

## Term Information

Effective Term Spring 2022

## General Information

Course Bulletin Listing/Subject Area Geography  
Fiscal Unit/Academic Org Geography - D0733  
College/Academic Group Arts and Sciences  
Level/Career Graduate, Undergraduate  
Course Number/Catalog 5101  
Course Title GIST professionalism and ethics  
Transcript Abbreviation GISTPROETHICS  
Course Description For a practitioner in this broad field of geographical information science and technology (GIST), what does "being professional" mean? Is doing your job competently enough to be at your job? What constitutes professional competence in this profession? This course will help students address these questions and find their moral compass in a constantly changing profession.  
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? Yes  
Is any section of the course offered 100% at a distance  
Grading Basis Letter Grade  
Repeatable No  
Course Components Lecture  
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  
Exclusions  
Electronically Enforced Yes

## Cross-Listings

Cross-Listings

## Subject/CIP Code

Subject/CIP Code 45.0701  
Subsidy Level Doctoral Course  
Intended Rank Junior, Senior, Masters, Doctoral

## **Requirement/Elective Designation**

Required for this unit's degrees, majors, and/or minors

## **Course Details**

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

- Explain GIST as a profession and related skills
- Demonstrate understanding of GIST as an industry and organization
- Development professional profile and resume
- Evaluate strengths and limitations of their own skillset
- Evaluate different career paths in GIST and other fields
- Conduct practitioner interviews
- Identify ethical issues of geospatial technology and its applications
- Evaluate decision options regarding ethical issues in geospatial applications
- Discuss ethics in classroom and in workplace
- Demonstrate moral reasoning skills through methodical analysis of ethical case studies
- Describe various philosophical frameworks upon which codes of ethics are based
- Defend or refute a decision as GIST professional for applications when ethical issues are involved

### **Content Topic List**

- Why GIS ethics?
- Geospatial profession
- Competence in GIST
- Interview preparation
- Fundamental issues in ethics
- Ethical computing and smarts
- Geospatial and Privacy
- Data and Ethics
- Public participation GIS
- GIST Professionals Interview
- Digital divide and VGI
- Intellectual property
- Critical GIS

### **Sought Concurrence**

No

**Attachments**

- GEOG5101-inperson-gis-professionalism-ethics-v2.docx: Syllabus (in-person)  
*(Syllabus. Owner: Xiao, Ningchuan)*
- GEOG5101-online-gis-professionalism-ethics-v2.docx: Syllabus (online)  
*(Syllabus. Owner: Xiao, Ningchuan)*
- Geog5101-asctech-review.docx: ASCTech review (online)  
*(Other Supporting Documentation. Owner: Xiao, Ningchuan)*
- ASCC-panel-comments-12082020.pdf: ASCC panel comments, 12/8/2020  
*(Other Supporting Documentation. Owner: Xiao, Ningchuan)*
- Curriculum\_map\_GEOG\_GIS\_ONLY.pdf: Curriculum map - GEOG GIS only  
*(Other Supporting Documentation. Owner: Xiao, Ningchuan)*
- Curriculum\_map\_summary\_GIS.docx: Curriculum map summary  
*(Other Supporting Documentation. Owner: Xiao, Ningchuan)*

**Comments**

- Please note this is a resubmission of the course proposal. The original course proposal request was "cancelled" by mistakenly clicking the Cancel button when I (N Xiao) tried to make the changes. The proposal was originally submitted on 11/19/2020 and the review by an ASCC panel was notified on 12/8/2020. The proposal was approved with one contingency and some comments (see the email in the attached PDF file called ASCC-panel-comments-12-082020.pdf). All comments are addressed. The curriculum map requested in the contingency is attached here too. I also prepared a summary about the curriculum map, highlighting the need of this new course. *(by Xiao, Ningchuan on 02/05/2021 11:45 AM)*

**Workflow Information**

Status	User(s)	Date/Time	Step
Submitted	Xiao, Ningchuan	02/05/2021 11:45 AM	Submitted for Approval
Approved	Munroe, Darla Karin	02/05/2021 11:46 AM	Unit Approval
Approved	Vankeerbergen, Bernadette Chantal	02/05/2021 02:35 PM	College Approval
Pending Approval	Jenkins, Mary Ellen Bigler Hanlin, Deborah Kay Oldroyd, Shelby Quinn Hilty, Michael Vankeerbergen, Bernadette Chantal	02/05/2021 02:35 PM	ASCCAO Approval



THE OHIO STATE UNIVERSITY

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COLLEGE OF ARTS AND SCIENCES

## **SYLLABUS: GEOG 5101 (ONLINE) GIST PROFESSIONALISM AND ETHICS SPRING 2021**

### **Course overview**

#### **Instructor**

Instructor: Prof. Ningchuan Xiao

Email address: xiao.37@osu.edu

Phone number: 614-292-4072

Office hours: by appointment only (CarmenZoom)

Office Location: 1132 Derby Hall

#### **Course description**

Geospatial has become a ubiquitous term in a wide range of applications where spatial data, GIS, mapping, remote sensing, spatial data analytics, and spatial decision making are involved. For a practitioner in this broad field of geographical information science and technology (GIST), what does “being professional” mean? Is doing your job competently enough to be at your job? What constitutes professional competence in this profession? This course will help you address these questions and, more importantly, help you find your moral compass in a profession that is at the cutting-edge of today’s constant social and technological advances.

#### **Course learning outcomes**

By the end of this course, students should successfully be able to:

- Explain GIST as a profession and related skills
- Demonstrate understanding of GIST as an industry and organization
- Development professional profile and resume
- Evaluate strengths and limitations of their own skillset
- Evaluate different career paths in GIST and other fields

- Conduct practitioner interviews
- Identify ethical issues of geospatial technology and its applications
- Evaluate decision options regarding ethical issues in geospatial applications
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## How this course works

**Mode of delivery:** This course is 100% online. There are no required sessions when you must be logged in to Carmen at a scheduled time.

**Pace of online activities:** This course is divided into **weekly modules** that are released one week ahead of time. Each module is organized around a specific topic (see course schedule below) and consists of introduction videos, coding tutorials, and student activities (see assignment information below). Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame.

**Credit hours and work expectations:** This is a 3-credit-hour course. According to [Ohio State policy](#), a 3 credit hour course comprises 3 hours of instruction in class (including online instruction content and Carmen activities) and 6 hours of homework/study time outside class per week, for a total of 9 hours per course per week, for the student to earn a C grade.

## GE Course Information

- This is not a GE course.

## Course materials

### Required

The following is the required textbook for this class. In addition, each week will include additional required readings that are listed after the course schedule.

Quinn, M. 2017. *Ethics for the Information Age* (7th Edition). New York: Pearson

## Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help/hours>, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357)
- **Email:** [8help@osu.edu](mailto:8help@osu.edu)
- **TDD:** 614-688-8743

### Baseline technical skills necessary for online courses

- Basic computer and web-browsing skills
- Navigating Carmen

### Technology skills necessary for this specific course

- CarmenZoom text, audio, and video chat
- Collaborating in CarmenWiki
- Recording a slide presentation with audio narration
- Recording, editing, and uploading video

### Necessary equipment

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed
- Microphone: built-in laptop or tablet mic or external microphone

### Necessary software

- [OpenOffice](#) is a free and complete suite of software tools for word processing, spreadsheet, and presentations.
- [Microsoft Office 365 ProPlus](#) All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Each student can install Office on five PCs or Macs, five tablets (Windows, iPad® and Android™) and five phones.
  - Students are able to access Word, Excel, PowerPoint, Outlook and other programs, depending on platform. Users will also receive 1 TB of OneDrive for Business storage.
  - Office 365 is installed within your BuckeyeMail account. Full instructions for downloading and installation can be found <https://ocio.osu.edu/kb04733>.

