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## **Term Information**

Effective Term Autumn 2022

## **General Information**

Course Bulletin Listing/Subject Area Anthropology  
Fiscal Unit/Academic Org Anthropology - D0711  
College/Academic Group Arts and Sciences  
Level/Career Graduate, Undergraduate  
Course Number/Catalog 5505  
Course Title Wicked Science  
Transcript Abbreviation Wicked Science  
Course Description This course aims to train students to become wicked scientists who are able to tackle the grand challenges of today and tomorrow—what are otherwise known as wicked problems.  
Semester Credit Hours/Units Fixed: 3

## **Offering Information**

Length Of Course 14 Week  
Flexibly Scheduled Course Never  
Does any section of this course have a distance education component? No  
Grading Basis Letter Grade  
Repeatable No  
Course Components Lecture, Seminar, Workshop  
Grade Roster Component Lecture  
Credit Available by Exam No  
Admission Condition Course No  
Off Campus Never  
Campus of Offering Columbus

## **Prerequisites and Exclusions**

Prerequisites/Corequisites Open to graduate students in any field and undergraduates with permission from the instructor.  
Exclusions  
Electronically Enforced Yes

## **Cross-Listings**

Cross-Listings EEOB 5505

## **Subject/CIP Code**

Subject/CIP Code 30.0000  
Subsidy Level Doctoral Course  
Intended Rank Junior, Senior, Masters, Doctoral

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## Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

## Course Details

### **Course goals or learning objectives/outcomes**

- The goal of this course is to train students to become wicked scientists who are able to tackle the grand challenges of today and tomorrow—what are otherwise known as wicked problems.
- Explain what wicked problems are.
- Analyze the dynamics, complexities, and interdependencies of wicked problems.
- Analyze roles, interests and perspectives of diverse stakeholders in wicked problems.
- Design a (research) project that tackles a wicked problem.
- Leverage the diversity among stakeholders to tackle wicked problems.
- Communicate research on wicked problems to academic audiences.
- Explain wicked problems and the study thereof to broader audiences.
- Recognize one's motivations for tackling a given wicked problem.

### **Content Topic List**

- Introduction to the course
  - Discussion of the concept of wicked problems
  - History of the concept of wicked problems
  - Use of the concept in different disciplines
  - Exploring wicked science
  - How to systems-think
  - How to incorporate stakeholder perspectives
  - How to leverage diversity
  - How to collaborate in transdisciplinary teams
  - How to act ethically in transdisciplinary teams
  - How to communicate with different audiences
  - How to keep going – long-term engagement with wicked problems
- No

### **Sought Concurrence**

## Attachments

- ANT 5505 on BA Curriculum Map.docx: BA Map  
*(Other Supporting Documentation. Owner: Healy, Elizabeth Ann)*
- ANT 5505 on BS Curriculum Map.docx: BS Map  
*(Other Supporting Documentation. Owner: Healy, Elizabeth Ann)*
- ANTHROP 5505 Wicked Science syllabus 3.docx: Syllabus  
*(Syllabus. Owner: Healy, Elizabeth Ann)*
- Feedback for Panels.docx: Response to Feedback  
*(Other Supporting Documentation. Owner: Healy, Elizabeth Ann)*

**COURSE REQUEST**  
5505 - Status: PENDING

Last Updated: Vankeerbergen,Bernadette  
Chantal  
02/16/2022

**Comments**

- See feedback email sent to department 11/22/21 RLS *(by Steele,Rachel Lea on 11/22/2021 12:48 PM)*
- Hi Elizabeth: I spoke with Mark and he will make a few tweaks based on the feedback from the undergrad studies committee. As soon as he makes the tweaks, this should be good to go... same for the other course. Thanks! *(by Guatelli-Steinberg,Debra on 10/27/2021 09:50 AM)*

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Healy,Elizabeth Ann	10/21/2021 09:36 AM	Submitted for Approval
Revision Requested	Guatelli-Steinberg,Debra	10/27/2021 09:50 AM	Unit Approval
Submitted	Healy,Elizabeth Ann	10/27/2021 12:00 PM	Submitted for Approval
Approved	Guatelli-Steinberg,Debra	10/27/2021 12:25 PM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	10/28/2021 02:44 PM	College Approval
Revision Requested	Steele,Rachel Lea	11/22/2021 12:48 PM	ASCCAO Approval
Submitted	Healy,Elizabeth Ann	02/14/2022 08:29 AM	Submitted for Approval
Approved	Guatelli-Steinberg,Debra	02/14/2022 08:37 AM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	02/16/2022 09:04 PM	College Approval
Pending Approval	Cody,Emily Kathryn Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Hilty,Michael Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	02/16/2022 09:04 PM	ASCCAO Approval

