

**GEO 3341 EXTREME FLOODS | GEO 6348 FLOODS SEMINAR**  
**T | Period 6 - 7 (12:50 PM - 2:45 PM) R | Period 6 (12:50 PM - 1:40 PM)**

**FALL 2020**

Fall 2020 Class Meetings will be a mix of synchronous and asynchronous (see Canvas for specifics. We will typically have at least one synchronous meet-up per week on Tuesdays at 12:50)

**Instructor:** Dr. Joann Mossa  
**E-mail:** [mossa@ufl.edu](mailto:mossa@ufl.edu) (please communicate when appropriate)  
**Phone:** 352-294-7510 (work number, will rarely check)  
**Office Location:** 3129 Turlington (no office meetings this term)  
**Office Hours:** MW 1-3 PM Through Zoom, and by appointment

**CATALOG DESCRIPTION:** Examines the world's most extreme floods from the Pleistocene through present due to various causes. Discusses physical and human aspects of flood warning, preparedness, response and recovery throughout the world. **(GE-PN)**

**COURSE OBJECTIVES INCLUDE:**

- *Understanding of the causes of floods* including excessive precipitation, excessive snowmelt, climatic oscillations, tsunamis, coastal storm surges, glacial lake outburst floods (GLOFs), ice jams, landslides, natural dam failures and other physical processes. Floods are also caused or augmented by failures, overtopping, mismanagement or intentional destruction of constructed dams and artificial levees and floodwalls.
- *Examining methods for assessing paleofloods*, paleoclimate and historical change with PSI-SWD-(paleostage indicators slack water deposits) and varied geologic and chronologic techniques (radiocarbon dating, tephrochronology, dendrochronology, lichenometry, stratigraphic methods), remote sensing for interpreting landscapes and change; Use of GIS and GPS for flood response, recovery and mitigation including search and rescue, flood frequency analysis, hydrologic modeling, and floodplain mapping
- Knowing that *values, attitudes and norms of different cultures and nationalities affect flood decisions and responses*. Extreme floods are influenced by settlement choices, land use change, governmental behaviors, and public education about disasters. *Individuals of different nationality, age, culture, gender, race, and income may be disproportionately and differentially affected by floods* in terms of lives, homelessness, displacement, and property damage due to variations in vulnerability and resilience in differing parts of the world.
- Examining *problems beyond direct inundation* including the erosion done by water, the debris brought in by water, ensuing famines, the spread of disease due to poor drinking water, disrupted sanitation facilities, inadequate and dysfunctional medical care, contamination of water (sewage, dam failures at mines), etc.
- Considering *varied outcomes of floods and lessons learned*. Discussing how floods have influenced history, culture, art, music, historic preservation, race relations, migration patterns, crime and crime-control attempts, mental health, seismology, animals, agriculture, livelihoods, engineering, policy, relief efforts, fund raising, tourism and more. Some stories regarding public education, advertising, memorializing, policy, government conflicts, and engineering.

## **DISCLAIMER/WARNING**

Please use your judgment as to whether the content of this course is suitable given your history and background, especially if you have experienced trauma or distress due to a disaster. We view some documentaries and witness accounts of recent floods that are sad or disturbing.

## **GRADING SCALE**

A = 93 or above; A- = 90-92.9; B+ = 87-89.9; B = 83-86.9; B- = 80-82.9; C+ = 77-79.9; C = 70-76.9; C- = 67-69.9; D+ = 65-66.9; D = 60-64.9; D- = 57-59.9; E = < 57

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

## **NO CLASSES:**

Thanksgiving Break. Other cancellations will be announced in class

## **BASIC TEACHING APPROACH**

- Want to create a positive learning environment
- Lots of videos and visuals
- Some readings, posted on Canvas (no \$ out of pocket for books)
- Content and teaching style appeals most to visual and kinesthetic/experiential learners
- Big believer in resource availability, all Power Points posted on Canvas; Use them
- I ask open-ended questions in class to help in retention, learning and thinking
- Bring your questions to assist in understanding and recollection
- Engagement encouraged by several small assignments
- Some Canvas discussion, posting, thinking
- Many items graded
- I like to get to know my students and try to be helpful and encouraging

**INSTRUCTIONAL METHODS:** In this course, much of the learning is done through assignments and discussions that involve data analysis, critical thinking, and synthesizing information.

