George Mason University
GGS 102: Physical Geography
Spring Semester 7.5 Week Session II 2024 (Mar 11 – Apr 30)

Class meeting: Asynchronous
Class location: Blackboard course site
Sect/Credits: DL2 / 3 credit hours
Instructor office: EXPL 2413

Instructor: Nathan Burtch
Email: nburtch@gmu.edu
Office hours: F 12:00 – 1:00 PM (via Zoom)
WR 12:00 – 1:00 PM in person

General Information

Catalog description: Interrelated processes affecting global distribution and character of climate, soils, vegetation, hydrology, and landforms. Includes elements of mapping.

Course overview: Physical geography is the spatial study of the natural materials and processes that interact on Earth. In physical geography, Earth is studied from a systems perspective, which emphasizes the interactions between the atmosphere, hydrosphere, lithosphere, and biosphere; in other words, understanding how air, water, land surface, and living systems have interplaying materials and processes. In this course, students will become familiar with climate, weather, landforms, water processes, and ecosystems through an examination of their spatial distributions and patterns.

Online course: GGS 102 is presented as an asynchronous online course. "Asynchronous" means that there are no scheduled meeting times for this course. Still, there will be specific due dates for graded work in the course that you are expected to meet. It is incumbent upon each student to organize their time and work through materials in a timely and efficient manner. **Additionally, this course is scheduled as a 7.5-week course** (Session II, roughly equating to the second half of a normal semester). As a 7.5-week course, each course week is approximately two weeks during a full Fall/Spring semester. Be sure you can devote the necessary time to the course.

The course has been designed in weekly segments (see the schedule at the end of the syllabus). Segments will be released in order in a prescribed manner. Students will not have access to the entirety of the course materials from the start; you will get the materials necessary for each week as the week approaches. This is done to ease logistical problems of students being at significantly different sections of the course. Please do not ask for advanced access to materials.

Natural science (non-lab) core: GGS 102 is designated as a Mason Core course, fulfilling the Natural Science (non-lab) designation under the Exploration requirements. As described in the Mason Catalog, "natural science courses engage students in scientific exploration; foster their curiosity; enhance their enthusiasm for science; and enable them to apply scientific knowledge and reasoning to personal, professional and public decision-making." As a non-lab course, the following learning outcomes are applicable:

1. Understand how scientific inquiry is based on investigation of evidence from the natural world, and that scientific knowledge and understanding:
    a. Evolves based on new evidence, and
    b. Differs from personal and cultural beliefs.
2. Recognize the scope and limits of science.

3. Recognize and articulate the relationship between the natural sciences and society and the application of science to societal challenges (e.g., health, conservation, sustainability, energy, natural disasters, etc.).
4. Evaluate scientific information (e.g., distinguish primary and secondary sources, assess credibility and validity of information).

Target audience: This course is intended for students interested in learning more about the natural world from a geographic or spatial perspective. As a survey course, students will be exposed to many broad aspects of the natural world. This course can serve as a gateway towards additional physical geography courses that provide more depth of subject, or a Bachelor's degree in geography. GEOG majors, non-GEOG majors, and undeclared majors are all welcome to take this course.

Prerequisites: No prior coursework is required, but basic computer skills are a must.

Enrollment and repeat policy: This course follows the general Mason policy that an undergraduate course can be repeated for grade up to three times. Understand that each academic unit can have more restrictive limits on specific courses. Students enrolling in this course again must submit all newly completed work.

Course Materials

Required text: Christopherson, R. W., S. Cunha, C. E. Thomsen, and G. Birkeland. 2017. *Geosystems core*. 1st ed. Pearson.
ISBN 13: 978-0-321-83474-4

The course textbook is available from various outlets in various forms. It is available through the bookstore or through your online provider of choice (Amazon, the publisher, etc.). The publisher site offers multiple packages, but you are not required to purchase access to their web resources called "Mastering Geography" (we will not use that package in class). The eText version is the same as the hard copy. In addition, there may be other readings posted on Blackboard for you to complete.

