

West Virginia University
Department of Civil and Environmental Engineering

CE 427: Water Resources Engineering

Semester: Spring
 Course Format: 2 class period, 75 minutes each
 Credit Hours: 3
 Prerequisite: None
 Instructor: Dr. Antar Jutla, 533 Engineering Sciences Building
 asjutla@mail.wvu.edu
 Schedule: Lecture. TR: 11:00 – 12:15 pm
 Location: ESB 211
 Office Hours: Location: ESB 533
 Wednesday 3:00 pm to 4:00pm.
 Final Exam: April 26, 2018

Course Objectives	<p>The objective of this course is to introduce:</p> <ul style="list-style-type: none"> Principles of water resources engineering Practical application of hydrological principles Basic applications of statistical methods for simulation of watershed functions. <p>REMEMBER: This course requires computer modeling simulation for class tasks. Self-learning plays an important role in the design of experiments and learning with computer software. There will be instance(s) when class(es) may need to be conducted in the CEE lab where sufficient time will be given to you to learn softwares. Therefore, there will be an element of uncertainty throughout the semester. This is not reflective on the course objective(s) (which will be met in any case). I sincerely request those who are not able to cope up with “uncertainty” to please seek alternate course.</p>
Expected Learning Outcomes:	<p>Upon successful completion of this course, students are expected to demonstrate the ability to understand and practice (if applicable):</p> <ul style="list-style-type: none"> • Issues of water sustainability • Hydrological processes • Surface runoff processes • Routing methods • Probability and risk estimates • Water withdrawals • Water resources management
Required Text:	<p><i>Water Resources Engineering, Second Edition, Larry Mays, Wiley.</i></p>
Grading Policy	<ul style="list-style-type: none"> • All exams are mandatory. There is no substitution to exams. • You may use calculators, but use of cell phones, computers and any other equipment with wireless connection is prohibited. The format of

	<p>exams will be discussed in class.</p> <ul style="list-style-type: none"> • There is NO replacement rule for anything. If you have had any emergency, please contact me immediately. • Assignments are due by the end of the due date, generally in faculty mailbox (located in 629 ESB) unless instructed otherwise. If the assignment is multiple choice, you will be given instruction to how to solve it. It is your responsibility to make sure you have collected the graded assignments • Lab reports are due the same day (usually by 5:00pm) • Some projects are to be conducted in a group. It is your responsibility to choose groups or to do work independently. If you chose a group route, you will be responsible for all the grades etc, whether or not your group member provided any insights or help. • Your grades will be posted either on eCampus or outside my office door (ESB627) regularly but not at fixed intervals. It is your responsibility to make sure that grades are entered correctly. I will NOT revise, edit or modify TWO weeks prior to final submission of grades. • Grades will not be revised for loss of potential scholarships, fellowships and other financial aid. No exception will be made. • It is better to discuss early than later if you have any problems with your grades or your understanding of course material. • Everyone has to fill in “Peer-Assessment forms” 								
<p>Grading:</p>	<table border="0"> <tr> <td>Term Exam (2)</td> <td>50 %</td> </tr> <tr> <td>Assignments (5-7)</td> <td>20 %</td> </tr> <tr> <td>Peer review</td> <td>5 % (this includes attendance during)</td> </tr> <tr> <td>Final Exam Project</td> <td><u>25 %</u></td> </tr> </table> <p>All exams are close book, in class exams. You should not use any device except calculator, and that too should not have internet connection. Cell phone based calculators are strictly prohibited. You must secure 20 points (out of 40) in term exams to be eligible for Final exam. If you do not secure combined 20 points in 2 term exams, your FINAL grade will be recorded as D, irrespective of your assignments or field work points.</p>	Term Exam (2)	50 %	Assignments (5-7)	20 %	Peer review	5 % (this includes attendance during)	Final Exam Project	<u>25 %</u>
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<p>Grade Assignment:</p>	<p>100 – 90 A 80-89.999 B 70 – 70.999 C 60 – 69.999 D 59 – 0 F</p>								
<p>Assignments:</p>	<p>Homework assignments will be given approximately every other week. Each HW will be equally weighted, irrespective to points in the homework. Since this is the design course, the final answer MATTERS, although points will be awarded for methodology as well. If you do not submit assignments by the due date, 10% of the marks will be deducted. I will not accept any late assignment after ONE day, unless you have obtained necessary permission to do so. Instructor</p>								

reserves right **NOT** to grade any late assignments and cannot be challenged.

Your final answer should be in the Failure to do so may lead to deduction of your grades.

Be neat: If I cannot understand, I cannot grade.

Your graded assignments will be returned within ONE to TWO weeks of the date of submission. THIS IS AN IMPORTANT COURSE POLICY.

