Spring 2024

Instructor:	Dr. Jian Qin
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Office:	226 Hinds Hall
Course Details:	: Tuesday/Thursday 11:00 am – 12:20 PM
	Classroom: Hinds Hall 243A
Office Hours:	Thursdays 1:00 – 3:00 PM
	(This syllabus was created by Dr. Jaime Banks and modified by Dr. Jian Qin)

Course Description:

This course introduces students to a variety of approaches to answer questions in different contexts (e.g., business, society, friendships, politics). Students will learn how to ask good questions and answer those questions ethically using a variety of data-driven approaches, including quantitative, qualitative, and computational.

Overview:

Playwright Stojan Steve Tesich (1942-1996) coined the term "post truth" in a 1992 essay in The Nation entitled, "A Government of Lies." He applied the term to American society, which he asserted had given up on the pursuit of truth following Watergate: "We came to equate truth with bad news, and we didn't want bad news anymore, no matter how true or vital to our health as a nation." One remedy in a post-truth society is data-driven inquiry, a process of answering questions honestly by triangulating data from multiple sources. When people review credible previous research, obtain data to investigate a question, when methods of data collection are well designed, and when the analysis of data is conducted thoroughly and competently, it is possible to shed light on answers and to pursue discovery of the underlying truth.

This course introduces several approaches to data driven inquiry. You will learn and use data collection and analysis methods, including those commonly referred to as quantitative, qualitative, archival, and computational. By emphasizing how information can be, will be, or has been acquired, you can answer questions competently in a variety of contexts. These skills have direct applications to most professions and job roles – particularly in technology-intensive industries – and utility in many other domains such as personal health, education, and finance. The course has a body of knowledge and core skills to acquire and sharpen. Your grade will reflect, as accurately as possible, your progress towards mastery on the required skills and knowledge.

Learning Objectives:

By the end of this course, the student will be able to:

- 1. Describe the criteria that determine the quality of research questions;
- 2. Synthesize findings from published, peer-reviewed research that inform a question;
- 3. Generate researchable questions for various types of situations;
- 4. Critique various methods of obtaining data, describing pros and cons of each method;
- 5. Identify appropriate data collection/analysis methods for a given research question, also using guidance from published, peer-reviewed research;
- 6. Engage in ethical analysis of the process of conducting research and the effects of the research on individuals, organizations, and society;
- 7. Recognize strengths and limitations in a given research data set and/or analytic results;
- 8. Analyze data emerging from a research design using basic qualitative and quantitative.

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Course Learning Objectives Aligned to iSchool Undergraduate Program Learning Outcomes & the Shared Competencies:

iSchool Undergraduate Program Learning Outcomes	IST414 Course Learning Objectives	SU Shared Competencies in Scientific Inquiry and Research Skills
Examine and critique how individuals, organizations and society are created and impacted by data and information technology in the age of digital transformation.	1. Describe the criteria that determine the quality of research questions.	1. Identify the context in which research occurs.
Employ critical thinking skills in identifying, evaluating, and designing innovative practices in the age of digital transformation.	 4. Critique various methods of obtaining data, describing pros and cons of each method. 7. Recognize strengths and limitations in a given research data set and/or analytic results. 	
Identify business concepts including accounting, economics, finance, management, and marketing.	2. Synthesize findings from published, peer-reviewed research that inform a question.	2. Evaluate existing knowledge and theories in relation to one's research interests.
Use data-driven approaches (e.g., visual, quantitative, qualitative, and computational) to generate insight from data, across a range of contexts (e.g., societal, business, political).	 Generate researchable questions for various types of situations. Identify appropriate data collection/analysis methods for a given research question, also using guidance from published, peer- reviewed research. Analyze data emerging from a research design using basic qualitative and quantitative. 	 Develop a feasible and ethical research plan based on identified knowledge gaps. Communicate and engage with relevant audiences about research.
Examine how individuals, organizations and society are created and impacted by data and machine learning models.	6. Engage in ethical analysis of the process of conducting research and the effects of the research on individuals, organizations, and society.	
Utilize data science development tools to support the full analytics life cycle.	7. Recognize strengths and limitations in a given research data set and/or analytic results.	4. Implement a research plan to respond to research question(s) and inform conclusion(s).