# Grading and faculty response

## Grades

Assignment or category	Points
Reflective papers	30
Professional profile (undergraduate students) GIST practitioner interview (graduate students)	20
Case study reading (all students) and Develop an ethics case study (graduate students only)	20
Recorded presentation	20
Participation	10
<b>Total</b>	<b>100</b>

## Assignment information

This course is organized around five types of activities. Students should carefully review the academic integrity policies in the subsequent section that pertain to all assignments of this class.

**Reflective papers.** During the semester, each student is required to write 3 reflection papers. Each paper should focus on one week's topic since the previous paper. Each paper will be 5 pages long, double spaced with 12pt font and normal margins. The papers will be graded based on how they adequately address the papers of the week selected, as well as the style and quality of writing. Detailed rubric will be provided along with the assignments.

**Professional profile.** Undergraduate students in this class are required to develop a professional profile on LinkedIn and provide constructive suggestions through peer review of other students' profiles.

**GIST practitioner interview.** Graduate students in this class are required to identify a practitioner and interview him/her regarding professionalism and ethics. Undergraduate students are not required to conduct the interview per se, but are required to discuss the interview process and to peer review the interview reports.

**Case studies.** A number of case studies will be used to help students develop their understanding of ethical issues in real world applications, get familiar with the codes of conduct, and cultivate their professional judgement. All students in this class are required to read and comment on various case studies. Detailed instructions will be provided along with the assignment. In addition, each graduate student is required to develop a case study. The main body of the case study is typically more than 400 words. By developing their own case studies, students will be able to develop a high level of ethical awareness. Interviewing practitioners is often a good start for preparing the case study. These case studies will be peer reviewed by all students in the class.

**Presentation.** Each student will record a video presentation (2-3 minutes) to explain what GIST as a profession means to you. The videos will be posted on Carmen and will also be peer reviewed.

**Participation.** Each week, I will post several questions on the discussion board and each student is required to response to these questions using the reading materials of that week. In addition, each student must also post at least one question for each reading material and provide their thoughts about those questions. Each student must also response to questions from at least two of other students.

## Late assignments

Late submissions will be accepted up to a week past the due date. One day late will incur a 10% penalty. Two days late will incur 20% penalty. Three days will incur a 30% penalty. Four days late will incur a 40% penalty. Five to seven days late will only receive 50% credit of the grade you would have received if it is submitted on time. If you contact me ahead of time for deadline adjustments, you will not incur any penalty. Please refer to Carmen for due dates.

## Grading scale

93–100: A  
90–92.9: A-  
87–89.9: B+  
83–86.9: B  
80–82.9: B-  
77–79.9: C+  
73–76.9: C  
70–72.9: C-  
67–69.9: D+  
60–66.9: D  
Below 60: E

## Faculty feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)



## Grading and feedback

For large weekly assignments, you can generally expect feedback within **7 days**.

## E-mail

I will reply to e-mails within **24 hours on school days**.

## Discussion board

I will check and reply to messages in the discussion boards every **Monday, Wednesday, and Friday on school days**.

# Attendance, participation, and discussions

## Student participation requirements

Because this is a distance-education course, your attendance is based on your online activity and participation. The following is a summary of everyone's expected participation:

- **Logging in: AT LEAST TWICE PER WEEK**  
Be sure you are logging in to the course in Carmen each week, including weeks with holidays or weeks with minimal online course activity. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible*.
- **Office hours and live sessions: OPTIONAL OR FLEXIBLE**  
This course is asynchronous, no live sessions. If you are required to discuss an assignment with me, please contact me at the beginning of the week if you need a time outside my scheduled office hours.
- **Participating in discussion forums: 4+ TIMES PER WEEK**  
As participation, each week you can expect to post at least four times as part of our substantive class discussion on the week's topics.

## 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. Informality (including an occasional emoticon) 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.

- **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 Carmen discussion.

## Other course policies

### Academic integrity policy

#### Policies for this online course

- **Written assignments:** Your written assignment, including discussion posts, should be your own original work. In formal assignments, you should follow The Chicago Manual of Style 17th edition ([click here for online version](#)) to cite the ideas and words of your research sources.
- **Reusing past work:** In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Falsifying research or results:** All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review:** The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.

## Ohio State's academic integrity policy

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

## Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

## Statement on title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator at [titleix@osu.edu](mailto:titleix@osu.edu).

## 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. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12th Avenue.

### Accessibility of course technology

This online course requires use of Carmen (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 with your instructor.

- [Carmen \(Canvas\) accessibility](#)
- Streaming audio and video
- Synchronous course tools

## 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. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting [ccs.osu.edu](http://ccs.osu.edu) or calling 614- 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org)

## Course schedule (tentative)

This class meets once a week. The following is a tentative schedule. The lengths of the reading materials vary, but in general the length of a peer-reviewed article is 10 to 20 pages, and the length of a book chapter is 40 to 50 pages. Other readings will be less than 10 pages.

Assignments are generally due in a week.

Week	Dates	Topics, Readings, Assignments
1	1/11-1/15	<b>Why GIS ethics?</b> Discussion forum: history of geospatial data and GIS Readings: Quinn 2017 Ch 2, Openshaw 1991, Curry 1995, Schuurman 2000
2	1/18-1/22	<b>Geospatial profession</b> Discussion Forum: codes of ethics Interview: Identify practitioner interviewees Case study: MAPPS lawsuit Readings: Quinn 2017 Ch 9, GISCI Code of Ethics, ASPRS Code of Ethics, Davis 2003, Richardson 2007
3	1/25-1/29	<b>Competence in GIST</b> Discussion forum: GIST job search experience Assignment: reflection paper #1 (GIST profession) Readings: URISA, 2012, DiBiase et al. 2010, DiBiase 2018
4	2/1-2/5	<b>Interview preparation</b> Discussion forum: mock interview and questions Interview: <a href="#">protocol</a> and questionnaire Assignment: LinkedIn profile Discussion forum: practitioner interviews from Quinn 2017 Readings: Kuniavsky 2003
5	2/8-2/12	<b>Fundamental issues in ethics</b> Discussion forum: define GIS ethics Assignment: LinkedIn profile peer review Case study: mapping Muslims Readings: Quinn 2017 Ch 4, Crampton 1995, Onsrud 1995
6	2/15-2/19	<b>Ethical computing and smarts</b> Discussion forum: Smart Columbus Assignment: LinkedIn profile Readings: Jefferson 2017, Hagendorff 2020, Orr & Davis 2020
7	2/22-2/26	<b>Geospatial and Privacy</b> Discussion forum: how to (not) track customers Case study: mobile phone tracking, tsunami response

