



## Syllabus: ANR 286N Water Resources

### Course Information

Course Title: Water Resources  
Course Prefix/Number: ANR 286N-1  
Semester: Fall 2020  
Class Days/Times: Tuesdays & Thursdays 9AM-11:45AM  
Credit Hours: 4 (lecture and lab are integrated)  
Delivery: Synchronous Zoom Meetings  
Prerequisites: MAT 089 or above

### Instructor Information

Name: Kimberly Danny  
Phone/Voice Mail: 928-380-5536  
E-mail: kdanny@tocc.edu  
Office location: Ha-Maşcamdam Ha-Ki: Room 121  
Office hours: Monday through Thursday 12PM-1:15PM and by appointment

### Course Description

This course aims to instill a basic understanding of the hydrological cycle and provide an overview of the processes that control water supplies to natural ecosystems and humans, giving students the knowledge they need to participate in informed decisions about water resources. The course will emphasize information and activities that are useful in the practice of agriculture and water conservation, including an introduction to rainwater harvesting principles. Topics will include the scientific method, precipitation, evaporation, runoff, water harvesting, erosion, groundwater aquifers, traditional Tohono O'odham water use and water harvesting practices, water quality and the Southern Arizona Water Resources Settlement Act (SAWRSA). Whenever possible, these topics will be addressed using examples relevant to the Tohono O'odham Nation.

### Student Learning Outcomes

After completion of the course students will be able to ...

1. Describe the various phases and effects of the hydrologic cycle, including: precipitation, evaporation and transpiration (evapotranspiration), runoff and erosion, streamflow, and groundwater storage.
2. Understand rainwater harvesting practices, such as directing water flowing on the landscape toward desired vegetation and collecting rooftop water for plants and people.
3. Recognize how local climate and weather influence the hydrologic cycle on the Tohono O'odham Nation, the U.S. Southwest, and around the globe.
4. Discuss water issues and practices as they relate to the Tohono O'odham Nation, including relevant vocabulary, traditional water harvesting practices, SAWRSA and other applicable water laws.

## Course Structure

It is important that stay on top of the readings, videos, and assignments. If you do experience any hardships, please let me know right away so we can come up with a solution.

**Synchronous (Live) Zoom Sessions.** Learners are required to read/watch/listen to introductory materials before live Zoom classes and be actively engaged. Please expect a brief lecture, small-group discussions, and ask/answer questions. I intend to limit live sessions to 1.5 hours, because I understand how draining it is to be online all day. However, I will remain online for the duration of the class times listed to answer any questions or provide clarification.

**Asynchronous Tasks and Assignments.** Outside of the Zoom sessions, learners will be expected to watch micro-lecture videos, take notes, submit a copy of your notes, participate in asynchronous discussions, submit weekly quizzes, and complete laboratory activities.

**Exams and Projects.** Three (3) timed exams will be given every 3-4 weeks. In addition, learners will be asked complete two research projects<sup>1s</sup>, one of which will be a group effort and one that will be done individually.

## Course Learning Materials and Textbook Information

### Required Textbook

John C. Clausen. 2018. *Introduction to Water Resources*. Long Grove, Illinois: Waveland Press, Inc. ISBN 10: 1-4786-2800-6; ISBN 13: 978-1-4786-2800-2. Available in paperback or eBook: (Chegg, Google Play, Kindle, VitalSource)

Other supplemental materials can be accessed through Canvas.

