COS 402 Section No. COURSE SYLLABUS

Social Impacts of Technology Convergence: AI and Quantum Computing

Fall Semester 2021, Greg Viggiano, PhD

Meeting days and times: To be decided
Building and room: To be decided

Office Location: To be decided
Office Hours: To be decided
Office phone number: To be decided
Telephone: (703) 629-4734
email: To be decided

COURSE DESCRIPTION

This course begins by looking at the social impacts that have resulted from a few notable innovations and merged technologies. Technology convergences increase the potential for unintended effects leading to novel trends and super trajectories. Much like a digital Swiss Army knife, the smartphone is an over-used but good example of multidimensional convergence across many different uses and applications - from a communication device, to a micro computer, to scientific measurement tools, to entertainment and toys. The internet is another good example of an enabling technology that has facilitated many other convergent technologies.

Artificial Intelligence and quantum computing offers another research opportunity to investigate the anticipated macro social trends and impacts that will accompany its arrival. Using a form of complexity theory as a reference framework, this course examines how new technologies are adopted and diffused within global communities - not unlike epidemiological studies of viral infections. As new technologies become more ubiquitous and evolve [mutate], it is useful to consider how to avoid unintended effects, potential dependencies, and vulnerabilities.

Using a 10-year time horizon, this course focuses on AI and quantum computing as two converging technologies. Selected science fiction narratives provide instructive guidance about new technology trends and effects. The literature offers a range of prophetic ideas concerning applied uses of fictional technologies. These stories allow greater potential awareness of what may be waiting over the horizon and glimpses of how civilization might prepare for such disruptive arrivals.

Course goals and objectives: Upon completion of this class, students will gain a greater awareness of an emerging technology - the convergence of quantum computing and artificial intelligence and the anticipated impacts to social fabric, economic activity, and the policy/regulatory environment.

By becoming more aware of the expected shifts in the technology landscape, students will develop competencies to better navigate these changes that accompany disruptive technology introductions. The main value of this course is to prepare students to more effective deal with new environments created by these technologies.

Prerequisite Classes - none.

CROSSLISTING NOTE
This is a crosslisted course; expectations will vary for graduate versus undergraduate students. Undergraduate students are required to submit a 1,000-word short essay, while graduate students are required to submit a 3,000-word essay to include critical thinking and the application of analytic methodologies. Throughout this crosslisted course, graduate students will be held to graduate student-level expectations.

COURSE MATERIALS
Reading List

1. Quantum Intelligence: The Convergence of AI and Quantum Computing, an Anthology, Viggiano, ed.*****
2. Diffusion of Innovation, Rogers*****
3. Complexity Theory and the Social Sciences: An Introduction, Byrne*****
4. 2001: A Space Odyssey (screenplay), Clarke & Kubrick
5. Simply Complexity: A Clear Guide to Complexity Theory, Johnson
6. A Complexity Theory for Public Policy, Morçöl
7. About the Impact of Technology Upon Society, Mukhtar

***Required**

Additional short readings will be required and will be made available as we need them through the Blackboard site. There you will find a folder appropriately titled “Readings.” These readings will take the form of original historical source materials (or their translations into English), either discussed in the course readings or during our class sessions.

Other readings will include original scholarly and professional journal articles (both historical and present-day).

Items (past and present) that have made the news. A folder entitled “In the News” has been set up on Blackboard. There you will find short news items and videos. It is important that you are able to connect the habits of mind we will be enhancing throughout the semester to such things as items you may come across in your daily lives. You might also find these items to be useful for some of the assignments (e.g. the short paper and creative project) you will be completing this semester. As we develop a framework for critical thought and analysis, it is hoped that you will be able to apply and extend it beyond the classroom.

GRADING AND COURSE REQUIREMENTS
Throughout the semester, you will have several opportunities to demonstrate your understanding and to achieve the learning outcomes, goals, and objectives. These include but are not limited to:

1. Reading assignments
2. Short quizzes
3. A variety of in class activities
4. Writing-based activities
5. Short essay assignment which will involve a critical analysis of reputable sources
6. Creative project activity and associated commentary
7. A midterm quiz
8. A comprehensive final exam that will utilize a variety of question types and an exam essay question

In the section that follows, an overview of the course standards and expectations is presented. Following an overview of the attendance and grading policies, you will find a description of each of the above activities and how each will factor into your overall course grade. Collectively these items will be used to assess your overall performance in this course.

