Department of Geography & Geoinformation Science
GGS 303 -001 - Geography of Resource Conservation
Fall 2025

Contact Details for Your Instructor			Course Details	
Name	:	Maction Komwa, PhD	Class Meeting Times	W| 12:00 – 1:15 pm
Office	:	Exploratory Hall, Room 2414	Location	Exploratory Hall 2312
Email	:	mkomwa@gmu.edu	Credit hours	3.00
Phone	:	703-993-5646	Office Hours	Thursday [1:00 pm- 2:30 pm | or by Appointment

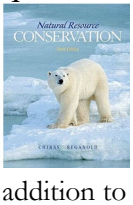
Graduate Teaching Assistant
Name: Casey Yuan (PhD Candidate)
Email: yuan5@gmu.edu
Office hours: Exploratory Hall - TBA
Office Hours: TBA

Learning Assistant
Name : Kaylee Hungerford
Email : khungerf@gmu.edu
Office : Exploratory Hall 2400-D
Office Hours: TBA

Course Description
The course provides analysis of world resources distribution, conservation, and preservation; and problems resulting from their natural occurrence and utilization. Uses knowledge from physical and social sciences to develop complex and sophisticated understanding of issues surrounding natural resource exploitation and management, conservation, and preservation.

Course overview
Conservation of Resources and Environment tackles the physical, environmental, economic, and human dimensions of resource availability and use. Unequal distribution and unsustainable practices create complex issues, highlighting the interdependence of humans, technology, and the natural world. Finding synergy between technology and environment is crucial for long-term, sustainable development that safeguards our planet for future generations.
This course takes a geographical approach to examine how resource management impacts our health, economic security, potential for conflict, the environment, and critical issues like biodiversity conservation, climate change adaptation, sustainable urban development, responsible forest management, and global food security.

Required Textbooks:



Natural Resource Conservation: Management for a Sustainable Future.
10th Edition
Daniel D Chiras Daniel Chiras, John Reganold
ISBN: 0132251388
ISBN-13: 9780132251389

In addition to the required textbook, other recommended readings and articles will be posted on Canvas throughout the semester. It is your responsibility to complete these readings before each class.

Learning Outcomes
Upon completing a Mason Apex course, students will be able to:
1. Integrate skills, abilities, theories, or methodologies gained across a Mason student's undergraduate education to explore complex issues in original ways.
2. Critically analyze the significance of various natural resources in supporting human life and ecosystems, and evaluate the effectiveness of local and global management strategies for sustainable resource use.
3. Demonstrate proficiency in using Geographic Information Systems (GIS) to analyze spatial data and develop effective conservation management and planning strategies.

4. Apply critical thinking skills to evaluate the validity, reliability, and limitations of arguments and solutions related to natural resource management and conservation, using both qualitative and quantitative evidence to support their assessments.
5. Communicate effectively the results of the student's work with awareness of audience, purpose, and context using an appropriate modality (for example: written, oral, visual, material, embodied, multimodal).

Class Format

This class will meet in person on Mondays and Wednesdays from 12:00 pm – 1:15 pm. I will deliver lectures that follow the course syllabus, and I encourage you to take your own notes in addition to the lecture notes I post on Canvas.

This will be an interactive class, and your participation is highly valued. We will use geospatial tools in lab assignments, so you'll need a computer with enough memory and storage to complete your work. If your computer doesn't meet these requirements, you can use our GIS Lab in the Exploratory Hall or access the ArcGIS software through a virtual environment. Please check the "Course Resources" section on Canvas for details.

Assignments and Evaluation

Your final grade will be determined by the following components: Each assignment category will be assigned a specific weight in the calculation of your final. See percentage allocated to each assignment category.

Course Assignment(s)	**Percentage (%)**
Online Discussion Forum	5%
Class Activities & Participation	5%
GIS for Environmental Applications Lab	15%
Exam 1	10%
Exam 2	15%
Final Research Project with Scaffolding Assignments	
• Topic description and Proposal	2%
• Annotated Bibliography	2%
• Draft	4%
• Peer-Review	2%
• Final Research Paper	25%
• Oral Presentation	15%

Grading Scale

Range	Letter Grade	Grade description	Range	Letter Grade	Grade description
93 - 100	A	Excellent	77 - 79	C+	Satisfactory
90 - 92	A-	Very Good	70 - 76	C	Satisfactory
87 - 89	B+	Good with merit	60 - 69	D	Just OK
83 - 86	B	Good	<60	F	Failure
80 - 82	B-	Above satisfactory			

Description of Assignments

1. Exams

As part of your course evaluation, you will demonstrate your understanding of the course material by taking two exams (Exam 1 and Exam 2). These exams will be primarily objective, featuring questions that assess your ability to analyze, apply, and synthesize concepts covered in lectures, videos, homework assignments, and reading materials. Expect a variety of question formats, including multiple choice, matching, fill-in-the-blank, and short answer questions**.**

2. Active Learning Through Online and Class Discussion/Activity

This course fosters active learning through engaging class discussions and online interactions.

