

Department of Civil Engineering
Water Reuse
Special Topics in Civil Engineering (CE5390)
Advanced Topics in Civil Engineering (CE 4375, 4376, 4377)
On-line course

Instructor

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Note: The best way to reach me is by email. I will repond to your emails within 24 business hours.

Course Description

Understand the basic concepts and issues involved in wastewater reclamation, recycling and reuse, treatment technologies and procedures for planning and managing water reclamation projects. We will explore the full range of non-potable reuse, indirect potable reuse, and direct potable reuse.

Course Credits: 3

Pre-requisites or Co-requisites: Graduate student in Civil Engineering in good standing. CE4342 Water and Wastewater Engineering or permission from Instructor.

Course Learning Outcomes

- Understand concepts of sustainable water resources, water reclamation and reuse, and resource recovery options
- Identify the socio-economic factors that lead to water reuse
- Identify policies and regulations at the local, state, and national level for water reuse
- Identify important constituents in wastewater effluents that impact human health and environmental quality
- Analyze water quality needs and match those needs with appropriate water treatment technologies
- Evaluate alternative technologies and treatment scenarios for a water reuse system based on local, economic, and technological factors
- Evaluate, assess, or design a water reuse treatment system for use in a realistic situation
- Present a technical and non-technical design report to alleviate typical fears associated with water reuse systems

Course Structure

The course is divided into three sections:

Section 1: Build knowledge of wastewater treatment, environmental and human health issues and approaches for water reuse and sustainable water resources.

Section 2: Wastewater technologies used for water reuse and resource recovery and their fundamental engineering design principles.

Section 3: Case histories of wastewater treatment for water reuse, including engineering design and application issues including group projects. Each group will examine and report on a notable specific water reuse application, biomethane production or other resource recovery methods.

Topics Covered

- Drivers for water reuse and sustainable utilities
- One water concepts
- Types of reuse: potable (“toilet-to-tap”), nonpotable (e.g. irrigation, industrial, etc.)
- Ensuring safety and water reuse regulations
- Water quality issues
- Contaminants of emerging concern
- Operational considerations
- Physical treatment processes
- Chemical treatment processes
- Biological treatment processes
- Pathogen reduction processes
- Typical centralized treatment systems
- Case studies

Textbook

Metcalf, & Eddy, Inc & Asano, Takashi & Burton, Franklin & Leverenz, Harold & Tsuchihashi, Ryujiro & Tchobanoglous, George. (2007). Water Reuse: Issues, Technologies, and Applications. ISBN: 978-0-07-145927-3

Resources

See Blackboard

Computer Activities

The computer activities are primarily assignments using MS Word/ Excel that is available for engineering students through the Microsoft DreamSpark Program (<http://etc.utep.edu/software/msdn.htm>).

For any kind of technical help, please contact the Engineering Technology Center in the Engineering Bldg., Room E351 (Tel: (915) 747-5223; Email: etchelpdesk@utep.edu)

Grading Policy

Students will complete weekly readings and/or videos and complete weekly homeworks, discussion board, and quiz.

- Research paper and/or project: 10%
- Discussion Board Section: 20%
- Weekly quizzes/homeworks (timed and/or untimed) 20%.
- Partial exams: 30%
- Final exam 20%

Grading Scheme: The instructor reserves the right to revise this grading plan. However, students will be informed of any changes. Your final grade will be calculated based on the points you have accumulated as follows:

A	<u>>89.5</u>
B	<u>>79.5</u> but <89.5
C	<u>>69.5</u> but <79.5
D	<u>>59.5</u> but <69.5
F	<59.5

Note that 89.44 is B, 79.44 is C, 69.44 is D, 59.44 is F. This is where your bonus points come to your rescue!

Deliverable Standards and Expectations:

The class material is divided into weekly modules. Each module consists of lectures and class assignments. Students will be responsible for all reading material assigned during each week.

- There will be **NO** makeup quizzes or exams.
- The specifics of the research paper will be provided during the third week.
- Each week students have to provide **FIVE** comments including their own answers to discussion questions posted on the discussion board online. The comments should add to the discussion by sharing your experience or adding information that is missing. The comments such as great...really good..I enjoyed it...All answers are good....I agree etc. will **NOT** be considered for grading purposes.
- Late assignments will **NOT** be accepted. Exception: Each student will have **ONE** opportunity during 7-week period to submit a late assignment within one day after the deadline is passed. **This doesn't apply to quizzes and discussion comments.**
- Communication is the key to success for the online courses.