1. Anthropology 5505 new course, cross-listed with EEOB 5505; approved by both Panels with a combined **2 contingencies**, *6 recommendations* and 4 comments
  - Feedback from the Social and Behavioral Sciences Panel:
    - **Contingency: The Panel requests a detailed explanation articulating how students at various levels – junior/senior-level undergraduates vs. MA/PhD graduate students – will move through this course from beginning to end. Are there differential requirements, reading lists, and assignments? What are the descriptions for these assignments in the course? This rationale should demonstrate how a group of students at different levels might successfully navigate a class like this together – that there is a viable path through the course for both undergraduates and graduates. We have added a section in the syllabus explaining the paths for graduate and undergraduate students. Here is the text: (1) This course can be taken by undergraduate and graduate students. Graduate students complete all the weekly homework assignments and addenda and together with the undergraduates will collaborate on analyzing the wicked problem that is central to the course that semester. (2) As graduate students are more advanced in their studies, they are expected to mentor and support the learning of the undergraduates enrolled in class, which entails encouraging them to participate and guiding them through the activities in class. (3) In addition to the required readings, graduate students will also read the recommended readings before coming to class on Tuesdays. (4) In the capstone assignment, graduate students will apply key concepts and strategies to a wicked problem of their choice that pertains to their own MA or PhD research (rather than the course wicked problem). They will leverage what they learned in the weekly homework assignments towards designing a (research) project to tackle their wicked problem.**
    - **Contingency: The Panel asks that the curriculum map be revised to include Anthropology 5505; the version submitted to curriculum.osu.edu highlights a different course. Done. See attachments.**
    - *Recommendation: The Panel strongly recommends that the course schedule be broken down by day rather than by week, thereby facilitating clearer delivery of readings and assignments to students. The course will be organized in weekly modules on CarmenCanvas with a weekly overview page that specifies the learning outcomes for that week, the activities for each class meeting, and what students have to do when, how, and why that week.*
    - *Recommendation: The Panel questioned why the course was not integrated into the Medical Anthropology curriculum map like with other subfield groups. The Panel recommends including the course in the Medical Anthropology major. After discussion with the lead of the medical anthropology program, we have decided for now not to list this course as an elective for the BA and BS in medical anthropology.*
    - *Recommendation: The Panel suggests reviewing the syllabus for extraneous DL language, as this course will be taught in-person (ex., page 12 of the syllabus implies that class discussion will take place entirely online). Done.*

- *Recommendation: The Panel recommends removing any reference to an “OSU standard grading scheme,” as Ohio State does not have a standardized grading scheme. We have changed the language, but keep in mind that the original text on the OSU Standard Scheme comes from CarmenCanvas (<https://teaching.resources.osu.edu/toolsets/carmencanvas/guides/calculating-final-grades/final-grades-transfer-add-grading>).*
- Feedback from the Natural and Mathematical Sciences Panel:
  - Comment: The Panel is enthusiastic about this course, and requests that the department widely advertise the course throughout the college and university when it is offered. *Will do. It is a course intended for students from across campus.*
  - Comment: The NMS Panel discussed concerns about the Addenda (syllabus, pg. 3 under “How this Course is Organized-Pace of course activities) and their due date of midnight on Friday after having class on Thursday afternoon. The concerns weighed were whether or not the time delay between class and the due date constituted too much between the material and the reflection (thereby not prompting immediate impressions) or too little time to allow students to balance their weekly workload. *Good point. The weekly homework assignments will be organized such that students have to complete a major part of the homework before they come to class on Tuesday. Then students will work through the material and the assignment in class on Tuesday and Thursday and finish the work by the end of the week. The deadlines are not hard, but are aimed at getting students to finish the work before the weekend. I am considering changing the deadline to 5 PM on Friday for that reason.*
  - Comment: The Panel noted some difficulty in differentiating which assignments/topics corresponded with Weeks 2-14 in the course schedule (syllabus, pg. 7-9 under “Course Schedule”). They kindly suggest that the department continue the visual layout (lines of delineation) from Week 1 throughout the course schedule to provide more clarity for students. *The course will be organized in weekly modules on CarmenCanvas. I am currently only using “paper syllabi” in Word / PDF format for curriculum committees. The format of the weekly modules will be consistent throughout the semester and follow a similar structure with headers and names for files, assignments, and other resources.*
  - Comment: The Natural and Mathematical Sciences Panel concurs with the contingencies, recommendations, and comments of the SBS Panel and entrusts the review of the course after the department has addressed the contingencies to SBS Panel Chair. *Sounds good.*
  - *Recommendation: The Panel noticed that the reading load does not seem to be balanced throughout the course. For example, in weeks 6-9 (syllabus, pg. 7-8 under “Course Schedule”) there are 3-4 articles assigned per week, while in weeks 10-12 there are only 1-2 articles assigned per week. The Panel asks that the department consider distributing the student workload more evenly across the schedule. The reading load is lower towards the end of the semester as students will be working on their final capstone assignment. The articles in week*

*6-9 are not too long and we will use excerpts from readings if necessary to keep the workload within limits.*

- *Recommendation: The Panel commends the department on their flexibility regarding accepting late assignments but recommends that the department consider including a final deadline to turn in all assignments, such as the end of the semester. Done. I have added a final deadline. I am still experimenting with finding a late policy that supports learning that offers structure and flexibility.*

# Wicked Science

(or Transdisciplinary Problem Solving)

**ANTHROP 5505**

**Autumn 2022**

## Course Information

- **Course times and location:** Tuesdays and Thursdays 12:45 – 2:05 PM
- **Credit hours:** 3
- **Mode of delivery:** In person

## Instructor

- **Name:** Nick Kawa
- **Email:** [kawa.5@osu.edu](mailto:kawa.5@osu.edu)
- **Office location:** 4030 Smith Laboratory
- **Office hours:** Tuesdays from 3 – 5 PM
- **Preferred means of communication:** email
  - My class-wide communications will be sent through the announcements tool in CarmenCanvas. Please check your [notification preferences](https://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to be sure you receive these messages.

