



## GY 470/570: Water Hazards Decision Making Spring 2022 (subject to minor changes)

**Instructor: Dr. Wanyun Shao**

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**Time: 2:00 pm – 4:50 pm T**

**Location: Gordon Palmer Hall 206**

**Office hours: 10:30 am – 1:30 pm T or by appointment**

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### Course Description

The hydrological cycle will intensify under climate change, resulting in more frequent and severe water hazards such as drought, flood, and hurricane. Facing increasing risks posed by water hazards in a changing climate, it is imperative for society to make timely decisions to mitigate these risks. This seminar surveys various theories from behavioral sciences and approaches from different disciplines to shed light on the complexity of water hazards decision making. Specifically, **in the first section on theoretical perspectives**, we will first review two of the most influential decision theory papers in the last half century: judgment under uncertainty (Tversky and Kahneman, 1974) and the framing of decision (Tversky and Kahneman, 1985). We will then look into perceptions of risk (Slovic, 1987), particularly focusing on the discrepancies between expert risk assessment and laypersons' risk perceptions. Along with risk perception, we will examine the predominant mental model on risk communication. We will also discuss how environmental ethics must be integrated into decision making. In the second section, drawing upon theories discussed in the first section, we will specifically focus on **water hazards decision making**. We will examine how the public evaluates the frequency and intensity of drought and flood, respectively. We will look into the factors influencing flood risk mitigation (e.g., purchasing flood insurance, elevating one's houses). We will also discuss social vulnerability to water hazards. In the third section, several guest speakers from different disciplines will discuss their approaches to making decisions to mitigate risks of water hazards. In the last section, students will participate in a group project and present individual projects by applying the knowledge and skills acquired from this class.

### Student Learning Outcomes

This is a reading intensive class. You are expected to read all the material I post on Blackboard. This is also a collaborative class. My role as an instructor is to help you learn through independent inquiry, critical thinking, and collaboration. In addition to completing all the

required assignments, you are expected to participate in class discussions, group project presentation, and independent project presentation. The immediate outcomes include:

1. Students have working knowledge of the dominant modes of thinking about water hazards decision making
2. Students critically assess the theories of decision making
3. Students apply the working knowledge and their independent and critical thinking to a particular object of concern

### **Course Materials:**

Material will be posted on Blackboard or disseminated in class.

### **Grade System**

As seminar participants are a mixture of undergraduate and graduate students, each class has its own assignments and grading rubrics.

For undergraduate students (GY470)

- One final paper due at the end of the course: worth 100 point (3-4 pages excluding references)
  - Presentation of the final paper: worth 30 points (10 minutes)
- Participation (in-class discussions): worth 100 points
- Group project: 40

For graduate students (GY570)

- One final paper due at the end of the course: worth 100 point (5-7 pages excluding references)
  - Presentation of the final paper: worth 30 points (15 minutes)
- Participation (in-class discussions and activities): worth 100 points
- Group project: 80

Group Project Description: Community mitigation planning activity

Students will role-play as members of a community (the city of Mobile) to identify vulnerabilities to hurricanes and develop a mitigation plan. Each student will be assigned to a group with a specific role. Depending on their roles, students will work representing various stakeholders such as **emergency managers, long-term residents, planners, scientists, members of the city council.**

Specific roles:

Graduate students: each graduate student will lead a stakeholder group, particularly lead the discussion on identifying their own vulnerabilities, interests, priorities and values, as well as laying out the plans to mitigate the impacts of potential failures.

Undergraduate students: each stakeholder group will review the elements of vulnerability they identified and create a prioritized list of short-term and long-term mitigation actions they would like to implement.

Note: students are required to attend each class, participate in discussions and activities, and complete all assignments. Failure to complete all of the required assignments may result in a grade of F for the course. Points will be deducted for any work that is turned in late. 10% of the entire points for that particular assignment will be taken off if one day late. 25% of the entire points will be deducted if two-five days late. 50% of the entire points will be deducted if five-seven days late. You will get 0 for that assignment if you submit your work over a week late. A make-up essay/written report will be considered only upon receipt of proper/official documentation for an absence.