GGS computer lab and virtual computing: The lab in EXPL 2102 is open 24 hours for you to use. Registration in a GGS class should automatically grant you access. Please contact ggsit@gmu.edu to report issues.

Mason provides access to Mason Labs virtual computing through your web browser. In order to access it, you will need to install both a Mason VPN (https://its.gmu.edu/service/virtual-private-network-vpn/) and the Citrix Workspace app (https://www.citrix.com/products/receiver.html). After logging into the VPN, you can then access https://mymasonapps.gmu.edu/ using your Mason directory ID. Once inside, you will be able to access Mason Labs and have a virtual connection to a Mason lab computer with some specialized software. You can connect to the Microsoft One Drive cloud storage that each Mason student has or connect to local storage drives.

Software, hardware, and data: A computer of some kind (desktop, laptop, tablet) will be necessary to view course materials and to complete quizzes and exercises. The ability to view and listen to online lecture videos and other materials is necessary; this means you will need speakers or

headphones with your device. As an online course, you will need to have dependable internet access to successfully complete this course. It is recommended that students have the technological bandwidth to stream data; students should have regular, reliable access to a computer with an updated operating system and a stable broadband Internet connection (consistent 1.5 Mbps or higher download and upload speed; you can use https://www.speedtest.net/ to check the speed of your connection).

Online materials and email: This course will make extensive use of Blackboard at Mason. Course materials such as assignments will be available only in electronic version on Blackboard. Also, students will be expected to submit assignments online through Blackboard. **Only Word document (.docx or .doc) or Adobe PDF (.pdf) file formats will be accepted,** with some exceptions. Grades will be posted on Blackboard as well. Make sure you are familiar and comfortable with the Blackboard interface.

Students are required to have a MasonLive/Email account, which will allow you access to Blackboard and lab computers. Please use this university email account when contacting the professor regarding this class; your professor will not respond to messages sent from a non-Mason email address. Students may also contact the professor through Microsoft Teams, although students should not expect instant responses from these direct chats; in other words, Teams is not a 24/7 direct support line for the class.

Grading

Quizzes (60% total): There will be seven quizzes in this course. Consider these as similar to noncumulative midterm examinations you may have in other courses. Quizzes will generally be composed of multiple-choice questions, with potentially some other options sometimes mixed in such as fill-in-the-blank and short answer. Quizzes will cover topics from that week and will pull information from any course materials (readings, recordings, other videos, and exercises). The lowest quiz grade will be dropped; each of the remaining six quizzes will be weighted equally (10% of the overall grade each).

Exercises (20%): There will be five exercises in this course. Exercises are assignments that allow students to dive deeper into subjects covered in the week's readings and recordings. The work completed in exercises will be varied and may include writing, calculations, answering short questions, and other practices.

Discussions (20%): There will be five group discussions in this course. Discussions will take place online on our Blackboard page. A group will be based upon a country, and all discussions will be about that country. Students will choose their country during the first week of class and stay within that group for the entirety of the term. Each week a discussion topic will be posted, and each student will be required to make a post. After posts have been made, students will then make short comments to each of their groupmates' posts.

Grading Scale:

Grades	***Percentage Required***	***Grades***	***Percentage Required***	***Assignment***	***Percentage of Total Grade***
A+	96 to 100	**C+**	76 to 79.9	Quizzes (7)	**60%**
A	93 to 95.9	**C**	73 to 75.9	Exercises (5)	**20%**
A-	90 to 92.9	**C-**	70 to 72.9	Discussions (5)	**20%**
B+	86 to 89.9	**D**	60 to 69.9		
B	83 to 85.9	**F**	<60		
B-	80 to 82.9				

Make-up and late assignment policies: Due dates are explicitly stated. All assessed/graded items in this course (listed above) will be accepted past the ascribed due date until **April 30th**. Late penalties are assigned in a two-tiered system. Items turned in **within seven (7) days will result in a 10% deduction** for the item. Items **later than seven (7) days will result in a 25% deduction** for the item. This penalty begins 1 minute after the due date. Technical excuses ("computer system error", "didn't submit correctly on Blackboard", etc.) will not be accepted as reasons for late work. You are expected to start work early. **Never underestimate the time you will spend on the assignments.** If you cannot complete the assignment on time, it may be better to turn in partially completed work than nothing at all.