GRADING
Your grade for this course will be determined using the following scale: A > 93%, A- > 89%, B+ > 87%, B > 83%, B- >79%, C+ > 77%, C > 73%, C- > 69%, D > 60%, F < 59%

Superior performance is required to earn an A. Excellent performance is required for a B. Satisfactory performance is considered a C grade. If you have a question about a score that you have received, please bring it to my attention immediately. In addition, do not put any additional marks on the item you have a question about. You have one week from the time something is returned to you to bring your question to my attention. After one week, your score will be considered final.

The composition of your final grade for this course will be determined on the following basis:

1. Reading Quizzes 100 points
2. Homework Activities 100 points
3. Short Essay 100 points
4. Creative Project 100 points
5. Class Involvement 100 points
6. Midterm Quiz 50 points
7. Final Exam 150 points
   TOTAL POINTS: 700

The sections that follow offer additional detail regarding the various measures that will be used as assessment tools in this course.

QUIZZES
We will have approximately 5 reading quizzes throughout the semester. The schedule for the reading quizzes is embedded in our working class schedule on pages 11 & 12. Any changes to the reading quiz schedule will be announced either in class or on Blackboard.

If you miss class on the day a reading quiz (or other class activity) is given due to an excused absence (i.e. see Attendance and Class Involvement, p. 5) you will be allowed to make it up. However, if you miss class due to an unexcused absence on the day that a reading quiz (or other class activity) is given then you will receive a zero grade for that quiz or activity. I must be notified PRIOR to your absence in order for you to be allowed to make up a reading quiz (or other class activity). Note: Most reading quizzes will be given at the beginning of the class session and they typically won't take more than 5 – 10 minutes. If you are late for class, you will forfeit work time - all quizzes are collected at the same time. Furthermore, if you are substantially late, you will forfeit the opportunity to take the quiz and you will receive a zero grade for it.

HOMEWORK

The homework activities for this class will take on many forms. For example, you may be asked to synthesize a current research article related to a topic we will cover in class. You might also be asked to critique a popular movie or other media item related to our course topics. Other homework activities may be given as short take-home assignments in which you may need to do some writing.

One type of writing activity you might expect is called a "free-writing" activity and is described in more detail in the next section. In addition, there may be times where some type of short in-class activity is given. Many times these will take the form of what I term "Classroom Assessment Techniques" (i.e. CATs). You will receive a certain amount of credit each time you complete one of these exercises. My intent in giving you these exercises is to allow you to discover any shaky logic you might have on a given topic. This will allow you to make adjustments and to come in and see me for help as necessary. From time to time I may also make use of various in- or out- of class activities. These will typically be short activities designed to encourage critical thinking and to help you better frame your conception of the universe.

Homework is due at the beginning of class on the designated dates. Once a homework assignment is graded and returned to you. No credit will be given for homework turned in after an assignment has been graded and returned to the class. However, homework turned in after the designated collection time and before it is returned to the class will receive 1/2 credit.

You are encouraged to work together on any out-of-class activities and assignments, but it is assumed that the work you turn in is your own. Written solutions and explanations that are identical to a classmate's solutions and explanations give rise to the need for me to question the integrity of your work. **When you write your name on the top of each activity you submit, that is your written assurance to me that the work that you have done is completely your own.**

WRITING ACTIVITIES

We will refer to one type of homework activity as a writing activity. Depending on the task at hand, these writing activities may be done in-class. Other times the will be given as an out-of-class assignment. Here you will be given the opportunity to display your understanding of a given topic or concept through the use of expository writing. The purpose of these writing activities is to allow you to uncover for yourself your own conceptions (or preconceptions) regarding a particular concept(s) related to what we are studying. For out-of-class activity, a grading rubric will be provided. For in-class activities, a set of instructions highlighting how a specific activity will be assessed will be provided. As you complete a writing activity, please keep the following items in mind:

