

# Anthropology 4012 Science in the Indigenous Americas Fall 2023

Class Times: Location: Mondays and Wednesdays, 10:00 – 11:30 am Braun Building (BB) 2002

## **Instructor Information**

Instructor:	Dr. Jessica Metcalfe
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Office:	BB 2001D
Office Hours:	Mondays and Wednesdays, 11:30 am – 12:30 pm, or by
	appointment (send me an email to schedule)

**Course Description:** This course will begin by exploring the definition of science and the ways in which Western science has been (and is) employed as a tool of colonialism. We will examine contradictions and complementarities between Western science and Indigenous knowledge by studying examples of community-based research. Drawing on research by archaeologists and Indigenous scholars, we will explore the many ways in which Indigenous peoples have sophisticated empirical knowledge of scientific topics such as climate and environmental science, ecology, zoology, resource management, geology and paleontology, astronomy, mathematics, chemistry, and engineering. In many cases, this Indigenous science developed and persisted over millennia.

**Prerequisites:** Third year standing or higher, or permission of the Chair of the Department of Anthropology.

**Format:** This is a **seminar course** that is **reading-intensive** and **discussion-based**. This means that you must take leadership for your own learning in order to succeed. You are expected to complete the readings before class and actively engage in discussions both in class and online. Following an Indigenous perspective of learning together, you will be encouraged to learn not only from the instructor but from your peers, from the land and its occupants, and from your own inner reflections.

Course Learning Objectives: By the end of this course, students will be able to

- Articulate varied perspectives on science, including mainstream western science and Indigenous sciences
- Demonstrate knowledge of the effects of scientific colonialism on Indigenous peoples in the Americas
- Describe archaeological evidence for a deep history of sophisticated scientific knowledge in the ancient Americas, drawing on various case studies

- Articulate relationships between land, other-than-human beings, culture, language, identity, and science among Indigenous communities and within the student's own worldview
- Critically analyze scholarly work
- Demonstrate skills in oral and written communication and holistic creative expression

# **Required Texts:**

Kimmerer, R.W., 2013. Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants. Milkweed Editions, Minneapolis, Minnesota.

Other required readings/materials (e.g., journal articles, book chapters, videos) will be posted on the course website, and are listed later in this document.

### Grades Breakdown

Item	Value	Due Date
	(%)	
Participation	10	Throughout the term
Introductory Reflection	5	Wed Sept 13
Seminar Proposal	10	Wed Sept 27
Land-Based Reflections (3 x 10% each)	30	Wed Oct 4, 18, 25
Seminar (Individual)	20	Between Nov 6 and 20
Seminar (Making Connections – Pairs)	5	Mon Nov 27
Final Assignment	20	Friday Dec. 8
TOTAL	100	

**Participation** includes regular attendance, active listening, completion of readings, and contributing to in-class and online discussions. A note on readings: in this class, we are not reading in order to memorize facts. We are reading to increase our own and others' understanding about the world. Prior to each class, you are encouraged to identify key themes in each reading and note down questions you would like to discuss in class.

**Introductory Reflection.** Early in the course you will be asked to reflect on your current understanding of what science is and how science relates to Indigenous people. You should consider how your positionality (i.e. gender, race, class, prior experiences) impacts your understanding of these questions. Your reflection should be a minimum of 250 words and no more than 500 words. Your reflection will only be read by the instructor and will not be shared with anyone else.

Land-Based Reflections. Both Indigenous wisdom and western ecology teach us that we are part of the land. The goal for this assignment is to follow an Indigenous approach by learning *from* the land. During Module 2 (*Braiding Sweetgrass*), you will spend time on the land. The goal of each land-based reflection is to open your mind so that land can teach you something about the course readings and themes of the week. For each reflection you should spend at least 30 minutes outside (the more time, the

better) in a natural space. Try to find a place you feel connected with: a forested area or undeveloped lakeshore is ideal, but a city park, garden, or even a quiet corner of your backyard or the LU campus is acceptable if access to a more remote location is difficult. Try to visit a different location for each reflection assignment. While you are spending time on the land, reflect on the following questions:

- What is the land teaching you?
- How does the land's teaching relate to this week's readings?

After your time on the land, prepare and submit (on the course website) a reflection in any ONE of the following formats:

- 1. Audio recording (2 4 minutes) accompanied by a photo of the place, or
- 2. Video recording (2 4 minutes) accompanied by a photo if the video does not include footage of the place), or
- 3. Written piece (250 500 words) accompanied by a photo of the place.