**ONLINE LEARNING COMMENTARY:** By now, you already know the basics of how to increase your chances of staying healthy during the semester, including wearing masks, social distancing, avoiding large gatherings, forming pods, avoiding places like restaurants, bars and gyms, etc. Do your best to keep yourself from getting sick, but please keep me posted if you become ill. Because we are online, this class will not put you at increased risk. However, some things will probably go wrong with technology during the semester on either end of our communications, including Zoom outages and low band-width problems here and there. Please be understanding of problems on my end and I will be understanding of issues on your end. Expect glitches to happen. If outages or problems are frequent, I will reduce Zoom meetings in favor of other options for engaged learning

**ONLINE RECORDING DISCLOSURE:** Our class sessions may be audio-visually recorded for students in the class to access later and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate verbally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will

need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

**ATTENDANCE POLICY:** When we have synchronous meetings, please do your best to attend and participate in the course throughout the duration of the term. If the internet connectivity is a problem, let me know if you were unable to participate. We may have to orchestrate an alternative assignment or way of engaging so please communicate when there is a problem. All assignments will be listed in the course schedule, and specific due dates can be found in the calendar. Requirements for class attendance and assignments in this course are consistent with university policies that can be found in the current UF Undergraduate Catalog

**ASSIGNMENTS, ATTENDANCE AND MAKE-UP POLICY**

Class attendance is critical. Please obtain valid written documentation if you miss in-class assignments and exams.

***Grade Breakdown Summary***

Assignment Type	Points or percentage
Mini-assignments Video sheets, crossword puzzles, data interpretation, Google Earth, discussion comments in Canvas, typically 10-30pts.	~30%
Critical Thinking Assignments Spreadsheet and article reviews, What is your Flood Zone, Floods Graphics Evaluation etc : 30-50 pts	~20%
Open Book Quizzes in Canvas, typically 20 pts. each	~30%
Final Project, 200 pts	~20%
Total	100%

**MINI ASSIGNMENTS (~30%):** One type of in-class assignment will be answering questions about documentaries or videos of floods associated with a variety of causes. These answer sheets will be turned in at the end of class on Canvas. There will also be crossword puzzles to reinforce your learning, data interpretation assignments, Google Earth assignments, discussion comments in Canvas, each typically 10-30pts.

**CRITICAL THINKING ASSIGNMENTS (~20%):**

spreadsheet and journal article reviews designed to assist in learning terminology, find and interpret data sources, use thinking and questioning skills, analyze data : 30-50 pts each

**What is Your Flood Zone?:** Students visit the FEMA flood map portal to interpret the flood zone of a past residence, and then are assigned different locations to assess the floodplains there.

**Spreadsheet Assignments:** We will do at least two spreadsheet assignments involving finding, analyzing, and graphing data as if you were assisting a water manager. One is called the

**mitigation assignment** where you will find data from the USGS and NOAA to look at a major flood and determine how much time residents had from reaching action stage to other different flood levels. You will then interpret whether this was sufficient and whether the action stage should be changed. Each student will be assigned a different station. A second assignment is called the **streamflow stripes assignment**. You will determine whether your station (students will each have a different assigned station) is showing increasing or decreasing trends in streamflow. You will learn some pretty cool tricks in Excel that might help with future work, whatever your profession.

**Journal Article Reviews:** Your main goal is to review the topic, summarize everything and present a clear understanding of the topic. It involves: 1) Cite journal or report with author, date, title, journal, volume, or website according to a standard convention (APA); 2) For each article, compose a very basic two sentence summary to get the major thrust of the paper: "The author's purpose in writing the article was..." "The author concluded...."; 3) List what struck you as being the four or five most important points in the article using your own words. Go beyond the author's conclusions or the abstract; 4) Find one thought-provoking quote from the article that will generate discussion; followed by a brief response, statement, or question of your own about the quote to provoke discussion; 5) Select an important figure or table from the article. Briefly state, and be prepared to discuss in class, why you think the figure or table is especially meaningful or interesting. If your article does not have one, write N/A; 6) What is the theoretical and applied significance of this article? What (if anything) was interesting or innovative about the paper?; 7) Come up with one thought-provoking question related to each article and express your own thoughts about this question. The class portal has some articles from which readings can be chosen. Students can start there to select articles for review or find readings outside of the repository and review with instructor permission. We will continue to add to the repository over the semester. Two students should not review the same article, so students will declare selection in Canvas posting when an article is assigned. You can save or upload your review as a Word or Google \*.doc or Power Point \*.ppt

**Flood Warning Graphics, Evaluation and Creation:** Students find several graphics that agencies disseminate to inform the public about floods, Critique pros and cons of each, and then create their own which is better.

**OPEN BOOK QUIZZES IN CANVAS (~30%):** Quizzes usually to be submitted on Sundays following introduction of class content.