## Course Description

The goal of this course is to **train students to become wicked scientists** who are able to tackle the grand challenges of today and tomorrow—what are otherwise known as wicked problems. The concept of wicked problem describes a wide range of local, national, and global challenges including: climate change, food security, biodiversity loss, marine plastic pollution, growing inequality, cyber security, and emerging infectious diseases. Wicked problems have two fundamental properties: they are complex with many interdependencies; and stakeholders have different values, interests and conceptions of the problem and its solution. Tackling them requires the skills and attitudes of a wicked scientists. This is the idea behind this transdisciplinary course. You will learn what wicked problems are and learn strategies for tackling the politics and complexity of these problems. Rittel and Webber (1973), who developed the concept of wicked problems, note that because wicked problems are complex and political, it is impossible to “solve” them. However, we argue that when researchers are trained to consider the politics and complexity of these wicked problems, it will lead to more equitable and sustainable resolutions and outcomes.

# Course Goal and Learning Outcomes

The goal of this course is **to train students to become wicked scientists who are able to tackle the grand challenges of today and tomorrow**—what are otherwise known as wicked problems. This entails that you will be able to meet the following learning outcomes.

- 1. Explain what wicked problems are.**
  - Explain the primary characteristics of wicked problems.
  - Apply concept of wicked problems to a wicked problem of their interest.
- 2. Analyze the dynamics, complexities, and interdependencies of wicked problems.**
  - Describe the complex systems that create and perpetuate wicked problems.
  - Analyze interdependencies and system dynamics of a wicked problem.
- 3. Analyze the roles, interests and perspectives of diverse stakeholders and disciplines in wicked problems.**
  - Recognize diverse stakeholders and their respective interests in and conceptions of a given wicked problem.
  - Recognize how diverse disciplines might approach the wicked problem based upon their respective interests and conceptions
  - Analyze how wicked problems affect the interests of different stakeholders.
- 4. Design a (research) project that tackles a wicked problem.**
  - List and prioritize research questions that will help to understand a wicked problem and its feedbacks.
  - Identify potential team members to develop and answer the research questions.
  - Identify questions that can be answered and ones that may be partially answered.
  - Identify and assess methodological approaches that can be used to collect and analyze the data to answer the questions.
  - Reflect on possible unintended consequences and limitations of their chosen approach in tackling their wicked problem.
- 5. Leverage the diversity among stakeholders to tackle wicked problems.**
  - Reflect on how personal background shapes one's own values, interests, worldviews, and moral and ethical lenses.
  - Appreciate diversity in knowledge, beliefs, and practices as benefits and not as deficits in tackling wicked problems.
  - Leverage diversity to imagine new and creative ways to tackle wicked problems.
- 6. Communicate research on wicked problems to academic audiences.**
  - Evaluate the different academic venues available for communicating their work.
  - Select the most appropriate academic venues for their work.
  - Write clearly, compellingly and in appropriate formats for selected audiences.
  - Present clearly, compellingly and in appropriate formats for selected audiences.
- 7. Explain wicked problems and the study thereof to broader audiences.**
  - Recognize that different audiences have different needs.
  - Explain the requirements and expectations for different communication outlets and audiences.
  - Communicate research on wicked problems clearly and compellingly through different media formats to different audiences.



## 8. Recognize one's motivations for tackling a given wicked problem.

- Articulate one's personal reasons for tackling a given wicked problem.
- Consider how one's motivations compare with or differ from other collaborators when addressing a given wicked problem.

## How this Course is Organized

**Mode of delivery:** This course is in-person and all the assignments and course materials can be found on CarmenCanvas. The course is organized in **weekly modules** in CarmenCanvas that are organized as follows:

- An **overview page** that describes the learning goals, activities in class, and homework assignments for that particular week.
- Links to required as well as recommended **readings / videos / podcasts**. Undergraduate students enrolled in the course will complete the required readings before coming to class on Tuesday. Graduate students will complete the required and the recommended readings before coming to class on Tuesday.
- In the **weekly homework assignments**, students will apply key concepts and strategies to a wicked problem that we tackle as a class. All the homework assignments will build towards designing a (research) project to tackle this wicked problem, for example, analyzing interdependencies and system dynamics of the wicked problem and analyzing the roles, interests and perspectives of stakeholders in wicked problem.
- **Addenda:** At the end of each week – before Friday midnight – you have to submit one paragraph or two (certainly no longer than one page) in which you reflect on what you learned that week from the readings, assignments, and class discussions. The goal of the addenda is for you to develop your own conceptual framework for tackling wicked problems and prepare you for the capstone assignment. There are 14 addenda and the three with the lowest score will be dropped (or you can skip three of them).

The assignments listed above – homework assignments and addenda - are due before 5 PM on Friday. The capstone assignment is due at the end of the semester.