		Readings: Quinn 2017 Ch 5, Crampton 2003, 2007, Armstrong & Ruggles 2005, Kerski 2016
8	3/1-3/5	<b>Data and Ethics</b> Discussion forum: what does your data tell? Case studies: submarine crash Readings: Keefer 2005, Huff & Brown 2004
9	3/8-3/12	<b>Public participation GIS</b> Discussion forum: public participation Assignment: reflection paper #2 Readings: Elwood 2006, Rickles et al. 2017
10	3/15-3/19	Spring break (no class)
11	3/22-3/26	<b>GIST Professionals Interview</b> Interview questions Assignment: Interview report
12	3/29-4/2	<b>Digital divide and VGI</b> Discussion forum: Readings: Curry 1997, Quinn Ch 10, Elwood 2008
13	4/5-4/9	<b>Intellectual property</b> Discussion forum: sign the dotted line Case study: public access to government data Readings: Quinn 2017 Ch 4, Stewart et al. 1997, Curry 1996, Sheppard 2005
14	4/12-4/16	<b>Critical GIS</b> Discussion forum: representation and GIS Assignment: reflection paper #3 Readings: Kwan 2002, McLafferty 2005, Schuurman & Leszczynski 2006, Schuurman 2006
15	4/19-4/23	<b>Case study</b> <b>Video presentation</b> <b>Peer review</b>

## List of readings

- Armstrong, M. and Ruggles, A. 2005. Geographic Information Technologies and Personal Privacy. *Cartographica* 40 (4): 63-73.
- Crampton, J. 1995. The Ethics of GIS. *Cartography and Geographic Information Systems* 22 (1): 84-89.
- Crampton, J. 2003. Cartographic Rationality and the Politics of Geosurveillance and Security. *Cartography and Geographic Information Science* 30 (2): 135-148.
- Crampton, J. 2007. The Biopolitical Justification for Geosurveillance. *Geographical Review* 97 (3):389-403.
- Croswell, P. 2018. Organizational Models for GIS Management. *The Geographic Information Science & Technology Body of Knowledge* (1st Quarter 2018 Edition), John P. Wilson (ed.). DOI: 10.22224/gistbok/2018.1.13
- Curry, M.R. 1995. Geographic information system and the inevitability of ethical inconsistency. In Pickles, J. (ed.) *Ground Truth: The social implications of geographic information systems*, 68-87. New York: The Guilford Press
- Curry, M.R. 1996. Data Protection and Intellectual Property: Information, Systems and the Americanization of the New Europe. *Environment and Planning A* 28: 891- 908
- Curry, M.R., 1997. The digital individual and the private realm. *Annals of the Association of American geographers*, 87(4), pp.681-699.
- Davis, M. 2003. What can we learn by looking for the first code of professional ethics? *Theoretical Medicine and Bioethics*, 24(5): 433-454.
- DiBiase, D. 2018. Competence in GIS&T Knowledge Work. *The Geographic Information Science & Technology Body of Knowledge* (3rd Quarter 2018 Edition), John P. Wilson (Ed.). DOI:10.22224/gistbok/2018.3.10
- DiBiase, D., Tripp Corbin, Thomas Fox, Joe Francica, Kass Green, Janet Jackson, Gary Jeffress, Brian Jones, Brent Jones, Jeremy Mennis, Karen Schuckman, Cy Smith, and Jan Van Sickle, 2010. The New Geospatial Technology Competency Model: Bringing Workforce Needs into Focus. *URISA Journal* 22:2, 55-72
- Elwood, S. and Ghose, R. 2004. PPGIS in Community Development Planning: Framing the Organizational Context. *Cartographica* 38 (3&4): 19-33.
- Elwood, S., 2006. Critical issues in participatory GIS: Deconstructions, reconstructions, and new research directions. *Transactions in GIS*, 10(5), pp.693-708.
- Elwood, S., 2008. Volunteered geographic information: future research directions motivated by critical, participatory, and feminist GIS. *GeoJournal*, 72(3-4), pp.173-183.
- Hagendorff, T., 2020. The ethics of Ai ethics: An evaluation of guidelines. *Minds and Machines*, 30: 1-22.
- Huff, C.W., and Brown, R. 2004. Integrating ethics into a computing curriculum: A case study of the Therac-25, In Akera, A. and Aspray, W. (Eds.), *Using History to Teach Computer Science and Related Disciplines*, Washington DC: Computing Research Association, 255-277.
- Jefferson, B.J. 2017. Digitize and punish: computerized crime mapping and racialized carceral power in Chicago, *Environment & Planning D: Society & Space* 35: 775-796
- Keefer, M.W. 2005. Making good use of online case study materials, *Science and Engineering Ethics*, 11: 413-429.

- Kerski, J. 2016. Location Privacy. *The Geographic Information Science & Technology Body of Knowledge* (3rd Quarter 2016 Edition), John P. Wilson (ed.). DOI: 10.22224/gistbok/2016.3.2
- Kuniavsky, M. 2003. Chapter 6, Universal tools: Recruiting and interviewing, *Observing the User Experience: A Practitioner's Guide to User Research*, San Francisco: Morgan Kaufmann Publishers, 117-127.
- Kwan, M.P. 2002. Feminist Visualization: Re-envisioning GIS as a Method in Feminist Geographic Research. *Annals of the Association of American Geographers* 92(4): 645-661.
- McLafferty, S. 2005. Women and GIS: Geospatial Technologies and Feminist Geographies. *Cartographica*, 40 (4):37-45.
- Onsrud, H.J. 1995. Identifying unethical conduct in the use of GIS. *Cartography and Geographic Information Systems*, 22(1), 90-97
- Openshaw, S., 1991. A view on the GIS crisis in geography, or, using GIS to put Humpty-Dumpty back together again. *Environment and Planning A*, 23(5), pp.621-628.
- Orr, W. and Davis, J.L. (2020) Attributions of ethical responsibility by Artificial Intelligence practitioners, *Information, Communication & Society*, 23:5, 719-735, DOI: 10.1080/1369118X.2020.1713842
- Pickles, J. 1995. Representations in an Electronic age: Geography, GIS and Democracy. In: J. Pickles (ed.), *Ground truth: The social implications of geographic information systems*. New York, New York: Guilford Press. pp. 1-30.
- Quinn, M. 2017. *Ethics for the Information Age* (7th Edition). New York: Pearson
- Richardson, D. 2007. Crossing Borders. *ArcNews* Spring Issue.  
<https://www.esri.com/news/arcnews/spring07/articles/a-serious-threat.html>
- Rickles, P., Haklay, M., Ellul, C., and Skarlatidou, A. (2017). Citizen Science with GIS&T. *The Geographic Information Science & Technology Body of Knowledge* (3rd Quarter 2017 Edition), John P. Wilson (ed.). doi: 10.22224/gistbok/2017.3.5.
- Schuurman, N. 2000. Trouble in the heartland: GIS and its critics in the 1990s. *Progress in Human Geography* 24 (4): 569-590.
- Schuurman, N. and Leszczynski, A. 2006. Ontology based Metadata. *Transactions in GIS*, 10(5):709-726.
- Schuurman, N., 2006. Formalization matters: Critical GIS and ontology research. *Annals of the Association of American Geographers*, 96(4), pp.726-739.
- Sheppard, E., 2005. Knowledge production through critical GIS: Genealogy and prospects. *Cartographica: The International Journal for Geographic Information and Geovisualization*, 40(4), pp.5-21.
- Stewart, K., G. Cho and E. Clark, 1997. Geographical Information Systems and Legal Liability. *Journal of Law and Information Science*. 8/1:84-113.
- URISA, 2012. *Geospatial Management Competency Model (GMCM)*  
<https://www.urisa.org/resources/geospatial-management-competency-model>





