CENG 3361- Applied Engineering Hydrology and Hydraulic Design
Course Syllabus

1. Course number and name

CENG 3361, Applied Engineering Hydrology and Hydraulic Design

2. Credits, contact hours

a) 3.0 Credit Hours
b) Two hours of lecture and three hours of laboratory per week
c) This is an engineering topics course in Hydrology and Hydraulics engineering that focuses on the hydrological cycle and the design of hydraulic structures to meet those needs. It provides the background for follow-on courses in water resources as well as environmental design.

3. Instructor's or course coordinator's names

Dr. Zain Al Houri, and Dr. J. Torey Nalbone

4. Textbook, title, author, and year

Gupta, R. S. (1997). Hydrology and hydraulic systems (4th ed.). Waveland Press, Inc. ISBN: 1-4786-3091-4.

5. Specific course information

a) Concepts covered are hydrologic cycle, precipitation, evapotranspiration, infiltration, runoff, hydrograph analysis, open channel flow, design of stable channels, and hydraulic design of weirs, spillways, stilling basins, and culverts. A design project involving hydrologic system analysis and design is assigned.
b) CENG 3310 or MENG 3310
c) Required course

6. Specific course learning objectives

1. Describe the hydrologic cycle and recognize the various storage and transport pathways in the cycle.
2. Describe the hydrologic design scale, select a design storm, and specify precipitation depth and distribution.
3. Apply Φ-index, SCS-CN, and unit hydrograph methods to estimate storm runoff hydrographs.
4. Use the Rational Method to compute the peak discharge for an urbanized watershed.
5. Design and analyze open channel systems
6. Apply spreadsheets and mathematical tools to support engineering analysis and design calculations.
7. Perform engineering tasks in a team environment and communicate effectively with others.

7. Topics covered

- Engineering Hydrology: hydrologic cycle, precipitation, evapotranspiration, infiltration, runoff
- Hydrographs and Unit Hydrographs
- Frequency Analysis
- Design Storms
- Open Channel Flow
- Hydraulic Design: open channels, weirs, spillways, stilling basins, culverts.

Student Learning Outcomes **At the completion of the program, students should be able to:**	
SO 1	Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
SO 2	Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
SO 3	Communicate effectively with a range of audiences
SO 4	Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
SO 5	Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
SO 6	Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
SO 7	Acquire and apply new knowledge as needed, using appropriate learning strategies

Course to Student Learning Objectives

The learning objectives of this course contribute to meeting one or more of the student learning outcomes as shown below, with the contribution designated as "H-high", "M-medium", or "L-low":							
	SO 1	**SO 2**	**SO 3**	**SO 4**	**SO 5**	**SO 6**	**SO 7**
CLO 1	**M**					**M**	**M**
CLO 2	**H**	**M**				**M**	**M**
CLO 3	**H**	**M**				**M**	**M**
CLO 4	**H**	**M**				**M**	
CLO 5	**H**	**H**				**M**	**M**
CLO 6	**H**	**H**			**M**	**M**	**M**
CLO 7	**H**	**H**	**H**	**M**	**H**		**M**

TENTATIVE COURSE SCHEDULE

This schedule may be adjusted, as needed, during the semester to better serve the educational needs of the class.

