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Iowa Lakes Community College is committed to ensuring that all programs and services, including electronic and our website (www.iowalakes.edu), are accessible to people with disabilities. In accordance with the provisions of Sections 504 and 508 of the Rehabilitation Act and the Americans with Disabilities Act (ADA), Iowa Lakes provides students, faculty, staff, and visitors with reasonable accommodations to ensure equal access to the programs and activities of the college. For more information visit: https://www.iowalakes.edu/educational-counseling-services/accommodations-disability-resources.

Drew Howing is Environmental Studies Program Coordinator at Iowa Lakes Community College.

Updated in 2017, this course covers an introduction to water distribution and wastewater collection systems offered in credit programs in a face-to-face format.

Course Syllabus

Water Distribution and Wastewater Collection Systems

EVS-224 (Lecture)
W 2:00-2:50 R 2:00-3:50
EVS-224B (Laboratory)
W 3:00-4:50
Spring 2018

Iowa Lakes Community College
300 South 18th Street
Estherville, IA 51334

Instructor Name: Drew Howing
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Office Hours: As posted on office door

This workforce solution is funded in part by the IHUM Consortium which is 100% financed through a $15,000,000 grant from the U.S. Department of Labor's Employment & Training Administration.

Catalog Description: Water Distribution and Wastewater Collection Systems is designed to provide the student with a basic understanding of the hydrology and hydrologic characteristics of water, the characteristics and capacity of the components of distribution systems, the characteristics and capacity of the components of collection systems, and the mathematical procedures performed to monitor and evaluate the effectiveness of distribution and collection systems. Topics covered will include hydraulics and hydrology, water distribution systems, and wastewater collection systems.

Prerequisites: None

Credits: Lecture (EVS-224) – 4 credits, Laboratory (EVS-224B) – 0 credits

Text & Additional Materials: *Water and Wastewater Treatment* by Joanne Drinan and Frank Spellman and *Water Distribution and Wastewater Collection Systems Laboratory Manual* by Gary Phillips

Course Objectives: The objectives of this course are to provide the student with a comprehensive knowledge and understanding of hydraulics and hydrology and the operation and maintenance of water distribution and wastewater collection systems.

Course Competencies: Upon completion of this course the student will be able to:

1. Define water pressure and describe the characteristics of head relationships.
2. Describe the characteristics of water flow under pressure.
3. Describe the characteristics and operation of centrifugal pumps.
4. Describe the characteristics of water systems.
5. Calculate the flow of water in a pipe network system.
6. Calculate the gravitational flow of water in circular pipes.
7. Describe the techniques utilized to measure water flow in a pipe network.
8. Describe how to determine storm water runoff.
9. Describe the hydrologic characteristics of streams and rivers.
10. Describe the hydrologic characteristics of lakes and reservoirs.
11. Describe the hydrologic characteristics of groundwater.
12. Determine the water quantity and pressure requirements of a water distribution system.
13. Describe the water requirements for municipal fire protection.

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14. Describe the characteristics of wells and the techniques utilized in well construction.
15. Describe the characteristics and functions of surface water intakes.
16. List and describe the various designs of piping networks.
17. List the various types of pipes and describe the characteristics of each type.
18. List the various types of water storage structures and describe the characteristics of type.
19. List the various types of valves and describe the characteristics of each type.
20. Define backflow preventers and describe how they function.
21. Describe the characteristics and functions of fire hydrants.
22. Describe how water distribution systems are designed and evaluated.
23. Describe the characteristics and functions of storm sewer systems.
24. Describe the characteristics and functions of sanitary sewer systems.
25. Describe how sewer flow is measured and sampled
26. List the various types of sewer pipes and the characteristics of each type.
27. Calculate the loads on buried pipes.
28. Describe the techniques used to install sewer pipes.
29. Describe the characteristics and functions of lift stations.
30. List and describe the techniques used in sewer testing.
31. Describe the techniques used to clean and maintain sewer systems.
32. Describe how television systems are used in sewer inspections.
33. Describe the problems created for sewer systems by infiltration and inflow.

Units of Instruction:

During the semester the following units will be covered**:**

1. Hydraulics and hydrology
2. Water distribution systems
3. Wastewater collection systems

Methods of Instruction: There are three hours of lecture, demonstrations, and discussions each week. One 2-hour laboratory periods are also part of this course. These laboratory periods are used for the performance of experiments, field trips, writing of laboratory reports, and work on special projects and research papers.

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Attendance Policies: Students are expected to attend class. Attendance will be taken and used in the determination of the final course grade. Each student will begin the semester with **three** sick leave/personal days which may be used as needed by the student for any illnesses or personal matters which may arise during the semester. Once these three days have been missed, two points will be taken for every additional missed class period. Course work or exams missed on those days may be made up if done so within three class days after the absence. If more than three days are missed during the semester, make-up of course work or exams missed on those days will not be allowed. In the case of an extended illness or personal emergency, the above policies may be modified if the circumstances warrant special consideration. Days missed as a result of a school related activities (i.e. participation in course field trips, athletic events, etc.) will be considered as an excused absence only if a memo from the faculty member sponsoring the event is received by the instructor prior to the absence. If such a memo is not received, the absence will be considered as a missed class period.

Grading Policies: Grading is determined by a percentage of total points for the semester.