THE OHIO STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

# **SYLLABUS: GEOG 5101**

## **GIST PROFESSIONALISM AND ETHICS**

### **SPRING 2021**

## **Course overview**

### **Instructor**

Instructor: Prof. Ningchuan Xiao

Email address: xiao.37@osu.edu

Phone number: 614-292-4072

Office hours: Monday and Wednesday 10-11:30 AM or by appointment

Office Location: 1132 Derby Hall

### **Course description**

Geospatial has become a ubiquitous term in a wide range of applications where spatial data, GIS, mapping, remote sensing, spatial data analytics, and spatial decision making are involved. For a practitioner in this broad field of geographical information science and technology (GIST), what does “being professional” mean? Is doing your job competently enough to be at your job? What constitutes professional competence in this profession? This course will help you address these questions and, more importantly, help you find your moral compass in a profession that is at the cutting-edge of today’s constant social and technological advances.

### **Course learning outcomes**

By the end of this course, students should successfully be able to:

- Explain GIST as a profession and related skills
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### Required

The following is the required textbook for this class. In addition, each week will include additional required readings that are listed after the course schedule.

Quinn, M. 2017. *Ethics for the Information Age* (7th Edition). New York: Pearson

## Grading and faculty response

### Grades

Assignment or category	Points
Reflective papers	30
Professional profile (undergraduate students only) GIST practitioner interview (graduate students only)	20
Case study reading (all students) and Develop an ethics case study (graduate students only)	20
Recorded presentation	20

Participation	10
<b>Total</b>	<b>100</b>

## Assignment information

This course is organized around five types of activities. Students should carefully review the academic integrity policies in the subsequent section that pertain to all assignments of this class.

**Reflective papers.** During the semester, each student is required to write 3 reflection papers. Each paper should focus on one week's topic since the previous paper. Each paper will be 5 pages long, double spaced with 12pt font and normal margins. The papers will be graded based on how they adequately address the papers of the week selected, as well as the style and quality of writing. Detailed rubric will be provided along with the assignments.

**Professional profile.** Undergraduate students in this class are required to develop a professional profile on LinkedIn and provide constructive suggestions through peer review of other students' profiles.

**GIST practitioner interview.** Graduate students in this class are required to identify a practitioner and interview him/her regarding professionalism and ethics. Undergraduate students are not required to conduct the interview per se, but are required to discuss the interview process and to peer review the interview reports.

**Case studies.** A number of case studies will be used to help students develop their understanding of ethical issues in real world applications, get familiar with the codes of conduct, and cultivate their professional judgement. All students in this class are required to read and comment on various case studies. Detailed instructions will be provided along with the assignment. In addition, each graduate student is required to develop a case study. The main body of the case study is typically more than 400 words. By developing their own case studies, students will be able to develop a high level of ethical awareness. Interviewing practitioners is often a good start for preparing the case study. These case studies will be peer reviewed by all students in the class.

**Presentation.** Each student will record a video presentation (2-3 minutes) to explain what GIST as a profession means to you. The videos will be posted on Carmen and will also be peer reviewed.

**Participation.** Prior to each class, students must use the online discussion board to (1) raise at least one question about the each of the reading materials and (2) provide their thoughts on their own questions. During the class, students will be asked to elaborate on the questions they raised for the class to discuss.

## Late assignments

Late submissions will be accepted up to a week past the due date. One day late will incur a 10% penalty. Two days late will incur 20% penalty. Three days will incur a 30% penalty. Four days late will incur a 40% penalty. Five to seven days late will only receive 50% credit of the grade you would have received if it is submitted on time. If you contact me ahead of time for deadline adjustments, you will not incur any penalty. Please refer to Carmen for due dates.

## Grading scale

93–100: A  
90–92.9: A-  
87–89.9: B+  
83–86.9: B  
80–82.9: B-  
77–79.9: C+  
73–76.9: C  
70–72.9: C-  
67–69.9: D+  
60–66.9: D  
Below 60: E

## Faculty feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

### Grading and feedback

For large weekly assignments, you can generally expect feedback within **7 days**.

### E-mail

I will reply to e-mails within **24 hours on school days**.

### Discussion board

I will check and reply to messages in the discussion boards every **Monday, Wednesday, and Friday on school days**.

## Other course policies

### Academic integrity policy

#### Policies for this course

- **Written assignments:** Your written assignment, including discussion posts, should be your own original work. In formal assignments, you should follow The Chicago Manual of Style 17th edition ([click here for online version](#)) to cite the ideas and words of your research sources.
- **Reusing past work:** In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Falsifying research or results:** All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review:** The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.

#### Ohio State's academic integrity policy

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

### Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

## Statement on title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator at [titleix@osu.edu](mailto:titleix@osu.edu).

## 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. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12th Avenue.

## 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. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting [ccs.osu.edu](http://ccs.osu.edu) or calling 614- 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at 614-292-5766 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273- TALK or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org)

## Course schedule (tentative)

This class meets once a week. The following is a tentative schedule. The lengths of the reading materials vary, but in general the length of a peer-reviewed article is 10 to 20 pages, and the length of a book chapter is 40 to 50 pages. Other readings will be less than 10 pages.

Assignments are generally due in a week.

Week	Dates	Topics, Readings, Assignments
1	1/11-1/15	<b>Why GIS ethics?</b> Discussion forum: history of geospatial data and GIS Readings: Quinn 2017 Ch 2, Openshaw 1991, Curry 1995, Schuurman 2000
2	1/18-1/22	<b>Geospatial profession</b> Discussion Forum: codes of ethics Interview: Identify practitioner interviewees Case study: MAPPS lawsuit Readings: Quinn 2017 Ch 9, GISCI Code of Ethics, ASPRS Code of Ethics, Davis 2003, Richardson 2007
3	1/25-1/29	<b>Competence in GIST</b> Discussion forum: GIST job search experience Assignment: reflection paper #1 (GIST profession) Readings: URISA, 2012, DiBiase et al. 2010, DiBiase 2018
4	2/1-2/5	<b>Interview preparation</b> Discussion forum: mock interview and questions Interview: <a href="#">protocol</a> and questionnaire Assignment: LinkedIn profile Discussion forum: practitioner interviews from Quinn 2017 Readings: Kuniavsky 2003
5	2/8-2/12	<b>Fundamental issues in ethics</b> Discussion forum: define GIS ethics Assignment: LinkedIn profile peer review Case study: mapping Muslims Readings: Quinn 2017 Ch 4, Crampton 1995, Onsrud 1995
6	2/15-2/19	<b>Ethical computing and smarts</b> Discussion forum: Smart Columbus Assignment: LinkedIn profile Readings: Jefferson 2017, Hagendorff 2020, Orr & Davis 2020
7	2/22-2/26	<b>Geospatial and Privacy</b> Discussion forum: how to (not) track customers Case study: mobile phone tracking, tsunami response

