# Course Syllabus

# URBDP 526 Autumn 2024: Floodplain Management and Planning for Coastal and River Communities

Instructor: Mitch Paine, CFM

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Flooding is one of the most prevalent natural hazards facing communities and societies worldwide. Climate change, urbanization, and global development challenges coincide with flood hazards to have huge impacts nearly everywhere. Incredibly widespread flooding in Pakistan in 2022 impacted 15% of the country's population of 250 million people; flooding in east African countries in 2020 displaced nearly one million people and threatened food security; major atmospheric rivers hit California in 2023; the list goes on daily for impactful flooding around the world.

Our responses as societies, communities, governments, and nations affect how flood survivors recover, how those living in and near flood-prone areas manage the risk, and how societal impacts are distributed after such major events. How much risk do we assume for flood-prone areas? Do we move people and livelihoods out of harm's way? Do we build giant levees and dams and coastal defenses to protect people? How do we do all of this in light of a changing climate?

This course will focus on understanding flooding and its impacts, identifying appropriate mitigation measures to protect people, property, and communities, and using methods to evaluate the effectiveness of those alternatives. We will use case studies of flooding in the past, we will look at individual communities as teams throughout the course to help us understand how to think holistically about flooding, and we will have discussions throughout the course on individual components of flood risk.

At the end of this course, students will be able to:

- Describe riverine, coastal, and other flood hazards
- Identify and describe the impacts from those flood hazards on people, property, and communities
- Identify structural and nonstructural flood risk reduction measures that can be used to lessen or eliminate flood risk
- Use tools to evaluate potential flood risk reduction measures

The course is divided into 5 units:

- 1. Understanding flood hazards
- 2. Understanding impacts from flooding
- 3. Structural flood measures
- 4. Nonstructural flood risk reduction measures
- 5. Evaluating alternatives and implementation

# **Policies**

- 1. All assignments must be turned in by the due date identified in Canvas. Late submissions will only be allowed with prior consultation with the instructor. Points will be taken off late submissions, to be determined by the instructor.
- 2. Plagiarism will not be tolerated. Instructor will use all tools available to identify attempts at plagiarism and any plagiarized assignment will receive a grade of 0. You must include a description of any AI software used (for example if used for proofreading), but you must create original written materials yourself.
- 3. Since attendance will be a mixture of online and in-classroom participants, please be on time. Attendance will not be recorded, but lack of attendance will impact your ability to complete homework and understand the material. Accommodations will be made for students who have work priorities or other situations that arise. Early communication with the instructor should be made to address these.
- 4. The final project will be a group project and all students are expected to fully participate. Each group will be required to develop and submit a team charter, and each student will be held to the charter.

# Assignments & Grading

The assignments will be given in Canvas and must be completed per the instructions in Canvas. If you have any technical limitations or difficulties, please reach out to the instructor right away. The points available will be provided in each assignment. The course grades will be based on the total points earned through the assignments and the final project.

## Assignments:

- 1. Applying Climate Impacts to Riverine and Coastal Flooding Due October 23<sup>rd</sup> at 11:00pm
- 2. Understanding Flood Impacts in Pakistan Flooding Case Study Due November 4<sup>th</sup> at 11:00pm
- 3. Identifying Appropriate Structural Flood Risk Solutions for New York City Due November 25<sup>th</sup> at 11:00pm

The assignments will be graded on the following:

- 1. Critical thinking how did you synthesize the information presented in class, gathered in readings, and experience brought in presenting your ideas? How insightful are the ideas you present?
- 2. Clarity of ideas how clear was your argument or conclusion? Could a reader reasonably describe what you are trying to convey?
- 3. Well-researched ideas while this course is not a science course, students are expected to convey well-researched, technically-based concepts. The resources provided for each class session in Canvas should be used as a source of information.
- 4. Response to the prompts each assignment will specify the questions to be answered or the key areas to focus on and how well they are addressed will be a component of the grade.
- 5. Quality of submittal does the student's submittal reflect a graduate level work? How complete is the assignment turned in? How professional is the submittal?

Extra credit will be provided on some assignments and the expectations will be outlined clearly in each assignment in Canvas. Extra credit will not be critical to success in this course, but will be an option for students to dig deeper into additional case studies and other floodplain management literature.

The final grades will be made up of Individual Assignments (60%) and the Team Final Project (40%). The course will be graded on a 4.0 scale based on the assignments and team final project.

#### Final Project and Group Assignment

The final project for this course will be a group assignment that will focus on a floodplain management case study and students will be expected to bring all aspects of what was learned in class to the case study. Small groups will be formed and all students are expected to complete a team charter that lays out individual roles and responsibilities for each member of the group. Small groups will be assigned by the instructor during the week of October 7<sup>th</sup>. Groups will be required to send a completed and signed team charter by October 18<sup>th</sup> to the instructor.

The final project will consist of two pieces:

1) a presentation to be given during the class sessions on December 2<sup>nd</sup> and 4<sup>th</sup> (30 points)

2) a final written paper. The final written paper will be due by Wednesday, December 11<sup>th</sup> at 11:00 pm. (50 points)

The final project will be graded using the same criteria as the assignments listed above. All individual team members will also be given an evaluation of the group project to be able to share their thoughts on the process at the end.