Scale:
A = 90 to 100%
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = Less than 60%

Four 1-hour tests of 100 points each will be given during the semester. These tests will include multiple choice and essay questions. Four quizzes of 10 points each will also be given during the semester. These quizzes will consist of 10 multiple choice questions. Class reports and projects will be assigned during the semester and will be graded on accuracy, completeness, proper format, neatness, and scientific knowledge. A 50-point research paper will also be assigned during the semester and will be graded on the same criteria as laboratory reports.

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Tests = 400 points
Quizzes = 40 points
Worksheets = 200 points
Research Paper = 50 points
Participation = 60 points
TOTAL POINTS = 750 points

Other Expectations: Students are expected to arrive on time and have the necessary course materials and supplies required for the day's activities. The usage of cell phones by students during class is prohibited. Failure to abide with this policy may result in the ejection of the student from the classroom. Students ejected from the classroom will also forfeit one of their sick leave/personal days as a result of violation of this policy.

Important: NO food or drinks in the lab.

Students must abide by all policies as stated in the Iowa Lakes Community College Student Handbook.

Students should be aware that classes might be audio or video recorded by one or more students. The college's policies governing the audio or video recording of class are included in the Student Handbook. Students who have any questions or concerns about class recordings should address their questions or concerns with the instructor at the ***beginning of the semester***.

STUDENT ACADEMIC HONESTY POLICY

Iowa Lakes Community College believes that personal integrity and academic honesty are fundamental to scholarship. Iowa Lakes strives to create an environment where the dignity of each person is recognized and an atmosphere of mutual trust exists between instructors and students. The faculty has confidence in the integrity of the students and encourages students to exercise good judgment in fulfilling this responsibility.

Actions contrary to academic integrity will not be tolerated. Activities that have the effect or intention of interfering with learning or fair evaluation of a student's work or performance are considered a breach of academic integrity. Examples of such unacceptable activities include, but are not limited to:

- **Cheating** (intentionally using or attempting to use unauthorized material, assistance or study aids in my academic work). For example, using a cheat sheet for a test, looking at another student's paper during an exam, stealing or buying all or parts of an exam or paper, altering and resubmitting work for a better grade without prior approval to do so, etc.
- **Plagiarism** (representing another's ideas, words, expressions or data in writing or presentation without giving proper credit, failing to cite a reference or failing to use proper documentation, using works of another gained over the Internet and submitted as one's own work).

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- **Falsification and/or misrepresentation of data** (submitting contrived or made-up information in any academic exercise). For example, making up data, citing non-existent sources, etc.
- **Facilitating Academic Dishonesty** (knowingly helping or attempting to help another violate any provision of the academic honesty policy). For example, working together on a take-home exam or other assignment when the option has not been made available, giving a paper/assignment to another student for his/her use, etc.
- **Multiple Submissions** (submitting, without prior approval from the instructor involved, any work submitted to fulfill academic requirements in another class). For example, submitting the same paper for two different classes, etc.
- **Unfair Advantage** (trying to gain unauthorized advantage over fellow students). For example, gaining or facilitating unauthorized access to exam materials (past or present); interfering with another student's efforts in an academic exercise; lying about the need for an extension on a paper or assignment; destroying, hiding, removing or keeping library materials, etc.

Disciplinary Action

Any violation of this policy will be treated as a serious matter. The instructor has primary responsibility over classroom behavior and maintaining academic integrity. Students who earn an "F" based on any violation of the Student Academic Honesty Policy may not withdraw from the class (and receive a grade of W). Depending on the nature and severity of the offense, Iowa Lakes Community College reserves the right to exercise disciplinary action as outlined in the Disciplinary Action Section of the Student Handbook.

Americans with Disabilities Act – Policy of Nondiscrimination

It is Iowa Lakes Community College policy to not discriminate against qualified individuals with disabilities and to provide reasonable accommodation(s), as required by law, to otherwise qualified applicants for admission or to students with disabilities in all education programs, activities, services and practices, including application procedures, admissions, course selection, the awarding of degrees, discipline and dismissal. Educational opportunities will not be denied to an otherwise qualified application or student because of the need to make reasonable accommodation(s) or modification(s) for the physical and mental impairment(s) of any such individual.

Iowa Lakes Community College students needing reasonable accommodation(s) and/or modification(s) should contact Jody Condon by phone at (712) 852-5219 or via email at jcondon@iowalakes.edu. To assure that accommodation(s) and/or modification(s) will be ready when classes start, students must make the request as soon as possible, before a semester begins.

It is the policy of Iowa Lakes Community College not to discriminate on the basis of sex, race, national origin, creed, age, marital status or disability in its education programs, activities, or employment policies, as required by Titles VI and VII of the 1964 Civil Rights Act, Title IX of the 1972 Educational Amendments, Section 504 of the Federal Rehabilitation Act of 1973 and Title II of the Americans with Disabilities Act (ADA) of 1990.

Inquiries regarding compliance with Title IX, Title VI, Title VII, or Section 504 may be directed to Kathy Muller, Human Resources, Iowa Lakes Community College, 19 S. Seventh Street, Estherville, IA 51334, telephone (712) 362-0433; to the Director of the Iowa Civil Rights Commission, Des Moines; or to the Director of the Region VII Office of Civil Rights, Department of Education, Kansas City, Missouri.

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