifugal operation
12. Describe troubleshooting chillers
13. Describe computer room air conditioning
14. Describe chilled glycol systems
15. Describe discharge air controllers in air conditioning systems
16. Describe different oils in chillers
17. Describe static pressure controllers
18. Describe head pressure controls
19. Describe low ambient operation and controls
20. Describe humidity controls
21. Describe air filtration
22. Describe outside air controls
23. Describe economizer operation
24. Describe free cooling
25. Describe face and bypass damper systems

D. INSTRUCTIONAL METHODS, EVALUATION CRITERIA, AND ASSESSMENT

1. Instructional Methods:

☒ Lecture/Discussion	☐ Performances
☐ Clinical Instruction	☐ Group Critiques
☒ Laboratory Assignments	☐ Field Trips
☐ Internet Assignments	☐ Telecourse
☐ Computer Simulations	☐ ITV Course
☐ On-Site Work Experience	☐ Self-Paced Instruction
☐ Team Assignments	☐ Other
☐ Demonstrations	☐ Other

2. Evaluation Criteria:

☒ Attendance	☒ Quizzes
☒ Class Discussion	☒ Tests
☒ Papers	☐ Midterm
☐ Portfolios	☒ Final Exam
☐ Projects	☐ Presentations
☐ Reports	☐ Individual Performance
☐ Clinical Assignments	☐ Group/Team Performance
☒ Home Work	☐ Other

3. Assessment of Student Achievement:

☐ Departmental Exam	☐ Pre-test/Post-test
☐ Follow-on Tracking	☐ Simulations
☐ Standardized Test	☐ Comprehensive Project
☐ Portfolio Assessment	☐ Other

F. EQUIPMENT, FACILITIES, TEXTS, MATERIALS, AND SUPPLIES

1. Special Equipment/Facilities :

☒ Lab equipment	☐ ITV Classroom
☒ Computer Lab	☐ Off-Campus Sites
☒ CD ROM's	☐ Testing Center
☒ Data Projector/Screen	☒ Other Supplied by Local 190
☒ VCR	☐ Other
☒ TV Monitor	☐ Other

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**