#### **Class Sessions**

Class sessions will be held in Gould 102 from 5:30 - 6:50pm on Mondays and Wednesdays. The instructor may occasionally join only via Zoom due to work travel. Each session will have a Zoom log-in and call-in option below:

#### https://washington.zoom.us/j/96315387232.

If you see this sentence, email me a photo of a pet (yours/family member's/friend/etc.) for a bonus five points as a reward for reading the syllabus.

#### **Office Hours**

Office hours will be held approximately 45 minutes before each in-person class session and the instructor will be in the basement open area of Gould Hall or in Gould 102 if it's available. The instructor will also be available for virtual office hours if an individual or group needs – just send him an email.

#### **Technology Requirements**

Students are expected to have software like Microsoft Word, Excel, and Powerpoint or Apple Pages, Numbers, and Keynote (either system is OK to submit assignments with) to create assignments as well

as Adobe Reader or another PDF-reading program. Students should have technology that allows for a full Zoom session, including video, audio, and screen-sharing. All of this required software is available through UW IT.

# **Course Prerequisites**

There are no prerequisites for this course. Students from all disciplines from engineering to planning to environmental science will be able to succeed in this course and add value to all discussions. Floodplain management includes a broad swath of knowledge from all disciplines.

# **Course Textbook and Readings**

The textbook for this course is:

• Cities and Flooding: A Guide to Integrated Urban Flood Risk Management for the 21<sup>st</sup> Abhas K Jha, Robin Bloch, Jessica Lamond. World Bank.

This textbook is available as a PDF or other electronic version from the UW Libraries for free. A physical copy is not required, but can be purchased online if so desired.

Readings will also be given for each class session. Required and optional readings will be provided. For the discussion sessions, all students will be expected to have read the assigned readings and be ready for a class discussion.

# Autumn 2024 Course Schedule

Questions, critical thinking, and discussions from all students are expected throughout each class session.

Each session can be found in an individual page on Canvas.

Introduction - Wednesday, 9/25

Module 1: Understanding Flood Hazards

- River flooding Monday, 9/30
- River flooding, continued Wednesday, 10/2
- Coastal, urban, and other flooding Monday, 10/7
- Coastal, urban, and other flooding, continued Wednesday, 10/9
- Climate change, land-use alterations Monday, 10/14
- Discussion/group exercise Wednesday, 10/16

Module 2: Understanding Impacts from Flooding

- Direct & indirect impacts, vulnerability Monday, 10/21
- Direct & indirect impacts, vulnerability, continued Wednesday, 10/23
- Discussion and case study Monday, 10/28

## Module 3: Structural Measures

- Levees, floodwalls, diversion structures, and dams Wednesday, 10/30
- Coastal defenses, urban drainage, nature-based structural solutions Monday, 11/4

Module 4: Nonstructural Flood Risk Reduction Measures

- Acquisitions, elevations, regulations Wednesday, 11/6
- Regulations, flood warning systems Wednesday, 11/13
- Discussion on structural vs nonstructural, case study Monday, 11/18

Module 5: Evaluating Alternatives and Implementation

- Cost-benefit analyses and multi-criterial analyses Wednesday, 11/20
- Guest lecture, Allan Gear, New South Wales Public Works, Australia Monday, 11/25

Final project presentations - Monday, 12/4

Final project presentations - Wednesday, 12/6

A final exam will not be given.

## About the Instructor

## Mitch Paine, CFM

Mitch is an urban planner and floodplain manager with over 15 years of experience in local, state, and federal government and international institutions. He currently is a Policy Analyst for FEMA's National Flood Insurance Program at FEMA Headquarters in Washington, DC and works on policy and regulatory aspects of the NFIP as well as the Endangered Species Act. He worked for FEMA Region 10 in Seattle before joining HQ and worked with local governments and tribes in Oregon and Alaska on their local floodplain management programs. Mitch has taught as an affiliate/part-time lecturer with UW since 2018.

Prior to joining FEMA, Mitch was part of the floodplain management team at King County, WA where he led a major overhaul of the permitting system for floodplain management. He was also the Community Rating System coordinator for King County, which is one of the top-rated communities in the country at a CRS Class 2.

Before moving to Washington, Mitch served as the State Floodplain Manager for Nebraska and worked with hundreds of communities on implementing floodplain regulations. He worked with multiple communities that saw major flooding and others that experienced tornadoes tear through houses in the floodplain and worked with the communities on a resilient recovery.

Mitch previously worked for the World Bank and the City of Lincoln, Nebraska. He holds a master's degree in urban planning from Cornell University. Mitch is also an accomplished nature photographer. He lives south of Seattle with his wife and two big dogs.

# **Religious Accommodations**

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at <u>Religious Accommodations Policy (https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/)</u>. Accommodations must be requested within the first two weeks of this course using the <u>Religious Accommodations Request form</u> (<u>https://registrar.washington.edu/students/religious-accommodations-request/</u>).

## Access and Accommodations:

Your experience in this class is important to me. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with Disability Resources for Students (DRS), please activate your accommodations via myDRS so we can discuss how they will be implemented in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), contact DRS directly to set up an Access Plan. DRS facilitates the interactive process that establishes reasonable accommodations. Contact DRS at disability.uw.edu.