- The **capstone assignment** is a proposal for tackling a wicked problem. The proposal builds on the weekly homework assignments and can take the form of a research or a policy proposal. Detailed instructions will be provided in CarmenCanvas. Towards the end of the semester, you will present your proposal in class to get critical feedback from your fellow students and instructor.

### Expectations for graduate students.

- This course can be taken by undergraduate and graduate students. Graduate students complete all the the weekly homework assignments and addenda and together with the undergraduates will collaborate on analyzing the wicked problem that is central to the course that semester.
- As graduate students are more advanced in their studies, they are expected to mentor and support the learning of the undergraduates enrolled in class, which entails encouraging them to participate and guiding them through the activities in class.
- In addition to the required readings, graduate students will also read the recommended readings before coming to class on Tuesdays.
- In the capstone assignment, graduate students will apply key concepts and strategies to a wicked problem of their choice that pertains to their own MA or PhD research (rather than the course wicked problem). They will leverage what they learned in the weekly homework assignments towards designing a (research) project to tackle their wicked problem.

**Credit hours and work expectations:** This is a 3 credit-hour course. According to [Ohio State bylaws on instruction](http://go.osu.edu/credithours) (go.osu.edu/credithours), students should expect around 3 hours per week of time spent on direct instruction (instructor content and CarmenCanvas activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of C average.

## How Your Grade is Calculated

Assignment Category	Percentage
Participation	10%
Addenda (14)	15%
Homework assignments (14)	50%
Capstone project	25%

## Late Assignments

Due dates are set to help you stay on pace and to allow timely feedback that will help you complete subsequent assignments. You can always submit assignments late and you will never lose points for late submissions, but it is your responsibility to stay on pace. The final deadline for submitting late assignments is by the end of week 13.

# Instructor Feedback and Response Time

Remember that you can call [614-688-4357 \(HELP\)](tel:614-688-4357) at any time if you have a technical problem.

- **Preferred contact method:** If you have a question, please contact me first through my Ohio State email address. I will reply to emails within **24 hours on days when class is in session at the university**.
- **Class announcements:** I will send all important class-wide messages through the Announcements tool in CarmenCanvas. Please check [your notification preferences](http://go.osu.edu/canvas-notifications) (go.osu.edu/canvas-notifications) to ensure you receive these messages.
- **Grading and feedback:** For assignments submitted before the due date, I will try to provide feedback and grades within **seven days**. Assignments submitted after the due date may have reduced feedback, and grades may take longer to be posted.

## Grading Scale

Final grades are based on the following grading scheme: A 93; A- 90-92; B+ 87-89; B 83-86; B- 80-82; C+ 77-79; C 73-76; C- 70-72; D+ 67-69; D 60-66; E < 60.

## Course Schedule

Refer to the CarmenCanvas course for up-to-date due dates. **All the assignments – homework assignments and addenda – are due before midnight.**

### Part I: Wicked Concepts

<b>Week 1</b>	<p><b>Introduction to the course:</b> discussion of learning outcomes, brief explanation of wicked science, discussion of why training wicked scientists is important (Ravitch and Riggan 2012; Agar 2006).</p>
	<p><b>HW1:</b> introduce yourself and your interest in wicked problems.</p>
<b>Week 2</b>	<p><b>Discussion of concept of wicked problems:</b> reading the original contribution by Rittel and Webber, digging deep and making sure that everyone understands the concept well (Churchman 1967; Rittel and Webber 1973).</p>
	<p><b>HW2:</b> explain the concept and its components in your own words and illustrate each component with a short example.</p>

**Week 3**

**History of the concept of wicked problems:** how has it been used in different disciplines, how has use of the concept change over time, what are the most common uses of the concept (Alford and Head 2017).

**HW3:** review how the concept has been used in your discipline.

**Week 4**

**Use of concept in different disciplines:** how do common uses of the concept hold up against the original concept, what parts are generally included, what parts are generally excluded, and what does that tell us about conventional approaches to wicked problems (DeFries et al. 2017).

**HW4:** compare an article from your discipline against the original concept.

**Week 5**

**Exploring wicked science:** can we translate the concept of wicked problems into wicked science, what are the attributes of wicked scientists (Kawa et al. 2021; Wade et al. 2020).

**HW5:** take one or more of the components and explain what this would mean for students graduating from a wicked science program.

## Part II: Wicked Strategies

**Week 6**

**Strategy one – how to systems-think:** what is a systems approach, what are the properties of complex systems, how to analyze complex systems (Baumgartner 2021; Liu et al 2013; Meadows 1999; Stroh 2015).

**HW6:** create a visual representation of your wicked problem in which you identify the main actors, drivers, and interdependencies.

**Week 7**

**Strategy two – how to incorporate stakeholder perspectives:** what are stakeholders, how to identify stakeholders, how to include all stakeholders in the process (Pyrko, Dorfler, and Eden 2017; Bammer 2013; Liboiron et al 2018; Mason et al 2018).

**HW7:** create a concept map with all the relevant stakeholders describing their roles, interests, and perceptions of the problem. Identify who is affected by the problem and discuss strategies to ensure their participation.

**Week 8**

**Strategy three – how to leverage diversity:** what are diversity, inclusion, and equity, how to create inclusive transdisciplinary teams (Philips 2017; Came and Griffith 2018; CLEAR 2020; Liboiron et al 2016).

