



SACRAMENTO
STATE

Course Change Proposal Form A



Academic Group (College): Engineering and Computer Science	Academic Organization (Department): Civil Engineering	Date: September 19, 2007
Type of Course Proposal: New <input checked="" type="checkbox"/> Change <input type="checkbox"/> Deletion <input type="checkbox"/>	Department Chair: Ramzi Mahmood Ph.D., PE	Submitted by: Kurt Ohlinger Ph.D., PE
Does this course fulfill a requirement for single-subject or multiple subject credential students? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	For Catalog Copy: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> CCE: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Semester Effective: Fall <input type="checkbox"/> Spring <input checked="" type="checkbox"/> 2008

New course:

Subject Area (prefix) & Catalog No. (course no.): CE 38A	Title: Operation of Wastewater Treatment Plants I	Units: 6.0
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JUSTIFICATION:

This course has been developed as a required component of the new Wastewater Treatment Plant Operation Specialist Certificate Program. The new certificate program is designed to provide students with the knowledge, skills, and abilities to competently operate wastewater treatment facilities.

NEW COURSE DESCRIPTION: (Not to exceed 80 words, and language should conform to catalog copy. See <http://www.csus.edu/acaf/univmanual/crspsl.htm>- Guidelines for Catalog Course Description)

This introductory course is designed to train operators in the safe and effective operation and maintenance of wastewater treatment plants. CE 38A emphasizes the knowledge and skills needed to operate wastewater treatment plants as efficiently as possible. Operators will gain an understanding of the basic operational aspects of their plant and learn how to analyze and solve operational problems.

Note:

Prerequisite: None
Enforced at Registration: Yes No

Corequisite: None
Enforced at Registration: Yes No

CAN (California Articulation Number):

Graded: Letter Credit/No Credit **Instructor Approval Required? Yes No**

Course Classification (e.g., lecture, lab, seminar, discussion):
Lecture (Distance Education) **Title for SIS+/CMS (not more than 30 characters):**
Oper Wastewater Trmt Plants I

Cross Listed?
Yes No **If yes, do they meet together and fulfill the same requirement, and what is the other course.**

How Many Times Can This Course be Taken for Credit? 1

Can the course be taken for Credit more than once during the same term? Yes No

FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

Description of the Expected Learning Outcomes: Describe outcomes using the following format: "Students will be able to: 1), 2), etc." See the example at <http://www.csus.edu/acaf/example.htm>

Upon completion of this course, student will be able to:

1. Demonstrate understanding of basic wastewater treatment and laboratory analysis processes.
2. Articulate the skills and knowledge necessary to operate and to administer operation of treatment processes at wastewater treatment plants to produce and deliver a clean, safe plant effluent suitable for reuse or for safe discharge to the environment. Unit treatment processes include: screening, grit removal, sedimentation, fixed film and suspended growth biological treatment processes, and disinfection.
3. Understand and apply safe operation practices for working in a wastewater treatment facility.

****Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Deans office, not Academic Affairs.**

Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above:

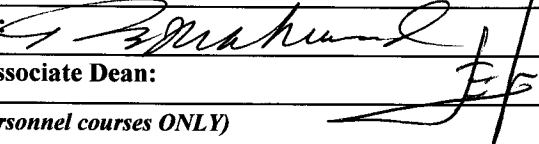
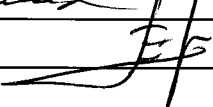
Student assessment will be based on:

1. Passing unit examinations for each training unit comprising the course.
2. Passing a comprehensive final exam covering all aspects of wastewater treatment plant operation covered during the course.

For whom is this course being developed?
 Majors in the Dept ___ Majors of other Depts ___ Minors in the Dept ___ General Education ___ Other X
 Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes X No ___
 If yes, identify program(s): **Wastewater Treatment Plant Operation Specialist Certificate Program – Certificate of Academic Achievement**
 Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes ___ No X
 If yes, attach a description of resources needed and verify that resources are available.
 Indicate which department or programs will be affected by the proposed course (if any). _____
The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.

Approvals: If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

Signatures:

	Date
Department Chair: 	9/19/07
College Dean or Associate Dean: 	9/24/07
CPSP (for school personnel courses ONLY)	
Associate Vice President and Dean for Academic Programs	

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent

Course Title: Operation of Wastewater Treatment Plants Volume I – CE 38A
6.0 Academic Credits

Course Description

This introductory course is designed to train operators in the safe and effective operation and maintenance of wastewater treatment plants. CE 38A emphasizes the knowledge and skills needed to operate wastewater treatment plants as efficiently as possible. Operators will gain an understanding of the basic operational aspects of their plant and learn how to analyze and solve operational problems.