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Course Materials:

- Primary textbook: *Social Science Research: Principles, Methods, and Practices* by Anol Bhattacherjee (full book in PDF is provided in Blackboard under syllabus for your convenience).
- Required readings: Chapters in the primary textbook and various readings will be provided via Blackboard—see the 'weekly materials' section.
- Required material: You must bring to each class at least 2 (two) 3"x5" index cards. These should be loose/unbound cards or can be pulled from a spiral-bound stack so long as they can be cleanly separated (no rough edges).

Course Expectations:

Participation is a core component of this course. You must complete the readings, the weekly activities, and prepare for the class in advance so that you can get the most out of it. For every 1 hour of class, you should expect to do 2 hours outside of class readings, project activities, and assignments. You will need to **read approximately 15-20 pages per class** and to do **team and individual project work** outside of class. Reading is an essential component of preparing for class. Because there is teamwork, it is critical you attend class because time will be devoted in class to team meetings. You are expected to contribute individually to every element of the course-long team project.

Course Format and Assignments:

Your mastery over the concepts and applications central to this course will be evaluated through discussions, quizzes, activities, small projects, and individual assignments. Below is a high-level outline of these course components; see Blackboard for detailed assignment instructions and see the and the schedule in this syllabus for deadlines. *Note that you MUST NOT work ahead on assignments – the course is designed so that you can have iterative feedback on your project through each assignment, and if there are shortcomings early in the process they need to be corrected before later assignments. To that point, the assignment descriptions on Blackboard may be adjusted based on class progress — they are not firm until they are assigned in class and before that are only for your general impression of assignments.*

There are multiple kinds of graded elements to this class, and it is critical that you understand their differences and do not fall behind on completing them (see the late policy later in this syllabus).

• In-Class Interactive Activities and Discussions (20% - Individual)

You are required to actively participate in each class period by attending and participating in inclass interactive activities. Often, these points are assigned (one per class) based on individual and/or collaborative skills activities related to course content. Sometimes it will be based on simple attendance. Each activity is worth one point (equivalent to 1 percent of your final grade). This is listed in the gradebook as 'IX' (for 'interactive') or 'TD' (for 'team discussion') and you have 22 total opportunities to earn 20 points (so up to 2 absences or missing activities do not count against you). These cannot be made up or excused if you are absent for any reason, except as required by the university.

• Quizzes (20% - Individual)

It is important that you understand some fundamental content on which the class assignments are based. To evaluate this understanding (and catch any challenges early), you will complete quizzes through Blackboard. These are to be individual work – you may use notes and readings and lecture material, but you may not work together. There are 12 quizzes, and each is worth 2

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points (each equivalent to 2% of your final grade), and your two lowest quiz grades will be dropped. Quizzes are to be completed after we have covered the content in class but before we begin new topics in the next week's class (see the schedule below for deadlines).

• Assignments (15% - Individual)

There are four individual assignments scheduled throughout the semester, with varying point values based on their level of complexity and time commitment. These assignments focus on completing tasks that help to demonstrate you have completed important individual parts of standard research processes.

• Project Study 1: State of the Situation (15% - Individual 3 + Team 12)

You will individually and collaboratively work to understand the state of the 'situation' around a central research question selected by your team. There are three parts. (1) You will review current, relevant scientific literature and synthesize that knowledge. (2) You will scrape social media data and analyze it using computer-assisted methods to identify patterns in that data. Those two parts completed, you will together (3) report and argue for a best answer to explain *what's going on* in relation to your research question.

• Project Study 2: Subjective Experience (15% - Individual 5 + Team 10)

You will individually and collaboratively work to understand people's subjective experience of your team's research topic. There are three parts. (1) You will conduct an observation of human behavior, taking careful notes, and crafting a descriptive narrative. (2) You will follow up the observation with a short interview, transcribing the interview, and then coding the transcript. Those two parts completed, you will together (3) synthesize your findings and present an answer to explain *what meaning the experience holds* for people, in relation to your question.