You do not need to submit in the same format each time, but whichever format you choose, please practice/edit your reflections prior to submitting your final version on the course website. Bullet points are not acceptable for the written submissions, but creative forms of expression may be incorporated into any of the submission types.

**Seminar Proposal.** Early in the course, each student will submit a written proposal that identifies a topic for their seminar and demonstrates that the student has conducted a preliminary literature review related to that topic. Your topic should be a case study in Indigenous science (i.e., identify a group/community and a focal subject). Your seminar must include Indigenous perspectives; it cannot be based purely on settler scholarship. However, you may focus on present and/or past examples of Indigenous science. A list of topic suggestions will be provided (though you are not limited to those examples). You are strongly encouraged to discuss your preliminary ideas with the instructor before submitting your proposal. You will receive instructor feedback on your proposal that will help you develop your seminar.

**Seminar (Individual).** Towards the end of the term, each student will lead one seminar on Indigenous science. Each seminar should include a short presentation (~10 minutes) followed by a class discussion (15-20 minutes) guided by the presenter. Seminar dates will be assigned early in the term. All topics must be approved by the instructor (see Seminar Proposal instructions).

At least two weeks prior to the seminar, each student must send me a 'background' source that will be distributed to the class to review prior to the seminar. The background source can be a typical academic reading (e.g., journal article or book chapter) or an informative video\*. The reading/video should introduce the topic and provoke critical thinking so that the class begins each seminar with some background knowledge. All students must do the reading (or watch the video) prior to participating in each student's seminar. This will allow us to have a more effective and informative discussion of the topic.

\* Videos must be from reliable sources, such as Indigenous knowledge-keepers and/or academics.

Seminar (Making Connections – Pairs). This assignment aims to explore the concept, central to many Indigenous ways of thinking, that everything is connected. After the individual seminars have all taken place, we will spend one class discussing ways in which they are connected. You will then pair up with another student to explore more deeply how your topics are connected. During the following class, each pair will explain how they think their topics are connected and discuss what further questions they have about those connections.

**Final Assignment: Written Reflection and Creative Expression.** This assignment includes two components:

(1) A written reflection (academic-style, short essay format) on the course themes. This essay should be between 500 and 1000 words long, and must revisit the questions 'what do you think science is?', and 'how does science relate to Indigenous people?' The essay should review insights from the course materials in relation to these guiding questions, and should also discuss your personal journey in the context of this course (that is, how have your ideas about these questions changed and grown?). Your essay should clearly show that you have read, understood, and reflected on the course materials (i.e., cite the course materials and demonstrate comprehension and critical thinking). Your essay must demonstrate a cohesive organizational structure and strong writing skills. This is not an exam, so feel free to have someone help you proofread the essay for grammar, spelling, and expression.

(2) A form of **creative expression** that relates to the learning objectives of this course (see above). This could be poetry, art, music, a short film, a crafted piece, or another mode of creative expression. (Speak to the instructor if you have any doubts or questions about what would be acceptable). The purpose of the creative component of this assignment is to acknowledge and explore the holistic nature of Indigenous science, knowledge, and learning. Include a picture of your creative component if it is a physical object (e.g., painting, beading, weaving), a video if it is a form of visual expression (e.g., dance), or an audio/video recording if it is a musical piece (e.g., drumming, singing, etc.). Include a written or oral (recorded) discussion of your creative piece, explaining what it is and how it relates to one or more of the course learning objectives. You are encouraged to start working on your creative piece early in the course—please don't leave it until the last minute!

## **Lateness Policies**

- In general, I will deduct 5% per day for late assignments, and I will not accept assignments handed in more than 1 week after the due date.
- Please contact me as soon as possible if you anticipate missing a deadline for this course, or if you are experiencing difficulties that you would like me to know about

# **Course Schedule**

### (subject to modification)

Note: In-class discussions will be based on the assigned readings/videos/podcast, so they must be reviewed <u>before</u> class on the dates indicated.

Text in red represents assignment and other course requirement deadlines.

### Week 1 (Wed. Sept. 6): Introduction to the course

- Course outline overview
- Introduction to talking circles
  - Who are you, and who am I?
  - What do you need to be successful in this course?
  - What does the instructor need in order to teach this course effectively?
  - What are your hopes/goals in the context of this course?

