



CE 751

Physical Hydrology

Fall 2026

Instructor and Contact Information:

Instructor: Joshua K. Roundy, Ph.D., P.E.

Associate Professor of Civil, Environmental,
and Architectural Engineering
2153 Learned Hall
785-864-3134
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Office Hours:

W 5:00 to 6:00 PM
You may also send an
email to ask a question
or to schedule a
meeting.

Required Texts and Instructional Materials:

Required Text: There is no required text for this course. Lecture slides and other required readings will be provided through Canvas.

Recommended Text: Dingman, S.L. (2015). *Physical Hydrology* (3rd edition), Waveland Press [ISBN: 978-1-4786-1118-9](https://www.waveland.com/978-1-4786-1118-9)

Required Software: All assignments will be completed using Python programming in a Jupyter Notebook run through Google Colabs. A free Google account is required to run Google Colabs. No previous knowledge with programming is required for this course. If you need extra help with learning this tool please contact the instructor.

Class Time and Location:

Class Time Wednesday 6:00-8:50 PM
& Location: LEEP2 2420

Course Description:

In this course students will develop a land surface model based on the underlying physics and mechanisms of radiative transfer, precipitation, snow processes, evapotranspiration, infiltration, and runoff generation. The course will also cover numerical and uncertainty issues associated with hydrologic modeling and its application to real world problems.

Instructional Mode and Credit Hours:

This course is offered as an in-person course or a synchronous online course that fulfills 3 credit hours; Consistent with [KU policy](#) and the federal definition of a credit hour, this means you should expect to spend at least 9 hours a week on this course over the 15-week semester. Most weeks, 3 hours will be instructional time in the classroom (i.e., class meetings) and the remaining time will involve out-of-class work.

Course Learning Outcomes:

Upon successful completion of this course, the student will be able to:

- Generate meaningful and relevant research questions about the hydrologic cycle.
- Develop, run, and interpret hydrologic/land surface model outputs and its associated uncertainty.
- Conduct analysis by interpreting and describing hydrologic processes.
- Summarize the and contextualize the analysis to produce meaningful conclusions.

Instructor's Attendance/Participation Policy:

The knowledge and skills you will gain in this course are dependent on your participation in class activities and are part of your grade in this course. Because of that, the student is expected to attend all class sessions unless they are ill or have a [University excused absence](#). In the event that the student has to miss class, please talk to the instructor beforehand. If you need to report an extended illness or serious accident, please contact Student Support and Case Management at studentsupport@ku.edu or 785-864-7022.

Course Requirements:

Every student will be required to complete four types of learning assessments in order to demonstrate sufficient learning and retention of the course content and meet the learning objectives. There is a total of 600 points possible through the course as outlined below:

- **Unit Report (UR)** - There are 12-unit reports throughout the course, each worth 20 points for a total of 240 points. Unit reports provide an opportunity to apply and expand your knowledge of the weekly topic by writing a short research report of what you have learned. Your report should follow the general style and formatting of the example report available on Canvas. Unit reports should be turned in by Friday at 5pm the week after the lecture.
- **Unit Presentations (UP):** There are 12-unit presentations throughout the course, each worth 5 points for a total of 60 points. Each week the student will present a one slide summary of their unit report from the previous week. It is ok for these summaries to be incomplete or contain questions. Students will receive constructive feedback about their presentation and will receive full points just for presenting. Unit Presentations should be uploaded to Canvas by 5pm on Wednesdays.
- **Midterm (MT):** There is one exam in this course worth 100 points. The exam will be in class on Wednesday November 17th and will consist of conceptual and quantitative questions on the material covered in class (lecture 1-10). The exam will be in class and will consist of the conceptual and quantitative questions on the material covered in class (Like the handout problems).
- **Final Exam (FE):** The final exam will be a take home exam that is worth 200 points. The final exam will be more like the homework and will be discussed on the last day of class.

Classroom Behavior Expectations:

This course aims for ALL students to experience a safe learning environment. It is possible that a student may not agree with everything that is said or discussed in the classroom. Please be courteous and respectful to everyone and be sure that you make a distinction between criticizing an idea and criticizing the person.

Students who engage in disruptive behavior, including persistent refusal to observe boundaries defined by the instructor regarding inappropriate talking, discussions, and questions in the classroom or laboratory may be subject to discipline for non-academic misconduct for disruption of teaching or academic misconduct, as defined in the [Code of Student Rights and Responsibilities \(CSRR\)](#). The CSRR also defines potential sanctions for these types of infractions.

Except for in cases of a [University Excused Absence](#), all assignments are due by the day/time indicated in the course calendar.

Special Accreditation Requirements:

This course is not designed to meet any accreditation requirements.

Evaluation Criteria with Grading Scale:

An overall course grade will be assigned based on the following cumulative point system:

Unit Reports	12 reports worth 20 points each	240
Unit Presentations	12 presentations worth 5 points each	60
Exam	1 exam worth 100 points	100
Final Exam	1 take home exam worth 200 points	200
TOTAL POINTS		600

Letter Grades will be assigned as follows:

Grade	Points
A	560-600
A-	540-559
B+	520-539
B	500-519
B-	480-499

Grade	Percentage Range
C+	460-479
C	440-459
C-	420-439
D	360-419
F	< 360

These thresholds may be adjusted downwards (in the students favor) at the instructor's discretion but will not be adjusted upwards.