Wk. #	DATE	LSN	Topic	Reading	Assignments/Lab
	12-Jan	1	Course Introduction		No Lab
1	14-Jan	2	Hydrologic Cycle	2.2- 2.4	HW1
	19-Jan		**MLK-NO CLASS**		
2	21-Jan	3	Water Balance Equation	2.2- 2.4	
	26-Jan	4	Elements of the Hydrologic Cycle: Precipitation	2.5	Lab 01
3	28-Jan	5	Analysis of Point Precipitation Data	2.6	
	2-Feb	6	Conversion of Point Precipitation to Areal Precipitation	2.6	HW2, Lab 02
4	4-Feb	7	Conversion of Point Precipitation to Areal Precipitation	2.7	
	9-Feb	8	Precipitation: IDF Analysis of Point Precipitation	2.8	HW3, Lab 03
5	11-Feb	9	Infiltration	4.2	
	16-Feb		Infiltration	4.2	HW4, Lab 04
6	18-Feb	10	Evaporation and Transpiration	3.1-3.9	
	23-Feb	11	**EXAM I**	3.1-3.9	HW5
7	25-Feb	12	Evaporation and Transpiration	3.1-3.9	
	2-Mar	13	Runoff: SCS Curve Number	4.1-4.6	HW6, Lab 05
8	4-Mar	14	Runoff: Rational Method	16.1	
	9-Mar		**SPRING BREAK**		
9	11-Mar				
	16-Mar	15	Hydrograph Analysis	9.1-9.14	HW7, Lab 06
10	18-Mar	16	Surface Water Flow Measurements	9.1-9.14	
	23-Mar	17	Introduction to Hydraulic Structures	8.1-8.8	HW8, Lab 07
11	25-Mar	18	Flow measuring Structures: Flumes	13.1 – 13.9	
	30-Mar	18	**EXAM II**		HW9
12	1-Apr	20	Flow measuring Structures: Weirs	13.1 – 13.9	
	6-Apr	21	Culverts	Handout	HW10, Lab 08
13	8-Apr	22	Open Channel flow: Elements of the channel section	14.1-14.2	
	13-Apr	23	Open Channel flow: Types of flow	14.3-14.4	HW11, Lab 09
14	15-Apr	24	Open Channel flow: Concepts of Specific Energy	14.5	
	20-Apr	25	Uniform Channel flow	14.6	HW12, Presentations
15	22-Apr	26	Channel Design	14.7	
	27-Apr		**FINAL EXAM WEEK (April 27th-30th)**		
16	29-May				

CENG 3361- Applied Engineering Hydrology and Hydraulic Design
Course Policies & Student Responsibilities

Lecture Time & Venue:

- **Meeting Time(s):** from 1320 to1420 on M/W
- **Course Number and Section:** CENG 3361, Section 001 (Main Campus)
- **Classroom Number(s):** Room RBS 2019
- **Lab:** 3361–01L 1430 to 1715 RBS 1027 if necessary or RBS 2019

Students are expected to attend class and take their own notes during lectures. If a class is missed, students are still responsible for all material covered. Presentation slides will be posted in the appropriate section of the CANVAS modules, but they are intended to support—not replace—your personal notes.

Instructor Information

- Instructor Name: Dr. J. Torey Nalbone
- Office Number: RBS 2003
- Email: tnalbone@uttyler.edu
- Office Hours (In Person &ZOOM): M, T & W 0730 AM – 0900 AM, Other times available either by Walk-in or by appointment
  (BEST PRACTICE is to email me ahead of time to set up an appointment for when you would like to meet

Topic: Dr. Nalbone's Zoom Office Hours Monday, Tuesday and Wednesday

Torey Nalbone is inviting you to a scheduled Zoom meeting.
Join Zoom Meeting
https://uttyler.zoom.us/j/89351558544?pwd=ViTwLVnmaRhGCR8ZfGgr0dOoALab0f.1

Meeting ID: 893 5155 8544
Passcode: 843084

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Contact

The best method of contact is to send me an email either in UT email or through **the Canvas Inbox.** Any email you send should have your first and last name, the course number (e.g., Nalbone CENG 3361), and proper punctuation. Failure to do so may delay the response

Course Overview

Welcome to CENG 3361 (Applied Engineering Hydrology and Hydraulic Design). This course introduces two broad fields within water resources engineering: **hydrology** (surface and subsurface processes) and **hydraulics** of both closed conduits and open-channel flow. You will begin by learning fundamental concepts of hydrology, including hydrologic processes such as precipitation, evapotranspiration, infiltration, runoff, and hydrograph analysis. The course will then transition to hydraulics, covering flow behavior in open channels and closed conduit systems. Finally, you will be introduced to design principles and criteria for solving practical engineering problems related to stable open-channel design and stormwater management systems. A course project involving hydrologic system analysis and design will be assigned.