- **Online Discussions:** You will participate in online discussions on Canvas, responding to thought-provoking questions about course materials. Specific instructions, prompts, and guidelines will be provided for each discussion.
- **In-Class Discussions/Activities:** Your active participation in in-class activities, such as simulations and debates, will be assessed as part of your grade. No grade will be given for missing in-class activity.
    - Some **in-class activities** will not be listed on the syllabus. The instructor will determine which of these count toward your class participation grade. Your attendance is expected and highly valued.

3. Term Research Project
For your final research paper, you will choose a specific topic in resource conservation geography to explore in greater detail. This project is a chance to explore a particular conservation or management issue aligned to the concepts of the course. We will dedicate time in Week 2 or 3 to help you select a suitable topic and structure your research process.

Throughout the semester, you will complete several graded assignments that scaffold the final paper, including a topic selection, a project proposal, annotated bibliography, and a full-length draft. The draft will be peer-reviewed, and feedback will help you create a substantially revised final paper. These assignments are designed to help you deepen your research and connect classroom concepts to real-world challenges. Detailed instructions and a grading rubric for the final research paper will be posted on Canvas.
The final paper is due on the last day of class and will be 8 pages long, double-spaced (excluding the title page and references).

4. Final Presentation
Towards the end of the semester, you'll have the opportunity to present your research findings to your classmates in a 15-minute presentation. We'll discuss specifics like the presentation schedule and sign-up process in class.

5. GIS For Environmental Applications

This course will teach you to use geospatial tools like Geographic Information Systems (GIS) and remote sensing to understand and solve real-world environmental and conservation issues. Through hands-on GIS lab assignments, you'll gain practical experience applying these technologies to resource management and conservation challenges.

Detailed lab instructions are posted on Canvas. You can collaborate with your classmates on these labs, but you're responsible for completing and submitting your own individual assignment.

For support, you can use the Canvas discussion board or attend office hours with the instructor or teaching assistants. You can also post your questions on the Canvas discussion board, which lets other students who might have the same question see the answer. Plus, students who have already taken an introductory GIS course might be able to help you in real time.

Late/Make-up Assignments Policy

Due Dates & Flex Days
All assignment due dates are listed in the syllabus and on Canvas. You get two flex days to use throughout the semester. You can use these to submit an assignment up to 48 hours late without a penalty, for any reason. These flex days do not apply to online class discussions.

Late Penalties:
- After using your flex days, late assignments will be penalized:
    - Assignments submitted up to one week late will receive a 10% grade reduction.
    - Assignments submitted one to two weeks late will receive a 25% grade reduction.
    - Assignments submitted more than two weeks late will receive 0 points.
- A time extension for exceptional circumstances must be approved in advance.

Updated August 2025

These four policies affect students in all courses at George Mason University. This Course Policy Addendum must be made available to students in all courses (see Catalog Policy AP.2.5) or click the link: GMU Common Course Policies - Stearns Center for Teaching and Learning

Academic Standards:

Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- **Honesty:** Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- **Acknowledgement:** Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, co-authored pieces, and project reports.
- **Uniqueness of Work:** Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. The process for reporting, investigating, and adjudicating violations is outlined in the university's procedures. Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility: Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Accommodations for Students with Disabilities

Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations, please visit https://ds.gmu.edu/ for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility: Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor *in advance* of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication

The Family Educational Rights and Privacy Act (FERPA) governs the disclosure of education records for eligible students and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility: Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting

As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the "Complainant") will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence. Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

Student opportunity: If you prefer to speak to someone ***confidentially***, please contact one of Mason's confidential employees in Student Support and Advocacy (SSAC), Counseling and Psychological Services (CAPS), Student Health Services (SHS), and/or the Office of the University

Additional Policies

Digital Interventions – AI

Generative AI tools, such as large language models, are powerful tools that can support your learning by helping with tasks like brainstorming and generating ideas. However, they can also interfere with the learning process. This means you must explicitly disclose when and how you've used AI in your work, including the specific platform and date of use. Treat AI-generated material like any other source—it must be properly cited, and you are not permitted to submit it as your own original work. Failure to follow this policy is a serious academic integrity violation and will be punished accordingly. Additionally, George Mason University's Academic Standards Policy prohibits students from cheating, plagiarism, stealing, and lying in academic work.