Project Study 3: Hypothesis Testing (15% - Individual 5 + Team 10)
 You will individually and collaboratively work to test a prediction that you have derived from
 Studies 1 and 2, which your team believes answers the research question. There are three parts.
 (1) You will design a two-condition experiment and develop stimulus materials that represent
 supporting and falsifying your hypothesis. (2) You will develop a survey that integrates the
 stimuli and measures dependent (effects) variables; you will collect human subjects data using
 that survey. Those two parts completed, you will together (3) statistically analyze your data to
 test the hypothesis and then use those results to present an answer as to whether your
 hypothesis is supported.

Additionally, you may earn **up to 2 XP** by participating in research studies through the CITRA Research Pool, which is a system for participating in research conducted by SU professors and students. See the policies section for more information.

Grading:

The course uses the standard A – F grade scale. As will be given for work that demonstrates excellence. Bs will be given for work that is of good quality. Cs will be given for work that meets expectations. Ds will be given for work that is below expectation. Fs will be given for work that fails to meet the basic parameters of the course. Note that I do *not* give grade 'bumps' at the end of the semester—there are opportunities for XP as well as absence/quiz drops; those *are* your potential bump.

Grade	Grade Points/Credit	Percentage Range
A	4.000	93 - 100
A-	3.667	90 - 92.9
B+	3.333	87 - 89.9
В	3.000	83 - 86.9
B-	2.667	80 - 82.9
C+	2.333	77 – 79.9
С	2.000	73 - 76.9
C-	1.667	70 - 72.9
D	1.000	63 - 69.9
D-	.667	60 - 62.9
F	0	Grade < 60

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Very often in the assignments, you need to offer subjective arguments and research design or analysis decisions. Simply stating your opinion does not constitute a complete argument. You must support any opinion with logic and evidence—where evidence can be direct empirical evidence (e.g., data you collect), indirect empirical evidence (e.g., data someone else has collected and analyzed and reported) and/or theoretical support (e.g., arguments developed by someone else). In all cases, any element that is not directly collected by you must be properly cited. For example, the prompt "justify why you chose an experiment to test a hypothesis" might be interpreted by a student as follows (note the associated grades A, B, C, or D):

- A: Describes what an experiment is including its key features, describes the utility of experiments for addressing certain kinds of research challenges, explains the hunch and why it aligns with the features and utility of the hunch. Presents a logical, coherent, and citation-supported argument for the fit of the method to the specific research challenge and hypothesis.
- B: Describes the nature of an experiment and its utility in hypothesis testing, offering a link between them that is not incorrect, but is more about experiments in general (rather than this specific instance), may be not entirely complete, or may lack support for some points.
- C: Describes a loose connection between experiments and the hypothesis-testing aim, but it is abstract and/or unsupported.
- D: Writes down anything you can think of about experiments, with no particular logic or link to the notion of hypothesis testing. Avoids giving conclusions, but if you do, be they are not supported by anything you have written.

UNIVERSITY and iSchool POLICIES

Syracuse University and the iSchool have a variety of policies designed to guarantee that students live and study in a community respectful of their needs and those of fellow students. **The policies and services are listed on the new Syracuse University Senate approved syllabus appendix titled**, 'Syracuse University Student Policies and Services.' These statements are an official part of this course syllabus. Please find them in the 'Syllabus' section of Blackboard.

COURSE SCHEDULE

Readings are on Blackboard – see the 'Daily Materials' link on the lefthand navigation bar. SSR = Social Science Research (textbook by A. Bhattacherjee, chapters in PDF on BB), Q = Quiz, A = Assignment, IX = Interactive in-class activity, PS = Project Study, TD = Team discussion. See blackboard sections 'Readings' and 'Interactive' and 'Assignment' and 'Quizzes' for details.

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IX/TD will be completed in class and cannot be made up.

HW/Q/A/MP are due before class on the following week unless otherwise indicated in Blackboard.