- **Each entry should include a thorough discussion of the topic(s) specified.** Be sure to demonstrate your understanding of the topics through thorough explanations. I am interested in complete, well documented and illustrated responses. *As appropriate be sure to support your responses using the concepts we have discussed in class.*
- **Sometimes you will be asked to complete a writing activity before we've talked about the topic in class.** Just put your thoughts down on paper. One of the aims of these short writing activities is to help you begin to collect your thoughts regarding ideas and concepts we'll soon be covering.
- **Each entry should comply with the specific instructions given in class.** Some entries will resemble more traditional homework questions. Others may

allow you to give more conceptual responses to various historical situations. For other entries, you may be given a more free-response type of writing assignment. You may also be given the opportunity to write about the influence that your studies in this class have or are having in your everyday life and how these studies have helped changed your views of technology.

- **All entries should be written using complete sentences.** Points will be deducted for errors in grammar and spelling. In addition, your entries must be legible and complete. If you have access to a word processor, I encourage you to use it *(and run the spelling and grammar checkers)*. Unless you've been told that the activity should be submitted via Blackboard, handwritten entries are also perfectly acceptable. Please use typing or loose-leaf paper. *If you use spiral notebook paper, please trim the edges of the paper off before submitting your assignment.*
- **Depending on the specific nature of a given activity, additional criteria may be specified in class.**

The writing assignments are not intended to be long assignments. Typically, a 1 – 2 page handwritten or a ½ - 1 page typed entry will be sufficient. If you are uncertain whether what you have written is sufficient, feel free to stop by, show me what you've done, and I'll give you some feedback. Furthermore, this activity is not about your putting down "what you think the professor wants." Rather, this activity is designed to allow you to share your understanding about a topic with me in an approachable manner. I hope to challenge you to think deeply and critically about a topic, while at the same time removing the threat of losing points for "getting the answer wrong." In fact, sometimes these activities will pose a question to you where there is no right or wrong answer. In this case, what I'm looking for is a demonstration that you are applying a critical analytical method, complete with documented reputable sources as appropriate. I will periodically give you written feedback on some of your entries and let you know if your line of thought has gone "a little off-course." I hope this will give you an opportunity to correct a potential problem BEFORE a quiz or exam.

I do hope that the writing activities will be an effective tool in your overall development of ideas presented in this course. I would like for these activities to be enjoyable for you. *Oftentimes you will have the opportunity to be as creative with this activity as you would like to be!* I welcome items like pictures, photographs, drawings, cartoons and newspaper and magazine clippings or articles to help illustrate your thoughts. Any such item that you include with your writing assignments will be returned to you in their original format.

SHORT ESSAY (~1,000 words)
You will be asked to write a short descriptive essay that will be due approximately half-way through the semester. An abstract (due four weeks prior) will help focus your essay and be better aligned with the course objectives.

You may find that your free-writing or other homework or class activities can serve as a "spring-board" for your thoughts on this assignment. This paper assignment is designed to allow you to explore, in more detail, a topic that we have been discussing or that you have been reading about thus far in *QI Anthology*. Through critical, analytical research involving one or more historical cosmologies it is hoped that you will be able to expand your understanding of more modern cosmological models as you consider such things as time frames and key historical influences. You might also find inspiration from one or

more of the guest lectures we have had and/or from one or more of the videos we have watched. Because I want to maximize what you get out of this assignment, I am going to give you considerable leeway in terms of topic selection.

Your short paper activity will begin with a proposal where you will pitch your idea to me. Within your proposal you must demonstrate that you've done some library work. To that end, you must provide an initial list of reputable sources that you've uncovered in your initial research in order for your proposal to be approved. Again, your paper must focus on our first course theme, so a proposal that focuses solely on modern cosmological models and theories will not be accepted. Additional details and guidance regarding the short paper will be provided in class.

