# eorge Mason University



**George Mason University**

**Department of Geography and Geoinformation Sciences
GGS 302: Global Environmental Hazards – Spring 2022**

**Class time:** Mondays & Wednesdays from 3:00 pm – 4:15 pm

**Location:** Exploratory Hall, Room 2310

**Instructor:** Lori Mandable (she/her)

Exploratory Hall, Room 2204
lmandabl@gmu.edu

Office: 703-993-3923

Mobile: 703-966-5316

**Learning** Kai Barner (he/him)

**Assistant:** Exploratory Hall, Room 2400 C/D

 kbarner2@gmu.edu

 Discord: <https://discord.gg/neDcCfGBMf>

**Office hours:** Lori: Monday – Thursday 12pm-1pm and by appointment in 2204 Exploratory Hall

and via Zoom Personal Meeting Room at <https://gmu.zoom.us/j/2749469680>

Kai: Tuesdays and Fridays from

**Overview:** GGS 302 introduces applications of observational and modeling techniques to natural hazards and the threat they pose to the world as well as a general introduction to global climate change and its impact on regional and local scales. Backgrounds in natural hazards such as earthquakes, tsunamis, volcanoes, landslides/mass movements, ground deformation, severe weather events, climate change, wildfires and space projectiles are discussed, including the anthropogenic components contributing to these hazards on scales ranging from global to local environments.

**Learning Objectives:**

1. Understand data and knowledge creation: Students will understand how data and knowledge are generated and communicated, and how they can be used to address questions or problems in disciplines and in society.
2. Engage multiple perspectives: Students will be able to identify and negotiate multiple perspectives, work collaboratively within and across multiple social and environmental contexts, and engage ethically with their subject and with others.
3. Investigate a meaningful question: Students will use inquiry skills to articulate a question; engage in an inquiry process; and situate the concepts, practices, or results within a broader context.
* Students will be able to ask increasingly complex questions about significant problems, debates, or challenges.
* Students will be able to evaluate and choose inquiry methods that are appropriate to a project.
* Students will be able to explain how a project has value to local, civic, professional, scholarly, or global contexts.

Green Leaf Sustainability-Related

Green Leaf Sustainability-Related courses “help build knowledge about a component of sustainability (people, planet and profit) or introduce students to sustainability concepts during part of the course. They may complement sustainability-focused courses by providing students with in-depth knowledge of a particular aspect or dimension of sustainability (such as the natural environment) or by providing a focus area (such as renewable energy) for a student’s sustainability studies, or they may broaden students’ understanding of sustainability from within different disciplines.”

**Required Text:** *Natural Hazards and Disasters, 5th Ed.*, Hyndman, Donald, and David Hyndman. Cengage 2017.

 **ISBN:** 978-1-305-58169-2

 Textbook website: <https://www.cengage.com/c/natural-hazards-and-disasters-5e-hyndman/9781305581692PF/>

 Also available via the GMU bookstore or Amazon

**You should do the readings before each Monday class period. It will be much more beneficial to you for lecture, in class activities and class discussion.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Assignment | Frequency or Date | Possible Points | Percent of Total | Where  |
| 2 Research Reports | 2 Article Reviews each worth 100 points | 200 | 20 | In Class |
| In Class Activity Participation | 5 Activities each worth 20 points | 100 | 10 | In Class |
| Exam 1 | March 9, 2022 | 200 | 20 | Blackboard |
| Exam 2/Final | May 11-17, 2022 | 200 | 20 | Blackboard |
| Research Paper | Topic: Feb 9, 2022Outline: Mar 2, 2022Draft: April 13, 2022Final: May 4, 2022 | Topic: 25 pts.Outline: 50 pts.Draft: 75 pts.Final: 150 pts. | 30 | Blackboard |
| Total |  | **1000 points** | **100%** |  |

Grades will be determined according to the following schema:

|  |  |  |
| --- | --- | --- |
| Grade | Percentage | Points |
| A+, GPA 4.00 points earned | 97% and above | 485-500 |
| A, GPA 4.00 points earned | 94% - 96.99% | 470-484 |
| A-, GPA 3.67 points earned | 90% - 93.99% | 450-469 |
| B+, GPA 3.33 points earned | 87% - 89.99% | 435-449 |
| B, GPA 3.00 points earned | 84% - 86.99% | 420-434 |
| B-, GPA 2.67 points earned | 80% - 83.99% | 400-419 |
| C+, GPA 2.33 points earned | 77% - 79.99% | 385-399 |
| C, GPA 2.00 points earned | 74% - 76.99% | 370-384 |
| C-, GPA 1.67 points earned | 70% - 73.99% | 350-369 |
| D, GPA 1.00 points earned | 60% - 69.99% | 300-349 |
| F, GPA 0.00 points earned | 59.99% and below | 0-299 |

