

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

APP 131

SECTION I. SUBMISSION INFORMATION

1. Course: Discipline/No: APP 131 Title: Water Supply and Drainage Start Term: P02				
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: <u>2002-03</u>	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: <table style="width:100%;"> <tr> <td style="width:50%; vertical-align: top;"> 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 _____ </td> <td style="width:50%; vertical-align: top;"> Major Changes ☒ Credit hours (credits were: <u>04</u>) ☐ 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) </td> </tr> </table>			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: <u>04</u>) ☐ 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)
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5. Rationale Changes are are being made in response to data from Assessment: yes ☐ no ☐ Chagne the # of credits from 4 to 3				

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: <u>Patricia Crider</u> Signature: <u>Patricia Crider</u> Date: <u>6/14/02</u> Faculty/Preparer Print: _____ Signature: _____ Date: _____ Department Chair			
2. Division Review Is this a curricular priority for your division? ☐ yes ☐ no (Comment _____) What is the estimated enrollment? _____ Recommendation ☒ Yes ☐ No <u>Reeta S. Hatch</u> <u>9.12.02</u> Dean's Signature Date			
3. Curriculum Committee Review Recommendation ☒ Yes ☐ No <u>[Signature]</u> <u>6/24/02</u> Curriculum Committee Chair's Signature Date			
4. Vice President for Instruction and Student Services Approval Approval ☒ Yes ☐ No <u>[Signature]</u> <u>7/1/02</u> Executive Vice President's Signature Date			
ACS Code _____	Entered in Banner <u>7/23/02</u>	Entered in Access <u>7/23/02</u>	Log File <u>7/23/02</u>
Approved for General Education Area/Group _____		Syllabus Date <u>200209</u>	

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SECTION III. COURSE SYLLABUS

A. COURSE DETAILS

Discipline & No.: APP 131 **Title:** Water Supply Drainage

1. Description:

This course will introduce students to the processes and operations used in water treatment plants for obtaining fresh water. Areas of special interest will include topics such as piping of potable water; operation of pumps; the use of valves; backflow prevention, balancing and testing; minerals in water and drainage requirements.

2. Credit Hours: <u>03</u> If Variable credit, Give Range: <u> </u> to <u> </u> credits If repeatable for credit, how many times <u> </u>		3. Contact Hours per Semester: Lecture: <u>30</u> Lab: <u>30</u> Clinical: <u> </u> Other: <u> </u> Total Contact Hours: <u>60</u>		4. Class Capacity: <u>24</u>		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	Other Prerequisites
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							Consent Required ☐
							7. Corequisites:
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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) <u>Local 190 apprenticeship program</u> <u> </u> <u> </u> <u> </u>		Please send syllabus for Transfer evaluation to: ☐ EMU ☐ UM <u> </u> <u> </u> <u> </u> <u> </u>		Accepted for transfer: ☐ EMU ☐ UM <u> </u> <u> </u> <u> </u> <u> </u>	
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9. Terms Course will be offered:				Even years only		Odd years only	
Terms ☒ Fall ☒ Winter ☒ Spr/Summer	Session Length (e.g. 15 weeks, 1 st 7½ weeks, etc.) <u>15 weeks</u> <u>15 weeks</u> <u>15 weeks</u>			Day ☐ ☐ ☐	Eve ☒ ☒ ☒	☐ ☐ ☐	☐ ☐ ☐

B. MAJOR INSTRUCTIONAL UNITS

1. Water Treatment
2. Water Mains & Services
3. Building Water Supply Systems
4. Cross Connections
5. Hot Water Supply
6. Valves

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7. Pumps
8. Sewage Disposal
9. Sewers & Drains
10. Building Drainage Systems
11. The Plumbing Trap

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C. INSTRUCTIONAL OBJECTIVES

Unit #1 Water Treatment

The student will:

1. Describe where fresh water comes from
2. Describe the operation of water treatment plants
3. List the chemicals used to treat water
4. List the mineral in water
5. Define terms used in water treatment

Unit #2 Water Mains and Services

The student will:

1. Describe water distribution systems
2. Differentiate between the various types of water supply systems
3. Describe the installation techniques for the construction of water mains
4. List the different material used in the construction of water mains
5. Describe the different types of joints used in the construction of water mains
6. Describe bed water mains
7. List the techniques used to tap water mains
8. Describe the functions and operations of water meters

Unit #3 Building Water Supply Systems

The student will:

1. List the material used in piping and drainage systems
2. Describe the required pressure for water treatment plants
3. Discuss optimal flow rate
4. Describe proper sizing of piping systems
5. List proper fire protection procedures
6. List the causes of water hammer

Unit #4 Cross Connections

The student will:

1. Describe the process of back siphonage, back flow, gravity
2. List the causes of negative pressure
3. List the types of vacuum breakers
4. Recognize possible cross connections
5. Demonstrate proper backflow prevention techniques
6. Demonstrate proper use of Check valves

Unit #5 Hot Water Supply

The student will:

