Yukon University	School of Science GEOG 101 Earth Systems: Atmosphere and Climate
	Term: Fall 2025 Number of Credits: 3

Course Outline

INSTRUCTOR: Tara Howatt, PhD
E-MAIL: thowatt@yukonu.ca
OFFICE: A2303b, office hours Wednesdays 11:00 am – 12:00 pm

LECTURE: Tuesday and Thursday 1:00 – 2:20 pm
LECTURE CLASSROOM: A2103
LAB: Friday 1:00 – 3:50 pm
LAB CLASSROOM: A2702 and A2801 (check schedule on Moodle)

COURSE DESCRIPTION

GEOG 101 is an introduction to the physical environment and methods of earth system research. The basic principles and processes that govern climate-weather-water systems on the surface of the earth will be examined from a systems perspective. Natural and human-induced changes in environmental systems through time will also be addressed. Issues of spatial and temporal scale, in the context of earth systems, will be demonstrated by laboratory investigations and principles of geographic information systems and remote sensing. The course will highlight a range of current research taking place throughout Yukon. GEOG 101 is the complementary course of GEOG 102.

COURSE REQUIREMENTS

Prerequisite(s): None.

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at:
https://www.yukonu.ca/admissions/transfer-credit

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to:

1. Understand the processes that govern Earth's weather, climate, and hydrological systems,
2. Understand the concept of earth systems research including the interactions between the landscape, climate, and biophysical features,
3. Have developed some comfort in a laboratory setting,

4. Provide examples of current research and work taking place throughout the Yukon Territory and understand its implications,
5. Critically analyze current media and peer-reviewed articles surrounding global climate change.

COURSE FORMAT

Weekly breakdown of instructional hours
This course will have two 1.5-hr lectures each week and one 3-hr lab each week. Students are expected to keep up with assigned course readings and complete assignments as necessary outside of scheduled hours each week. Although it will vary from individual to individual, students should expect to spend 4-5 hours on course material outside of the classroom time (per week) on studying or completing assignments.

Students are expected to attend both lectures and lab each week. If a student is absent for a lecture or a lab, they must contact the instructor and make up for the missed material on their own time. A missed lab may result in a grade value of 0 for that activity if it cannot be completed outside of the scheduled lab period.

Delivery format
This course will be delivered on campus in a face-to-face setting. Lectures will take place in a classroom (A2103) and labs will take place in either a computer or multi-purpose laboratory (A2702 and A2801). Lectures and labs are complimentary. Field activities may be a part of the course curriculum. Your instructor will provide details about what to bring and expect prior to any field activity.

EVALUATION

Worksheet Participation	5%
Quizzes	10%
Midterm Exam	15%
Final Exam	20%
Lab Assignments	50%
Total	100%

Students must pass both the lecture component and the lab component in order to pass the course. For example, a passing grade in the lecture and a failing grade in the lab will result in failure of the course.

In-class Worksheets
There will be a number of worksheets in this course. Students are to work on the worksheets in class, usually in small groups. The worksheets will be collected at the end of class, graded for participation, and then returned to the students. A minimum of 80% of worksheets will need to be attempted to receive full grades for the worksheet participation. Worksheets completed outside of class time will not be accepted.

Quizzes
A quiz will be delivered each week. Quizzes are based largely on assigned readings and are created to encourage students to complete assigned readings on time each week. Students will have one week to complete the quiz, after which the quiz will be closed. Students may have 2 attempts at each quiz, the higher grade of the two will be used.

Exams
There will be one midterm exam that will take place during class time and one final exam that will be scheduled during the exam period. Both exams will be closed book and based on the lecture and lab material.

Lab Assignments
Lab activities will have assignments that will be due the following week (unless otherwise indicated by the instructor).

Late Policy
A late penalty will be applied to lab assignments when submitted after the due date. A deduction of 10% per day up until a maximum of 50% will be applied. Students are granted a one-time late submission for lab submissions, no penalty, no questions asked. Students must hand in the work *before* the graded work is returned to students.

Extensions may be granted exceptionally and under special circumstances. Please communicate with your instructor **prior to the due date**. Once the due date has passed no extension will be granted.

COURSE WITHDRAWAL INFORMATION

The last date to withdraw without academic penalty is October 31, 2025. Refer to the YukonU website for other important dates.

TEXTBOOKS & LEARNING MATERIALS

Christopherson, R.W. & Byrne, M.L. 2019. Geosystems: An introduction to Physical Geography— Updated Fourth Canadian Edition. Canadian Edition. Prentice-Hall Canada, Inc.: Toronto.
This textbook is available from www.pearson.com as an e-text.

ACADEMIC INTEGRITY

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

Note that generative artificial intelligence tools such as Chat GPT can be useful in the same way as a web search or Wikipedia: they can be a starting point but cannot be used to do the work for you. Simply copying the output from something like Chat GPT and submitting it as your own work will be considered plagiarism the same as if you copied directly from a book, webpage, or classmate. Furthermore, appropriate referencing is expected in submitted work. If generative AI is used as part of your writing

workflow, this must be indicated either as a footnote or endnote describing the use/purpose of the AI. Please be aware that generative AI cannot be used as a reference source itself. Chat GPT and similar tools are not actual sources of information and should not be referenced as such, much as you would not reference the results of a web search. References should be to the published scientific literature, or, when appropriate, to the popular scientific media.

ACCESSIBILITY AND ACADEMIC ACCOMMODATION

Yukon University is committed to providing a positive, supportive, and barrier-free academic environment for all its students. Students experiencing barriers to full participation due to a visible or hidden disability (including hearing, vision, mobility, learning disability, mental health, chronic or temporary medical condition), should contact Accessibility Services for resources or to arrange academic accommodations: access@yukonu.ca.

TOPIC OUTLINE

Topic outline may be altered at any point at the discretion of the instructor

Week	Date	Module	Lecture Topics
1	Sept 4	Introduction to Geography	Introduction and Geography Essentials
2	Sept 9	Solar Energy and Earth's Seasons	Solar Energy
	Sept 11		Solar Energy and the Seasons
3	Sept 16	Introduction to Earth's Atmosphere	Earth's Modern Atmosphere
	Sept 18		Atmospheric Lapse Rate
4	Sept 23		Atmospheric Pollution
	Sept 25	Energy Balances on Earth and Global Temperature	Energy Balance Essentials
5	Sept 30		**National Day for Truth and Reconciliation (No Class)**
	Oct 2		Atmosphere and Surface Energy Balances
6	Oct 7		Global Temperatures
	Oct 9		Midterm Review
7	Oct 14		**Reading Week (No Class)**
	Oct 16		
8	Oct 21		**Midterm Exam**
	Oct 23	Atmospheric and Oceanic Circulation Systems	Atmospheric and Oceanic Governing Forces
9	Oct 28		Atmospheric and Oceanic Circulation
	Oct 30		Natural Oscillations in the Atmosphere and Ocean
10	Nov 4	Water and Atmospheric Moisture	Water Properties and Atmospheric Moisture
	Nov 6		Atmospheric Stability and Clouds
11	Nov 11		**Remembrance Day (No Class)**
	Nov 13	Weather	Weather: Air Masses and Atmospheric Lifting Mechanisms
12	Nov 18		Weather Systems
	Nov 20	Water Resources	Water Budget
13	Nov 25		Water Resources
	Nov 27	Climate Change	Climate Change Introduction and Climate Proxies
14	Dec 2		Natural Climate Variability and Present Climate Change
	Dec 4		Anthropogenic Climate Change
15	Dec 9	Global Climate Systems	Global Climate Systems
	Dec 10		Semester Review