**HW8:** discuss how backgrounds shape stakeholder values, interests, and worldviews and how these perspectives help to tackle the wicked problem.

**Week 9**

**Strategy four – how to collaborate in teams:** what are the challenges of working in transdisciplinary teams, what strategies can be used to support effective and innovative collaborations (Bennett, Gadlin, and Levine-Finley 2018; Hall, Vogel, and Croyle 2019; Sahneh et al. 2021).

**HW9:** develop a collaboration plan using a simple template.

**Week 10**

**Strategy five – how to act ethically:** what are some of the ethical and moral challenges that researchers in transdisciplinary teams encounter, what are some of the strategies to work through these challenges (Cockburn and Cundill 2018; Simpson 2007).

**HW10:** identify potential ethical issues in your project and discuss how stakeholders may view these issues differently.

**Week 11**

**Strategy six – how to communicate:** what are the modalities, venues, norms, and structured for communicating with academics, general audiences, and policymakers (Baron 2010; Olson 2015).

**HW11:** Record an elevator pitch in which you clearly and compellingly explain your wicked problem project to a non-academic audience, for example through blogs, podcasts, YouTube videos.

**Strategy seven – how to keep going:** what are the careers in tackling wicked problems, what are the individual habits and qualities for long-term engagement with wicked problems (Bhasin 2017).

**Week 12**

**HW12:** Write a statement of purpose that outlines your motivations, attitudes, and habits that prepare you for long-term engagement with wicked problems.

## Part III: Applying Concepts and Strategies

<p><b>Week 13</b></p>	<p><b>Proposal presentations:</b> students present their proposals and get critical feedback from students and the instructor.</p> <p><b>HW13:</b> student presentations</p> <p><b>Looking back and paying it forward:</b> synthesize what have we learned, what is missing, what should we do different next time.</p>
<p><b>Week 14</b></p>	<p><b>HW14:</b> write a letter to students of next cohort with a discussion of your journey through the course and advice on how to tackle this course.</p>
<p><b>Finals week</b></p>	<p>Capstone project is due in finals week.</p>

## Required readings

**All the required and recommended readings are available in CarmenCanvas.**

Agar, Michael. 2006. An Ethnography By Any Other Name ... *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* 7 (4).

Alford, John, and Brian W. Head. 2017. Wicked and less wicked problems: a typology and a contingency framework. *Policy and Society* 36 (3):397-413.

Bammer, Gabriele. 2013. *Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems*. Canberra (Australia): Australian National University.

Baron, Nancy. 2010. *Escape From the Ivory Tower: A guide to making your science matter*. Washington DC: Island Press.

Baumgartner, Jeffrey. *The Basics of Creative Problem Solving - CPS*. Innovation Management 2021 cited September 2, 2021. Available from <https://innovationmanagement.se/2010/06/02/the-basics-of-creative-problem-solving-cps/>.

Bennett, L. M., H. Gadlin, and S. Levine-Finley. 2018. *Collaboration and team science: A field guide*. Bethesda (MD): National Institutes of Health.

Bhasin, Ritu. 2017. *Authenticity Principle: Resist Conformity, Embrace Differences, and Transform How You Live, Work, and Lead*. Toronto (Canada): Melanin Made Press.

Came, H., and D. Griffith. 2018. Tackling racism as a "wicked" public health problem: Enabling allies in anti-racism praxis. *Social Science and Medicine* 199:181-188.

Churchman, C. West. 1967. Guest Editorial: Wicked Problems. *Management Science* 14 (4):B141-B142.

Civic Laboratory for Environmental Action Research (CLEAR). 2020. Civic Laboratory for Environmental Action Research (CLEAR) Lab Book: A living manual of our values, guidelines, and protocols.

Cockburn, Jessica, and Georgina Cundill. 2018. Ethics in Transdisciplinary Research: Reflections on the Implications of 'Science with Society'. In *The Palgrave Handbook of Ethics in Critical Research*, edited by C. I. Macleod, J. Marx, P. Mnyaka and G. J. Treharne: Springer Verlag.

DeFries, R., and H. Nagendra. 2017. Ecosystem management as a wicked problem. *Science* 356 (6335):265-270.

Hall, Kara L., Amanda L. Vogel, and Robert T. Croyle, eds. 2019. *Strategies for Team Science Success: Handbook of Evidence-Based Principles for Cross-Disciplinary Science and Practical Lessons Learned from Health Researchers*. Cham (Switzerland): Springer Nature.

Kawa, Nicholas C., Mark Anthony Arceño, Ryan Goeckner, Chelsea E. Hunter, Steven J. Rhue, Shane A. Scaggs, Matthew E. Biwer, Sean S. Downey, Julie S. Field, Kristen Gremillion, Joy McCorriston, Anna Willow, Elizabeth Newton, and Mark Moritz. 2021. Training wicked scientists for a world of wicked problems. *Humanities and Social Sciences Communications* 8 (1).

Liboiron, Max, Alex Zahara, and Ignace Schoot. 2018. Community Peer Review: A Method to Bring Consent and Self-Determination into the Sciences. *Preprints*.