Required Textbooks and Readings

- **Primary Textbook:** Hydrology and Hydraulic Systems, 4th Edition by Ram Gupta, Waveland Press, Inc. ISBN 1-4786-3091-4 (the one in which I reference in class).
- **Additional Readings:** Throughout the semester, you will encounter insightful readings assigned and posted on Canvas.

Course Website

- Canvas will be used to manage the course material for the semester. All course materials and announcements will be provided in Canvas. There you will find homework assignments, homework solutions, handouts and other material pertaining to the class. **Please check there regularly.**

- ***Sharing of course materials*:** Course material delivered via Canvas may NOT be shared online or with anyone outside of the class, without me granting express written permission. The term handouts refer to all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, assignment sheets, recorded lectures, outlines, in-class materials, and review sheets. The unauthorized sharing of class materials outside of the class constitutes academic dishonesty and disciplinary action may be taken (see Policy on Academic Dishonesty below).

Course Structure

This course is designed to provide a comprehensive understanding of environmental engineering principles through a combination of lectures and hands-on laboratory work.

- Lectures:
  - Frequency: Two lectures per week
  - Duration: 55 minutes
- Laboratory Sessions:
  - Frequency: One lab session per week
  - Duration: 3 hours per session
- UT Tyler's Canvas website will be used to manage the course material for the semester. There you will find homework assignments, homework solutions, handouts and other material pertaining to the class. **Please check there regularly.**

Grading Breakdown

The following components contribute to your final grade*:

Assignment	Percentage %
Homework/ Quizzes/ In Class Activities	15%
Professional Practice (three Org. attendance)	5%
Final Project	10%
Lab Memos	15%
MIDTERM EXAMS (Two)	30%
Final Exam	25%
Total	**100%**

Final Grade: Scale
90-100: A
80-89: B
70-79: C
60-69: D
<60: F

****NOTE: There will be no makeup work or extra credit allowed/granted at the end of or during the semester unless allowed/granted to everyone by the instructor.All assignments must be turned in at the appropriate time to receive credit.***

Graded Course Requirements Information

Homework Assignments

- Homework will be assigned on a regular basis (see homework schedule).
- You will need to upload your homework as a single pdf file to canvas no later than 11:59 pm on the due date. No late homework will be accepted except for unusual circumstances.
- Homework must be submitted on engineering paper. Homework solutions not submitted on engineering paper will receive only 90% of the graded credit.

- Solutions should be presented in a clear methodical manner. Follow the "homework submission guidelines" when completing your assignment. Solutions which are not clearly presented will receive a 0 credit.
- Students may discuss their homework solutions with one another, but each student must submit their own, independent solutions (i.e. you may not just copy someone else's homework). If you receive assistance from a fellow student on a particular problem, you must cite that assistance within your solution.

Homework Submission Guidelines

- Homework should be submitted using letter size (8 ½ x 11") paper. Engineering paper is required.
- The header of the first page should include the following:
  - Name of Student: LAST NAME, FIRST NAME (All Caps)
  - Course Number and Name
  - Homework Number
- There should be no more than 2 problems per page. This is to ensure that there is enough space on the paper for the grader to add comments.
- All problems should include:
  - Problem Number
  - A diagram of the problem
  - A set of given quantities
  - A set of unknown quantities
  - A set of assumptions
- All numbers and writing should be clear and readable.
- When required to produce a graph, use a computer program such as excel or MATLAB to generate the plot. Do not draw it by hand!

