

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

CON 077

For help screens, select a field and press F1

SECTION I. SUBMISSION INFORMATION

1. Course: (Enter proposed discipline, number & title here.)
Discipline/No: CON 077 **Title:** BUILDING CONTROL SYSTEMS **Start Term** F03
 Banner allows only 29 characters and spaces, for the title. Longer titles will have to be abbreviated.

Division Code: HAT **Department Code:** CON **Org #:** 14700 Don't publish: in College Catalog
 in Time Schedule on Web Page

2. Type of Approval: (applies to both new courses and changes)
 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 (Skip 4 and go directly to 5.)
 Five-year Syllabus Review No changes to course (Submit complete syllabus)
 Major Change(s) (Submit complete syllabus)
 Minor Change(s)* (For fully approved courses, submit revised sections only.)
 Reactivation of Inactive Course
 Inactivation (Submit this page only.)
 *If requesting a change to a course that has conditional approval, please submit a complete syllabus.

4. Change Information: (Check all that apply. Make proposed changes in Section III, Course Syllabus.)

<p>Minor Changes</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>Major Changes (will be reviewed by Curriculum Committee.)</p> <input type="checkbox"/> Credit hours (credits were: _____) <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 (Attach Approval Form.) <input type="checkbox"/> Approval for offering Distance Learning Sections (Attach Distance Learning Approval Form) <input type="checkbox"/> General Education Distribution Course: Add <input type="checkbox"/> Remove <input type="checkbox"/> (Attach General Education Course Approval Form) <input type="checkbox"/> Pre or Co-requisites (that affect other departments)
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5. Rationale: (for new course or course change) Changes are are being made in response to data from Assessment: yes no
 This is the fourth course in a series of five that we provide for the University Of Michigan Physical Plant department to benchmark skills for their personnel.

SECTION II. SIGNATURES

1. Department Review (To be completed by department chair)
 Will any new resources be required? No, none anticipated Yes (If yes, attach list with projected costs)
 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 (if no, initial and return to preparer with rationale.)

Print: LPIERCE Faculty/Preparer Signature: [Signature] Date: 04-24-03

Print: LPIERCE Department Chair Signature: [Signature] Date: 04-24-03

2. Division Review (To be completed by division dean; if recommendation is no, initial and return to department with rationale.)
 Is this a curricular priority for your division? yes no (Comment _____)
 What is the estimated enrollment? _____
 Recommendation Yes No Dean's/Administrator's Signature: [Signature] Date: 5/1/03

3. Curriculum Committee Review (Attach additional comments if necessary and forward to Executive Vice President.)
 Recommendation Yes No Curriculum Committee Chair's Signature _____ Date _____

4. Vice President for Instruction and Student Services Approval (Attach additional comments if necessary.)
 Approval Yes No Vice President's Signature: [Signature] Date: 5/8/03
 Processed 5/8/03

ACS Code _____ Entered in Banner 5/8 Entered in Access _____ Log File _____
 Approved for General Education Area/Group _____ Syllabus Date _____

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SECTION III. COURSE SYLLABUS

For help screens press F1.

A. COURSE DETAILS (Start with #1.)

Discipline & No.: CON 077 **Title:** BUILDING CONTROL SYSTEMS

Course and title will automatically appear above upon saving or previewing

1. Description: (Please be brief. Explain acronyms if used.)

This course provides students with the basic knowledge of various HVAC control systems. Included are basic control theory, an explanation of the devices used in control systems, and the application of the HVAC system devices.