		Readings: Quinn 2017 Ch 5, Crampton 2003, 2007, Armstrong & Ruggles 2005, Kerski 2016
8	3/1-3/5	<b>Data and Ethics</b> Discussion forum: what does your data tell? Case studies: submarine crash Readings: Keefer 2005, Huff & Brown 2004
9	3/8-3/12	<b>Public participation GIS</b> Discussion forum: public participation Assignment: reflection paper #2 Readings: Elwood 2006, Rickles et al. 2017
10	3/15-3/19	Spring break (no class)
11	3/22-3/26	<b>GIST Professionals Interview</b> Interview questions Assignment: Interview report
12	3/29-4/2	<b>Digital divide and VGI</b> Discussion forum: Readings: Curry 1997, Quinn Ch 10, Elwood 2008
13	4/5-4/9	<b>Intellectual property</b> Discussion forum: sign the dotted line Case study: public access to government data Readings: Quinn 2017 Ch 4, Stewart et al. 1997, Curry 1996, Sheppard 2005
14	4/12-4/16	<b>Critical GIS</b> Discussion forum: representation and GIS Assignment: reflection paper #3 Readings: Kwan 2002, McLafferty 2005, Schuurman & Leszczynski 2006, Schuurman 2006
15	4/19-4/23	<b>Case study</b> <b>Video presentation</b> <b>Peer review</b>



## List of readings

- Armstrong, M. and Ruggles, A. 2005. Geographic Information Technologies and Personal Privacy. *Cartographica* 40 (4): 63-73.
- Crampton, J. 1995. The Ethics of GIS. *Cartography and Geographic Information Systems* 22 (1): 84-89.
- Crampton, J. 2003. Cartographic Rationality and the Politics of Geosurveillance and Security. *Cartography and Geographic Information Science* 30 (2): 135-148.
- Crampton, J. 2007. The Biopolitical Justification for Geosurveillance. *Geographical Review* 97 (3):389-403.
- Croswell, P. 2018. Organizational Models for GIS Management. *The Geographic Information Science & Technology Body of Knowledge* (1st Quarter 2018 Edition), John P. Wilson (ed.). DOI: 10.22224/gistbok/2018.1.13
- Curry, M.R. 1995. Geographic information system and the inevitability of ethical inconsistency. In Pickles, J. (ed.) *Ground Truth: The social implications of geographic information systems*, 68-87. New York: The Guilford Press
- Curry, M.R. 1996. Data Protection and Intellectual Property: Information, Systems and the Americanization of the New Europe. *Environment and Planning A* 28: 891- 908
- Curry, M.R., 1997. The digital individual and the private realm. *Annals of the Association of American geographers*, 87(4), pp.681-699.
- Davis, M. 2003. What can we learn by looking for the first code of professional ethics? *Theoretical Medicine and Bioethics*, 24(5): 433-454.
- DiBiase, D. 2018. Competence in GIS&T Knowledge Work. *The Geographic Information Science & Technology Body of Knowledge* (3rd Quarter 2018 Edition), John P. Wilson (Ed.). DOI:10.22224/gistbok/2018.3.10
- DiBiase, D., Tripp Corbin, Thomas Fox, Joe Francica, Kass Green, Janet Jackson, Gary Jeffress, Brian Jones, Brent Jones, Jeremy Mennis, Karen Schuckman, Cy Smith, and Jan Van Sickle, 2010. The New Geospatial Technology Competency Model: Bringing Workforce Needs into Focus. *URISA Journal* 22:2, 55-72
- Elwood, S. and Ghose, R. 2004. PPGIS in Community Development Planning: Framing the Organizational Context. *Cartographica* 38 (3&4): 19-33.
- Elwood, S., 2006. Critical issues in participatory GIS: Deconstructions, reconstructions, and new research directions. *Transactions in GIS*, 10(5), pp.693-708.
- Elwood, S., 2008. Volunteered geographic information: future research directions motivated by critical, participatory, and feminist GIS. *GeoJournal*, 72(3-4), pp.173-183.
- Hagendorff, T., 2020. The ethics of Ai ethics: An evaluation of guidelines. *Minds and Machines*, 30: 1-22.
- Huff, C.W., and Brown, R. 2004. Integrating ethics into a computing curriculum: A case study of the Therac-25, In Akera, A. and Aspray, W. (Eds.), *Using History to Teach Computer Science and Related Disciplines*, Washington DC: Computing Research Association, 255-277.
- Jefferson, B.J. 2017. Digitize and punish: computerized crime mapping and racialized carceral power in Chicago, *Environment & Planning D: Society & Space* 35: 775-796
- Keefer, M.W. 2005. Making good use of online case study materials, *Science and Engineering Ethics*, 11: 413-429.

- Kerski, J. 2016. Location Privacy. *The Geographic Information Science & Technology Body of Knowledge* (3rd Quarter 2016 Edition), John P. Wilson (ed.). DOI: 10.22224/gistbok/2016.3.2
- Kuniavsky, M. 2003. Chapter 6, Universal tools: Recruiting and interviewing, *Observing the User Experience: A Practitioner's Guide to User Research*, San Francisco: Morgan Kaufmann Publishers, 117-127.
- Kwan, M.P. 2002. Feminist Visualization: Re-envisioning GIS as a Method in Feminist Geographic Research. *Annals of the Association of American Geographers* 92(4): 645-661.
- McLafferty, S. 2005. Women and GIS: Geospatial Technologies and Feminist Geographies. *Cartographica*, 40 (4):37-45.
- Onsrud, H.J. 1995. Identifying unethical conduct in the use of GIS. *Cartography and Geographic Information Systems*, 22(1), 90-97
- Openshaw, S., 1991. A view on the GIS crisis in geography, or, using GIS to put Humpty-Dumpty back together again. *Environment and Planning A*, 23(5), pp.621-628.
- Orr, W. and Davis, J.L. (2020) Attributions of ethical responsibility by Artificial Intelligence practitioners, *Information, Communication & Society*, 23:5, 719-735, DOI: 10.1080/1369118X.2020.1713842
- Pickles, J. 1995. Representations in an Electronic age: Geography, GIS and Democracy. In: J. Pickles (ed.), *Ground truth: The social implications of geographic information systems*. New York, New York: Guilford Press. pp. 1-30.
- Quinn, M. 2017. *Ethics for the Information Age* (7th Edition). New York: Pearson
- Richardson, D. 2007. Crossing Borders. *ArcNews* Spring Issue.  
<https://www.esri.com/news/arcnews/spring07/articles/a-serious-threat.html>
- Rickles, P., Haklay, M., Ellul, C., and Skarlatidou, A. (2017). Citizen Science with GIS&T. *The Geographic Information Science & Technology Body of Knowledge* (3rd Quarter 2017 Edition), John P. Wilson (ed.). doi: 10.22224/gistbok/2017.3.5.
- Schuurman, N. 2000. Trouble in the heartland: GIS and its critics in the 1990s. *Progress in Human Geography* 24 (4): 569-590.
- Schuurman, N. and Leszczynski, A. 2006. Ontology based Metadata. *Transactions in GIS*, 10(5):709-726.
- Schuurman, N., 2006. Formalization matters: Critical GIS and ontology research. *Annals of the Association of American Geographers*, 96(4), pp.726-739.
- Sheppard, E., 2005. Knowledge production through critical GIS: Genealogy and prospects. *Cartographica: The International Journal for Geographic Information and Geovisualization*, 40(4), pp.5-21.
- Stewart, K., G. Cho and E. Clark, 1997. Geographical Information Systems and Legal Liability. *Journal of Law and Information Science*. 8/1:84-113.
- URISA, 2012. *Geospatial Management Competency Model (GMCM)*  
<https://www.urisa.org/resources/geospatial-management-competency-model>