THE CREATIVE PROJECT

This assignment is intended to be significantly different from writing a standard short essay. This is an opportunity for you to use your creativity to express your understanding of a topic(s) related to the course themes. You may select a topic(s) based on your readings, class lectures and discussions, any of the video segments, or topics brought up through the guest lectures. You might also consider using the topic of your short paper as a catalyst for your creative project. All projects will require a written commentary and details will be presented later. In your commentary you will be asked to clearly explain your project and its significance. You should also address how your topic in some way can be connected to one or more historical cosmological models. Possible topics for your creative projects include (but are not limited to):

- The creation of a piece of software (simple arduino or something more sophisticated).
- The creation of a piece of artwork (e.g. photography (digital or analog/film), a collage, drawing, painting, sculpture, a particular model of the universe, etc.).
- A musical expression of some type (e.g. writing a song, creating an interpretive dance).
- A creative literary piece (e.g. a screenplay, piece of poetry, essay, short story, creation of a website, a blog, a piece of science journalism such as an interview with a scientist, cosmologist, astronomer, etc.).
- The construction of a demonstration that illustrates a specific concept or idea.
- The construction of a physical scientific model, machine, instrument, or piece of equipment that illustrates a specific concept or idea.
- The creation of an original scientific theory or conjecture about the nature and reality of the universe.
- The creation and performance of a short skit or play.
- The creation of a garment, costume, or fashion design item.
- The creation of a short PowerPoint presentation.
- Creation of a short video, film, or audio clip in the form of a public service announcement (this might serve as a stand-alone piece or that might accompany your project).
- The creation of something edible (food / drink). This might be a stretch, but I would be willing to entertain this idea.
- The development of a new and improved Touring test.

You will need to submit a short proposal outlining your proposed creative project in order to have your topic approved. **In order to get your project approved, you will need to demonstrate in your proposal how you plan to tie your project in to one or more course objectives. In addition, your proposal must include at least one properly**

documented citation of the original source material(s) you will be utilizing in your project. Additional details about the creative project assignment will be provided in class.

CLASS INVOLVEMENT

YOU are an important and valued member of this class. Together we will work to create a community of learners centered on mutual respect, appreciation, and professionalism. When someone is absent, a member of our community is missing, and that absence affects the classroom dynamics. Regardless of whether or not you are vocal during a class session, your presence is valued and you are making a contribution to our collective efforts as a class. To recognize your involvement, you will receive three Class Involvement points every class session you attend. As a member of our classroom community, you are encouraged to ask questions during class and during office hours. If you have had a two-way communication with me **prior to** being absent from class and I have deemed the absence excused, then you will receive Class Involvement points for that day. If you miss class and your absence has not been excused, you will also miss out on your Class Involvement points for that day. Except in extremely rare situations, there are no exceptions to this policy. [Please note that something like "My boss just called and needs me to fill in for someone today so I have to miss class" does not fall into the "extremely rare situations" category.]

MIDTERM QUIZ AND FINAL EXAM

There will be one midterm quiz and one final comprehensive exam given this semester. The quiz is designed to help keep you current with the class material and assignments. In addition, the quiz questions will serve as examples of the kinds of questions you might expect on the exam. Because of the natural progression of material presented in class and through required readings and other activities, each topic will often build upon the previous topic(s). The quiz and exam will consist of a variety of question types including (but not limited to): essay and short answer questions, multiple choice questions, fill-in-the-blank, and short calculations.

ATTENDANCE

Your presence is required at every class session and you are responsible for all material presented (i.e., discussion material, video clips, guest lectures, handouts, demonstrations (yes – there may be some demonstrations!), announcements, schedule changes, etc.). You must notify me if you are going to be absent from class due to an illness, a university-related function, or some other excusable activity. If you must be absent from a class session it is your responsibility to obtain the missed material. Further, if you must miss a class because of an extreme family or individual emergency or some other unavoidable circumstance, you should inform me as soon as possible (i.e. hopefully in advance of missing a class). Depending on the nature of the absence, I may ask you to provide me with some type of written documentation. Notifying me of an absence via email is fine as long as it is sent a reasonable amount of time in advance. However, an email message sent 5 minutes before class is NOT an appropriate means of notifying of an absence. If you know you will need to be absent from class on a particular day you should let me know ahead of time so that proper arrangements can be made to make up any missed class work. **Only when proper arrangements have been made with me in advance will you be allowed to make up a late or missed assignment, in-class activity, reading quiz, exam, etc.**

Attendance will be taken each class period. If you miss a class and do not inform me of the circumstances as indicated above, that absence will not be excused. Any work that is missed because of an unexcused absence (including unannounced quizzes or other in-class activities) will be given a zero grade. Missing three or more class sessions is considered excessive and could lead to the lowering of your overall course grade. The number of unexcused absences an individual has will be one of the many items I will look at when recording final grades. This is particularly important for borderline situations. It is much easier to give a student with a perfect attendance record the higher grade in a borderline situation.

