

Enrollment is now open

register here

Online Course
for advanced university students
and professionals

International Approaches to Flood-Risk Management

Jan 22- Apr 30, 2025

**UNIVERSITY
OF
CALIFORNIA**

Berkeley Landscape Architecture
and Environmental Planning

UC DAVIS Water World

This 14-week course on fundamentals of flood risk management brings experts across the UC system to teach the state of the art in flood risk management worldwide: mapping, land use planning, innovative technology for flood risk reduction, equity, climate change, floods after fires and debris flows, policy, governance, environmental sustainability. You will learn how communities can be more resilient in a sustainable and equitable way.

Next start date

January 22, 2025

Lecture M-W 9-10:30am

Duration

14 Weeks

Format

Online (synchronous)

Cost

\$2,250

Participants who complete this course are eligible to receive **12 Continuing Education Credits** through the US Association of State Floodplain Managers' (ASFPM's) Certified Floodplain Manager (CFM) Program.



Contact information

annaserrallobet@berkeley.edu

Enrollment is open to professionals working in flood management or related fields, including:

- floodplain managers working for local, state, or federal agencies
- regulatory professionals and planners working on rivers and floodplains
- environmental and engineering consultants working on flood management and mitigation
- insurance and reinsurance professionals managing flood risk
- and others

Instructors Spring 2025



Anna Serra-Llobet
UC Berkeley



Nicholas Pinter
UC Davis



Brett Sanders
UC Irvine



Matt Kondolf
UC Berkeley



Sarah Yarnell
UC Davis



Jeremy Lancaster
California Geological
Survey



Adda Athanasopoulos-Zekkos
UC Berkeley



Jay Lund
UC Davis



Jessica Ludy
US Army Corps of
Engineers



Yanan Ma
AECOM



James Gregory
ESA

Introduction

Week 1

- Introduction, course overview, key concepts

Module 1

Week 2-3

The science behind floods

- Rain, rivers, and rising seas
- Types of flooding
- Ecological benefits of flooding
- Climate change, urbanization, aging infrastructure, ecosystem loss: Impacts on flooding

Module 2

Week 4-6

Global approaches to flood risk management: Governance, policy, politics

- Flood risk management in the United States / California
- International approaches. Part 1. Europe
- International approaches. Part 2. Canada, Australia
- International approaches. Part 3. Global South, UN Sendai Framework

Module 3

Week 7-9

Conceptualizing, mapping, and assessing flood risk: Innovative technologies. Integrating equity

- Digital twins, AI and flood risk management
- Modeling floods

- Mapping floods: coastal, riverine and urban flood hazard, alluvial fan flooding, debris flow hazard, compound hazards
- Floods and environmental justice
- Mapping and assessing human vulnerability: social, institutional and procedural vulnerability

Module 4 **Planning and managing floods: Flood risk reduction measures**

Week 10-13

- Prevention measures: Land use planning, policy arrangements, risk communication
- Preservation and restoration measures: Nature-based solutions
- Protection measures: Dams, levees, flood diversions, innovative technologies
- Preparation and response measures: Emergency management, early warning systems, innovative technologies to monitor levees
- Recovery measures: Managed retreat, flood insurance

Module 5 **Resilience, nature-based solutions, climate adaptation: Challenges and opportunities**

Week 13-14

- Resilience to flooding: what do we mean?
- Nature-based solutions, climate adaptation: Challenges and opportunities
- Course conclusion
- **Final exam**



Learn from
renown experts



International approaches
& innovative technologies



Optional
field trip

What future leaders are saying?



Daniel Smith

Assistant Engineer - City of Sacramento, Floodplain Management

"As someone who attended while in the workforce, I found value in participating in this challenging course with students who provided thoughtful and critical questions that fostered my learning. Even though I was working directly with graduate students on my assignments, the professors were able to tailor the curriculum to all of our levels of experience. I firmly believe that this course has helped me become a more well-informed floodplain manager and engineer."



Hanji Xu

Undegraduate Student - UC Berkeley, Cognitive Science & Landscape Arch.