## Arts and Sciences Distance Learning Course Component Technical Review Checklist

**Course: Geog 5101**

**Instructor: Ningchuan Xiao**

**Summary: GIST Professionalism and Ethics**

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/ Recomm.
6.1 The tools used in the course support the learning objectives and competencies.	X			<ul style="list-style-type: none"> <li>• Office 365</li> <li>• Carmen</li> </ul>
6.2 Course tools promote learner engagement and active learning.	X			<ul style="list-style-type: none"> <li>• CarmenZoom</li> <li>• CarmenWiki</li> <li>• Carmen Discussion Boards</li> </ul>
6.3 Technologies required in the course are readily obtainable.	X			All tools are available via OSU site license free of charge.
6.4 The course technologies are current.	X			All are updated regularly.
6.5 Links are provided to privacy policies for all external tools required in the course.	X			No external tools are used.
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	X			Links to 8HELP are provided
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	X			a
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	X			b
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	X			c
Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide student-users with a consistent user experience in terms of navigation and access to course content.
8.2 Information is provided about the accessibility of all technologies required in the course.	X			No 3 <sup>rd</sup> party tools are used.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	X			Instructions are provided to obtain materials in another format.
8.4 The course design facilitates readability	X			
8.5 Course multimedia facilitate ease of use.	X			All assignments and activities that use the Carmen LMS with embedded multimedia facilitates ease of use. All other multimedia resources facilitate ease of use by being available through a standard web browser

### Reviewer Information

- Date reviewed: 7/13/20
- Reviewed by: Ian Anderson

**Notes:**

<sup>a</sup>The following statement about disability services (recommended 16 point font):  
Students with disabilities (including mental health, chronic or temporary medical conditions) that have been certified by the Office of Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office of Student Life Disability Services is located in 098 Baker Hall, 113 W. 12th Avenue; telephone 614- 292-3307, [slds@osu.edu](mailto:slds@osu.edu); [slds.osu.edu](http://slds.osu.edu).

<sup>b</sup>Add to the syllabus this link with an overview and contact information for the student academic services offered on the OSU main campus.  
<http://advising.osu.edu/welcome.shtml>

<sup>c</sup>Add to the syllabus this link with an overview and contact information for student services offered on the OSU main campus. <http://ssc.osu.edu>. Also, consider including this link in the “Other Course Policies” section of the syllabus.

# Curriculum Map: GIS Major, Department of Geography

Levels indicated for proficiencies: B: beginning I: intermediate A: advanced  Course colors: green: courses taught by the same person blue: courses among which students choose	Codes for mapping proficiencies to your courses:  y: yes, covered and evaluated  c: covered but not currently evaluated OR could be covered and evaluated  blank: not covered; no intention to cover		GIS										GIS 2 (to be proposed)																																					
			G					I					G					I																																
			0	1	2	3	4	0	1	2	3	4	0	1	2	3	4	0	1	2	3	4																												
			DL	EC	YS	EC	EC	NX	YS	DL	Total "y"	NE	ER	YS	YQ	Total "y"	DL	EC	EC	YS	DL	Total "y"	NE	ER	YS	EC	NX	Total "y"	MD	NE	NW	HL	HM	Urban	Total "y"	JW	ER	BK	NM	JM	MD	YQ	Other	Total "y"						
<b>Goal A: Human, Environmental, and Spatial Concepts</b> Students understand various conceptual approaches and their context to interpret patterns, processes and their relation.																																																		
<b>1. Conceptualize human, environmental, or spatial problems</b>																																																		
a. Describe the spatial and historical context of a problem (B)			y	c	c	c	y	c	c	y	2					c	c	0	y	c	c	c	y	2					c	1	3	y	y	y	y	y	5	8	y	y	y	y	y	y	7	15				
b. Identify the 'ecological fallacy' (the inappropriate homogenization or aggregation of differentiated phenomena within a unit of analysis, using scale as an analytical unit) (B)			y								3	y	y	2		y	c	y	y	2					2				2	4	y	y	2	6						c	c	y	1	7						
c. Examine dynamics within a place's or system's boundaries, and implications for real-world problems (I)			c								0	y	c	1		c		y	c	1					c	0	1	y	y	y	y	y	4	5	y	y	y	y	y	y	7	12								
d. Examine dynamics that connect places or systems across space, and implications for real-world problems (I)											0								y	c	1						1	1	y	y	y	y	y	5	6	y	y	y	y	y	y	7	13							
e. Evaluate processes that operate at different scales and their effects (A)			c								0	y	y	c	2	c		c	c	0					y	1	1	y	y	y	y	y	5	6	y	c	y	y	y	y	c	5	11							
<b>2. Critically evaluate different approaches to describe, explain, or predict real-world experience</b>																																																		
a. Describe the strengths and weaknesses of various approaches for their utility in interpreting real-world experience (B, I)			y	y	y	y	y	y	y	y	8	y	y	c	2	y	y	y	y	y	5					y	y	y	y	4	9	y	y	y	y	3	12	y	y	y	y	y	6	18						
b. Explain the contexts in which various approaches were developed (A)			c	c	c	c	y	c	c	c	2					c	c	0	c	c	c	c	y	1				c	1	2	y	y	c	y	3	5	c	y	c	y	c	y	2	7						
c. Critically evaluate various approaches in their field of study (A)			c	y	y	c	y	y	y	y	5	y	c	1		c	y	y	y	y	3					y	y	c	3	6	y	y	c	3	9	y	y	y	y	4	13									
<b>3. Appraise the relation between concepts and real-world experience</b>																																																		
a. Interpret patterns (B)			y	c							3	y	y	y	3	y	c	y	y	y	3					y	1	4	y	y	y	y	4	8	c	y	y	c	y	y	4	12								
b. Critique how knowledges in their fields are used in developing solutions to real-world problems (I)			c	c	y	c					1	c	c	c	0	c	c	c	y	c	y	2				c	1	3	y	y	y	3	6	c	c	y	y	y	y	4	10									
c. Relate research findings to debates about different approaches to research (A)											0								c	c	y	1					c	0	1	1	y	y	y	c	3	4				y	c	y	2	6						
d. Relate patterns to processes to assess causal relations (A)			c								0	y	y	c	2	c			c	y	1				y	1	2	y	y	y	c	3	5	c	c				y	y	c	2	7							
<b>Goal B: Research Strategies, Methods and Data</b> Students are able to apply appropriate methods and data, to transform data into actionable knowledges to support ethical scholarship and decision making.																																																		
<b>1. Gather information regarding data and their context to draw conclusions</b>																																																		
a. Identify relevant data sources and their quality (B)			y	c	y	c	c	c	y	y	3					c	0	0	y	c	c	y	y	2				y	c	1	3						y	c	1	4	c	c	c	y	c	1	5			
b. Collect data from relevant sources (I)			c	c	y	c	c	c	y	y	2					c	0	0	c	c	c	y	y	1				y	c	1	2					y		1	3						c	c	y	c	1	4
c. Design feasible data-collection procedures (I)			y								2					c	0	0	y		y	y	2						0	2					y	c	1	3						c	c	y	1	4		
d. Explain how context shapes conclusions drawn from data (A)			c								0					c	0	0	c	c		y	1						0	1					y	c	1	2	c					c	c	y	1	3		
<b>2. Evaluate research strategies and methods to engage problems</b>																																																		
a. Identify available research strategies and methods (B)											2	y	c	c	1						1					c	1	2	3	y	y	y	3	6	c						c	1	7							
b. Explain how strategies and methods may be used constructively and destructively in real-world applications (B, I)											1	c	c	c	0						1					c	1	0	1	y	c	y	2	3	c						y	c	c	1	4					
c. Provide empirical examples of constructive and destructive applications of methods (I)											0											1						0	1	y	c	c	1	2							c	c	0	2						
d. Assess the strengths and limitations of available research strategies and methods (I, A)											2	y	c	1							1					c	1	2	3	y	c	c	1	4	c						c	c	0	4						
<b>3. Apply strategies and methods</b>																																																		
a. Visualize patterns through mapping, graphing, or using GIS techniques (B)			y	y	y	y	y	y	y	y	8	y	y	y	3	y	y	y	y	4					y	y	y	y	4	8					y	1	9						c	c	y	1	10			
b. Identify sources of uncertainty or partial knowledges (B, I)			y	c	y	y	c	c	y	y	3	y	y	1		y	c	y	c	y	y	4				y	y	c	2	6					c	0	6	c					c	c	0	6				
c. Analyze how errors propagate through data processing (I)			c	c							0					c						1					c	c	0	1							1								0	1				
d. Examine the impacts of sources of uncertainty or partial knowledges on the reliability of data (I)			c	c	c						0					c	c		c	c	y	1				c	c	0	1							0	1								0	1				
e. Apply interactive and dynamic visualization techniques (I, A)			c	y							4					y	c	1	c		y	y	1					y	2	3					0	3								0	3					
f. Analyze patterns using appropriate methods (I, A)			y	y	y	y	y	c	y	y	5	y	y	c	2	y	y	y	y	3					y	y	y	3	6					0	6	c					c	0	6							
g. Apply strategies to mitigate or constructively engage the effects of uncertainty or partial knowledges (A)			c	c	c						0	y		1		c	c		y	y	2				y	c	1	3					0	3	c							0	3							
h. Interpret data and results using appropriate methods (A)			y	c	y	y	y	y	y	y	6	y	y	y	3	y	c	y	y	y	3					y	y	y	4	7					y	1	8						y	1	9					