**FINAL PROJECT (~20%):** Options will include a power point presentation of topical research, creation of a flood game, or an individual or group project with instructor permission flood case study video. More will be posted in CANVAS

**VISUAL (POWER POINT) TOPICAL FLOOD RESEARCH:**

Relate Floods to something of a topical nature such as: Art Inspired from Floods, Calculating Economic Costs of Floods, Pets and floods, The Elderly and Floods, Disease and Floods, Gender and Floods, Mental Health and Floods, Hospitals and Floods, Schools and Floods, Engineering for Floods, Climate Change and floods, Children and Floods, Dogs and Floods, Water Contamination and Floods, Fires and Floods: How are they connected?, Recovery from Floods, Homelessness and Floods, Humanitarian Assistance and Floods, Housing and Floods, Vegetation Changes from Floods, Construction and Floods, Planning and Floods, Music Inspired from Floods, Ancient

Civilizations and Floods, Race and Floods, Poverty and Floods, Dysfunctional Governments and Floods, Geomorphology and Floods, Livestock and Floods, Cropland and Floods, Churches and Floods, Donations and Floods, Migration following Floods, Memorializing Victims of Floods, Mapping of Floods, Boats and Floods, Floods and NGOs, Many more etc. (I recommend that you consult me regarding a different topic). See Guidelines Power Point for a long list of topics...there are many more. Consult me regarding your thoughts and questions.

Tell a story drawing from at least 3 events, including at least 2 examples from outside the U.S. Presentations should be at least 15 slides. Begin with a title slide, and then a framework slide that raises one or more questions for which you will provide some insight. Use maps and graphics from refereed journals (discussed in class; Google Scholar/UF e-journals) and the internet. Use strong graphics, cite the web source or author, date for each graphic on the slide, make a conclusions slide that responds to the initial questions. Include a references slide with complete citations (author, date, article title, journal title, volume, pages). I am happy to provide early feedback. The grading rubric is as follows: 20% originality (using examples and topics not discussed in class, 20% breadth and depth of research (examining topic across different events and locations), 20% organization and structure, 20% use of maps, data, tables and graphics, 20% quality and quantity of sources, inclusion of full references and citations. Due early November (200 pts.)

#### **FLOOD GAME AND FLOOD GAME EVALUATION (CARD OR BOARD OR COMPUTER GAME)**

- Create a game where at least 20 facts and concepts about floods are learned or reinforced, Rubric (High end is 40 points in each category), Max 200 points
- Visual Appeal/Graphics: Quality icons or graphics associated with floods and flooding
- Scientific Correctness: Integration of facts or information that have to do with physical and/or social aspects of floods/ flooding, Includes >20 facts or concepts
- Breadth and depth of research: different types of scenarios, scientific and social complexity, understanding of topic is conveyed to game player
- Organization and structure: game is named, instructions clear, game tells a story
- Playability: game easy to copy for classroom play, finishes in timely manner, etc.

**Evaluation:** The game will be evaluated by at least two other students who made flood games. The questions that they will answer include: Does the game have a name? If not, can you think of one? Or a better one? How would you rate the level of learning, concept reinforcement and critical thinking in the game? What is original and creative about the game? How long does it take before someone wins? What do you like about the game? Is there anything you dislike about the game? What suggestions do you have for revising/improving the game?

**VIDEO OR DATA ANALYSIS, INDIVIDUAL OR GROUP PROJECT (20%):** This can be an individual or a group data analysis or research-based or project involving spreadsheets or GIS, or a video project focused on floods. I will be happy to assist with ideas and/or hear your ideas and suggest data sources.











## **Weeks 14 and 15: Humans and Catastrophic Floods**

- Catastrophic Dam Failures/Overtopping/Mismanagement
  - Johnstown PA 1889, Malpasset France 1959, Vaiont Italy 1963, others
- Catastrophic Levee and Floodwall Failures
  - Red River, Katrina, Mississippi flood of 1993
- Intentional Floods
  - Blowing up dams and dikes in wartime, Dynamiting levees, Dam-building
- Floodplain management: Where are we and others?
- Floods: climate change, sea level rise, land use change and settlement trends

### **TYPICAL ASSIGNMENTS**

- Mini-quizzes (20 pts.)
- Dams disasters worksheet
- Submit early draft of final project

### **VIDEOS**

- Dam failure videos in Canvas portal

### **READINGS**

- TBD

**HONOR CODE:** UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code.” On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor of this class.

**STUDENTS WITH DISABILITIES AND OTHER CONCERNS** "Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Please take care of your health and be aware that the University Counseling Center (<http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575), the Student Health Care Center (392-1161) and Student Mental Health (392-1171) can assist students as they work through personal, academic and social issues. Provide advance notice and obtain documentation for excused absences where possible. If needed, University Police Department can be contacted at 392-1111 or Dial 9-1-1 for emergencies.

**COMMON SENSE ADULT BEHAVIOR** Please minimize distractions to yourself and others during class time (mute when appropriate, pay attention, etc.).

**GETTING HELP IN CANVAS:** For issues with technical difficulties for Canvas, please contact the UF Help Desk at: <http://helpdesk.ufl.edu>; (352) 392-HELP (4357); Walk-in: HUB 132  
Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from the Help Desk when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you need to resubmit.

**EVALUATIONS:** Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.