If you are ill or physically indisposed and cannot submit work on time, you must notify the instructor beforehand for you to have a chance to make up the work without late penalty. This policy may seem strict, but it is in your best interest to turn in everything on time to avoid falling irrecoverably behind. Please contact the instructor if you are struggling and you will receive aid as best as the instructor can provide.

Incomplete policy: Students may request an incomplete for this course if they (a) currently have a passing grade based on submitted coursework; (b) will have completed at least 50% of coursework materials; (c) cannot complete scheduled coursework for a cause beyond reasonable control; and (d) submit an Incomplete Grade Contract with the professor. In general, students have until the 9th week of the following full semester to complete their work (unless it is the student's final semester). Keep in mind that if the incomplete grade is not updated by the deadline, it defaults to a grade of F. All incomplete work will be assigned late penalties as outlined in this syllabus.

Administrative

Academic integrity: *The following statement is adapted from the Stearns Center for Teaching and Learning.* No grade is important enough to justify academic misconduct. The integrity of the University community is affected by the individual choices made by each of us. Mason has an Honor Code, which you can read fully at the Office for Academic Integrity (https://oai.gmu.edu/mason-honor-code/). The Honor Code Pledge reads as follows:

> To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University Community and with the desire for greater academic and personal achievement, we, the student members of the university community, have set for this Honor Code: Student Members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work.

The Mason Honor Code defines cheating, plagiarism, stealing, and lying. It is expected that you understand these definitions. If you have any doubts about what constitutes cheating, plagiarism, stealing, or lying in the academic context, please see your professor. **Acts of academic dishonesty in this course may be penalized with failure of either the work in question or the entire course.**

While collaboration and group learning is encouraged in this course, each student **absolutely must** turn in their own work, from their own computer, and any discussion must be theirs alone, and not attributable to another person or group, *except where noted* (for example, quoting authors as a small portion of your scholarly work). This also applies to online sources; you cannot copy the words of anyone else for any graded part of this course. It is not enough to exchange a few synonyms within a sentence! You must write, summarize, and analyze with your own words and ideas.

Course materials and student privacy: All course materials posted to Blackboard or other course sites are private; by federal law, any materials that identify specific students (via their name, voice, or image) **must not be shared** with anyone not enrolled in this class. Video recordings of class meetings that include audio or visual information from other students are private and must not be shared. Live video conference meetings (e.g. Collaborate or Zoom) that include audio or visual information from other students must be viewed privately and not shared with others in your household. Some or all of our synchronous meetings in this class may be recorded to provide necessary information for students in this class. Recordings will be stored on Blackboard and will only be accessible to students taking this course during this semester. **Sharing of instructor-created materials** (lectures, notes, videos, assignments, exams, etc.) to others not currently enrolled in this specific section of this class, **including to public or private online "study" sites, is considered a violation of Mason's Honor Code.**

Disability statement: This course complies with Mason policies for students with disabilities. Students with disabilities are encouraged to register with Disability Services (DS). DS can be contacted by phone at (703) 993-2474, or in person at SUB I Suite 2500, or online by the link at the end of this section. Students who suspect that they have a disability, temporary or permanent, but do not have documentation are encouraged to contact DS for advice on how to obtain appropriate evaluation. A memo (faculty contact sheet) from DS authorizing your accommodation is needed before any accommodation can be made. The faculty contact sheet should be furnished to the professor preferably within the first two weeks of class or as soon as an accommodation is made. Please visit https://ds.gmu.edu/ for more information.

Diversity, non-discrimination, and anti-racism: Mason President Gregory Washington has created the President's Task Force on Anti-Racism and Inclusive Excellence. Through a broad focus, the task force will help Mason become "a local, regional, and national beacon for the advancement of anti-racism, reconciliation, and healing." For President Washington's full statement, visit https://www2.gmu.edu/news/587381. Members of this classroom community must uphold Mason's core values of diversity and inclusion, and help maintain a learning environment of respect across identity, status, origin, and ability. Being inclusive and anti-racist is an active, conscious practice involving self-reflection.