Levels indicated for proficiencies: B: beginning I: intermediate A: advanced  Course colors: green: courses taught by the same person blue: courses among which students choose	Codes for mapping proficiencies to your courses:  y: yes, covered and evaluated  c: covered but not currently evaluated OR could be covered and evaluated  blank: not covered; no intention to cover	GIS										GIS 2 (to be proposed)																																				
		G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	U	U	U	U	U	U	U	U	U	U																	
		4	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	5	5	5	5																			
		1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1																			
		0	0	0	1	1	2	2	2	9	0	2	2	2	2	2	2	2	2	0	0	1	1	1	1	1	1	1	1																			
		3	3	1	0	2	2	3	5	1	3	6	6	9					3	0	0	5	5	1	0	1	0	1																				
<b>Goal C: Communication and Engagement</b>																																																
<b>The successful student will be able to share and receive knowledge by engaging with diverse audiences, participants, and stakeholders.</b>																																																
<b>1. Disseminate knowledges</b>																																																
a. Identify modes by which knowledges can be disseminated (B)																																																
		c	c		y	y			2		c	0								c	c			0			y	1	1		c	0	1	c	0	1	c	c		c	0	1						
b. Recognize that different audiences will have different degrees of familiarity with subject being presented (B)																																																
		c		c	c	c	c		0		c	0								c	c		y	1				c	c	0	1		y		c	1	2	c	c	y	c	1	3					
c. Summarize an author's argument in their own words (B)																																																
									0			0											y	1				0	1	y	y	y	y	5	6		y	y	y	y	5	6	y	y	y	y	5	11
d. Deliver oral presentations (B)																																																
		c		c	c	c	c		y	0		y	1							c	c		y	y	2			c	c	0	2	y	y	y	y	5	7		c		y	y	y	3	10			
e. Adjust the language and technical level of oral or written presentation relative to different audiences (B, I)																																																
									0		y	1										y	1				c	0	1	y		c	1	2				y		c	1	3						
f. Evaluate the standard modes of dissemination of knowledges for their strengths and weaknesses in a given context (I)																																																
		c							0			0							y	y			2				0	2					0	2							0	2						
g. Use visual methods to enhance oral or written presentation (B, I)																																																
		c		c	c	y	y		2		y	y	2						c	c		0					y	c	y	2	2	y	y	c	y	3	5					y	y	3	8			
h. Construct other output or products using diverse media, art, activism, or other strategies to convey messages from academic research (I)																																																
									0			0										0					0	0	c	c	c	y	1	1							1	2						
i. Synthesize material from several sources (I)																																																
						c	c		0		c	0										0					c	0	0	y	y	y	y	5	5		c		y	y	y	4	9					
j. Generate a document that develops an argument drawing from multiple sources (A)																																																
									0			0										0					c	0	0	y	y	y	y	5	5		c		y	y	y	4	9					
<b>2. Collaborate in learning and research</b>																																																
a. Demonstrate responsiveness to others (B)																																																
		c		c	c	c	y		c	1		c	0						c	c		c	0				c	c	0	0	y	c	y	y	c	3	3		c	y	c	y	y	3	6			
b. Demonstrate ability to work with a division of labor in a collaborative project (B, I)																																																
		c		c	c		y		c	1		c	0						c	c		c	0				c	0	0	y	c	y	c	2	2		y		y	y	3	5						
c. Demonstrate ability to work with people of varying cultures, backgrounds, abilities, ideas, ideals, and status (B, I)																																																
							y		1		c	0									0					0	0	y	c	y	c	2	2		c	y	c	c	y	2	4							
d. Employ teamwork to achieve results (B, I, A)																																																
		c		c	c		y		y	1		y	1					c	c		y	1				c	0	1	y	c	c	y	2	3		y		y	y	3	6							
<b>Goal D: Critical Thinking and Ethical Engagement</b>																																																
<b>The successful student is intellectually curious, interested in scrutinizing their assumptions, and is aware of the ethical dimensions of their professional activity regarding real-world problems to work towards justice.</b>																																																
<b>1. Critically engage real-world problems</b>																																																
a. Identify multiple sides of a problem (B)																																																
		c		c		y	y		2		c	0						c	c		y	1				y	1	2	y	y	y	y	5	7		y	y	y	y	c	y	c	5	12				
b. Explain multiple sides of a problem (I)																																																
		c				y	y		2		c	0						c			y	1				y	1	2	y	y	y	y	c	4	6		y	y	y	y	y	6	12					
c. Explain the real-world consequences of different positions regarding a problem (A)																																																
		c							0		c	0						c			y	1				0	1	y	y	c	c	2	3		y	y	y	y	c	y	5	8						
d. Develop a position based on an understanding of multiple sides of a problem (A)																																																
		c							0		c	0						c			y	1				0	1	c	y	y	c	c	2	3		y	y	c	y	y	5	8						
e. Identify linkages among apparently discrete problems (A)																																																
						y			1		c	0									y	1				y	1	2	c	c	c	y	1	3		y	c	y	c	c	3	6						
<b>2. Appraise ethical issues in research</b>																																																
a. Explain how strategies and methods may be used constructively and destructively in real-world applications (B, I) [identical to b.2.b]																																																
		c					y		1		c	0						c			y	1				0	1	y	y	c	2	3		c	c	y	y	c	c	2	5							
b. Perceive that everyone, including researchers, implicitly have biases and partial knowledges that can have negative effects on subjects under study (B, I)																																																
		c					y		1		c	0						c			y	1				0	1	y	y	y	c	3	4		c	c	y	y	c	c	2	6						
c. Perceive that subjects under study and those encountered in the field, their values, and their privacy require respect (B, I)																																																
									0			0									y	1				0	1	c			0	1							c	c	0	1						
d. Analyze their positionality regarding, for example, class, race/ethnicity, gender, age, citizenship, occupation, and the like relative those under study or encountered in the field (I, A)																																																
									0			0									y	1				0	1	c	c	c	0	1							c	c	0	1						
e. Integrate ethical considerations into formulation of questions and applications of their knowledges (S)																																																
							y		1			0									y	1				0	1	c	c		0	1							c	c	0	1						
<b>Goal E: Professional Development</b>																																																
<b>The successful student understands how to make use of the skills and knowledges developed in their undergraduate program towards securing a job and pursuing a career.</b>																																																
<b>1. Make use of their values to guide their careers</b>																																																
a. Identify their value systems relative to career opportunities (B)																																																
									0		c	0									y	1				0	1	c			0	1							c	0	1							
b. Describe tensions between their ideals and career realities (I)																																																
									0		y	1									y	1				1	2	y			0	2							0	2								
c. Appraise the variety of options and trade-offs in career paths relative to their value systems (A)																																																
									0		c	0									y	1				0	1	c			0	1							0	1								
<b>2. Deploy their skills relative to a changing job market</b>																																																
a. Identify the range of their skills relative to a variety of career paths (B)																																																
		c							0		c	0						c			y	1				0	1	c			0	1							c	0	1							
b. Identify the strengths and limitations of their range of skills relative to various professional opportunities (I)																																																
									0		c	0						c			y	1				0	1	c			0	1							0	1								
c. Demonstrate the ability to learn new skills (A)																																																
									0		c	y									y	1				1	2	c	y		1	2							0	2								
<b>3. Creatively use skills to solve problems beyond those encountered in formal training</b>																																																
a. Apply knowledge from formal training to examine a problem (B)																																																
		c	y	c		c	c	c	1		y	y	c					c	c	c	y	1				y	y	y	c	3	4							y	1	5								
b. Integrate diverse skills from formal training (I)																																																
			y	c					1		c	c						c	c		y	1				1	2	c	y		1	2							y	1	3							
c. Integrate knowledges from formal training with those acquired independently (A)																																																
			y						1		c	c						c			y	1				1	2	c	y		1	2							c	0	2							