## Courses Outline and Important Dates

Topics to be covered during the course:

- I. Tohono O'odham relationships with water
- II. Introduction to the water cycle
- III. Precipitation

- IV. Evaporation
- V. Infiltration
- VI. Runoff and erosion
- VII. Water harvesting: introduction
- VIII. Water harvesting: passive
- IX. Transpiration and Evapotranspiration
- X. Water harvesting: active
- XI. Streams
- XII. Groundwater
- XIII. Water balance
- XIV. Water quality and arsenic contamination
- XV. Water Law and policy/SAWRSA

### Important Dates

First Day of Classes	August 24, 2020
Add without Instructor's signature	August 24-28, 2020
Add with Instructor's signature	August 31 – September 4, 2020
Labor Day - College Closed	September 7, 2020
Drop/Full Refund Deadline	September 15, 2020
Week 4 - Student Progress Reports Due	September 18, 2020
O'odham Tas - College Closed	September 25, 2020
Fall Break - No Classes	September 28 - October 2, 2020
St. Francis Day - College Closed	October 2, 2020
45th Day Census	October 8, 2020
Week 8 - Student Progress Reports Due	October 16, 2020
Withdrawal Deadline	November 9, 2020
Week 12 - Student Progress Reports Due	November 13, 2020
Veteran's Day - College Closed	November 11, 2020
Thanksgiving Holiday - College Closed	November 26-27, 2020
Last Day of Instruction	December 11, 2020
Last Day of Class/Final Grades Due	December 15, 2020
Winter Break - College Closed	December 25 - January 1, 2021

### Evaluations and Grading & Assignments:

GRADE	PERCENTAGE (%)
A	90-100
B	80-89.9

---

**DISCLAIMER:** This syllabus is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.

<b>C</b>	70-79.9
<b>D</b>	60-69.9
<b>F</b>	0-59.9

Your grade will be determined by the following:

<b>EVALUATION</b>	<b>NUMBER OF ASSIGNMENTS</b>	<b>POINTS PER ASSIGNMENT</b>	<b>WEIGHTED GRADE %</b>
<b>In-class Participation</b>	15	15	10%
<b>Weekly Discussion Boards</b>	15	15	20%
<b>Weekly Quizzes</b> (2 Lowest Scores Will Be Dropped)	15	100	15%
<b>Lab Activities/Reports</b>	13	100	15%
<b>Research Projects</b> (1 group, 1 individual)	2	100	20%
<b>Exams</b>	3	100	20%
<b>TOTAL</b>			<b>100%</b>

## Himdag Cultural Component

Tohono O’odham traditions and cultural beliefs will be discussed as relevant course topics, and only as appropriate to the Tohono O’odham Nation’s traditional standards for sharing information as determined by the *Himdag* committee.

## Policies and Expectations

### Attendance Policy

You are expected to arrive to class on time and be prepared to participate in each class period. Four unexcused absences may result in withdrawal and a “W” or “Y” will be recorded. You may request to be excused from class for religious observances and practices, for illness, for school or work-related travel or for personal or family emergency. If you will be absent, please notify the instructor as soon as possible (approved by Faculty Senate April 2014).

### Incomplete Policy

Incomplete (I) grades are not awarded automatically. The student must request an "I" from the instructor who can choose to award an Incomplete only if all three of the following conditions are met:

1. The student must be in compliance with the attendance policy.
2. The student must have unavoidable circumstance that would prohibit the student from completing the course.
3. The student must have completed over 75% of the course requirements with at least a “C” grade.

Incompletes are not a substitute for incomplete work due to frequent absences or poor academic performance. Incomplete grades that are not made up by the end of the ninth week of the following semester will be automatically changed to an F if the agreed upon work, as stipulated on the written form signed by the instructor and the student when the I grade is awarded, is not completed.

### **Instructor Withdrawals**

Students who have missed four consecutive classes (or the equivalent) not submitted any assignments nor taken any quizzes by the 45th day census report, due on **October 8, 2020**, are assumed NOT to be participating in the class and may be withdrawn at the faculty member's discretion. [faculty members should be clear in their withdraw policy, if you do not withdraw students please note in appropriate sections].

### **Student Withdrawals**

Students may withdraw from class at any time during the first 2/3 of the semester without instructor permission and without incurring any grade penalty. Please be sure to withdraw yourself by **November 9, 2020**, if you do not expect to complete the class, otherwise you may receive an "F" grade.