**Research**

**Reports:** There will be 2 Research Reports due on topics of your choice. Sign up for a date via the Sign-Up Genius link (posted on our BB Home Page) to present on a particular topic. Essentially, this is review of an article of your choice on that day’s lecture topic and you are required to present the article to the class along with your critique of the article. Details are in the Research Report Discussion Board section of BB.

Click “Submit” when complete. You may submit answers as many times as you would like up to the time due, though only the final submission will be graded. Once submitted, make sure you KEEP the submission email Blackboard sends you in case of technical issues – it is your proof that you have submitted the lab on time!

It is important to create your own summary and critique – any instances of plagiarism will be reported to the Honor Committee and the Office of Academic Integrity in accordance with university policy.

**In Class** We will have a combination of 5 required in class activities that each will count 20

**Activities**: points for a total of 100 points.

**Exams:** There will be two exams for this course, each worth 200 points. Exam 1 will cover Chapters 1-8 and Chapter 19 of the text, and Exam 2/Final Exam will be comprehensive but focus more intently on Chapters 9-17 of the text.

**Research**

**Paper:**

## Instructor Policies

* **Attendance is key to doing well in this course.** Several scientific studies conclusively correlate academic success with regular class attendance. While the instructor does not take attendance for class, there will be 5 unannounced In Class Activities given in class during the semester, which comprise 100 points of the total grade for this class. If you must miss a class, please let the instructor know ahead of time via email or text message. It is the student’s responsibility to meet with the instructor to follow up on any missed material.
* **Absences:** Make up exams, make up in-class quizzes and late submissions of labs and other graded material will only be accepted at the discretion of the instructor for **DOCUMENTED** extenuating circumstances. Missed quizzes, exams and late submissions of labs and other graded work will receive a grade of 0 and it is the student’s responsibility to follow up with the instructor regarding a documented extenuating circumstance.
* **Respect for Others:** Frequent discussions will occur in class. Please be kind and respectful to fellow students, Learning Assistant(s) and the Professor. Remember your audience and use proper professional etiquette and language. We all bring our wonderful and unique experiences and perspectives to class. A foundation of respect and acknowledgement of diverse perspectives enables everyone to benefit from our collected insights.
* **Use of electronic devices/cell phones:** Please do not engage in activities that are unrelated to the class on the class computers and any private electronic devices brought into the classroom. Please mute cell phones prior to class commencing. If you do need to receive an incoming call during the class period, please step outside the classroom to take the call.
* **Email policy:** The instructor will return emails and text messages as quickly as possible Monday through Friday. If you send an email on Saturday or Sunday it could be a full 24-48 hours before the instructor is able to respond.

## University Policies

* **Catalog:** The University Catalog (http://catalog.gmu.edu) is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at [http://universitypolicy.gmu.edu/.](http://universitypolicy.gmu.edu/) All members of the university community are responsible for knowing and following established policies.
* **Email:** Students must use their MasonLive email account to receive important University information, including communications related to this class. The instructor will not respond to messages sent from or send messages to a non-Mason email address. See <http://masonlive.gmu.edu> for more information.
* **Inclement Weather and Class Cancelation:** GMU posts closings on its website (www.gmu.edu.) You can receive notification from Mason Alerts via email or text to a cell phone; please let the instructor know if you need more information.
* **Registration:** Instructors do not have the capacity to remove students from class enrollment, therefore students are responsible for any changes in enrollment.
* **Honor Code:** Students of this course must be familiar with the GMU honor code, which can be viewed via this link: <http://www.gmu.edu/catalog/9798/honorcod.html#code>.

Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask the instructor for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Paraphrased material must also be cited, using MLA or APA format. A simple listing of books or articles is not sufficient. Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting. If you have any doubts about what constitutes plagiarism, please see the instructor.