Artificial Intelligence (AI) Use and Citation Policy for Homework

The use of AI tools (e.g., ChatGPT, Copilot) is permitted only for homework assignments in this course and is not allowed on exams, quizzes, projects, or other graded work unless explicitly authorized by the instructor. Any use of AI for homework must be properly disclosed and cited, including the tool used, the date accessed, and a brief description of how it was used. Unauthorized use of AI or failure to disclose AI assistance will be treated as academic dishonesty under UT Tyler's Honor Code

Recommended reference format for ChatGPT:

- OpenAI. (2023). ChatGPT (Mar 14 version) [Large language model]. *https://chat.openai.com/chat*
- *Note*: describe how the AI model is used, and the prompt used: e.g. The solution to this problem is generated with the assistance of ChatGPT, OpenAI or (AI is used to help brainstorm solution steps).

Late Homework/ Assignment Policy

- It is a basic principle of professionalism that "Professionals are not late."
- A "COORDINATED LATE" submission occurs when you miss the suspense for a graded homework assignment, and you contact me in advance. Notification immediately before the submission will not suffice.
- Point cuts up to the amounts below may be assessed for a "COORDINATED LATE" submission:
  - 0-24 hours late a deduction of 25% of the earned grade
  - 24-48 hours late a deduction of 50% of the earned grade
  - More than 48 hours late No credit.

Quizzes

The instructor may give unannounced or announced in-class quizzes throughout the semester. These quizzes will cover material covered in previous lectures.

In-Class Activities

Active participation in class is an essential component of this course. Regular participation helps students develop skills necessary for success, including problem-solving, critical thinking, and

collaboration. In-class activities and exercises are designed to reinforce key concepts, strengthen analytical skills, and promote peer interaction. These activities may include, but are not limited to:

- Solving example problems related to lecture topics
- Participating in group discussions or case studies
- Completing short individual or team-based assignments
- Engaging in real-time quizzes or polls to assess understanding

No late submissions of in-class activities will be accepted. In-class activities will be graded **only for students who attend the class in person and actively participate during the class period**.

Design Project

- The design project consists of a drainage study in Tyler or Houston. Each group will present their findings and recommendations on the dates shown in the course schedule.
- You can find more information on Canvas.
- The due date to submit your project report is on the last day of class, which is April 12th.

Professional Practice Assignment

- Your professional practice grade will be based on your attendance at 3 ASCE student technical meetings (cookout and game night events do not count) throughout the fall semester. Example of valid meetings include guest speakers, field trips, or any other technical meeting from either organization within the college of engineering.
- For each professional practice meeting you must take a picture as proof of attendance, **ensuring you are visible in the picture**. Be sure to include the speaker's name and a summary of what you learned during the meeting.
- You should use the template Word file when you attend a professional practice meeting and must complete this for each meeting you attend.
- The due date to submit this is on the last day of class, which is April 24th.

Midterm Exams and Final Exam

- There will be 2 midterm exams and one final examination. The exams are TENITATIVELY scheduled for:
  - Exam 1: M, Feb 23
  - Exam 2: M, Mar 30
  - Final Exam: As published by the University.
- Exams dates may be moved up or pushed back depending on the progress of the lectures.
- Exams Format: The midterm exams are worth 35 points, and the final exam is worth 25 points. The purpose of these examinations is to assess your command of the material we've covered in a particular unit. Each exam will contain conceptual questions (MC, T/F, and short answer questions), as well as numerical questions. We'll take some time in the week before an exam to talk about study strategies, and I'll be happy to answer any review questions you may have, but bear in mind that the best way to prepare for these exams is to keep up with the readings and our in-class activities.
- The mid-term exams and final exam are closed book. You can use a TI-30 calculator (or FE equivalent see calculator policy below), and instructor approved reference material.
- Use the restroom prior to coming to class to take an exam. Suspicious restroom breaks in the middle of an exam are not acceptable.
- I do not give exam backs, but you can see and review in class and in my office.
- Exam solutions will NOT be posted on Canvas. However, you are welcome to visit my office to review the solutions in person. Please note that taking photos of your exam paper with your phone is not permitted.