If I fail to record your grade correctly, you need present evidence in form of graded assignments to update your grade. If you lose your marked assignments, your grade will not be changed.

IMPORTANT NOTES:

- **A successful completion of this class requires self-reading from the textbook. Most of the material will be covered in the class. However, you are REQUIRED to read relevant chapters from the book since exam, assignments and mid-term problems will be from those chapters.**
- **Use of Chegg.com or similar websites is strictly prohibited.**
- If you think you have trouble in understanding any aspect of class, please see me in my office or send me email elaborating such issues. If you decide to drop this course, please do so during first one to two weeks of the semester.
- I have an open door policy for meetings; however, I also encourage sending email and making prior appointments. No appointments will be entertained two hours before class lecture.
- You may eat, but please turn off your cell phones and **do not sleep in the class.** Do not disturb fellow students.
- During the class, please feel free to ask any relevant question pertaining to this course.
- I will provide limited lecture notes and when available, will be posted on eCampus. It is your responsibility to download and print it and bring it to class. If for any reason, lecture notes are not posted 24 hours prior to the class, I will print it and bring it with me. There will be email communication for this as well. You are also required to bring textbooks in class since not everything will be covered from the notes.
- Since this class is mathematical in nature, blackboard learning will be encouraged, implying that you are expected to write down your own notes.
- It is your responsibility to track grades. If you are unsure, please send email to me and expect a reply within reasonable time. If I do not reply, please see me in my office after two working days. A word of mouth is NOT acceptable communication mode for this class.
- **STRICTLY ENFORCED:** Every issue has to be communicated through email. Your email subject line should start like this: "CE427: issue". For example if you have questions regarding assignment your email subject line should be: "CE427: problem with assignment". You should expect a

	<p>definitive response if you follow these instructions. Failure to do so will result in delayed communication and possibly other consequences.</p> <ul style="list-style-type: none"> • Your submitted work should have cover pages, unless otherwise mentioned. If you DO NOT attach cover pages, 5% of your grade will be deducted. Some of the assignment questions are design questions. I expect you to be creative and innovative and think in all dimensions. If your design questions involve sketches, it should be drawn neatly, with pencil and appropriate drawing tools. • You are expected to work as a group to do this exercise. Please document role of each group member. • If you have trouble with your group/member, you have to report it using a form available on eCampus. A word of mouth or discussion on this matter will not be acceptable.
Supplies	<ul style="list-style-type: none"> • You are required to purchase a file storage device (upto 5GB) to hold files for your computer mapping projects. • Bring a scientific calculator to each class period.
Attendance	<p>Attendance is not counted in the grading system. However, attendance is recommended and encouraged.</p> <p>“WVU recognizes the diversity of students, many of whom must be absent from class to participate in religious observances. Students must notify their instructors by the end of the third class meeting regarding religious observances that will affect their attendance. Further, students must abide by the attendance policy of their instructors as stated on their syllabi. Faculty will make reasonable accommodation for tests or field trips that a student misses as a result of a religious observance.” See missed exam policy under Grading Policy.</p>
Social justice Statement	<p>“West Virginia is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class. Please advise me and make appropriate arrangement with Disability Services (293-6700).”</p>
Academic/ Honesty Policy:	<p>West Virginia University expects that every member of its academic community shares the historic and traditional commitment to honesty, integrity, and the search for truth. Students and faculty should act to prevent opportunities for academic dishonesty to occur, and act in such a manner to discourage any type of academic dishonesty. Academic dishonesty includes plagiarism; cheating and dishonest practices in connection with examinations, papers, and projects; and forgery, misrepresentation, and fraud. Complete policy statements and definitions on academic integrity/dishonesty can be accessed at: http://www.arc.wvu.edu/admissions/integrity.html</p>

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	Topic	Number of Lectures	Reading (chapter)
1	Introduction	1	1,2
2	Hydrological processes-precipitation	2	7
3	Hydrological processes-Evapotranspiration	2	7
4	Hydrological processes-Infiltration	2	7
5	Surface Runoff	4	8
	Exam 1	1	
	HEC-HMS software	2	Notes
6	Flow routing	4	9
7	Probability and risk analysis	4	10
	Exam 2	1	
8	Water use and withdrawal.	3	11
9	Water Law	2	19
	Final Project demonstration	1	

Read book chapters!

In class exercises: These are small questions, usually solved examples from book, to familiarize you with basic concepts. Usually exams and assignments will NOT have these questions.

Problems: These are practical real-time questions (usually assignments and exams)

Prior to exam, I will discuss exam format. Previous year's exam will not be shared in class. It will be your responsibility to prepare a cheat sheet (one standard A4 size paper). Remember, this class is not about cramming but understanding concepts. If an equation is required to solve the problem, and the equation is sufficiently complicated, it will either be provided or you will be asked to make a cheat sheet.