**Any** violation of the honor code is taken seriously and will be reported.

Pursuant to OAI policy, for any cases of cheating faculty must give two recommendations for sanctions, for first and second offenses. My recommendations will be as follows:

1st Offense: ‘F’ for the course and academic probation

2nd Offense: Expulsion from the university

* **George Mason Diversity Statement**:

*George Mason University promotes a living and learning environment for outstanding growth and productivity among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth.*

*An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.*

*The reflection of Mason’s commitment to diversity and inclusion goes beyond policies and procedures to focus on behavior at the individual, group and organizational level. The implementation of this commitment to diversity and inclusion is found in all settings, including individual work units and groups, student organizations and groups, and classroom settings; it is also found with the delivery of services and activities, including, but not limited to, curriculum, teaching, events, advising, research, service, and community outreach.*

*Acknowledging that the attainment of diversity and inclusion are dynamic and continuous processes, and that the larger societal setting has an evolving socio-cultural understanding of diversity and inclusion, Mason seeks to continuously improve its environment. To this end, the University promotes continuous monitoring and self-assessment regarding diversity. The aim is to incorporate diversity and inclusion within the philosophies and actions of the individual, group and organization, and to make improvements as needed.*

* **Support Resources:**

**Office of Disability Services:** If you have a documented learning disability or other condition that you believe will impact your academic performance: 1) Consult with the Office of Disability Services (SUB I, Rm. 2500; 703-993-2474; <http://ods.gmu.edu>) so that they can document the issues and determine about proper accommodations and 2) Provide the professor with the documentation of accommodations provided by ODS. As a matter of university policy, faculty cannot provide accommodations without documentation from the ODS.

**Responsible Employee:** As a faculty member and designated “Responsible Employee,” the instructor is required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s [*Title IX Coordinator*](https://diversity.gmu.edu/sexual-misconduct) per [*university policy 1412*](https://universitypolicy.gmu.edu/policies/reporting-of-clery-act-crimes-andor-prohibited-sexual-conduct/).

**Confidential Support Services:** If you wish to speak with someone confidentially, please contact the [*Student Support and Advocacy Center*](http://ssac.gmu.edu/) (703-380-1434) or [*Counseling and Psychological Services*](https://caps.gmu.edu/) (703-993-2380). You may also seek assistance from [*Mason’s Title IX Coordinator*](https://diversity.gmu.edu/sexual-misconduct) (703-993-8730; titleix@gmu.edu).

**Additional Support Services:** Several departments exist to aid students in a wide variety of ways and are listed on the last page of this syllabus.

## GGS 302 - Course Outline 1, 2

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Date | Chapter(s) Covered | Due Dates |
| 1 | 1/24 | Course Introduction |  |
| 1/26 | Chapter 1: Natural Hazards & Disasters |  |
| 2 | 1/31 | Chapter 2: Plate Tectonics & Physical Hazards |  |
| 2/2 | Chapter 3: Earthquakes & Their Causes | **Research Report Sign Up due by end of class (SignUp Genius)** |
| 3 | 2/7 | Chapter 4: Earthquake Predictions, Forecasts & Mitigation |  |
| 2/9 | **Research Paper Topic Due** |
| 4 | 2/14 | Chapter 6: Volcanoes: Tectonic Environments & Eruptions |  |
|  | 2/16 |  |
| 5 | 2/21 | Chapter 7: Volcanoes: Hazards & Mitigation |  |
| 2/23 | Chapter 5: Tsunamis |  |
| 6 | 2/28 | Chapter 8: Landslides & Other Downslope Movements |  |
|  | 3/2 | **Research Paper Outline Due** |
| 7 | 3/7 | Chapter 18: Asteroid & Comet Impacts  |  |
| 3/9 | **Exam 1 – Chp 1-8 and Chp 18** |  |
| 8 | 3/14 | **SPRING BREAK** |
| 3/16 |
| 9 | 3/21 | Chapter 10: Weather, Thunderstorms & Tornadoes |  |
| 3/23 |  |
| 10 | 3/28 | Chapter 11: Climate Change: Processes & History |  |
|  | 3/30 |  |
| 11 | 4/4 | Chapter 12: Climate Change: Impacts & Mitigation |  |
| 4/6 |  |
| 12 | 4/11 | Chapter 13: Streams & Flood Processes |  |
|  | 4/13 | **Research Paper Draft Due** |
| 13 | 4/18 | Chapter 14: Floods & Human Interactions |  |
| 4/20 |  |
| 14 | 4/25 | Chapter 9: Sinkholes, Land Subsidence & Swelling Soils |  |
|  | 4/27 | Chapter 15: Waves, Beaches & Coastal Erosion |  |
| 15 | 5/2 | Chapter 16: Hurricanes & Nor’easters |  |
| 5/4 | Chapter 17: Wildfires | **Research Paper Due** |
| 16 | Wed, May 11 – Tues, May 17, 2022 | **Comprehensive FINAL EXAM (Chp 1-18), but emphasis is on Chp 9-17** |  |

**\*Notes:** 1This is a flexible course outline. The instructor reserves the right to make changes when necessary.

2The current “official” copy of the syllabus/course outline will be kept on Blackboard. Students will be notified of any changes.