## Geography Curriculum Mapping: Summary for GIS Major and the Proposed Course of GEOG 5101

Ningchuan Xiao  
February 3, 2021

The Department of Geography went through an undergraduate curriculum mapping process in 2019 and 2020. Throughout the process, the faculty have agreed upon a set of program goals, outcomes, and proficiencies, which are detailed in the left column in the attached file (Curriculum\_map\_GEOG\_GIS\_ONLY.pdf). Please note that because the online service does not accept the spreadsheet file, I had to copy the content from the original spreadsheet to a separate document where the content is heavily crammed because of the limitation on formatting. A summary table with a more friendly format is enclosed below.

After the proficiencies were set, the faculty then “mapped” their courses to each of the proficiencies. The attached spreadsheet in PDF includes the mapping result for the courses of the Geographic Information Science (GIS) major, under the grouped column called GIS. It became clear to the GIS faculty that proficiencies under **Goals D and E are not sufficiently covered** in the current curriculum by our required courses (see the many zeros in the summary table below and in the attached PDF) nor by the electives. This is one of the motivations we decided to revise our GIS major curriculum. The courses in the revised curriculum are listed in the attached PDF (under a grouped column called GIS 2). This revised curriculum is to be proposed in later in Spring 2021. GEOG 5101 (GIST Professionalism and Ethics) is the new course that will be added in the revised curriculum. As shown in the table below and in PDF, **GEOG 5101 will provide sufficient coverage of proficiencies in Goals D and E.**

Table 1. Coverage of the proficiencies by the courses of the current GIS curriculum (Required and Electives) and the proposed GEOG 5101. Numbers under columns Required and Electives are the number of times each proficiency is covered by the required and elective courses, respectively, in the current curriculum. Letter ‘Y’ in the last column indicates that a proficiency will be covered by the proposed GEOG 5101. The actual proficiency descriptions are not included here and can be found in the attached curriculum mapping PDF.

Goals	Outcomes	Proficiencies	Required	Electives	GEOG5101	
A: Human, Environmental, and Spatial Concepts	1. Conceptualize human, environmental, or spatial problems	a.	2	0		
		b.	3	2		
		c.	0	1		
		d.	0	1		
		e.	0	2		
	2. Critically evaluate different approaches to describe, explain, or predict real-world experience	a.	8	2	y	
		b.	2	0	y	
		c.	5	1	y	
		3. Appraise the relation between concepts and real-world experience	a.	3	3	
			b.	1	0	y
			c.	0	0	y
	B: Research Strategies, Methods, and Data	1. Gather information regarding data and their context to draw conclusions	d.	0	2	y
a.			3	0		
b.			2	0		
c.			2	0		

	2. Evaluate research strategies and methods to engage problems	d.	0	0	y
		a.	2	1	y
		b.	1	0	y
		c.	0	0	y
	3. Apply strategies and methods	d.	2	1	y
		a.	8	3	
		b.	3	1	y
		c.	0	0	
		d.	0	0	y
		e.	4	1	
		f.	5	2	
g.		0	1	y	
h.	6	3			
C: Communication and Engagement	1. Disseminate knowledges	a.	2	0	
		b.	0	0	y
		c.	0	0	y
		d.	0	1	y
		e.	0	1	y
		f.	0	0	
		g.	2	2	
		h.	0	0	
		i.	0	0	
		j.	0	0	
	2. Collaborate in learning and research	a.	1	0	
		b.	1	0	
		c.	1	0	
		d.	1	1	
D: Critical Thinking and Ethical Engagement	1. Critically engage real-world problems	a.	2	0	y
		b.	2	0	y
		c.	0	0	y
		d.	0	0	y
		e.	1	0	y
	2. Appraise ethical issues in research	a.	1	0	y
		b.	1	0	y
		c.	0	0	y
		d.	0	0	y
		e.	1	0	y
E: Professional Development	1. Make use of their values to guide their careers	a.	0	0	y
		b.	0	1	y
		c.	0	0	y
	2. Deploy their skills relative to a changing job market	a.	0	0	y
		b.	0	0	y
		c.	0	1	y
	3. Creatively use skills to solve problems beyond those encountered in formal training	a.	1	2	y
		b.	1	0	y
		c.	1	0	y