Mason's non-discrimination policy can be read at https://universitypolicy.gmu.edu/policies/non-discrimination-policy/. Please utilize the office of Compliance, Diversity, and Ethics

(https://diversity.gmu.edu/) for training, resources, and to submit grievances. The following is a short portion of the Mason Diversity Statement; visit https://stearnscenter.gmu.edu/knowledge-center/general-teaching-resources/mason-diversity-statement/ to read the full 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.

Gender identity, pronoun use, and proper address: Students are welcome to share their chosen name and gender pronouns with the instructor and discuss how the instructor can best address you in class and via email. As well, students should be aware that they can use Mason-provided tools to update their chosen name and pronouns; these changes will appear in Blackboard class sites among other places. See https://registrar.gmu.edu/updating-chosen-name-pronouns/ for more information. Your instructor uses *he/him/his* pronouns. When addressing your instructor in writing or verbally, please use "Dr. Burtch" or "Prof. Burtch." The surname 'Burtch' is pronounced the same as 'birch.'

Instructor availability: Please do not hesitate to contact your instructor if you have questions about course topics or assignments. Your instructor will do his best to answer all weekday emails within 24 hours, and weekend emails within 48 hours. Should you not receive a response within that time frame, you may send a gentle reminder via email. Do try to avoid last-minute emails, as your instructor may not have email accessible immediately before deadlines. It is generally a good practice to avoid sending an email at the first sign of trouble with an assignment; often you will find the proper solution by giving yourself an hour or two to problem solve! Please make use of the office hours listed at the top of this document. Generally, issues can be clarified quickly in person or in a live online chat.

Sexual harassment, sexual misconduct, and interpersonal violence: *The following statement is adapted from the Stearns Center for Teaching and Learning. As a faculty member and designated "Responsible Employee," I am required to report all disclosures of sexual assault, interpersonal violence, stalking, sexual exploitation, and retaliation to Mason's* Title IX Coordinator per university policy 1412. *If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as the* Student Support and Advocacy Center *at 703-380-1434,* Counseling and Psychological Services *at 703-993-2380,* Student Health Services*, or* Mason's Title IX Coordinator at *703-993-8730 or via email at titleix@gmu.edu).*

University-wide closures and class cancellations/delays: There may be times during the semester in which George Mason University announces university-wide closures or delays. Should inclement weather or another emergency force Mason to close, causing our class to cancel meeting times, we will not meet. Check the Mason website and our own Blackboard site for updates. Other cancellations or delays to class will be announced via Blackboard by your professor. In the event that

this course has missed meeting times, the course schedule, assignment deadlines, and other course alterations will be decided upon and announced via Blackboard and email by the professor. You are expected to stay abreast of any changes.

GGS 102 Course Schedule

Unit	Lecture Topics	Coursework
Week 1: Monday 3-11 through Sunday 3-17		
0	Intro to physical geography 0.1. Course logistics 0.2. Physical geography and Earth systems 0.3. Locations on Earth 0.4. Maps and cartography 0.5. Modern geoscience tools	**Read** Intro chapter, Chapter 1 **Discussion 1:** - Post by Thursday, 3-14 - Comment by Sunday, 3-17
1	Solar energy and the atmosphere 1.1. The solar system and the sun 1.2. Energy and radiation 1.3. The seasons 1.4. Atmospheric composition and layering 1.5. Natural and anthropogenic air pollution	**Exercise 1:** - Due by Friday, 3-15 **Quiz 1:** - Due Monday, 3-18
Week 2: Monday 3-18 through Sunday 3-24		
2	Atmospheric energy 2.1. Energy balance and inputs 2.2. The greenhouse effect 2.3. Earth-atmosphere energy balance 2.4. Temperature measurement and controls 2.5. Urban environments 2.6. Worldwide temperature patterns and concepts	**Read** Chapter 2, 3 **Exercise 2:** - Due by Friday, 3-22 **Quiz 2:** - Due Monday, 3-25
3	Pressure, winds, and currents 3.1. Wind 3.2. Atmospheric pressure and motion 3.3. Upper atmospheric circulation 3.4. Local and regional wind 3.5. Ocean currents and global circulation	
Week 3: Monday 3-25 through Sunday 3-31		
4	Atmospheric water and weather 4.1. Water properties and humidity 4.2. Clouds and fog 4.3. Air masses 4.4. Midlatitude cyclones 4.5. Weather forecasting 4.6. Thunderstorms and tornadoes 4.7. Tropical cyclones	**Read** Chapter 4, 5 **Discussion 2:** - Post by Thursday, 3-28 - Comment by Sunday, 3-31 **Quiz 3:** - Due Monday, 4-1
5	Water resources 5.1. Water resources on Earth 5.2. The hydrologic cycle and water budget 5.3. Surface water and groundwater 5.4. Fresh water supply and groundwater depletion 5.5. Water scarcity	