### **Special Withdrawals (Y) Grade**

The "Y" grade is an administrative withdrawal given at the instructor's option when no other grade is deemed appropriate. Your instructor must file a form stating the specific rationale for awarding this grade. "Y" grades are discouraged since they often affect students negatively. Your instructor will not award a "Y" grade without a strong reason.

### **Academic Integrity:**

Violations of scholastic ethics are considered serious offenses by Tohono O'odham Community College, the Student Services Department, and by your instructor. Students may consult the TOCC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure. Copies are available at Tohono O'odham Community College.

All work done for this class must be your own, or the original work of your group. While you may discuss assignments with other class members, the final written project must clearly be original. You may use work from books and other materials if it is properly cited. Copying from a book without proper reference or from a person under any circumstances will result in an "F" for the assignment, and at the instructor's discretion, possibly an "F" for the course. If you are uncertain about proper citations, ask your instructor or the librarian.

### **Course Feedback:**

All assignments will be graded and returned to the students promptly, typically within a week after the assignment is closed for handing in. Email and phone messages will be returned within two days. A student or the instructor may request a student conference at any time

during the semester. Quarterly grade reports will be provided to each student, either in person, by email or via the electronic system of Canvas.

### **Class Participation**

Class participation and preparation is essential to student success. Students are expected to come to class prepared and complete any preliminary work required as per the course schedule.

Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave. Student behavior guidelines are detailed in the Student Handbook under the Student Code of Conduct Violations (page 34).

### **Equal Access Statement/Disability Accommodations**

Tohono O'odham Community College seeks to provide reasonable accommodations for qualified individuals with disabilities. The College will comply with all applicable regulations, and guidelines with respect to providing reasonable accommodations as required to ensure an equal educational opportunity. This process includes self-identifying as a student with a disability, providing supporting documentation of their disability, and being approved for services through the Disability Resources Office (DRO). It is the student's responsibility to make known to their instructor(s) the student's specific needs within the context of each class in order to receive appropriate accommodations. We will work together in order to develop an accommodation plan specifically designed to meet the individual student's requirements.

For more information or to request academic accommodations, please contact: Anthony Osborn, TOCC Disabilities Resource Coordinator, [aosborn@tocc.edu](mailto:aosborn@tocc.edu), or 520-383-0033 for additional information and assistance.

### **Title IX**

Tohono O'odham Community College encourages each student to have the knowledge and skills to be an active bystander who intervenes when anyone is observed or being harassed or endangered by sexual violence. Sexual discrimination and sexual violence can undermine students' academic success and quality of life on campus and beyond. We encourage students who have experienced or witnessed any form of sexual misconduct to talk about their experience and seek the support they need.

Confidential support and academic advocacy can be found with: Student Services Title IX Coordinator/Counselor, Alberta Espinoza, M.Ed. located in I-We:mta Ki: Room 18. Phone 520-383-0033. Email: [aespinoza@tocc.edu](mailto:aespinoza@tocc.edu).

### **Conduct: Bias, Bullying, Discrimination and Harassment**

Tohono O'odham Community College faculty and staff are dedicated to creating a safe and supportive campus environment as a core value. Harassment based on age, class, color, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration

status, marital status, political ideology, race, religion/spirituality, sex, sexual orientation, and tribal sovereign status will not be tolerated.

## **Instructor Policies and Expectations**

### **Course Policies:**

1. Students are expected to attend each class., arriving on time, except in the case of an excused emergency.
2. Students are expected to contact instructor prior to absences, coming late to class or leaving early.
3. Unexcused late arrivals or early departures will count against attendance record.
4. Class participation and preparation are essential to student success. Students must read textual material, prepare for projects, complete required research as stated on the course schedule.
5. Students are expected to come to class prepared for class and having done any preliminary work required as per the course schedule.
6. Students are expected to stay in class and work diligently throughout the whole time. Sleeping, frequent/continued exiting from the class during the class period will constitute one (1) absence.
7. No cell phone use is allowed during class. unless the instructor is allowing students to use their tools (calculator, internet access).
8. Late work is marked down 10 points for each day of tardiness.
9. Failure to submit a project results in a grade of zero (0). A 60% grade is a better grade!
10. No work accepted after the last class
11. At the instructor's discretion, extra credit opportunities and optional activities may be provided.