GENERAL USES OF E-MAIL: I am happy to respond to e-mail. The most appropriate uses of e-mail include: asking a question, clarifying an assignment, sharing general class-related information, etc. Do not send me a "last minute" e-mail on the day of an exam or a quiz telling me you are unable to attend class. *This will not be accepted and you will not be allowed to make up the missed exam or quiz*. I do not check my e-mail around-the-clock and may not see your message until after an exam or a quiz has been given. To avoid potential miscommunication, always phone me (in advance) or stop by my office if an unavoidable problem or situation arises in which you must be absent, especially on the day of a scheduled exam or quiz. **Students must use their MasonLive email account to receive important University information, including communications related to this class. I will not respond to messages sent from or send messages to a non-Mason email address.**

HATS OFF! During exams and quizzes, baseball hats, large stocking caps, and hoods on sweatshirts must be removed. Honestly, it's simple etiquette to remove them while in the classroom. It's mandatory however, to remove them during tests and quizzes.

CELL PHONES: Cell phones are wonderful pieces of technology (and they utilize many good physics concepts!!), but they have no place in a college classroom. If you use a cell phone, please be sure it is silenced or turned off before you come to class. ***Texting during class will not be tolerated.*** It's also a good way to ensure that the next question asked by your professor will likely be tossed in your direction!

BLACKBOARD: As a member of this class, you have been added to the class Blackboard site. I expect you to regularly check the site for updates, announcements, assignments, etc. *Please be sure that you have your spam and junk filters properly configured to ensure that you will receive email with an american.edu extension on it.* I want to be sure that everyone in the class receives all of email announcements that I send out via Blackboard. This is very important. Please be sure to check your e-mail every day. ***I do not intend to repeat announcements during class that have been made via email and/or posted on Blackboard.***

USE OF COMPUTERS IN THE CLASSROOM: Within the classroom environment, the use of computers can be very distracting for those around you, including your professor. **If you have a circumstance in which you need to bring a computer into the classroom, then you must get that approved by me (in advance).** In addition, you will need to sign a contract with me regarding the appropriate use of computers in the classroom. The bottom line is, with the exception of tablet computers that lay flat on the desk, I prefer that computers not be used the classroom at all and I will handle individual situations on a case-by-case basis. Thank you for your understanding and cooperation.

COURSE MATERIALS AND STUDENT PRIVACY: Videorecordings of class meetings that are shared only with the instructors and students officially enrolled in a class do not violate FERPA or any other privacy expectation. Videorecordings that only include the instructor (no student names, images, voices, or identifiable texts) may be shared without violating FERPA. All course materials posted to Blackboard or other course site are private to this class; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.

Videorecordings — whether made by instructors or students — of class meetings that include audio, visual, or textual information from other students are private and must not be shared outside the class. Live video conference meetings (e.g. Collaborate or Zoom) that include audio, textual, or visual information from other students must be viewed privately and not shared with others in your household or recorded and shared outside the class.

Course Recordings and Sharing — if you are recording class meetings via classroom webcam or web-conferencing software, you should alert students to that. Since only class members who ordinarily have the right to access this information will be present, recording and private storage does not violate student privacy; it's just an informational note. Some/All of our synchronous meetings in this class will be recorded to provide necessary information for students in this class. Recordings will be stored on Blackboard [or other secure site] and will only be accessible to students taking this course during this semester. Some student recording of class lectures or materials for personal use, especially those that include only the faculty member's information (e.g., no identifiable names, voices, or images of other students), is generally permitted. Even sharing of some of this material may be allowable (conversations nationally about FERPA often identify how this falls within student freedom of speech). Sharing of materials may be limited by what those materials contain and where they are shared: Sharing of class materials that contain identifiable student information is limited by FERPA (see "Fall 2020 Policies" on this page for statements about recordings or streamings of class meetings). Sharing of instructor-created materials, particularly materials relevant to assignments or exams, to public online "study" sites is considered a violation of Mason's Honor Code. For more information, see the Office of Academic Integrity's summary of information about online study sites. They also have a short video you can share with students or embed in your Blackboard course.