- All exams will be held in person during class time. The final exam will also be held in person at the time, date and location specified by the university.
- Additional information will be provided in class

Late Work and Make-Up Exams:

- There will be no makeup work or extra credit allowed/granted at the end of or during the semester unless allowed/granted to everyone by the instructor. All assignments must be turned in at the appropriate time to receive credit.
- Failure to take the exam at the scheduled time will constitute a grade of zero in the exam.
- Official reasons for missing an exam are outlined in the UT Student Handbook. Report any conflict to me as soon as possible prior to the Exam. You are required to take a make-up Exam, regardless of your reason for missing the scheduled Exam.

Attendance Policy/Classroom Procedures:

- Attendance will be taken in every class, and your presence is essential, as much of your grade will depend on what we accomplish during class meetings. I understand that emergencies or unexpected situations may occasionally prevent you from attending. If this happens, please notify me as soon as possible so we can make arrangements to help you catch up. However, this does not apply to non-emergencies, such as oversleeping. For absences due to university-sponsored activities, please coordinate with me in advance to address any missed work.
- If your absence from class becomes excessive you may be asked by the instructor to withdraw from the class.
- It is a basic principle of professionalism that "Professionals are not Late." Please come to class on time and leave on time. Interruption of lecture is not acceptable. Normally an excuse would be given for being late or missing that class if you have a valid verified urgent emergency or some validated significant act of nature or God like a car accident.
- Bring study notes, textbook, note-taking material, and calculator TO EVERY CLASS. You may not borrow or exchange calculators during graded events. If your calculator fails during a graded exercise, I am not responsible for furnishing a substitute. Class preparation is your individual responsibility. Please refer to the Calculator Policy.
- You will need regular **access to a computer with an Internet connection** to be able to participate in some of the in-class activities during the period of this semester.
- **No food or snacks in classrooms and Labs.**
- Phones ringing or vibrating are distracting during class or if you are texting during class, you will relinquish your device for the duration of the class. A second offense will result in a request for you to leave the classroom.

Tips for Success in this Course

1. **Participate.** I invite you to engage deeply, ask questions, and talk about the course content with your classmates. You can learn a great deal from discussing ideas and perspectives with your peers and professor. Participation can also help you articulate your thoughts and develop critical thinking skills.
2. **Manage your time.** I get it—students usually juggle a lot, and I know you've got commitments beyond this class. Still, doing your best often means carving out enough dedicated time for coursework. Try scheduling specific blocks of time and ensure you have enough room to finish assignments, allowing extra space for any tech issues that might pop up.
3. **Login regularly.** I recommend that you log in to Canvas several times a week to view announcements, assignments and any other posts.
4. **Do not fall behind.** This class moves at a quick pace and each week builds on the previous class content. If you feel you are starting to fall behind, check in with the instructor as soon as possible so we can troubleshoot together. It will be hard to keep up with the course content if you fall behind in the pre-work or post-work.

5. **Use Canvas notification settings.** Pro tip! Canvas can ensure you receive timely notifications in your email or via text. Be sure to enable notifications to be sent instantly or daily. (Canvas Notification Guide)
6. **Ask for help if needed.** If you are struggling with a course concept, reach out to me and your classmates for support.

Calculator Policy

Only NCEES approved calculators will be permitted during tests and your test will be collected and your grade will be a zero if you are using a non-approved calculator.

The approved calculators include the following: (Please check the NCEES website for a complete listing, www.ncees.org/exams/calculator-policy/. Examples include but are not limited to:

- Hewlett Packard – HP 33s, HP 35s, and no others
- Casio – All FX 115 models
- Texas Instruments – All TI 30X or TI-36X models.
- If you are unsure about your calculator, it is your responsibility to check with the instructor for approval.