Course Outline

- I. Introduction - The Treatment Plant Operator

- II. Why Treat Wastes?
 - A. Prevention of Pollution
 - B. What is Pure Water?
 - C. Types of Waste Discharges
 - D. Effects of Waste Discharges
 - E. Solids in Wastewater
 - F. Natural Cycles
 - G. NPDES Permits

- III. Wastewater Treatment Facilities
 - A. Collection, Treatment, Disposal
 - B. Collection of Wastewater
 - C. Treatment Plants
 - D. Preliminary Treatment
 - E. Flow Measuring Devices
 - F. Primary Treatment
 - G. Secondary Treatment
 - H. Solids Handling and Disposal
 - I. Waste Treatment Ponds
 - J. Advanced Methods of Treating Wastewater
 - K. Disinfection
 - L. Effluent Disposal
 - M. Solids Disposal

- IV. Racks, Screens, Comminutors and Grit Removal
 - A. Caution
 - B. Preliminary Treatment
 - C. Bar Screens and Racks
 - D. Comminution

- E. Grit Removal
 - F. Operational Strategy
 - G. Design Review
- V. Sedimentation and Flotation
- A. Purpose of Sedimentation and Flotation
 - B. Operation and Maintenance
 - C. Sampling and Laboratory Analysis
 - D. Sludge and Scum Pumping
 - E. General Maintenance
 - F. Safety
 - G. Principles of Operation
 - H. Review of Plans and Specifications
 - I. Flotation Processes
 - J. Combined Sedimentation-Digestion Unit
 - K. Imhoff Tanks
 - L. Septic Tanks
- VI. Trickling Filters
- A. How a Trickling Filter Works
 - B. Classification of Filters
 - C. Starting, Operating, and Shutting Down a Filter
 - D. Sampling and Analysis
 - E. Operational Strategy
 - F. Maintenance
 - G. Safety
 - H. Loading Criteria
 - I. Trickling Filter/Solids Contact (TF/SC) Process
 - J. Review of Plans and Specifications
- VII. Rotating Biological Contactors
- A. Description of Rotating Biological Contactors
 - B. Process Operation
 - C. Maintenance
 - D. Safety
 - E. Review of Plans and Specifications
 - F. Loading Calculations
- VIII. Activated Sludge (Package Plants & Oxidation Ditches)
- A. The Activated Sludge Process
 - B. Requirements for Control
 - C. Package Plants (Extended Aeration)
 - D. Oxidation Ditches
 - E. Review of Plans and Specifications

- IX. Wastewater Stabilization Ponds
 - A. Use of Ponds
 - B. History of Ponds in Waste Treatment
 - C. Pond Classifications and Applications
 - D. Explanation of Treatment Process
 - E. Pond Performance
 - F. Starting the Pond
 - G. Daily Operation and Maintenance
 - H. Surface Aerators
 - I. Sampling and Analysis
 - J. Safety
 - K. Review of Plans and Specifications
 - L. Eliminating Algae from Pond Effluents

- X. Disinfection and Chlorination
 - A. Need for Disinfection
 - B. Points of Chlorine Application
 - C. Chlorination Process Control
 - D. Chlorine Safety Program
 - E. Chlorine Handling
 - F. Chlorination Equipment and Maintenance
 - G. Other Uses of Chlorine
 - H. Dechlorination

Required Text

Operation of Wastewater Treatment Plants, Volume I, 6th Ed. (2004), Prepared by the CSU Sacramento Office of Water Programs.

Recommended Reference

Standard Methods for the Examination of Water and Wastewater, 20th Ed. (1998), Prepared by the American Public Health Association, American Water Works Association, and Water Environment Federation.

Expected Learning Knowledge, Behavior, and Attitude Outcomes and Competencies

1. Demonstrate understanding of basic wastewater treatment and laboratory analysis processes.
2. Articulate the skills and knowledge necessary to operate and to administer operation of treatment processes at wastewater treatment plants to produce and deliver a clean, safe plant effluent suitable for reuse or for safe discharge to the environment. Unit treatment processes include: screening, grit removal, sedimentation, fixed film and suspended growth biological treatment processes, and disinfection.

3. Understand and apply safe operation practices for working in a wastewater treatment facility.

Assessment Strategies and Evidence of Competency

1. Pass unit examinations for each training unit comprising the course.
2. Pass a comprehensive final exam covering all aspects of wastewater treatment plant operation covered during the course.