Liboiron, Max, France Liboiron, Emily Wells, Natalie Richárd, Alexander Zahara, Charles Mather, Hillary Bradshaw, and Judyannet Murichi. 2016. Low plastic ingestion rate in Atlantic cod (*Gadus morhua*) from Newfoundland destined for human consumption collected through citizen science methods. *Marine Pollution Bulletin* 113 (1):428-437.

Liu, Jianguo, Vanessa Hull, Mateus Batistella, Ruth DeFries, Thomas Dietz, Feng Fu, Thomas W. Hertel, R. Cesar Izaurralde, Eric F. Lambin, Shuxin Li, Luiz A. Martinelli, William J. McConnell, Emilio F. Moran, Rosamond Naylor, Zhiyun Ouyang, Karen R. Polenske, Anette Reenberg, Gilberto de Miranda Rocha, Cynthia S. Simmons, Peter H. Verburg, Peter M. Vitousek, Fusuo Zhang, and Chunquan Zhu. 2013. Framing Sustainability in a Telecoupled World. *Ecology and Society* 18 (2).

Mason, Tom H. E., Chris R. J. Pollard, Deepthi Chimalakonda, Angela M. Guerrero, Catherine Kerr-Smith, Sergio A. G. Milheiras, Michaela Roberts, Paul Rodrigue, and Nils Bunnefeld.

2018. Wicked conflict: Using wicked problem thinking for holistic management of conservation conflict. *Conservation Letters* 11 (6):e12460.

Meadows, Donella. 1999. *Leverage Points: Places to intervene in a system*. Hartland (VT): The Sustainability Institute.

Olson, Randy. 2015. *Houston, We Have a Narrative - Why Science Needs Story*. Chicago: University of Chicago Press.

Philips, Katherine W. 2017. What is the real value of diversity in organizations? Questioning our assumptions. In *The diversity bonus: How great teams pay off in the knowledge economy*, edited by S. E. Page. Princeton (NJ): Princeton University Press.

Pyrko, I., V. Dorfler, and C. Eden. 2017. Thinking together: What makes Communities of Practice work? *Human Relations* 70 (4):389-409.

Ravitch, Sharon M., and Matthew Riggan. 2012. *Reason & Rigor: How conceptual frameworks guide research*. Los Angeles (CA): Sage.

Rittel, Horst W. J., and Melvin M. Webber. 1973. Dilemmas in a general theory of planning. *Policy Sciences* 4:155-169.

Sahneh, F., M. A. Balk, M. Kisley, C. K. Chan, M. Fox, B. Nord, E. Lyons, T. Swetnam, D. Huppenkothen, W. Sutherland, R. L. Walls, D. P. Quinn, T. Tarin, D. LeBauer, D. Ribes, D. P. Birnie, 3rd, C. Lushbough, E. Carr, G. Nearing, J. Fischer, K. Tyle, L. Carrasco, M. Lang, P. W. Rose, R. R. Rushforth, S. Roy, T. Matheson, T. Lee, C. T. Brown, T. K. Teal, M. Papes, S. Kobourov, and N. Merchant. 2021. Ten simple rules to cultivate transdisciplinary collaboration in data science. *PLoS Computational Biology* 17 (5):e1008879.

Simpson, Audra. 2007. On Ethnographic Refusal: Indigeneity, 'Voice' and Colonial Citizenship. *Junctures* 9:67-80.

Stroh, David Peter. 2015. *Systems thinking for social change*. White River Junction (VT): Chelsea Green Publishers.

Wade, A.A., A. Grant, S. Karasaki, R. Smoak, D. Cwiertny, A.C. Wilcox, L. Yung, K. Sleeper, and A. Anandhi. 2020. Developing leaders to tackle wicked problems at the nexus of food, energy, and water systems. *Elementa - Science of the Anthropocene* 8 (1):11.

## Required Equipment

- **Computer:** current Mac (MacOS) or PC (Windows 10) with high-speed internet connection
- **Other:** a mobile device (smartphone or tablet) to use for BuckeyePass authentication

If you do not have access to the technology you need to succeed in this class, review options for technology and internet access at [go.osu.edu/student-tech-access](https://go.osu.edu/student-tech-access).

## CarmenCanvas Access

You will need to use [BuckeyePass](https://buckeyepass.osu.edu) (buckeyepass.osu.edu) multi-factor authentication to access your courses in CarmenCanvas. To ensure that you are able to connect to CarmenCanvas at all times, it is recommended that you do each of the following:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](https://go.osu.edu/add-device) (go.osu.edu/add-device) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click **Enter a Passcode** and then click the **Text me new codes** button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- [Install the Duo Mobile application](https://go.osu.edu/install-duo) (go.osu.edu/install-duo) on all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at [614-688-4357 \(HELP\)](tel:614-688-4357) and IT support staff will work out a solution with you.

## Technology Skills Needed for this Course

- Basic computer and web-browsing skills
- [Navigating CarmenCanvas](https://go.osu.edu/canvasstudent) (go.osu.edu/canvasstudent)
- [CarmenZoom virtual meetings](https://go.osu.edu/zoom-meetings) (go.osu.edu/zoom-meetings)

## Technology Support

For help with your password, university email, CarmenCanvas, or any other technology issues, questions or requests, contact the IT Service Desk, which offers 24-hour support, seven days a week.