ACADEMIC INTEGRITY: Mason is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

In writing papers, you must properly cite all sources (1) directly quoted, (2) paraphrased, or (3) consulted in any fashion. Sources include all printed material as well as the Internet. Proper citation means using a standard citation format: MLA, APA, or Chicago.

It is also considered plagiarism if you merely rework source material, placing an author's thoughts in other words without contributing your own ideas. For that reason, you must include some kind of source note whenever drawing on someone else's interpretation. A source note can be a sentence or more in your paper, or it can be a footnote. A source note should clarify the extent to which your interpretation is indebted to your source, explaining both (1) what you use and (2) where you depart or differ from the source. It is also considered plagiarism to submit drafts, response papers, and other informal assignments without properly citing sources and acknowledging intellectual debts. Failure for the course is the typical sanction in such cases.

I expect that all of the work that you submit for this class be your own. This includes all forms of classroom activities, homework assignments, papers, and written exams and quizzes. Sharing answers with other students violates the Academic Integrity Code; so too does improper and inappropriate consultation of outside resources such as notes, textbooks, and the Internet.

SAFE RETURN TO CAMPUS STATEMENT
All students taking courses with a face-to-face component are required to have completed Safe Return to Campus Training prior to visiting campus. Training is available in Blackboard (https://mymason.gmu.edu). Students are required to follow the university's public health and safety precautions and procedures outlined on the university Safe Return to Campus webpage (www2.gmu.edu/safe-return-plan). Similarly, all students in face to face and hybrid courses must also complete the Mason COVID Health Check daily, seven days a week. The COVID Health Check system uses a color code system and students will receive either a Green, Yellow, or Red email response. Only students who receive a "green" notification are permitted to attend courses with a face-to-face component. If you suspect that you are sick or have been directed to self-isolate, please quarantine or get testing. Faculty are allowed to ask you to show them that you have received a Green email and are thereby permitted to be in class.

SUPPORT FOR STUDENTS
If you experience difficulty in this course for any reason, please don't hesitate to consult with me. In addition to the resources of the department, a wide range of services and resources are available to support in your efforts to meet the course requirements. During the semester, there may be times when you can benefit from the resources that George Mason University makes available to students that can help with stress or academic challenges. Here are some useful resources:

- **Learning Services** Provides a variety of experience based learning opportunities through which students explore a wide range of academic concerns. Services include support to students with learning differences, individual study skills counseling, individualized programs of study, and provision of tutoring resources. Presentations on a variety of academic skill topics are available to the university community. The programs are open to all George Mason University students free of charge. Services are confidential and use of these services does not become part of the student's academic record. https://learningservices.gmu.edu/
- Students with Disabilities - Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities.

Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit http://ds.gmu.edu/ for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email:ods@gmu.edu | Phone: (703) 993-2474

- **Counseling and Psychological Services** Offers faculty and staff consultation about how to help students that experience difficulties that impact their learning, including how to respond to students in crisis. In particular, the Mason Cares, faculty referral guide, and students of concern are primary resources for faculty and staff. Students can take advantage of psychological services, a variety of learning services, multicultural services, and educational programs that support students' educational goals. https://caps.gmu.edu/
- **Diversity & Inclusion** Women and Gender Studies seeks to create a learning environment that fosters respect for people across identities. We welcome and value individuals and their differences, including gender expression and identity, race, economic status, sex, sexuality, ethnicity, national origin, first language, religion, age and ability. We encourage all members of the learning environment to engage with the material personally, but to also be open to exploring and learning from experiences different than their own. https://ccee.gmu.edu/
- **Interpersonal and Sexual Violence** George Mason University is committed to providing a learning, living and working environment that is free from discrimination and a campus that is free of sexual misconduct and other acts of interpersonal violence in order to promote community well-being and student success. We encourage students and employees who believe that they have been sexually harassed, sexually assaulted or subjected to sexual or interpersonal misconduct to seek assistance and support. University Policy 1202: Sexual Harassment and Misconduct speaks to the specifics of Mason's process, the resources, and the options available to students and employees. Notice of mandatory reporting of sexual or interpersonal misconduct: As a faculty member, I am designated as a "Non-Confidential Employee," and must report all disclosures of sexual assault, sexual harassment, interpersonal violence, stalking, sexual exploitation, complicity, and retaliation to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance or support measures from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.
- **International Programs and Services** provides guidance to students and scholars studying and working at George Mason University on immigration, employment and taxation, and adjustment issues, while fostering cross-cultural understanding through programs highlighting global themes. https://oips.gmu.edu/

EMERGENCY PREPAREDNESS

If the campus closes or class is canceled due to weather or other concern, students should check Blackboard for updates on how to continue learning and information about any changes to events or assignments.