2. Credit Hours: <u> 2 </u> If Variable credit, Give Range: _____ to _____ credits If repeatable for credit, how many times _____	3. Contact Hours per Semester: Lecture: <u> 30 </u> Lab: _____ Clinical: _____ Other: _____ Total Contact Hours: _____	4. Class Capacity: <u> 30 </u> (If nonstandard, attach Class Capacity Exception form.)	5. Course Options: <input type="checkbox"/> Distance learning (Attach DL Form) <input type="checkbox"/> Honors (Attach Honors Addendum.) <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 "I" II	Other Prerequisites
<input type="checkbox"/> <input type="checkbox"/> _____	_____	<input type="checkbox"/>	comp reading	36	<input checked="" type="checkbox"/> <input type="checkbox"/>	_____
<input type="checkbox"/> <input type="checkbox"/> _____	_____	<input type="checkbox"/>	comp math (prealgebra)	24	<input checked="" 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"/> <input type="checkbox"/>	_____
<input type="checkbox"/> <input type="checkbox"/> _____	_____	<input type="checkbox"/>	_____	_____	<input type="checkbox"/> <input type="checkbox"/>	_____

* Can take prerequisite before or concurrently with this course.
 **Level I is enforced in Banner; Level II is enforced by instructor on 1st day of class.

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

B. MAJOR INSTRUCTIONAL UNITS A major instructional unit is a grouping of topics that naturally relate to one another. Add additional numbers as needed. (This section is unprotected so that you can cut and paste from other documents.)

1. Control System Basics
2. Controllers
3. Controlled Devices
4. Auxiliary Control Devices
5. Electronic Control Systems
6. Computers and Microprocessors in Control Systems

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C. INSTRUCTIONAL OBJECTIVES

DIRECTIONS: Use student outcomes-based language. (Example: Upon visiting a gravel pit students will observe, analyze and describe in one page the weathering processes.) Units should match those listed in Section B.

(This section is unprotected. You may cut and paste from other documents as needed.)

Unit #1 Control Systems Basics

1. The student will describe the makeup of a basic control system
2. The student will understand the concept of compressed air supply in pneumatic control systems

Unit #2 Controllers

1. The student will describe various types of control action
2. The student will define controller sensitivity, differential and range.
3. The student will understand the operation of various sensing elements

Unit #3 Controlled Devices

1. The student will name various types of dampers and actuators
2. The student will name various types of control valves
3. The student will understand the flow characteristics of dampers and inner valves.

Unit #4 Auxiliary Control Devices

1. The student will define the term auxiliary device
2. The student will explain the principle of operation and application of auxiliary devices.
3. The student will describe how auxiliary devices fit into control systems.

Unit #5 Electronic Control Systems

1. The student will explain the operating principles behind electric and electronic control systems.

Unit #6 Computers and Microprocessors in Control Systems

1. The student will understand the fundamentals of a computer system.
2. The student will understand how computers are used in control systems.

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D. INSTRUCTIONAL METHODS, EVALUATION CRITERIA, AND ASSESSMENT

1. Instructional Methods: (Check the appropriate boxes and describe as needed.)

<input checked="" type="checkbox"/> Lecture/Discussion _____ <input type="checkbox"/> Clinical Instruction _____ <input 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 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: (Indicate methods that will be used for NCA mandated assessment of student academic achievement at the course and (if applicable) general education levels)

<input type="checkbox"/> Departmental Exam _____ <input type="checkbox"/> Follow-on Tracking _____ <input type="checkbox"/> Standardized Test _____ <input type="checkbox"/> Portfolio Assessment _____	<input checked="" 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 : (Check the appropriate boxes and describe as needed.)

<input type="checkbox"/> Lab equipment _____ <input type="checkbox"/> Computer Lab _____ <input type="checkbox"/> CD ROM's _____ <input type="checkbox"/> Data Projector/Screen _____ <input type="checkbox"/> VCR _____ <input type="checkbox"/> TV Monitor _____	<input type="checkbox"/> ITV Classroom _____ <input type="checkbox"/> Off-Campus Sites _____ <input type="checkbox"/> Testing Center _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Other _____
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2. Texts: (Please indicate if no text is required.)

Title: BUILDING CONTROL SYSTEMS
Author: John I. Levenhagen Copyright Yr: 2000
Publisher: BOMI Est. Cost: 200.00

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
_____	_____
_____	_____
_____	_____