

Department of Mathematical Sciences
Foundations of Applied Mathematics
MATH 35803 – 001, Fall 2026

Instructor	Dr. Jiahui Chen
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Office	SCEN 228
Office Hours	Mon. & Fri. 11:40 AM–1:00 PM; Wed. 3:30–4:45 PM
Meeting Time	MWF, 10:45 AM–11:35 AM
Classroom	CHPN 421
Semester Dates	August 17 – December 11, 2026 (University of Arkansas Fall 2026 academic calendar)

Communication

Email is the best way to communicate with the instructor, beyond coming to office hours. Students can normally expect a reply within 24 hours, excluding weekends and University holidays. Students are expected to monitor their UARK email address regularly and consult the course Blackboard site for important announcements.

Course Description

Introduction to applied mathematical modeling using deterministic and stochastic frameworks. Topics include vectors and matrices, dimensional analysis, perturbation methods, kinetics, diffusion, traffic flow, continuum mechanics, and an introduction to financial mathematics, including binomial models and the Black–Scholes equation. Emphasis is placed on formulating, analyzing, and interpreting mathematical models arising from real-world systems.

Learning Objectives

By the end of the course, students should be able to use dimensional analysis and scaling to simplify models; formulate deterministic models involving kinetics, conservation laws, continuum mechanics, fluids, and diffusion; apply perturbation, stability, and differential-equation methods to analyze those models; construct and analyze random-walk, binomial, Brownian-motion, and Black–Scholes models; and clearly interpret assumptions, mathematical results, and model limitations in context.

Textbook and Supplementary Materials

Holmes, *Introduction to the Foundations of Applied Mathematics*, 2nd edition; Shreve, *Stochastic Calculus for Finance I: The Binomial Asset Pricing Model*.

Student Responsibilities

Students are responsible for reviewing materials and instructions posted in Blackboard before class, attending and participating in class, completing assigned work by the announced deadlines, mon-

itoring their UARK email and Blackboard announcements, seeking help promptly when needed, and following the academic-integrity and classroom policies in this syllabus.

Important Dates and Schedule

The week-by-week schedule, including exam dates, holidays, and university add/drop/withdrawal deadlines, is maintained in `syllabus/course_schedule.pdf` in the course repository and is subject to the official University of Arkansas academic calendar. The schedule is tentative and may be adjusted to support student learning and official university calendar changes.

Evaluation and Grading

Component	Weight	Description
Exam 1	20%	Sep. 16
Exam 2	20%	Oct. 16
Exam 3	20%	Dec. 3
Homework	20%	Weekly
Quiz	20%	Weekly
Total	100%	

Homework late-work policy. Homework submitted after its printed due date without an approved extension receives a 30% deduction from that assignment's earned score. Request an extension in writing before the deadline when possible.

Quiz. Twelve short quizzes, each worth 2 points, are scheduled every Friday in teaching weeks 1–4, 6–8, and 10–14. There are no quizzes during exam weeks or Week 15.

Homework. Eleven homework sets are assigned according to the course schedule. Due dates are printed on each assignment. The homework late-work policy above applies.

Exams. Three 50-minute, 100-point exams are each worth 20% of the course grade. Exam dates and topic coverage are listed in the course schedule.

Make-up policy. Contact the instructor in writing before an anticipated absence, or as soon as reasonably possible after an emergency. Missed quizzes or exams may be made up only for an approved excused absence and may differ in form from the original assessment. Approved make-ups will normally be scheduled during office hours or at another arranged time. Homework is governed by the late-work policy above. Work missed for an unexcused absence normally receives no make-up opportunity.

Grade Policy

Percentage	Letter
90–100	A
80–89	B
70–79	C
60–69	D
0–59	F

Attendance and Participation

Education at the university level requires active involvement in the learning process. Students are therefore responsible for attending class and actively engaging in the learning assignments and opportunities provided. Illness, family crisis, University-sponsored activities, religious observances, jury duty or a subpoenaed court appearance, and military duty are examples of circumstances that may make full attendance or participation impossible.

When an absence is anticipated, notify the instructor in writing before the absence whenever possible. After an emergency, make contact as soon as reasonably possible. The instructor may require appropriate documentation when an absence affects an exam, quiz, deadline, or requested make-up. See the University attendance policy at <https://policies.uark.edu/faculty-handbook/2-academic-responsibilities/03.php>.

Attendance is not a separate graded category in this course. However, regular attendance and participation directly support the course learning objectives. An absence does not by itself change a deadline or create a make-up opportunity; the attendance and make-up procedures above must be followed. Students remain responsible for announcements, notes, assignments, and other material missed during an absence.