At the conclusion of this course, the University will provide an opportunity for you to provide feedback via an online (anonymous) Student Survey of Teaching. The student is strongly encouraged to take advantage of this opportunity to provide feedback. More generally, please feel free to tell the instructor what is working well, and what is not working as well during the semester.

Academic Integrity and Profession Conduct:

[Academic misconduct](#) by a student shall include, but not be limited to, disruption of classes; threatening an instructor or fellow student in an academic setting; giving or receiving of unauthorized aid on examinations or in the preparation of notebooks, themes, reports or other assignments; knowingly misrepresenting the source of any academic work; unauthorized changing of grades; unauthorized use of University approvals or forging of signatures; falsification of research results; [plagiarizing of another's work](#); violation of regulations or ethical codes for the treatment of human and animal subjects; or otherwise acting dishonestly in research.

The issue of digital plagiarism has raised concerns about ethics, student writing experiences, and academic integrity. The student will be asked to submit some assignments in a digital format so that the paper can be checked against Web pages and databases of existing papers. Although the student may never have engaged in *intentional* plagiarism, many students incorporate sources without citations. This constitutes plagiarism and cannot be treated differently than intentional plagiarism. The [KU Writing Center](#) offers a student writing guide with links to useful information regarding plagiarism and how to avoid it (<http://writing.ku.edu/writing-guides>). If the student is not sure how to use a source in a document, please visit <http://writing.ku.edu/paraphrase-and-summary> or ask the instructor.

Student Access Center:

The Student Access Center (SAC) coordinates academic accommodations and services for all eligible KU students with disabilities. If a student has a disability for which they wish to request accommodations and have not contacted SAC, please do so as soon as possible. SAC is located in 22 Strong Hall and can be reached at [785-864-4064](tel:785-864-4064) (V/TTY). Information about their services can be found at access.ku.edu. Please contact the instructor privately regarding needs in this course.

Other Notes:

If the student has trouble with the reading materials, lectures, or with the pace of the class, please contact the instructor as soon as they are aware of the difficulty. The instructor will work with the student to improve their study skills or to overcome particular obstacles that may interfere with optimal performance in this class. Please talk to the instructor early in the course if there is a suspect or anticipate difficulty in this class!

As a premier international research university, the University of Kansas is committed to an [open, diverse and inclusive learning and working environment](#) that nurtures the growth and development of all. KU holds steadfast in the belief that an array of values, interests, experiences, and intellectual and cultural viewpoints enrich learning and our workplace. The promotion of and support for a diverse and inclusive community of mutual respect require the engagement of the entire university. All members of our campus community must accept the responsibility to demonstrate civility and respect for the dignity of others. Expressions or actions that disparage a person's or group's race, ethnicity, nationality, culture, gender, gender identity, religion, sexual orientation, age, veteran status, or disability are contrary to the mission of the University and are not acceptable in my classroom.

Students shall not be penalized for absence from regularly scheduled class activities that conflict with mandated religious observances ([USRR 2.2.3](#)). In cases of conflicts between class activities and mandated religious observances, the student is responsible for initiating discussion with the instructor to reach a mutually acceptable solution. **If the student anticipates missing class because of a religious observance, please contact the instructor as soon as possible so that alternative arrangements can be made.**

Additional Resources and Policy Information for Students:

In addition to the policies noted above, the following links and resources may be helpful to the student for this course, as well as for others they may be taking. If there are any questions or concerns about any of these policies, statements, or resources, please let the instructor know. In addition, please visit the [Student Resources website](#) (KU Academic Success) for additional policies and resources.

- [Change of Grade Policy](#) and [USRR, Section 3: Change of Grade](#)
- [Code of Student Rights and Responsibilities](#)
- KU Policy on [Commercial Notetaking](#)
- [KU Statement on Diversity and Inclusion](#)
- [Mandatory Reporting](#) (Civil Rights & Title IX)
- [Nondiscrimination, Equal Opportunity, and Affirmative Action](#)
- [Racial and Ethnic Harassment Policy](#)
- [Sexual Harassment](#)
- [Counseling and Psychological Services](#)
- [Kansas Board of Regents Statement on Freedom of Expression](#)
- [Student Support and Case Management](#)

Course Schedule:

Date	Topic
W - Aug 28	Climate
W - Sep 4	The Watershed
W - Sep 11	Water and Energy
W - Sep 18	Precipitation
W - Sep 25	Infiltration
W - Oct 2	Soil Moisture
W - Oct 9	Streamflow Routing
W - Oct 16	Evaporation
W - Oct 23	Surface Fluxes
W - Nov 6	Snow
W - Nov 13	Midterm Exam
W - Nov 20	Parameter Estimation
W - Nov 27	Thanksgiving Break
W - Dec 4	Model Scales
W - Dec 11	Carbon/Vegetation
W - Dec 18	Final Report Due by 11:59pm

The schedule is subject to change throughout the semester.