### Module 1: Western Science and Indigenous Science: Theory and Practice

### Week 2: Science and Scientists

Mon Sept 11	What is science?	Dyck (1996)
		Kawagley et al. (1998)
Wed Sept 13	Who does science?	Snively & Williams (2016) Ch. 9
		Introductory reflection due

#### Week 3: Decolonizing Science

Mon Sept 18	Decolonizing methodologies	No readings. Video of a lecture by Linda Tuhiwai Smith (2019) will be shown in class
		and then discussed.
Wed Sept 20	Science is still colonial	Roy (2018)

#### Week 4: Colliding Worldviews

Mon Sept 25	Cross-cultural science education	Snively & Williams (2016) Ch. 8
Wed Sept 27	Worldviews colliding	Little Bear (2000) Kidwell (2002) Seminar proposal due

## Module 2: Braiding Sweetgrass

#### Week 5:

Mon Oct 2	Planting sweetgrass	Kimmerer (2013) pp. ix – 59
Wed Oct 4	Tending sweetgrass	Kimmerer (2013) pp. 61 – 117
		Land-based reflection #1 due

October 9 – 13: Study Break. No classes.

# Week 6:

Mon Oct 16	Picking sweetgrass	Kimmerer (2013) pp. 119 - 201
Wed Oct 18	Braiding sweetgrass	Kimmerer (2013) pp. 203 – 300
		Land-based reflection #2 due

# Week 7:

Mon Oct 23	Burning sweetgrass	Kimmerer (2013) pp. 301 - 384
Wed Oct 25	Module 1 wrap-up	Podcast: Hynes & Kimmerer (2020)
		Land-based reflection #3 due

# Module 3: Indigenous Science Case Studies

## Week 8:

Mon Oct 30	Northwestern North	Snively & Williams (2016) Ch. 6 & 7
	America (various examples)	Background reading or video for seminars
		must be emailed to instructor
Wed Nov 1	Anishinaabe plant	Geniusz (2015) excerpts
	knowledge	

# Week 9:

Mon Nov 6	Student Seminars (Individual) Day 1	TBD (readings/videos chosen by students)
Wed Nov 8	Student Seminars (Individual) Day 2	TBD (readings/videos chosen by students)

# Week 10:

Mon Nov 13	Student Seminars (Individual) Day 3	TBD (readings/videos chosen by students)
Wed Nov 15	Student Seminars (Individual) Day 4	TBD (readings/videos chosen by students)

# Week 11:

Mon Nov 20	Student Seminars (Individual) Day 5	TBD (readings/videos chosen by students)
Wed Nov 22	Student Seminars: Making Connections (Pairs) discussions	No required readings/videos

# Week 12:

Mon Nov 27	Student Seminars: Making Connections (Pairs) presentations	No required readings/videos
Wed Nov 29	Discussion of course themes	Whiteley (2013)

### Week 13

Mon Dec 4	Course wrap-up and	No required readings/videos
	celebration	

### The final assignment is due Friday Dec. 8.

Note: I will grant automatic extensions for the final assignment to Monday Dec. 11, with no questions asked, but you must contact me ahead of time if you wish to receive this extension.

# List of Required Readings, Podcasts, and Videos

Note: Additional selected readings/videos will be chosen by students as background for student seminars.

Dyck, L.E., 1996. An analysis of western, feminist and Aboriginal science using the medicine wheel of the Plains Indians. *Native Studies Review* 2, 89-102.

Geniusz, M.S. (2015). Excerpts from *Plants have so much to give us, all we have to do is ask: Anishinaabe botanical teachings.* University of Minnesota Press, Minneapolis.

Hynes, M. & Kimmerer, R.W., Nov. 27, 2020. <u>Podcast: Why is the world so beautiful?</u> <u>An Indigenous botanist on the spirit of life in everything</u>. *Tapestry*, CBC Radio Podcast.

Kawagley, A.O., Norris-Tull, D., Norris-Tull, R.A., 1998. The Indigenous worldview of Yupiaq culture: its scientific nature and relevance to the practice and teaching of science, *Journal of Research in Science Teaching* 35, 133-144.

Kidwell, C.S., 2002. Native American systems of knowledge. In: Deloria, P.J., Salisbury, N. (Eds.), *A Companion to American Indian History*, Blackwell Publishers, Oxford, pp. 87-102.

Kimmerer, R.W., 2013. *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants.* Milkweed Editions, Minneapolis, Minnesota.

Little Bear, L., 2000. Jagged worldviews colliding. In: Battiste, M. (Ed.), *Reclaiming Indigenous Voice and Vision*, UBC Press, Vancouver, pp. 77-85.

Roy, R. D. (2018). <u>Science still bears the fingerprints of colonialism</u>. *Smithsonian Magazine*, April 9.