Etiquette

Students and instructors each have an important role in maintaining a classroom environment optimal for learning and are expected to treat each other with respect during class, using thoughtful dialogue, and keeping disruptive behaviors to a minimum. Both students and faculty perceive abusive language directed towards others as the most disruptive behavior. Other behaviors that can be disruptive are chatting and whispering during class, the use of smartphones or laptops for texting or in other ways unrelated to the course, preparing to leave before class is over, and consistently arriving late to class. Inappropriate behavior in the classroom may result in a request to immediately leave the classroom and/or a referral to the Office of Academic Integrity and Student Conduct.

Academic Honesty

Academic dishonesty will not be tolerated.

“As a core part of its mission, the University of Arkansas provides students with the opportunity to further their educational goals through programs of study and research in an environment that promotes freedom of inquiry and academic responsibility. Accomplishing this mission is only possible when intellectual honesty and individual integrity prevail.” Each University of Arkansas student is required to be familiar with and abide by the University’s [Academic Integrity Policy](#). Students with questions about how these policies apply to a particular course or assignment should immediately contact their instructor.

Electronic Devices

Cell phones, tablets, laptops, smart watches, or other devices that may distract from class should be silenced and put away unless instructed otherwise. During quizzes and exams, electronic devices, calculators, notes, and other aids are prohibited unless the instructor explicitly authorizes them for that assessment.

Inclement Weather Policy

Class will meet unless the University is closed. On-campus students are expected to be present. Off-campus students should make their own decisions in the best interest of personal safety. Off-campus students will not be penalized for being absent on those days the Fayetteville Public Schools are closed due to weather. If attendance is severely affected by weather, deadlines and exam dates may be adjusted. Please do not call the Department of Mathematical Sciences with weather-related inquiries. You may contact the instructor for information.

Accommodations

Under University policy and federal and state law, students with documented disabilities are entitled to reasonable accommodations to ensure the student has an equal opportunity to perform in class. If any member of the class has such a disability and needs special academic accommodations, please report to the [Center for Educational Access \(CEA\)](#). Reasonable accommodations may be arranged after the CEA has verified your disability. Students who are registered with the Center for Educational Access must meet with the instructor by the end of the first week of class, or within one week of registering with CEA, to discuss their accommodations. This must be done before you utilize your accommodations. Do not hesitate to contact your instructor if any assistance is needed in this process.

Intellectual Property

Notes, review material, exams, quizzes, videos, or other learning material used in this class are the intellectual property of the instructor. Selling or freely sharing this content in electronic or written form is a violation of intellectual property rights and also constitutes a violation of the University's academic integrity policy. Your continued enrollment in this class signifies your understanding of and your intent to abide by this policy. There are severe consequences for sharing class content online.

Emergency Procedures

Many types of emergencies can occur on campus; instructions for specific emergencies such as severe weather, active shooter, or fire can be found at <https://tips.uark.edu/emergency-preparedness/>.

Tutoring and Help

- MRTC Tutoring Center, located in Champions Hall (<https://math.uark.edu/mrtc/>)
- [Student Success](#)
- For hiring personal tutors: [Tutor Request](#) via the Department of Mathematical Sciences
- [Health and wellness](#)

Disclaimer

Syllabus is subject to change. You will be notified of any changes.

Grade Disputes

The instructor is committed to keeping students informed of their standing in the class. Scores on all graded items will be posted in a timely manner. Students are expected to bring any possible errors to the attention of the instructor within one week of posting. This maintains an accurate grade record throughout the semester. All scores posted before Dead Day will be deemed accurate unless a possible error is brought to the attention of the instructor before the scheduled final exam.

Class Cancellation Policies and Procedures

Class cancellation by the University due to inclement weather-related delay/closure

In the event of an inclement weather delay, early dismissal, or closure, your instructor may conduct class through synchronous distance instruction (i.e. remote instruction) at the scheduled class time while the campus is closed for inclement weather but will not require a student to attend synchronously. Any class taught remotely while the campus is closed for inclement weather will be recorded and made available to all students in the class in the approved campus Learning Management System. Your instructor will provide students the opportunity to make up work due while the University is closed for inclement weather without penalty. If remote instruction is not used, the instructor will cancel class meetings altogether. Instead, alternative learning materials and assignments will be supplied, to make up the missing class days.

Faculty absence due to medical or other emergency

Every effort will be made to arrange for a substitute if your instructor must take an emergency leave. If a substitute cannot be arranged, then your instructor may choose to teach classes remotely when they are able to do so, subject to appropriate university policies on remote instruction. If your instructor cancels class in case of an emergency (allowed per [university policy](#)), then your instructor will make up missed class time using recorded lectures, assignments, readings, instructional materials, or other alternative forms of instruction. Your instructor will send announcements promptly via email and posted to Blackboard. Each student will also get the opportunity to make up work that is due if class is impacted by an emergency.