CTC 261T **Time: TBD**
Hydraulics Theory **Lab: TBD (Don 1159)**
Instructor: Jayne Baran **Semester: Spring 2023**

Course Description:

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

Course Goals:

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

Student Learning Outcomes (Performance Indicators):

1. Understand the use of the Reynolds number for determining laminar flow.
2. Able to solve for the static force (magnitude and direction) on a vertical non-rectangular gate.
3. Able to estimate the capacity and velocity of a pipe flowing full using Manning's Equation.
4. Able to complete a Culvert Design Form to evaluate an existing concrete box culvert.
5. Able to design a riprap apron (stone size, thickness, width and length).

Required Text and Materials:

Gribbin, John E., *Introduction to Hydraulics and Hydrology*, 4th edition, Prentice Hall, 2014, ISBN-10: 1-133-69183-8; ISBN-13: 978-133-69183-9

Office Hours and Contact Info:

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Topics and Projects:

Topics:	Description	Hrs	Chapter/Activity or Project
1	Introduction and Fluid Properties	1.0	Chapter 1,2
2	Fluid Statics	4.0	Chapter 3
3	Fundamental Hydrodynamics	2.0	Chapter 4
4	Open Channel Flow	2.0	Chapter 6 / Flowmaster
5	Hydraulic Devices	2.0	Chapter 5 /
6	Culvert Hydraulics	2.0	Chapter 7 / Culvert Replacement
7	Culvert Design	2.0	Chapter 11 / Culvert Design Project
8	Stormwater Systems	3.0	Chapter 10 / Stormwater Design
9	Stormwater Pollution Control Plans	2.0	Handout / Review Control Plans
10	Detention Design	2.0	Chapter 12

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 homework assignments. A missed homework assignment is a zero and will be factored into the final grade.

Projects/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. The labs and projects will be completed in the lab section which accompanies 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 period and have assignments completed and ready to present. A missed lab does not excuse responsibility for the work covered in the lab.

Method of Evaluation:
Student grades will be based on homework, laboratory reports, design projects and exams. Assignments for both theory and lab will be combined into one final grade for both sections with the distribution shown below.

Labs w/ Reports and Design Projects	20%
Homework	20%
Midterm Exam	30%
Final Exam	30%
TOTAL	**100%**

Code of Conduct:

Students are referred to the Student Handbook for SUNY Poly's current Academic Integrity Policy regarding plagiarism and other inappropriate academic activities.

Cancellation of Classes Due to Inclement Weather or Other Emergency:

SUNY Poly has a 24-hour hotline to inform students, faculty and staff when severe winter weather prompts the cancellation of all classes. On-campus, you can call the "Snowline" by dialing ext. 7669 ("SNOW"). Off-campus, Snowline can be reached by calling 315-792-7385. Snowline cards are available at various locations on campus.

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, at sunypoly.edu, and will be broadcast on radio and television stations in the Utica-Rome, Syracuse and Albany areas. Individual class cancellations are always available at sunypoly.edu/apps/cancelled_classes.

Accommodations for Students with Disabilities:

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, 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 or medical conditions are encouraged to request these services by registering with the Office of Disability Services. Please request accommodations early in the semester, or as soon as you become registered with Disability Services, so that we have adequate time to arrange your approved academic accommodation/s. Once Disability Services 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 Disability Services right away. For information related to these services or to schedule an appointment, please contact the Office of Disability Services using the information provided below.

Leslie K. Reid, Director (she/her/hers)
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Utica Campus: Peter J. Cayan Library, L145