- **Self Service and Chat:** [go.osu.edu/it](https://go.osu.edu/it)
- **Phone:** [614-688-4357 \(HELP\)](tel:614-688-4357)
- **Email:** [servicedesk@osu.edu](mailto:servicedesk@osu.edu)

# Other Course Policies

## Discussion and Communication Guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online. I will provide specific guidance for discussions on controversial or personal topics.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.
- **Backing up your work:** Consider composing your academic posts in a word processor, where you can save your work, and then copying into the CarmenCanvas discussion.

## Academic Integrity Policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the university's [Code of Student Conduct](http://studentconduct.osu.edu) (studentconduct.osu.edu), and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the university's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the university or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the university's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

**If I suspect that a student has committed academic misconduct in this course, I am obligated by university rules to report my suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the university's Code of Student

Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the university. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- [Committee on Academic Misconduct](http://go.osu.edu/coam) (go.osu.edu/coam)
- [Ten Suggestions for Preserving Academic Integrity](http://go.osu.edu/ten-suggestions) (go.osu.edu/ten-suggestions)
- [Eight Cardinal Rules of Academic Integrity](http://go.osu.edu/cardinal-rules) (go.osu.edu/cardinal-rules)

## Student Well-Being

The well-being of students is of primary importance. If you are facing any challenges related to your physical or mental health, or obstacles like food or housing insecurity, please do not hesitate to get in touch to discuss ways we can put you in the best possible position to succeed.

## Creating an Environment Free from Harassment, Discrimination, and Sexual Misconduct

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate on the basis of age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at [equity.osu.edu](http://equity.osu.edu),
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or email [equity@osu.edu](mailto:equity@osu.edu)

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university

employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.
- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

## Your Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, [on-demand mental health resources](https://go.osu.edu/ccsondemand) (go.osu.edu/ccsondemand) are available. You can reach an on-call counselor when CCS is closed at [614- 292-5766](tel:614-292-5766). **24-hour emergency help** is available through the [National Suicide Prevention Lifeline website](https://www.suicidepreventionlifeline.org) (suicidepreventionlifeline.org) or by calling [1-800-273-8255\(TALK\)](tel:1-800-273-8255). [The Ohio State Wellness app](https://go.osu.edu/wellnessapp) (go.osu.edu/wellnessapp) is also a great resource.

## Accessibility Accommodations for Students with Disabilities

The university strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability including mental health, chronic or temporary medical conditions, please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with [Student Life Disability Services \(SLDS\)](#). After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services.

## Disability Services Contact Information

- Phone: [614-292-3307](tel:614-292-3307)

- Website: [slds.osu.edu](https://slds.osu.edu)
- Email: [slds@osu.edu](mailto:slds@osu.edu)
- In person: [Baker Hall 098, 113 W. 12th Avenue](#)

## Accessibility of Course Technology

This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations as early as possible.

- [CarmenCanvas accessibility](https://go.osu.edu/canvas-accessibility) (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- [CarmenZoom accessibility](https://go.osu.edu/zoom-accessibility) (go.osu.edu/zoom-accessibility)

## **ANTHROPOLOGY MAJOR (BA)**

### **Program Learning Goals:**

The general goals of our undergraduate program in Anthropology (BA) are threefold: (1) attract and train an increasingly diverse and competitive student body; (2) make graduates more competitive on the job market and in the applicant pool for graduate/professional school; (3) provide more rigorous and empirically oriented training within each anthropological subfield.

General goals # 2 and # 3 are met by a curriculum designed to achieve the following specific learning goals:

- (i) Students are introduced to the breadth of and acquire foundational knowledge in each of the three major sub-disciplines within the major (physical anthropology, cultural anthropology and archaeology).
- (ii) Students master core concepts in each of the three major sub-disciplines within the major (physical anthropology, cultural anthropology and archaeology).
- (iii) Students complete elective coursework in each of the three sub-disciplines within the major (physical anthropology, cultural anthropology and archaeology).
- (iv) Students gain in depth knowledge in one (or more) field by choosing at least two additional courses in any sub discipline (physical anthropology, cultural anthropology or archaeology) within the major.

**CURRICULUM MAP AND PROGRAM LEARNING GOALS: BA**

<b>Required Courses</b>	<b>Goal # i</b>	<b>Goal # ii</b>	<b>Goal # iii</b>	<b>Goal # iv</b>
ANT 2200	✓			
ANT 2201	✓			
ANT 2202	✓			
ANT 3300 or 3301		✓		
ANT 3401		✓		
ANT 3525		✓		
<b>Elective Courses</b>				
Physical Anthropology Elective			✓	
(Complete at least one of the following)			✓	
ANT 3211			✓	
ANT 3302			✓	
ANT 3304			✓	
ANT 3304			✓	
ANT 3305			✓	
ANT 3315			✓	
ANT 3409			✓	
ANT 3410			✓	
ANT 3411			✓	
ANT 3500			✓	
ANT 3504			✓	
ANT 5600			✓	
ANT 5607			✓	
ANT 5608			✓	
ANT 5609			✓	
ANT 5610			✓	
ANT 5641			✓	
ANT 5644			✓	
ANT 5645			✓	
ANT 5797			✓	