Unit	Lecture Topics	Coursework
Week 4: Monday 4-1 through Sunday 4-7		
6	Global climate systems 6.1. Earth's climate system and classification 6.2. Tropical and mesothermal climates 6.3. Microthermal, polar, and highland climates 6.4. Dry climates	**Read** Chapter 6, 7 **Discussion 3:** - Post by Thursday, 4-4 - Comment by Sunday, 4-7 **Exercise 3:** - Due by Friday, 4-5 **Quiz 4:** - Due Monday, 4-8
7	Climate change 7.1. Earth's past climates 7.2. Natural climate change and climate feedbacks 7.3. Evidence and causes of current climate change 7.4. Climate models 7.5. The climate change debate 7.6. How to address climate change	
Week 5: Monday 4-8 through Sunday 4-14		
8	Tectonics, earthquakes, and volcanism 8.1. Geologic time and physical Earth history 8.2. The rock cycle 8.3. Plate tectonics 8.4. Plate boundaries 8.5. Deformation, folding, faulting, and mountains 8.6. Earthquakes and volcanism	**Read** Chapter 8, 9 **Exercise 4:** - Due by Friday, 4-12 **Quiz 5:** - Due Monday, 4-15
9	Weathering and mass movement 9.1. Weathering and landforms 9.2. Physical and chemical weathering 9.3. Karst topography 9.4. Mass movement	
Week 6: Monday 4-15 through Sunday 4-21		
10	River systems and fluvial processes 10.1. Drainage basins 10.2. Drainage patterns 10.3. Stream gradient and discharge 10.4. Fluvial processes 10.5. Stream channels and deposition 10.6. Floods, floodplains, and humans	**Read** Chapter 10, 11, 12 **Discussion 4:** - Post by Thursday, 4-18 - Comment by Sunday, 4-21 **Quiz 6:** - Due Monday, 4-22
11	Coastal systems and wind processes 11.1. Oceans and coasts 11.2. Coastal processes 11.3. Human/environment coastal interactions 11.4. Wind erosion and deposition	
12	Glacial systems 12.1. Glacial mass balance 12.2. Glacial deposition and landscapes 12.3. The Pleistocene 12.4. Glaciers in the current warming cycle	

Unit	Lecture Topics	Coursework
Week 7: Monday 4-22 through Monday 4-29		
13	Ecosystems and soils 13.1. Energy and the nutrient cycle 13.2. Biogeochemical cycles 13.3. Soil development 13.4. Physical and chemical properties of soil 13.5. Species habitats, niches, and interactions 13.6. Ecosystems	**Read** Chapter 13, 14 **Discussion 5:** - Post by Thursday, 4-25 - Comment by Sunday, 4-28 **Exercise 5:** - Due by Friday, 4-26 **Quiz 7:** - Due Monday, 4-29
14	Terrestrial biomes 14.1. Biogeography 14.2. Soil classification 14.3. Tropical biomes 14.4. Midlatitude and desert biomes 14.5. Tundra and anthropogenic biomes	

Note: The GGS 102 course schedule is tentative and is subject to revision by the instructor