### **Semester Grades Are Determined Using This Scale**

Numerical Grade	Letter Grade	Grade Points
≥ 96.7	A+	4.33
≥ 93.3	A	4
≥ 90.0	A-	3.67
≥ 86.7	B+	3.33
≥ 83.3	B	3
≥ 80.0	B-	2.67
≥ 76.7	C+	2.33
≥ 73.3	C	2.0
≥ 70.0	C-	1.67
≥ 66.7	D+	1.33
≥ 63.3	D	1.0
≥ 60.0	D-	0.67
< 60.0	E/F (Fail)	0

### **Attendance Policy**

Students must attend every class. Participation in classroom activities and demonstration of preparedness will boost your participation grade.

### **Communication with the Instructor outside the Class**

Communication with the instructor outside the class is equally important given that this is an upper level class. Throughout this course, students are encouraged to discuss their research projects with the instructor during her office hours or upon appointment.

### **Email Policy**

I WILL NOT respond to messages sent by any email service other than UA E-mail. AND ALWAYS PUT the course number on the subject line.

### **Notification of Changes**

The instructor will make every effort to follow the guidelines of this syllabus as listed; however, the instructor reserves the right to amend this document as the need arises. In such instances, the instructor will notify students in class and/or via email and will provide reasonable time for students to adjust to any changes.

*Plagiarism:* Plagiarism is a serious offense that is relatively easy to trace and determine. I have various means of identifying and tracing plagiarism. If you have questions about plagiarism, please contact me for further details and/or view official university websites. In addition, we have the Turnitin Policy.

*Turnitin Policy:* The University of Alabama is committed to helping students uphold the ethical standards of academic integrity in all areas of study. Students agree that their enrollment in this course allows the instructor the right to use electronic devices to help prevent plagiarism. All course materials are subject to submission to Turnitin.com for the purpose of detecting textual similarities. Assignments submitted to Turnitin.com will be included as source documents in Turnitin.com's restricted access database solely for the purpose of detecting plagiarism in such documents. Turnitin.com will be used as a source document to help students avoid plagiarism in written documents.

### *The UAct*

The University of Alabama is committed to an ethical, inclusive community defined by respect and civility. The UAct website ([www.ua.edu/uact](http://www.ua.edu/uact)) provides a list of reporting channels that can be used to report incidences of illegal discrimination, harassment, sexual assault, sexual violence, retaliation, threat assessment or fraud UA's primary communication tool for sending out information is through its web site at [www.ua.edu](http://www.ua.edu). In the event of an emergency, students should consult this site for further directions. Additional course information will be posted using Blackboard.

### *Severe Weather Guidelines*

The guiding principle at The University of Alabama is to promote the personal safety of our students, faculty and staff during severe weather events. It is impossible to develop policies that anticipate every weather-related emergency. These guidelines are intended to provide additional assistance for responding to severe weather on campus.

UA is a residential campus with many students living on or near campus. In general classes will remain in session until the National Weather Service issues safety warnings for the city of

Tuscaloosa. Clearly, some students and faculty commute from adjacent counties. These counties may experience weather related problems not encountered in Tuscaloosa. Individuals should follow the advice of the National Weather Service for that area taking the necessary precautions to ensure personal safety. Whenever the National Weather Service and the Emergency Management Agency issue a warning, people in the path of the storm (tornado or severe thunderstorm) should take immediate lifesaving actions. When West Alabama is under a severe weather advisory, conditions can change rapidly. It is imperative to get to where you can receive information from the [National Weather Service](#) and to follow the instructions provided. Personal safety should dictate the actions that faculty, staff and students take.

