

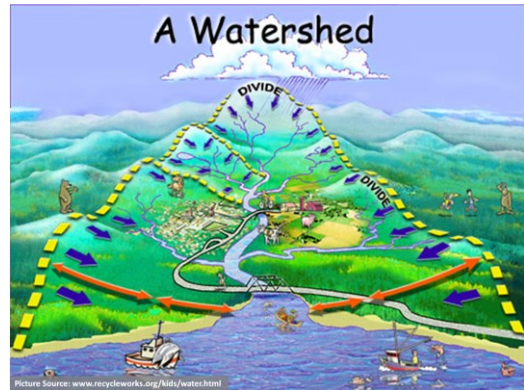
ABE 458 – Nonpoint Source Pollution Modeling Spring 2021

Course Objective:

After completion of this course, students will be able to develop a hydrologic model for a watershed system which simulates hydrologic and pollutant transport processes. Students will have learned to process environmental data, set-up, and calibrate their model.

Credit: 2 undergraduate hours, 2 graduate hours.

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References:

- Class notes: Available on Compass2g
- Soil and Water Assessment Tool documentation (online: <http://swat.tamu.edu/documentation/>)
- Soil and Water Assessment Tool software (online: <https://swat.tamu.edu/software/>)
- SWAT-CUP (online: <https://swat.tamu.edu/software/swat-cup/>)
- SPELLmap (online: <http://jguzman.info/SPELLmap/spellmap.html>)

Weekly Meeting Schedule/Contact Hours: Tuesday and Thursday 3-4:50 pm AESB 220

Office Hours: Open door policy

Teaching Assistant: Jeongho Han (jeongho2@illinois.edu)

Class Policies:

Projects: The project deliverables should be uploaded to Compass 2g before midnight of the due date. To get full credit in the projects, the deliverables should have the required format and must contain the information/data asked for in the projects. Models should run without errors.

Graduate vs undergraduate credits: Graduate students are required to use more input data points in their model than undergraduate students. They are also required to calibrate their model using at least two assessment endpoints. Graduate students are expected to submit a final report that is comparable to a peer-reviewed manuscript.

Grading:

A. Projects

Topics	Weight
Project 1: Watershed information	5
Project 2: Data: Rainfall, Temperature, Runoff data	15
Project 3: SWAT model: Watershed delineation	15
Project 4: SWAT model: Model set-up and simulation	15
Project 5: SWAT CUP Calibration/validation	25
Final report	15
Quizzes	10
TOTAL	100

B. Final report: “Set-up and calibration of the SWAT Model for the xxx River watershed”.

The final report will be a write up of your projects. You will describe how you develop your watershed model from data to calibration. Your report will be evaluated using the following rubric:

Technical Content (80%)	
Abstract (purpose, procedure, findings, recommendations, etc)	5
Introduction (background, motivation, objectives)	20
Methodology (study area, data, model, research tasks, etc)	30
Results and Discussion (observations, comparisons, analysis, expectations, implications, etc)	25
Presentation (20%)	
Writing (grammar, structure, organization, etc)	10
Appearance (figures, graphs)	10

Tentative Schedule:

Topics	Week	Date	Day	Type of Delivery
Course structure	1	23-Mar	Tuesday	Synchronous
<i>What is a model</i>				module
<i>What is a system</i>				module
<i>The watershed</i>				module
<i>What is a hydrologic model</i>				module
Project #1	1	25-Mar	Thursday	Synchronous
What model to use				Synchronous
Modelling process				Synchronous
Time series: types and sources				Synchronous
Plotting				Synchronous
Missing data: Introduction	2	30-Mar	Tuesday	Synchronous
<i>Missing data: Methods</i>				module
Project #2: Time series data	2	1-Apr	Thursday	Synchronous
Time series: model requirements	3	6-Apr	Tuesday	Synchronous
<i>Introduction to ArcGIS</i>				module
Maps: types and sources	3	8-Apr	Thursday	Synchronous
ArcGIS 101				Synchronous
SWAT				Synchronous
Watershed delineation	4	13-Apr	Tuesday	Synchronous
Project #3				module
Project #3	4	15-Apr	Thursday	module
Model set-up	5	20-Apr	Tuesday	Synchronous
Project #4				Synchronous
Project #4	5	22-Apr	Thursday	module
Model calibration	6	27-Apr	Tuesday	Synchronous
SWAT - CUP	6	29-Apr	Thursday	module
Project #5	7	4-May	Tuesday	module
Project #5	7	6-May	Thursday	module
Final report	8	TBD		

Academic Integrity: Academic misconduct (plagiarism, cheating, or other forms of misconduct as defined by the university) will not be tolerated in this course. Academic Misconduct is defined as any activity which tends to compromise the academic integrity of the institution or subvert the educational process. According to Article 1 of the Student Rights and Responsibilities - Part 4 (Academic Integrity and Procedure): No student shall use or attempt to use in any academic exercise materials, information, study aids, or electronic data that the student knows or should know is unauthorized. This includes copying, direct quotation without citation, paraphrasing without citation, or providing false or misleading information for the purpose of gaining an academic advantage. Please see Academic Integrity Infractions at: http://studentcode.illinois.edu/article1_part4_1-402.html for a complete outline.

Students with Disabilities: To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor as soon as possible. To insure that disability-related concerns are properly addressed from the beginning, students with disabilities who require assistance to participate in this class should contact Disability Resources and Educational Services (DRES) and see the instructor as soon as possible. If you need accommodations for any sort of disability, please speak to me after class, or make an appointment to see me, or see me during my office hours. DRES provides students with academic accommodations, access, and support services. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TDD), or e-mail a message to disability@uiuc.edu. <http://www.disability.illinois.edu/>.

Emergency Response Recommendations: Emergency response recommendations can be found at the following website: <http://police.illinois.edu/emergency/>. I encourage you to review this website and the campus building floor plans website within the first 10 days of class. <http://police.illinois.edu/emergency/floorplans/>.

Family Educational Rights and Privacy Act (FERPA): Any student who has suppressed their directory information pursuant to *Family Educational Rights and Privacy Act* (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <http://registrar.illinois.edu/ferpa> for more information on FERPA.

Sexual Misconduct Policy and Reporting: The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here: wecare.illinois.edu/resources/students/#confidential. Other information about resources and reporting is available here: wecare.illinois.edu.