### **Classroom Behavior**

- Students creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.
- Student behavior is also detailed in student handbook under Student Code of Conduct Violations.

### **Late Work**

- If you are not able to submit an assignment (other than quizzes) due to an emergency or hardship, please let me know prior to the deadline so arrangements can be made.
- Weekly Quizzes will not be reopened after their weekly due date. Please plan your attempt(s) accordingly.

- Lab Activities/Reports can be submitted up to a week after the due date. However, for every day after the due date, a 10% penalty will be deducted. After the week is over, lab report submissions will be marked zero.
- Presentations: Unless you have contacted me prior to the due date, a 10% penalty will be deducted daily for late submissions.

### Exams

- Exams will be timed. Exams will be open for a set period of time.
- If you plan to be absent, please let me know as soon as possible. A missed exam with no communication prior or up to 4 hours before the exam will be marked 0.
- Make-up exams must be taken with 2 days of the original exam date.

**DISCLAIMER:** This syllabus is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.

### Courses Schedule and Important Dates

WK	DATES	TOPIC
<b>1</b>	8/24-8/30	Course Overview, Properties of Water
	<i>Fri. 8/28</i>	<i>Last day to add/drop without instructor's signature</i>
	<i>Fri. 9/4</i>	<i>Last day to add/drop with instructor's signature</i>
<b>2</b>	8/31-9/7	Water quantity units, Introduction to the Water Cycle
	<i>Mon. 9/7</i>	<i>Labor Day – College Closed</i>
<b>3</b>	9/8-9/13	Precipitation
<b>4</b>	9/14-9/20	Interception, Evapotranspiration
	<i>Tue. 9/15</i>	<i>Last day to drop with a full refund</i>
	<i>Fri. 9/18</i>	<i>Week 4 Progress Report</i>
<b>5</b>	9/21-9/27	Infiltration, Streamflow
	<i>Fri. 9/25</i>	<i>O'odham Tas – College Closed</i>
<b>Fall Break</b>	<i>9/28-10/4</i>	<i>Fall Break – No Classes</i>
	<i>Fri. 10/2</i>	<i>St. Francis Day – College Closed</i>
<b>6</b>	10/5-10/11	Groundwater, <b>Exam 1</b>
	<i>Thu. 10/8</i>	<i>45<sup>th</sup> Day Census</i>
<b>7</b>	10/12-10/18	Water quantity laws/regulations
	<i>Fri. 10/16</i>	<i>Week 8 Progress Report</i>
<b>8</b>	10/19-10/25	Water quality units, physical characteristics of water
<b>9</b>	10/26-11/1	Chemical and biological characteristics of water

---

**DISCLAIMER:** This syllabus is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.



<b>10</b>	11/2-11/8	Water quality laws/regulations, rainwater harvesting practices
	11/9-11/15	<b>Exam 2, Research Project</b>
<b>11</b>	<i>Mon. 11/9</i>	<i>Withdrawal Deadline</i>
	<i>Wed. 11/11</i>	<i>Veteran's Day – College Closed</i>
	<i>Fri. 11/13</i>	<i>Week 12 Progress Report</i>
<b>12</b>	11/16-11/22	Surface and ground water quality
<b>13</b>	11/23-29	Pollution, contamination
	<i>11/26-11/27</i>	<i>Thanksgiving Holiday – College Closed</i>
<b>14</b>	11/30-12/6	Research
<b>15</b>	12/7-12/10	<b>Exam 3, Final Project Presentation</b>