**Student Support Services:**

|  |  |
| --- | --- |
| NAME OF RESOURCE | DESCRIPTION OF RESOURCE |
| [Academic Advising](https://advising.gmu.edu/) | [www.advising.gmu.edu](http://www.advising.gmu.edu)  |
| [Assistive Technology Initiative](https://ati.gmu.edu/) | **Aquia Building Rm. 238 703-993-4329** [**www.ati.gmu.edu**](http://www.ati.gmu.edu)Manages the production of accessible text for Mason students with disabilities. They also ensure access to information technology and communications to the entire university community through the use of adaptive equipment and provision of technical assistance. |
| [Center for Culture, Equity, and Empowerment (formerly ODIME and LBGTQ+)](https://ccee.gmu.edu/) | **SUB I Room 2400 703-993-2700** [**www.ccee.gmu.edu**](http://www.ccee.gmu.edu)Leverages programs and services focused on advocacy and direct student support to strengthen equity and inclusion at George Mason University. Our advising fosters opportunities for identity development, cross-cultural engagement, and inclusive learning communities, affirming the indivisible aspects of all our identities. Our three areas: [Student Access and Equity (SAE)](https://ccee.gmu.edu/sae/), [Student Engagement for Racial Justice (SERJ)](https://ccee.gmu.edu/serj/), and [LGBTQ+ Resources](https://ccee.gmu.edu/lgbtq-resources/), serve as resources to those in the Mason Community who seek to meaningfully engage and interact with people with different identities and intersections to co-create an equitable campus environment. |
| [Counseling and Psychological Services](https://caps.gmu.edu/) | **SUB I Room 3129 703-993-2380** [**www.caps.gmu.edu**](http://www.caps.gmu.edu)Students can take advantage of psychological services, a variety of learning services, multicultural services, and educational programs that support students’ educational goals. |
| [Disability Services](https://ds.gmu.edu/) | **SUB I Room 2500 703-993-2474** [**www.ds.gmu.edu**](http://www.ds.gmu.edu)Implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. |
| [International Programs and Services](https://oips.gmu.edu/) | **SUB I Room 4300 703-993-2970** [**www.oips.gmu.edu**](http://www.oips.gmu.edu)Provides guidance to students and scholars studying and working at George Mason University on immigration, employment and taxation, and adjustment issues, while fostering cross-cultural understanding through programs highlighting global themes. |
| [Learning Services](https://learningservices.gmu.edu/) | **SUB I Room 3129 703-993-2380** [**www.learningservices.gmu.edu**](http://www.learningservices.gmu.edu) Provides a variety of experience based learning opportunities through which students explore a wide range of academic concerns. Services include support to students with learning differences, individual study skills counseling, individualized programs of study, and provision of tutoring resources. Presentations on a variety of academic skill topics are available to the university community. The programs are open to all George Mason University students free of charge. Services are confidential and use of these services does not become part of the student’s academic record. |
| [Mason Student Services Center](https://masonec.gmu.edu/) | **SUB I Room 1003** [**www.mssc.gmu.edu**](http://www.mssc.gmu.edu)Provides one-stop, integrated information and referrals regarding admissions, registrar, student accounts, and financial aid. |
| [Mathematics Tutoring Center](http://math.gmu.edu/tutor-center.php) | **Exploratory Hall 703-993-3622** [**www.science.gmu.edu/academics/departments-units/mathematical-sciences/math-tutoring**](http://www.science.gmu.edu/academics/departments-units/mathematical-sciences/math-tutoring)Offers tutoring on a walk-in basis for all George Mason University students who are enrolled in math courses up to MATH 290. |
| [Office of Academic Integrity](https://oai.gmu.edu/) | **SUB I Room 4100 703-993-6209** [**www.oai.gmu.edu**](http://www.oai.gmu.edu)Provides information on the honor code and resources for students and faculty. |
| [Office of Coalition Building and Diversity Education (CBDE)](https://cbde.gmu.edu/) | **SUB I Room 2400 703-993-2700** [**www.cbde.gmu.edu**](http://www.cbde.gmu.edu)Through collective and collaborative work with campus and community partners, supports, builds, and enhances the understanding of interpersonal identities to respond to systemic inequities, through engagement, advocacy, and education. CBDE aims to be a catalyst for change by creating, promoting and sustaining an inclusive and equitable campus community. |