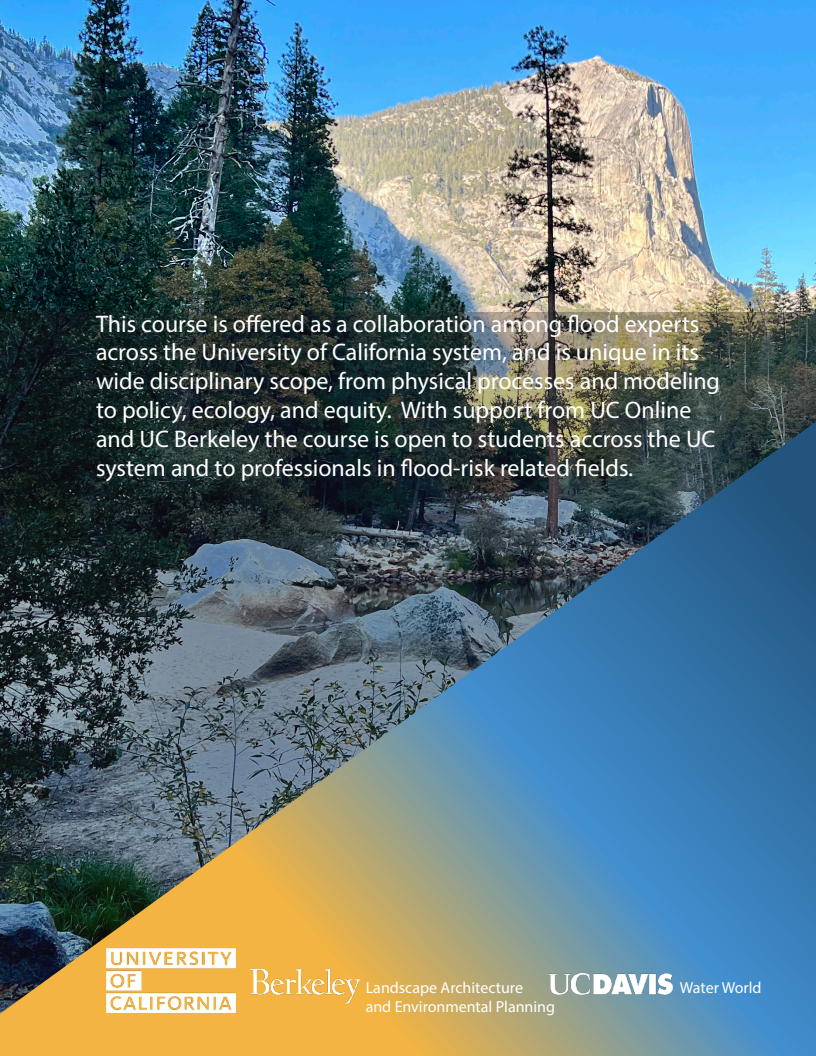
"This class was the most impactful course I've taken in my transition from a design background to climate solutions. The seminar-style format featured diverse guest speakers who shared cutting-edge research, policy work, and technological advancements across various geographical contexts. We submitted our term paper to the ASFPM 2024 National Student Paper Competition and we won first place! We also earned a fully sponsored trip to the ASFPM Conference at Salt Lake City to be at the same place with thousands of floodplain engineers and managers – an opportunity I would never had without this course."



Roberto Andrade-Moreno PhD Student

Currently Environmental Engineer-Scientist - EKI Environment & Water, Inc.

"The course provides a holistic perspective on flood risk management that emphasizes understanding the role that hazard, vulnerability, and exposure each play in manifesting risk. These risk drivers are often overlooked in traditional engineering practice. I found the interdisciplinary lenses through which we analyzed risk and disaster management in the course insightful for my profession."



This course is offered as a collaboration among flood experts across the University of California system, and is unique in its wide disciplinary scope, from physical processes and modeling to policy, ecology, and equity. With support from UC Online and UC Berkeley the course is open to students across the UC system and to professionals in flood-risk related fields.