Cultural Anthropology Elective				✓	
(Complete at least one of the following)				✓	
ANT 3005*				✓	
ANT 3050				✓	
ANT 3334				✓	
ANT 3400				✓	
ANT 3403				✓	
ANT 3416				✓	
ANT 3418				✓	
ANT 3419				✓	
ANT 3597.01				✓	
ANT 3597.02				✓	
ANT 3623				✓	
ANT 4100				✓	
ANT 4597.05H				✓	
ANT 5505				✓	
ANT 5601				✓	
ANT 5602				✓	
ANT 5621				✓	
ANT 5624				✓	
ANT 5625				✓	
ANT 5626				✓	
ANT 5627				✓	
ANT 5797				✓	
Archaeology Elective				✓	
(Complete at least one of the following)				✓	
ANT 3350				✓	
ANT 3402				✓	
ANT 3434				✓	
ANT 3451				✓	
ANT 3452				✓	
ANT 3555				✓	
ANT 3604				✓	
ANT 4597.03H				✓	
ANT 5603				✓	
ANT 5604				✓	
ANT 5605				✓	
ANT 5614				✓	
ANT 5615				✓	
ANT 5651				✓	
ANT 5797				✓	

				✓	
Free Elective # 1					✓
Free Elective # 2					✓
(complete any 2 additional courses from the list of electives above)					

## **ANTHROPOLOGICAL SCIENCES MAJOR (BS)**

### **Program Learning Goals:**

The general goals of our undergraduate program in Anthropological Sciences are to prepare students for (i) employment that combines critical thinking, communication, and analytical skills with an understanding of human diversity in both time and space and/or (ii) continued study in graduate/professional schools.

These general goals are met via the following specific learning outcomes:

- (i) Students will acquire foundational knowledge in each of the three major sub-disciplines within the major (physical anthropology, cultural anthropology and archaeology).
- (ii) Students will achieve mastery of core concepts in each of the three major sub-disciplines within the major (physical anthropology, cultural anthropology and archaeology). In so doing, they will acquire rigorous and empirically oriented skills in each sub discipline.
- (iii) Students will accumulate breadth of knowledge by completing elective coursework in each of the three sub-disciplines within the major (physical anthropology, cultural anthropology and archaeology).
- (iv) Students achieve in depth knowledge in one (or more) field by choosing at least two additional courses in any sub-discipline (physical anthropology, cultural anthropology or archaeology) within the major.
- (v) Students achieve competence in basic statistical methods and evolutionary theory.

**CURRICULAR MAP AND PROGRAM LEARNING GOALS (BS)**

<b>Required Courses</b>	<b>Goal # i</b>	<b>Goal # ii</b>	<b>Goal # iii</b>	<b>Goal # iv</b>
ANT 2200	✓			
ANT 2201	✓			
ANT 2202	✓			
ANT 3300		✓		
ANT 3301		✓		
ANT 3401		✓		
ANT 5620		✓		
<b>Elective Courses</b>				
Physical Anthropology Elective			✓	
(Complete at least one of the following)			✓	
ANT 3211			✓	
ANT 3302			✓	
ANT 3304			✓	
ANT 3304			✓	
ANT 3305			✓	
ANT 3315			✓	
ANT 3409			✓	
ANT 3410			✓	
ANT 3411			✓	
ANT 3500			✓	
ANT 3504			✓	
ANT 5600			✓	
ANT 5607			✓	
ANT 5608			✓	
ANT 5609			✓	
ANT 5610			✓	
ANT 5641			✓	
ANT 5644			✓	
ANT 5645			✓	
ANT 5797			✓	

	Goal # i	Goal # ii	Goal # iii	Goal # IV	Goal # V
Cultural Anthropology Elective			✓		
(Complete at least one of the following)			✓		
ANT 3005*			✓		
ANT 3050			✓		
ANT 3334			✓		
ANT 3400			✓		
ANT 3403			✓		
ANT 3416			✓		
ANT 3418			✓		
ANT 3419			✓		
ANT 3597.01			✓		
ANT 3597.02			✓		
ANT 3623			✓		
ANT 4100			✓		
ANT 4597.05H			✓		
ANT 5505			✓		
ANT 5601			✓		
ANT 5602			✓		
ANT 5621			✓		
ANT 5624			✓		
ANT 5625			✓		
ANT 5626			✓		
ANT 5627			✓		
ANT 5797			✓		
Archaeology Elective			✓		
(Complete at least one of the following)			✓		
ANT 3350			✓		
ANT 3402			✓		
ANT 3434			✓		
ANT 3451			✓		
ANT 3452			✓		
ANT 3555			✓		
ANT 3604			✓		
ANT 4597.03H			✓		
ANT 5603			✓		
ANT 5604			✓		
ANT 5605			✓		
ANT 5614			✓		
ANT 5615			✓		
ANT 5651			✓		

ANT 5797			✓		
			✓		
Free Elective # 1			✓		
Free Elective # 2					
(complete any 2 additional courses from the list of electives above)					

Additional Courses					
EEOB 3310					✓
STAT 1450 or 2450					✓