At the discretion of the course instructor, any calculator not meeting the requirements stated (especially in the case of a graphing calculator) may be used but only after an inspection of the device and a clearing of all the memory within the device, performed for the instructor at a time immediately prior to the exam. At any time during the exam your calculator is subject to a random search by the instructor. Failure or refusal to clear all memory or to surrender your calculator to search will disqualify you from the exam immediately, unless you can produce a calculator meeting the requirements as stated above.

Communication & Support

- Students are expected to display proper netiquette (Internet etiquette) with their instructor and with other students. This includes being polite, stating your needs clearly and politely. Practice collegiality and mutual respect. If an email or discussion post ever concerns you, please notify me privately and we'll work toward a resolution.
- In general, the most efficient way to communicate and receive assistance with your questions or concerns is during office hours. If you are unable to meet during the scheduled office hours, you may email me to request an appointment at a mutually convenient time. All email correspondence must be professional. Please follow the guidelines below in preparing all written communications.:

All email correspondence should take place through the Canvas system and therefore using your Patriot email accounts; check your Patriot email account often.

Final Day to Withdraw

The final day to withdraw from the course without penalty is **Feb 04th.**

The last day to withdraw from the course is **Mar 30.**

Census Dates

The university requires that instructors report the attendance to the register at various points inthe semester. Therefore, on **January 26th**, I will report the attendance for the class.

UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Chat GPT or other AI sources

Students may use AI-based writing programs only for homework assignments, and any AI-generated content must be properly cited or referenced. The use of AI tools on exams or quizzes is strictly prohibited. Unauthorized use will be considered cheating according to the Academic Dishonesty policy below.

New requirement for class assignment submissions (deliverables)

USE of Artificial Intelligent Systems (AI in Engineering Studies)

Student AI Use Checklist (Read Before You Submit)

Before turning in any assignment, ask yourself the following questions:

Understanding & Learning

- ☐ Did I personally do the thinking, analysis, and problem-solving required for this assignment?
- ☐ Can I explain my solution, design choices, or reasoning without help from AI?
- ☐ Did AI support my learning rather than replace it?

Appropriate Use

- ☐ Did I only use AI in ways allowed for this type of assignment (homework, lab, project, reflection, etc.)?
- ☐ Did I avoid using AI on quizzes or exams unless explicitly permitted?
- ☐ Did I verify all calculations, results, and technical content myself?

Integrity & Responsibility

- ☐ Is all submitted work accurate, original, and honestly represented?
- ☐ Did I avoid copying or submitting AI-generated content as my own work?
- ☐ Did I avoid fabricating data, sources, or results using AI?

Disclosure

- ☐ Did I clearly disclose my AI use at the end of the assignment?
- ☐ Did my disclosure state *what tool* I used and *how* I used it?

If you answered "no" to any of these questions, revise your work before submitting.

Remember: using AI responsibly is part of becoming a professional engineer. The goal is not to avoid AI—but to use it ethically, transparently, and thoughtfully.

Academic Misconduct

Plagiarism of homework and cheating on examinations will be interpreted as academic misconduct and will not be tolerated. Please refer to the University of Texas at Tyler current Undergraduate Catalog for academic policies and Manual of Policies and Procedures for Student Affairs (MOPPS, Chapter 8) regarding academic integrity, cheating and plagiarism. Academic dishonesty will not be tolerated. Ignorance of the rules and policies provides no protection from the consequences.

Technical Support

For technical problems with Canvas, contact UT Tyler 24/7 Canvas Support, which can be accessed by clicking Help at the bottom of the Global Navigation menu on the far-left side of the browser window. For login/password problems or support for other technical issues, contact Campus Computing Services at 903-565-5555 or itsupport@uttyler.edu.

University Policies & Student Resources

University policies and student resources are available on the University website and in Course home page on Canvas:

- University Policy
- Student Resources

CENG 3361L: General Requirements for Laboratory Reports

LABORATORY TIME & VENUE:

- The Lab of this course is scheduled from 02:30-5:30 PM on Monday-HEC D114*(HEC Campus)*
- Laboratory attendance is mandatory. Absences are not permitted and will result in a zero grade. Lab reports will not be accepted from students who were not present during the scheduled laboratory session.