Week of:	Topics	Readings	Interactive	Assignment
Module 1: I	oundations of Data-D		•	
			frameworks for conduct	ting social scientific
research—v	vhy we do it, what the p	process is like, and h	ow we embed our values	s in that work.
Week 1	-Introduction	Tue: Syllabus	IX: GenAl trials	A1: Replika
1/16-18	-Philosophies of	Thu: SSR, Ch1	IX: Paradigm	exploration (due
-, -0 -0	science	,	worksheet	1/23)
	-GenAl intro			, -,
	-TAM intro			
Week 2	-Scientific method	Tue: Starting	TD: Team intros, firm	Q1: Scientific Method
1/23-25	-Data and	where you are	naming, comm plan	Q2: Data
_,	dichotomies	Thu: SSR Ch2	TD: RQ interests,	Q
	-RQs/Hs		topic selection	
Module 2: 9	State of the Science/Sit	uation		
			out 'What's going on here	e?" These include the
	• •	•	ion-numerical) data, incl	
-			how to make sense of i	-
Week 3	-Research Ethics	Tue: SSR Ch16	IX: Ethical Dilemmas	Q3: Theory
1/30-2/1	-Role of theory/lit	Thu: SSR Ch4	IX: Lit Review	A2: Project RQ (due
1,00 2,1	-Modeling logics		TD: Modeling RQ/H	1/30)
Week 4	-Qualitative data	<i>Tue</i> : Wildemuth	IX: Keyword sampling	Q4: Artifacts
2/6-8	-Trace data (docs	on documents as	IX: Social media	A3: CITI Training (due
2/0-8	and artifacts)	data (Chapter 18	scraping	2/8, or 2/15 the
	-Social media data		scruping	latest)
	-Social media data	only)		lutesty
Week 5	-Machine-	<i>Tue:</i> Adu on	IX: WC/Cloud testing	Q5: Text Analysis
2/13-15	supported text	Automated text	IX: Sentiment/topic	PS1-a Text data
2/13-13	analysis	analysis	testing	cleaning (individual,
	-Workshop Day for	analysis	lesting	Due 2/15)
	Study 1			Due 2/15)
Madula 2.1	Jnderstanding Subjecti	l ivo Exporionco		
		-	ividuals' subjective expe	riances related to your
			find patterns in those experi-	
			to gather it, and how to	
Week 6	-Qualitative data	<i>Tue:</i> Tracy on	IX: Workshopping	PS1-b – Text analysis
2/20-22		Qualitative		,
2/20-22	and expansion		IX: Sampling plan	+ report (team, due
	-Qualitative	quality		2/22)
	sampling	Thu: Seidman on		
14/2 al. 7	Ohaamustiku	Why interview?	W. Duration	OC Observation
Week 7	-Observation	<i>Tue:</i> Baker on	IX: Practice	Q6: Observation
2/27-29	-Interviewing	observation	observation	PS2-a – observation
	-Think-aloud	Thu: Wolfinger	TD: Observation plan	data collection (due
	protocols	on field notes	+ interview Q	3/7)
	-Transcription			

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Week 8	-Thematic analysis	Tue& Thu: B&C	TD: Share	PS2-b – Observation
3/5-7	-Induction	on thematic	observation/interview	report (due 3/21)
		analysis	notes	
			TD: Practice deep	
			reading and	
			annotation	
Week 9		No Class – Spring	Break, University Holiday	/
3/12-14				
Week 10	Study 2 Workshoppin	ng		
3/19-21				
Module 4: T	esting Hypotheses			
This module	focuses on methods fo	r making causal pre	dictions, designing exper	iments to test those
hypotheses,	quantitatively (numeri	cally) measuring cor	mplex concepts for that to	esting, performing
those experi	ments, and then statis	tically analyzing the	results.	
Week 11	-Hypotheses +	<i>Tue:</i> SSR, Ch8	TD: H + logic	Q7: Sampling
3/26-28	Justifications		TD: Sampling plan	
	-Diagramming			
	logics			
	-Sampling +			
	recruitment			
Week 12	-Experimental	Tue: SSR, Ch10	IX: Experiment logic	Q8: Experiments
4/2-4	design + causality		IX: Stimulus	
	-Manipulation		development	
	-Stimuli			
Week 13	-Cascade:	<i>Tue:</i> SSR, Ch6	IX: Cascade design	Q9: Measurement
4/9-11	construct to	Thu: SSR, Ch7	TD: Scale selection	Q10: Reliability/
	measurement			Validity
	-Quality in			
	measurement +			
	generalizability			
Week 14	-Survey structures	<i>Tue:</i> SSR, Ch9	IX: Survey drafting	Q11: Surveys
4/16-18	-Descriptive stats	Thu: SSR, Ch14	IX: Descriptives	PS3-a – Survey
				design (due 4/23)
Week 15	-Inferential stats	Tue: SSR, Ch15	IX: Inferentials	Q12: Stats
4/23-25	-Wrap-up			PS3-b – data
	-Final assignments			collection + report
				(due 5/2)
Week 16	D-flastia /D			humodou Adam 2
4/30-5/2	Keflection/R	eport (A4) and Study	y 3 due at 12:20 pm on Tl	nursaay, May 2