Technology Requirements

You will need the following software on your computer to efficiently work in this course. In some cases your computer may already have some of these programs installed.

- YouTube Channel. Create a YouTube Chanel.
- Acrobat Reader. You can get the program by going to <http://www.adobe.com> and then clicking on the icon on the center of the screen which says "Get Adobe Reader". Follow instructions to install the reader.
- Adobe Flash Player. You can get the player by going to <http://www.adobe.com> and then clicking on "Get Adobe Flash Player". Follow instructions to install the player.
- Apple QuickTime Player. You can get this player by going to <http://www.apple.com>. Once there, click on the "Downloads" tab on the top of the page and then click on QuickTime "Download" and follow instructions.
- Microsoft Office. I recommend buying this if you do not have any word processing software or presentation software. As students, you can generally buy this whole package for about \$25, far less than the store price of approximately \$400.

Class Policies

These policies serve to help make the learning experience optimally effective and enjoyable for everyone.

Course Schedule Changes

As course instructor, I reserve the right to adjust the course syllabus or change assignments as needed. I will make sure to give you plenty of notice prior to any changes.

Professional conduct

During this course, I expect you to deal with your peers and with me in a professional manner. Be courteous and honest and always communicate with each other in a way that shows respect and sensitivity to cultural, religious, sexual, and other individual differences. I expect you to come to class on time and stay focused on the lecture and learning activities.

Notice of Safe Assign

This course may utilize third party software that has the ability to automatically detect plagiarism on documents submitted for grading.

Copyright Notice

Many of the materials that are posted within this course are protected by copyright law. These materials are only for the use of students enrolled in this course and only for the purpose of this course. They may not be further retained or disseminated.

Institutional Policies

Cheating, Plagiarism, Scholastic Dishonesty, and Student Discipline

Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording: it is also not acceptable. Do not submit work under your name that you did not do yourself, ever. You may not submit work for this class that you did for another class. If you cheated or plagiarized, you will be subject to disciplinary action as stated in the UTEP undergraduate catalog policy.

“Scholastic dishonesty (which includes the attempt of any student to present the work of another as his or her own, or any work which s(he) has not honestly performed, or attempting to pass any examination by improper means) is a serious offense and will subject the student to disciplinary action. The aiding and abetting of a student in any dishonesty is held to be an equally serious offense. All alleged acts of scholastic dishonesty should be reported to the Dean of Students for disposition. It is the Dean of Students’ responsibility to investigate each allegation, dismiss the allegation, or proceed with disciplinary action in a manner which provides the accused student his or her rights of due process.”

Refer to <http://www.utep.edu/dos/acadintg.htm> for further information.

You must cite, reference, or quote information obtained from other sources so you give credit where credit is due. If you do not know how to do that, ask. In addition, when an assignment specifies that you must perform a task individually, asking for your classmates’ help is scholastic dishonesty. Do NOT copy any material, regardless of where you obtained it, into your own work. Do NOT submit work under your name if you did not complete it entirely yourself; be honest and tell me you did it together. The consequences will be less severe when you are up front about it than when you try to hide it.

UTEP now has a site license for Turnitin.com, a plagiarism detection tool that you can also use to check your own work for this or other classes to prevent getting in trouble. I will report any instances of plagiarism and dishonesty to the Dean of Students Office and the grade for the assignment will be an “F” or “zero”.

If you want to test your understanding of plagiarism, take the self-assessment at <http://education.indiana.edu/~frick/plagiarism> or visit <http://www.turnitin.com>

Students with Any Type of Disability

UTEP seeks to provide reasonable accommodations for all qualified individuals with disabilities, including learning disabilities. This university will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required affording equal educational opportunity. It is the student's responsibility to register with Center for Accommodation and Support Services

(CASS) in the East Union Bldg., Room 106 within the first two weeks of classes, and inform the faculty member to arrange for **appropriate accommodations**.

Center for Accomodation and Support Services (CASS) can also be reached in the following ways:

Web: <http://sa.utep.edu/cass/>

Monday thru Friday 8:00a.m.-5:00p.m.

Union Building East Room 106

Phone:(915) 747-5148

cass@utep.edu

Technical Assistance

The University of Texas at El Paso offers complete technical information and help desk support at:
<http://at.utep.edu/techsupport/>.