Smith, L.T. (2019). Video: <u>The Sociological Review Annual Lecture: Decolonizing</u> <u>Methodologies, 20 Years On.</u> Snively, G., Williams, W.L., 2016. Chapter 6: Indigenous science: Proven, practical, and timeless. In: <u>Knowing Home: Braiding Indigenous Science with Western Science, Book</u> <u>1</u>, University of Victoria Press, Victoria, B.C.

Snively, G., Williams, W.L., 2016. Chapter 7: A window into the Indigenous science of some Indigenous peoples of northwestern North America. In: <u>Knowing Home: Braiding</u> <u>Indigenous Science with Western Science, Book 1</u>, University of Victoria Press, Victoria, B.C.

Snively, G., Williams, W.L., 2016. Chapter 8: When uncles become killer whales: Bridging Indigenous science, western science and worldviews. In: <u>Knowing Home:</u> <u>Braiding Indigenous Science with Western Science, Book 1</u>, University of Victoria Press, Victoria, B.C., pp. 116-132.

Snively, G., Williams, W.L., 2016. Chapter 9: Changing students' perceptions of scientists, the work of scientists, and who does science. In: <u>Knowing Home: Braiding</u> <u>Indigenous Science with Western Science, Book 1</u>, University of Victoria Press, Victoria, B.C., pp. 133-147.

Whiteley, P. (2013). The fire burns yet. Aeon, November 25.

# **General Information**

Regulations - from the Lakehead University Academic Calendar

It is the responsibility of each student registered at Lakehead University to be familiar with, and comply with all the terms, requirements, regulations, policies and conditions in the Lakehead University Academic Calendar. This includes, but is not limited to, Academic Program Requirements, Academic Schedule of Dates, University and Faculty/School Policies and Regulations and the Fees and Refund Policies and Schedules.

# Academic Integrity

A breach of Academic Integrity is a serious offence. The principle of Academic Integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students are strongly advised to familiarize themselves with the Student Code of Conduct - Academic Integrity (<u>"The Code"</u>) - and, in particular, **sections 26 and 83 through 85**. Non-compliance with the Code will NOT be tolerated in this course and the Code will be adhered to in terms of disciplinary action. The Code provides a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

# Use of Al

Generative artificial intelligence (Generative AI or GenAI) is a category of AI systems capable of generating text, images, or other media in response to prompts. These

systems include ChatGPT and its variant Bing (built by OpenAI) and Bard (built by Google) among several others. Other Generative AI models include artificial intelligence art systems such as Stable Diffusion, Midjourney, and DALL-E. **Any use of GenAI systems to produce assignments for this course is not permitted.** All work submitted for evaluation in this course must be the student's original work. The submission of any work containing AI generated content will be considered a violation of academic integrity ("Use of Unauthorized Materials").

# Copyright

Students should be aware that all instructional, reference, and administrative materials prepared for this course are protected in their entirety by copyright. Students are expected to comply with this copyright by only accessing and using the course materials for personal educational use related to the course, and that the materials cannot be shared in any way, without the written authorization of the course instructor. If this copyright is infringed in anyway, students may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University's academic values.

**Supports for Students** – there are many resources available to support students, including:

- Health and Wellness
- <u>Student Success Centre</u>
- <u>Student Accessibility Centre</u>
- <u>Academic Support Zone</u> (Writing and Math Tutoring Centre)
- Library
- Lakehead International
- Indigenous Initiatives

Lakehead University is committed to achieving full **accessibility** for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact <u>Student Accessibility Services</u> (SC0003, 343-8047 or <u>sas@lakeheadu.ca</u>)

As a university student, you may sometimes **experience mental health concerns or stressful events** that interfere with your academic performance and negatively impact your daily activities. All of us can benefit from support during times of struggle. If you or anyone you know experiences academic stress, difficult life events or feelings of anxiety or depression, **Student Health and Wellness** is there to help. Their services are free for Lakehead Students and appointments are available. You can learn more about confidential mental health services available on and off campus at <u>lakeheadu.ca/shw</u>. Remember that getting help is a smart and courageous thing to dofor yourself, for those you care about, and for those who care about you. Asking for support sooner rather than later is almost always helpful.

### Important Dates:

First day of classes: Tues. Sept. 5 Final date to register: Mon. Sept. 18 Fall Study Break (no classes): Mon. Oct. 9 – Fri. Oct. 13 Final date to withdraw: Fri. Nov. 3 Last day of classes: Mon. Dec. 4 Exam period: Thurs. Dec. 7 – Sun. Dec. 17 Exam contingency date: Mon. Dec. 18 Instructor must submit grades by Thurs. Dec 21