LABORATORY REPORT:

A laboratory report is required for each Lab. Only one lab report is required per group for most labs. There may be, however, labs that require each person to submit their own work. Due dates for each lab will be posted. Each group will need to upload a copy to Canvas. Reports must be written using clear and concise language, avoiding unnecessary jargon, and should maintain a formal and objective tone. Consistent formatting must be used throughout the report, including font size, spacing, and section headings. Students are responsible for reviewing reports for grammatical and typographical errors prior to submission.

Report Format

Each laboratory report must follow the format outlined below

Cover Page: Course Number (CENG 3361L), Laboratory Title, Your Names and Group Number. Each person in the group signs the cover page indicating that they have read the report and approve of the contents contained within.

Introduction
State the objectives of the experiment clearly
Include any equations or principles relevant to the experiment.
Include diagrams or photos if applicable.

Procedure/Theory: Include a summarized procedure of the steps you took to complete this lab. Numbered list is preferred. Present tabulated raw data (Data sheets should be typed in Excel)

Results
Present your data clearly using tables, charts, and graphs as necessary *(Include units for all measured and calculated values.* Sample calculations should be written neatly on engineering paper and placed as an appendix of the report *Label all figures and tables with descriptive captions. Refer to each figure and table in the text.* **Avoid interpretation or discussion in this section.**

Discussion: Analyze your results and interpret the results in the context of the experiment's objectives. Compare experimental findings with theoretical expectations or literature values. Explain any discrepancies and potential sources of error that may have occurred while you performed the laboratory and explain how these errors might affect your results (final value will increase or decrease). DISCUSS!! For example, what trends do you notice in the data? Do the results make sense? Are they what you expected? If so, why? If not, why not? Some labs will have more data than others to discuss. Be sure to give a thorough discussion of your results.

Conclusion
Summarize your results. Relate what you have learned from class about the topic to what you have learned from performing in this lab. Explain how this experiment is useful to solve practical civil engineering problems.

References
List all sources cited in the report, following a consistent style of citation (e.g., APA, IEEE).
Include textbooks, journal articles, or online resources used.

Team Contributions form: The contributions of each team member should be stated in the internal review form. List what portions of the report each person contributed towards and how much time each person spent. It is okay to have multiple people working on any part.

GRADING:

- Your laboratory report will be evaluated based on the following:
- Content (40%): Completeness, accuracy of data, and logical flow.
- Analysis (30%): Quality of interpretation, calculations, error analysis.
- Presentation (20%): Clarity, formatting, and organization, correct use of language and adherence to guidelines.
- Grammar and Style (10%): Completion of the Internal review form

TENTATIVE LAB SCHEDULE*

Wk.#	Date	Topic	Lab No.
01	01/12	No Lab Meeting (First Week)	
02	01/19	MLK	
03	01/26	Hydrologic Cycle as a Mass Balance	Lab 01
04	02/02	Areal Rainfall and Thiessen Method	Lab 02
05	02/09	Probability and Return Period (IDF-curves)	Lab 03
06	02/16	Infiltration	Lab 04
07	02/23	EXAM I	-
08	03/02	Watershed Analysis	Lab 05
09	03/09	No Lab Meeting (Spring Break)	
-	03/16	Stormwater Runoff -Rational Method	Lab 06
10	03/23	Hydrograph Analysis	Lab 07
11	03/30	EXAM II	-
12	04/06	Flow Measurements/Weirs	Lab 08
13	04/13	Flow Measurements/Spillways	Lab 09
14	04/20	Project Presentation	Lab 10
15	04/27	Final Exams	-

* **The Lab schedule is subject to change throughout the semester, and the revisions will be noted in lab**