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COURSE-SPECIFIC POLICIES

Contacting Dr. Qin: The quickest way to get ahold of Dr. Qin is through the Blackboard FAQ section or (for more personal matters) directly by email at jqin@syr.edu. As a matter of course, students are reminded that our course primarily uses technologies that are not designed for synchronous communication – that is, they are not technologies designed for "real-time" communication. For all e-

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mails or other course messages, **please allow for up to 48 hours for an instructor response**, however I anticipate that I will regularly be able to respond to you much more quickly. Emergencies or urgent messages should be marked as such, and I will address those communications first, though I cannot guarantee an immediate response. You are always welcome to access me during scheduled office hours as well (see below).

Office Hours: Office hours can be accessed in two ways. 1) You may schedule dedicated time in 15minute increments using the Calendly link at the top of this syllabus. This will ensure that you have dedicated time for your questions or concerns. 2) You may drop into Dr. Qin's office during office hours to see if she is available. Note, however, that if someone has already scheduled that time through Calendly, that reservation will be prioritized and you will need to wait until that appointment has been completed.

Attendance Policy: You are expected to be present, on time, and engaged in class. Your satisfaction of this expectation is accounted for through the Interactive Activities (IX) components above. Activities (or substitute attendance) missed due to late arrival or absence may not be made up, unless an excusal, university-sanctioned absence, or day of special concern is discussed with and approved by the instructor ahead of time.

Late Policy: The general policy is that you are to submit all work on time, as it is important to keep this intense, fast-moving class on track. Because of this, late work is not accepted. The XP opportunity listed above is aimed at accounting for the fact that 'life happens.'

Professionalism (in Writing): You are expected to be civil and professional in all aspects of the course, including your behavior in class, your treatment of your peers, in your communication with the instructor, and in the completion of your assignments. Regarding the latter, keep in mind that a key part of scientific work is communicating our processes and findings clearly and professionally. Therefore, it is not acceptable to turn in assignments that are written in incomplete sentences, bullet points, lists, inconsistent formatting, poor grammar (or syntax or spelling or punctuation, etc.), or with the instructions pasted into the document. Rather, you should treat every assignment as though you are submitting it to a person who will use your work to make important decisions – as a professional document. If you submit an assignment that does not adhere to the requirements for professional communication, it will not be graded and will be given a 0 (and no opportunity to revise).

Team Work: A large portion of the points in this class are earned through team work. The class project is designed in a way that earlier work sets the foundation for later work, and individual work sets the foundation for team work. It is imperative that you complete your individual work so your team may not be successful. It is mandatory that you complete the individual portions, to be eligible to complete the team portions. If you do not complete individual portions, you will have to complete the team elements on your own. This policy is set to prevent folks from slacking on contributions while benefiting from the work of their teammates. Team work can be challenging (with various personalities, commitments, priorities, interests), but learning how to engage a team is critical to being prepared to enter team work scenarios in the 'real world.' If you are not comfortable with your grade depending in part upon team work, you should consider whether or not this class is appropriate for you.

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Academic Integrity and Citation of Sources: It is critical that you see and understand the <u>university's</u> <u>academic integrity policy</u>. In this course, you are expected to create original work and to properly cite (with in-text citations and complete reference) any works referred to in your discussions or submitted as part of assignments. This includes any works that you summarize, refer to, and partially or wholly represent in your work—and includes works assigned in the class and those you may find elsewhere. Any suspected instance of academic dishonesty will be reported for investigation according to iSchool and University policies. The course may leverage TurnItIn, which is a plagiarism detection and prevention system that compares submitted documents against documents on the Internet and against student papers submitted to Turnitin at Syracuse University and at other colleges and universities. I will take your knowledge of the subject matter of this course and your writing level and style into account in interpreting the originality report. Keep in mind that all papers you submit for this class will become part of the TurnItIn reference database used by that system solely for the purpose of detecting plagiarism in papers. You are invited to submit your work to Turnitin in advance of submitting them for grading, to check that your sources have been properly cited.