| [Office of Compliance, Diversity and Ethics](https://diversity.gmu.edu/) | **Aquia Building Room 373 703-993-8730** [**www.cde.gmu.edu**](http://www.cde.gmu.edu)The Office of Compliance, Diversity and Ethics provides leadership and support on matters relating to equity, diversity, access, respect and inclusiveness for all members of the George Mason University community.  |
| [Office of Military Service](https://military.gmu.edu/support/services) | **SUB I 703-993-1316** [**www.military.gmu.edu**](http://www.military.gmu.edu)Assists U.S. Military veterans, their dependents and survivors with navigating the complex benefits process. Also provides career assistance and social opportunites for military and veteran students. |
| [Safe Zone](https://lgbtq.gmu.edu/safe-zone/) | **SUB I Room 2200 703-993-2702** [**www.lgbtq.gmu.edu/safe-zone/**](http://www.lgbtq.gmu.edu/safe-zone/) Creates a safer, more welcoming and inclusive campus environment to strengthen community and encourage networking among faculty, staff, and students toward the goal of supporting the well-being of LGBTQ people. |
| [Social Action and Integrative Learning (SAIL)](https://sail.gmu.edu/) | **Enterprise Hall Room 442 703-993-2900** [**www.sail.gmu.edu**](http://www.sail.gmu.edu)Fosters experiential learning opportunities on campus, regionally, and globally for the Mason community with a particular emphasis on effecting positive social change. SAIL is Mason’s home for service-learning initiatives. |
| [Student Conduct](https://studentconduct.gmu.edu/) | **SUB I Room 4100 703-993-6209** [**www.studentconduct.gmu.edu**](http://www.studentconduct.gmu.edu) Provides information about university policies, the student conduct process, and resources for faculty related to addressing student behaviors of concerns and other disruptive behaviors. |
| [Student Health Services](https://shs.gmu.edu/) | **SUB I Room 2300 703-993-2831** [**www.shs.gmu.edu**](http://www.shs.gmu.edu)Provides high quality health care, counseling, education, and prevention services in support of student learning and retention. |
| [Student Support and Advocacy Center](https://ssac.gmu.edu/) | **SUB I Room 3200 703-993-3686** [**www.ssac.gmu.edu**](http://www.ssac.gmu.edu)Provides comprehensive services for students in an effort to foster the safety and well-being of the Mason community. SSAC services include assisting students who are encountering barriers to their academic success or personal growth, interpersonal violence prevention, alcohol and drug education, health promotion/healthy relationships, student crisis intervention, and connecting students with appropriate campus and off-campus resources. |
| [University Career Services](https://careers.gmu.edu/) | **SUB I Room 3400 703-993-2370** [**www.careers.gmu.edu**](http://www.careers.gmu.edu)Provides information on career choices, internships and employment, and graduate and professional school. |
| [UNIV Courses and Programs](https://transitions.gmu.edu/) | [**www.transitions.gmu.edu**](http://www.transitions.gmu.edu)Serves as a resource and development center for undergraduates, providing courses, programs, and services to facilitate students’ personal and academic success. |
| [University Life](https://ulife.gmu.edu/) | **Merten Hall Room 5200 703-993-8760** [**www.ulife.gmu.edu**](http://www.ulife.gmu.edu)Enhances students’ in- and out-of-class experiences, in addition to facilitating interactions among faculty, staff, and other students. These resources help students achieve academically, stay healthy, get involved with campus life, find jobs, and identify resources to enrich their learning. |
| [University Writing Center](https://writingcenter.gmu.edu/) | **Johnson Ctr Room 227E 703-993-1200** [**www.writingcenter.gmu.edu**](http://www.writingcenter.gmu.edu)Offers free individual writing consultations for students, who choose between meeting a tutor on Zoom or submitting a draft for the tutor’s written feedback. Also offers online writing guides on specific genres of writing, citation style, and other topics. Additionally, the Writing Center provides assistance to faculty who are interested in holding in-class writing workshops, developing effective writing assignments, or evaluating students’ writing. |