The Office of University Relations will disseminate the latest information regarding conditions on campus in the following ways:

Weather advisory posted on the UA homepage

Weather advisory sent out through UA Alerts to faculty, staff and students

Weather advisory broadcast over WVUA at 90.7 FM

Weather advisory broadcast over Alabama Public Radio (WUAL) at 91.5 FM

Weather advisory broadcast over WVUA-TV/WUOA-TV, and on the website at <http://wvuatv.com/content/weather>. WVUA-TV Home Team Weather provides a free service you can subscribe to which allows you to receive weather warnings for Tuscaloosa via e-mail or cell phone.

Check <http://wvuatv.com/content/free-email-weather-alerts> for more details and to sign up for weather alerts.

In the case of a tornado warning (tornado has been sighted or detected by radar; sirens activated), all university activities are automatically suspended, including all classes and laboratories. If you are in a building, please move immediately to the lowest level and toward the center of the building away from windows (interior classrooms, offices, or corridors) and remain there until the tornado warning has expired.

Classes in session when the tornado warning is issued can resume immediately after the warning has expired at the discretion of the instructor. Classes that have not yet begun will resume 30 minutes after the tornado warning has expired provided at least half of the class period remains.

#### *Policy on Academic Misconduct*

All students in attendance at The University of Alabama are expected to be honorable and to observe standards of conduct appropriate to a community of scholars. The University of Alabama expects from its students a higher standard of conduct than the minimum required to avoid discipline. At the beginning of each semester and on examinations and projects, the professor, department, or division may require that each student sign the following Academic Honor Pledge: "I promise or affirm that I will not at any time be involved with cheating, plagiarism, fabrication, or misrepresentation while enrolled as a student at The University of Alabama. I have read the Academic Honor Code, which explains disciplinary procedure resulting from the aforementioned. I understand that violation of this code will result in penalties as severe as indefinite suspension from the University." See the [Code of Student Conduct](#) for more information.

## **Disability Accommodations**

The University of Alabama is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or think you may have a disability) and need reasonable accommodation(s) to participate in this class, contact the Office of Disability Services (or ODS; 205-348-4285, ods@ua.edu, Houser Hall 1000, www.ods.ua.edu) as soon as possible. If you have been approved to receive accommodations through ODS, please meet with me during office hours or by appointment to submit your accommodation letter and discuss how accommodations can be implemented in this course.

## **Note on Tophat**

We will be using Top Hat Pro ([www.tophat.com](http://www.tophat.com)) for class participation. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message. For instructions on how to create a Top Hat account and enroll in our Top Hat Pro course, please refer to the invitation sent to your school email address or consult Top Hat's Getting Started Guide (<https://bit.ly/31TGMIw>). If you already have a Top Hat account, go to <https://app.tophat.com/e/265747> to be taken directly to our course. If you are new to Top Hat, follow the link in the email invitation you received or...

- Go to <https://app.tophat.com/register/student>
- Click "Search by school" and input the name of our school
- Search for our course with the following join code:

If a paid subscription is required, it will be listed at checkout when you enroll in our Top Hat Pro course. Should you require assistance with Top Hat at any time please contact their Support Team directly by way of email ([support@tophat.com](mailto:support@tophat.com)), the in-app support button, or by calling 1888- 663-5491. Specific user information may be required by their technical support team when troubleshooting issues

## **Schedule**

### **GY 470: Water Hazards Decision Making**

**(Subject to Changes)**

Week 1	Introduction: Syllabus, Schedule, and Stuff
Week 2	Judgment under Uncertainty
Week 3	The Framing of Decisions and the Psychology of Choice
Week 4	Risk Perception and Risk Communication
Week 5	Environmental Ethics
Week 6	Public Evaluation of Drought and Flood
Week 7	Flood Mitigation Behaviors
Week 8	Social Vulnerability to Water Hazards
Week 9	Federal Programs on Flood Management
Week 10	Measuring Flood Risks
Week 11	Group Project Discussion
Week 12	Individual Student Presentation