Diversity

Diversity is an important in an academic environment, and is a priority for George Mason University. See: http://ctfe.gmu.edu/professional-development/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."*

Absences & Accommodations

- **Religious Holidays:** Please refer to George Mason University's calendar of religious holidays and observations (http://ulife.gmu.edu/calendar/religious -holiday-calendar/). It is the student's responsibility to speak to the instructor in advance should their religious observances impact their participation in class activities and assignments.
- **Absence for documented illness:** Students who miss multiple virtual classes due to prolonged illness should seek medical care and provide documentation of such to the Dean's Office, which will communicate with the student's professor(s). A prolonged absence may necessitate the student's withdrawal from the course or from the University for the semester.
- At **the discretion of the professor:** There may be cases where an absence is undocumented but is, nevertheless, excused by the professor (e.g., absence due to a death in the family). Students should initiate a conversation with their professors about the nature and duration of the absence, in advance of the absence whenever possible.

When absences are excused, students remain responsible for all assigned work, and shall be provided with the opportunity to make up, without penalty, any work that they have missed.

University Resources

George Mason University has several academic support and other resources to facilitate your success. Some of these resources are presented below:

i. University Libraries: see http://library.gmu.edu/for/online.
ii. Counseling and Psychological Services: http://caps.gmu.edu/
iii. The Writing Center [http://writingcenter.gmu.edu/
iv. University Policies: http://universitypolicy.gmu.edu
v. University Catalog: http://catalog.gmu.edu/
vi. Learning Services, University Career Services: http://careers.gmu.edu/

Tentative Course Schedule - *Faculty reserves the right to alter the schedule as necessary, with notification to students.*

Week | Date		Topic Description	Readings	Homework Due date & Time [11:59 pm]
1	8/25 & 8/27	Course Overview	Syllabus	Discussion – Self -intro
		Natural Resources: Concept & classification	Chapter 1	
2	9/1 9/3	Labor Holiday		Online Discussion # 1 GIS Software Installation
		Historical and Resource Conservation, Enviro & Sustainability Movements	Chapter 1	
3	9/8 & 9/10	World Distribution of Natural Resources & Significance of Resources	Article(s)	Debate about the State of Nature Class Activity (Carl Pope vs Bjorn Lomborg) Research Topic Proposal – 9/14
		New Tools for Resource Management (GIS & Remote Sensing) – Intro to GIS Hands-on	Chapter 1	
4	9/15 & 9/17	Environmental & Conservation Economics	Chapter 2	GIS Lab 1 – Intro to GIS - 9/14 Discussion # 2
		Environmental & Conservation Economics		
5	9/22 & 9/24	Tragedy of the Commons | Exam 1 Review	| Article(s)	**Exam 1 – 9/24**
		Exam 1		
6	9/29 & 10/1	Human Population & Conservation	Chapter 4	**Annotated Bibliography** – 10/5 Discussion # 3
		Human Population – GIS Hands-on Activity		
7	10/6 & 10/8	Managing Water Resources | Water Pollution	Chapter 10 & Chapter 11	
8	10/13 & 10/15	**Fall break**		GIS Lab 2 - 10/12
		World Hunger: Solving the Problem Sustainability	Chapter 5	
9	10/20 & 10/22	World Hunger: Solving the Problem Sustainability	Chapter 5	In-class Discussion about Final Project
		GIS Hands-on Activity – Food Desert & Food Security		
10	10/27 & 10/29	Plant & Animal Extinction (Biodiversity) | Exam 2 Review	Chapter 15	GIS Lab 3 - 10/26 Discussion # 4
11	11/3 & 11/5	Global Warming and Climate Change	Chapter 19	
		Exam 2		**Exam 2 – 11/5**

Week | Date		Topic Description	Readings	Homework Due date & Time [11:59 pm]
12	11/10 & 11/12	Global Warming and Climate Change | GIS hands-on Activity	Chapter 19	**Draft – 11/9**
		In-class Simulation Activity		Summary and Reflection of Simulation Activity – 11/12
13	11/17 & 11/19	Forest Management	Chapter 14	GIS Lab 4 – 11/16
14	11/24	Preparing Your Final Paper for Discussion and Presentation		Peer Review – 11/23 Discussion # 5
	11/26	Thanksgiving Recess		
15	12/1 & 12/3	Final Presentation		
16	12/8	Final Presentation		
		Submit your Final Paper - 12/14		

Note:

- Discussion assignments will be assigned periodically throughout the semester, focusing on selected topics. These assignments will involve online forum discussions to explore the selected topics in depth.
- Prompts for each discussion assignment will be announced as needed. For all online discussions, your initial posting is due by Friday, and you are required to respond to at least two of your classmates' initial posts by Sunday.