Earning Research Credit through the CITRA Portal: This course participates in the Communication, Information, and Technology Research Alliance (CITRA) Research Pool. This is a shared resource for students interested in participating in scientific research being conducted Newhouse or iSchool faculty and students, and you can earn credit for this course in exchange for volunteering for those studies.

At any time during the semester, you can visit <u>https://ischool.syr.edu/citra/</u> to read more about the study participation opportunities. Note that there may not *always* be studies available and you might not be eligible for all studies, but that the list of studies is updated frequently so you should check for new studies throughout the semester. For each study listed there are specific instructions for how to sign up and participate—if you have questions please email the researcher listed directly.

When you sign up for a CITRA study, you will earn credits equal to roughly 1 credit for each 30 minutes of study-participation time (although some studies could be worth more or less, depending on what you are asked to do). For our particular class, each CITRA Credit is worth .5 points and you are limited to earning 4 Credits—up to a total of 2% points on your final grade for the semester. Each CITRA Credit can be assigned only to one course—so be sure to specify to the researcher if you want your Credit to be assigned to this course—and study participation must be completed by the last class day of the semester.

Finally, it is important to understand that it is *not mandatory* that you participate in research to earn course credit. If you would still like to earn course credit but are not interested in volunteering for any of the CITRA Pool studies, you may contact the coordinators of the CITRA Pool for more information about alternative credit activities. For iSchool courses, your contact is the CITRA coordinator Dr. Jaime Banks (banks@syr.edu). You may also email that address for any other questions, comments, or concerns you have about the CITRA program.

Academic Integrity and Artificial Intelligence: In this course, we have a specific policy around the use of AI for course assignments; it is critical that you understand this policy especially because it may be different than policies in other classes. The use of generative artificial intelligence (e.g., ChatGPT, Bard,

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Claude, Bing AI, LaMDA, Chatsonic; Hugging Face, GitHub Copilot; Midjourney, Dall-E) *is permitted* in this class, with these specific criteria and exclusions:

- (1) Whenever you use AI to generate assignment content (in whole or part) you must annotate the portion(s) of the submission using the word processor's comment function (see <u>Word</u>, <u>Pages</u> instructions). The annotation should include (a) the AI used, (b) the prompt that generated the content, and (c) how you fact-checked the generated content, including the confirming source(s).
- (2) Any content that is found to be AI generated (e.g., by the Turnitin AI-detection tool) without a complete annotation will be treated as though it was plagiarized content according to the university's academic integrity policy (see the section above).
- (3) In addition to any annotations, you must also support your arguments with reputable sources. ChatGPT is *not* a citable source because a specific exchange cannot be referred back to.
- (4) Al is not a replacement of knowledge, merely a tool to assist in the communication of your ideas. You are still responsible for fully understanding the concepts and techniques covered in the class. You may be called on to explain concepts in person to validate your understanding.
- (5) Other appropriate uses of AI outside of assignment content generation could include: to help with brainstorming, identifying flaws in reasoning, spotting confusing language, fixing citation formatting, generating illustrations, rephrasing arguments you don't understand. In those cases, there is not a specific required annotation content, but you should still work to be transparent about your use of it by indicating how AI was used in a comment.
- (6) Using AI to generate synthetic data is *NOT* permitted. All data gathered for class assignments must be gathered from actual, live humans according to the techniques covered in class.

Any instance in which these rules are not followed will be treated as academic dishonesty, and dealt with according to SU's academic integrity policies and procedures.

In spite of this permissive policy, AI tools should be used *with caution*. AI often 'hallucinates' resulting in citations/sources or events or people that are plausible but that do not actually exist, has embedded biases that may lead to problematic arguments, and often generally lacks common sense because it cannot situate answers through lived experience or in the current (2023) zeitgeist. It can be quite bad at math, often prioritizes answers that please over answers that are correct, and will itself plagiarize. Remember that you are responsible for all content submitted, so you must ensure that it is correct, logically justified, and appropriately cited.