1. List the benefits of hot water
2. Describe different types of water heaters
3. Demonstrate ability to size hot water systems
4. Describe the process of recirculation
5. List the fuels used to create hot water
6. Describe safety precautions for hot water
7. Describe the process of tempering valves

Unit #6 Valves

The student will:

1. List different valves and describe where they are typically used
2. Describe the various parts of the valve

Unit #7 Pumps

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The student will:

1. Demonstrate understanding of a pump
2. List different types of pumps
3. List what systems to use certain types of pumps
4. Describe the pressures different pumps put out

Unit # 8 Sewage Disposal

The student will:

1. List the causes and locations of where bacteria is found
2. Describe the functions and processes of septic tanks and absorption fields
3. Demonstrate the understanding of sizing of tanks and fields
4. Describe the functions and processes of city waste treatment plants

Unit #9 Sewers and Drains

The student will:

1. Describe the functions of storm sewers
2. Describe the functions of sanitary sewers
3. Describe subsurface drains
4. List the types of material used in construction of drains
5. List the safety regulations to be considered

Unit # 10 Building Drainage Systems

The student will:

1. List the requirements of roof drains
2. Define branch storm drains
3. Define rain leader
4. Discuss the requirements of area drains
5. Discuss the requirements of foundation drains
6. Discuss the importance of back water valves

Unit #11 The Plumbing Trap

The student will:

1. Define a plumbing trap
2. List the various types of traps
3. Describe the differences in legal and illegal traps
4. List the requirements of grease traps
5. Describe where each type of trap is used

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D. INSTRUCTIONAL METHODS, EVALUATION CRITERIA, AND ASSESSMENT

1. Instructional Methods:

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

☒ Attendance _____ ☒ Class Discussion _____ ☐ Papers _____ ☐ Portfolios _____ ☐ Projects _____ ☐ Reports _____ ☐ Clinical Assignments _____ ☒ Home Work _____	☒ Quizzes _____ ☒ Tests _____ ☐ Midterm _____ ☒ Final Exam _____ ☐ Presentations _____ ☐ Individual Performance _____ ☐ Group/Team Performance _____ ☐ Other _____
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3. Assessment of Student Achievement:

☐ Departmental Exam _____ ☐ Follow-on Tracking _____ ☐ Standardized Test _____ ☐ Portfolio Assessment _____	☒ Pre-test/Post-test _____ ☐ Simulations _____ ☐ Comprehensive Project _____ ☐ Other _____
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F. EQUIPMENT, FACILITIES, TEXTS, MATERIALS, AND SUPPLIES

1. Special Equipment/Facilities :

☐ Lab equipment _____ ☐ Computer Lab _____ ☐ CD ROM's _____ ☐ Data Projector/Screen _____ ☐ VCR _____ ☐ TV Monitor _____	☐ ITV Classroom _____ ☐ Off-Campus Sites _____ ☐ Testing Center _____ ☐ Other _____ ☐ Other _____ ☐ Other _____
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2. Texts:

Title: UA material supplied by local 190

Author: _____ 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

<u>supplied by local 190</u>	_____
_____	_____
_____	_____

Course: APP 131

Title: Water Supply and Drainage

Course

Description: This course will introduce students to the processes and operations used in water treatment plants for obtaining fresh water. Areas of special interest will include topics such as piping of potable water, operation of pumps; the use of valves; backflow prevention, balancing and testing; minerals in water and drainage requirements.

Outline:

- I. Fresh Water
 1. Where fresh water comes from
 2. Operation of water treatment plants
 3. Chemicals used to treat water
 4. Minerals in water
- II. Water distribution systems
 1. Types of water supply systems
 2. Installation techniques for water mains
 3. Materials used in the construction of water mains
 4. Types of joints used in the construction of water mains
 5. Bed water mains
 6. Techniques used to tap water mains
 7. Functions and operations of water meters
- III. Materials used in piping and drainage systems
 1. Required pressure for water treatment plants
 2. Optimal flow rate
 3. Proper sizing of piping systems
 4. Proper fire protection procedures
 5. Causes of water hammer
- IV. Back siphonage, back flow, gravity
 1. Causes of negative pressure
 2. Types of vacuum breakers
 3. Possible cross connections
 4. Backflow prevention techniques
 5. Check valves
- V. Hot water
 1. Types of water heaters
 2. Sizing hot water systems
 3. Recirculation
 4. Fuels used to create hot water
 5. Safety precautions for hot water
 6. Tempering valves
- VI. Valves
 1. Types of valves
 2. Parts of the valve
- VII. Types of Pumps
 1. Systems and types of pumps used
 2. Pressures different pumps put out

- VIII. Septic tanks and absorption fields
 - 1. Sizing of tanks and fields
 - 2. City waste treatment plants
- IX. Storm sewers
 - 1. Sanitary sewers
 - 2. Subsurface drains
 - 3. Materials used in construction of drains
 - 4. Safety regulations
- X. Roof drains
 - 1. Branch storm drains
 - 2. Rain leader
 - 3. Back water valves
- XI Plumbing traps
 - 1. types of traps
 - 2. legal versus illegal traps
 - 3. Grease traps