

CTC 261
Hydraulics
Instructor: Jayne Baran

Time: TR 11:00-11:50 am, Kunsela B232
Lab: Wed Noon-2 pm (Donovan 1155)
Semester: Spring 2026

Course Description:

Introductory course in applied hydraulics. Topics include fluid statics, buoyancy, open channel flow, conduit flow, culvert hydraulics and design, storm water systems. Course consists of two hours of lecture and two hours of laboratory per week. Prerequisite: CTC 224-Statics and Strength of Materials

Credit Hours: 3

Learning Outcomes:

1. Learn fundamental principles of hydraulics and apply technical concepts to the solution of problems.
2. Perform standard analysis and design using hydraulics principles.

Required Text and Materials:

Nathanson, Jerry A. and Schneider, Richard A., *Basic Environmental Technology*, 6th edition, Pearson, 2015, ISBN-10: 0-13-284014-6; ISBN-13: 978-0-13-284014-9

HDS-5 <https://www.fhwa.dot.gov/engineering/hydraulics/pubs/12026/hif12026.pdf>

Office Hours and Contact Information:

Wednesday 10-Noon;
Thursday 1-2 pm (Or by appointment)
Email: jayne.baran@sunypoly.edu

Donovan Hall 1197
Phone: (315) 792-7542
Website: <http://www.sunypoly.edu/~barans/>

Topics and Projects:

Topics:	Description	Hrs	Lab or Project
1	Introduction and Fluid Properties	1.0	Lab: Flow Visualization
2	Fluid Statics	4.0	Lab: Fluid Statics
3	Fundamental Hydrodynamics	2.0	
4	Open Channel Flow	2.0	Software: Flowmaster/Culvertmaster
5	Hydraulic Devices	2.0	
6	Culvert Hydraulics	2.0	Project: Culvert Replacement
7	Culvert Design	2.0	or Culvert Design
8	Stormwater Systems	3.0	
9	Stormwater Pollution Control Plans	2.0	
10	Detention Design	2.0	
	Experimental Labs	4.0	
	Software/Design Projects	16.0	
	Mid-Term/Final	4.0	

Methods of Evaluation:

Homework:

Homework shall be typed or neatly handwritten in pencil on engineering graph paper. There is no provision for make-up of late homework assignments. The homework grade will be based on the top ten of eleven homework assignments.

Projects/Design Labs:

Applied design projects and reports emphasize teamwork and communication, as well as the application of industry-standard hydraulic, word-processing, spreadsheet, and presentation software. The need for professionalism and excellence is reinforced through the requirement for assignments to be completed on time and in a neat and well-organized manner. Several laboratory experiments and a design project will be completed in this course.

Examinations:

There will be one midterm and one final exam scheduled during the semester. Students are expected to take the exams at the scheduled times. Generally, no make-up test will be given except for medical emergencies or other valid reasons for which prior approval has been obtained.

Attendance/Participation:

Students are expected to attend every class period and have homework and project assignments completed and ready to present. The need for professionalism and excellence is reinforced through the requirement for assignments to be completed on time and in a neat and well-organized manner. A missed class does not excuse responsibility for the work covered in class and the homework assignments.

Homework	25%
Projects/Labs	25%
Mid-Term Exam	25%
Final Exam	25%
TOTAL	100%

Accommodations for Students with Accessibility Needs at SUNY Polytechnic Institute:

Your access in this course is important to me. In compliance with the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973, SUNY Polytechnic Institute is committed to ensuring comprehensive educational access and accommodations for all registered students seeking access to meet course requirements and fully participate in programs and activities. Students with documented disabilities, temporary, or medical conditions are encouraged to request services by contacting Student Accessibility Services (SAS) or filling out the [Request for Accommodations form](#). Please note, requesting accommodations is only the first step. You must provide documentation (the request form may count) to SAS and meet with staff *before* receiving accommodations. Please do this as early as possible 1) because accommodations are never retroactive and 2) so that we have adequate time to arrange your approved academic accommodation/s.

Once SAS creates your accommodation plan, it is your responsibility to provide me a copy of the accommodation plan. If you experience any access barriers in this course, such as with printed content, graphics, online materials, etc., reach out to me or SAS right away. For information related to these services or to schedule an appointment, please contact SAS using the information provided below.

Office of Student Accessibility Services

SAS@sunypoly.edu

(315) 792-7170

Kunsela Hall, B101

Content Accessibility

SUNY Poly's goal is for all digital content to be fully accessible but there may be times when remediation is still underway, please let me know if you experience challenges accessing any digital content in this course.

Pregnancy Statement:

SUNY Poly is committed to fostering an inclusive and supportive environment for all students and it does not discriminate against any student based on the student's pregnancy or related conditions. If you have questions or concerns related to pregnancy or related conditions, please contact the Title IX Coordinator, Kathie Artigiani at artigik@sunypoly.edu.

Technical Assistance for Students:

The [SUNY Poly Help Desk](#) is in the Cayan Library on the first floor. You can contact them by phone at 315-792-7440, by email at helpdesk@sunypoly.edu, or by submitting an online help ticket on their website.

If the SUNY Poly Help Desk is closed, you can obtain assistance from the [Open SUNY Help Desk](#) by calling 1-844-OPENSUNY (673-6786). The Open SUNY email is OpenSUNYHelp@suny.edu or you can [submit an online help ticket](#).

The SUNY Poly ITS website has [information about software and hardware](#) that you can access as a student, as well as links to software you may need in your classes. Students are encouraged to save all work in multiple locations. MS Office OneDrive is available for use. For assistance, please contact the ITS Help Desk, helpdesk@sunypoly.edu or 315-792-7440.

Academic Integrity and Code of Conduct:

SUNY Poly is committed to academic excellence in a climate of honesty, respect, and trust. The mutually respectful exchange of honest ideas is foundational to the intellectual vigor of the SUNY Poly community. The University seeks to maintain and enhance its educational environment through the development, promotion, and enforcement of standards for academic integrity. Please take a few minutes to become familiar with [SUNY Poly's Community Standards](#), including the Student Handbook and Student Code of Conduct. SUNY Poly's Academic Integrity Policy, which describes SUNY Poly's policies regarding plagiarism and other inappropriate academic activities, can be found in the Student Handbook.

Writing and Communications Center:

The [Writing and Communications Center](#) (WCC) is here to support all of SUNY Poly's writers: students, faculty, and staff. We offer one-on-one in-person and remote consultations for writers working on a range of projects at any stage of the writing process (from idea generation to final revisions). WCC consultants work with writers on idea development, brainstorming, content development, structure, source use, style, grammar, punctuation, and more. While we are not a proofreading or editing service and we do not comment on grades, we offer strategies and resources writers can use as they compose, revise, edit, and learn to proofread their own work. The WCC is located on the first floor of the Cayan Library. You can learn more about the WCC or make an appointment by visiting our website: <https://sunypoly.edu/writingcenter.html>.

Cancellation of Classes Due to Inclement Weather or Other Emergency:

SUNY Poly has a 24-hour hotline, called Snowline, to inform students, faculty, and staff when severe weather prompts the cancellation of all classes. Snowline can be reached by calling 315-792-7385. In the event of severe weather, Snowline will announce only the cancellation of ALL classes. The cancellation of all classes will also be posted online and broadcast on radio and television stations in the Utica Rome and Syracuse areas. The SUNY Poly website also maintains a list of [individual class cancellations](#).

In addition, all SUNY Poly students and employees are enrolled in the Rave Alert emergency alert service. You can visit the [SUNY Poly Rave Alert website](#) to learn more and to adjust your notification preferences.