In the event of a declared pandemic (influenza or other communicable disease), George Mason University will implement a plan for meeting the needs of all members of the university community. Should the university be required to close for a period of time, we are committed to ensuring that all aspects of our educational programs will be delivered

to our students. These may include altering and extending the duration of the traditional term schedule to complete essential instruction in the traditional format and/or use of distance instructional methods. Specific strategies will vary from class to class, depending on the format of the course and the timing of the emergency. Faculty will communicate class-specific information to students via GMU e-mail and Blackboard, while students must inform their faculty immediately of any absence due to illness. Students are responsible for checking their GMU e-mail regularly and keeping themselves informed of emergencies. In the event of a declared pandemic or other emergency, students should refer to the GMU Web site for general university-wide information, as well as contact their faculty and/or respective dean's office for course and school/college-specific information.

OFFICE HOURS*
Monday: Varying online hour Thursday: Varying online hour
Tuesday: 2:30 – 3:30 pm Friday: 4:00 – 5:00 pm
Wednesday: By appointment
*At the beginning of each week I typically post an Announcement on Blackboard reminding you of my office hours for that week. Sometimes my office hours for a given week will need to be adjusted due to meetings and other obligations. I will always let you know in advance if there needs to be a shift in my office hours for a given week. My office hours on Tuesday and Friday will be held in my office. On Mondays and Thursdays, I will hold an online office hour that will vary from week to week. That way more of you should be able to take advantage of my assistance.

Please feel free to stop in for help during my office hours. If the posted times for a given week do not work for you, I am happy to set aside an alternate time to meet with you. Feel free to call or e-mail me to set up an appointment and be sure to provide me with your schedule so that I can suggest a day and time for us to meet. You are always welcome to call me at home. You may also feel free to simply "drop by." The coffee pot is almost always on and other warm beverages are also available!! If you happen to drop by and find that I'm busy working with someone else, feel free to interrupt and schedule a time to stop back and see me. Don't ever feel embarrassed or afraid to ask for help. Working with you is one of the most enjoyable parts of my day. I truly look forward to working with and getting to know you this term.
Let's have a great semester!!

Working Course Schedule*

***Note: Any changes to this schedule will be announced in class and/or posted on our course Blackboard site. Given the broad nature of many of the topics that we will explore, you can expect that there will be some modifications to the schedule as we move through the semester.**

Class	Session & Date	Topic	Reading(s)*
1	Day, Date	Welcome, Course Introduction and Overview, Convergence of Technologies (historical perspectives), Over the Horizon Technologies	Class Syllabus
2	Day, Date	Frameworks: Diffusion of Innovation, Complexity Theory for the Social Sciences, Epidemiology and Viral Vectors	Rogers Byrne Morçöl Johnson
3	Day, Date	Over the Horizon Technologies: Artificial Intelligence and Quantum Computing: Present State of Development	Viggiano Anthology 2001
4	Day, Date	Social Impacts of New Technologies Guest Lecture Short Quiz 1	Mukhtar
5	Day, Date	Macro Trends and Super Trajectories Video 1	Mukhtar
6	Day, Date	Multidimensional Convergence Case Study: Mobile Telephony and Smartphones	Blackboard Article
7	Day, Date	Economic Impacts of AI and Quantum Computing Short Quiz 2	Viggiano Anthology
8	Day, Date	National Security Aspects of Artificial Intelligence and Quantum Computing Case Study: The Internet/World Wide Web	Viggiano Anthology
9	Day, Date	Public Policy Impacts of Artificial Intelligence and Quantum Computing	Viggiano Anthology
10	Day, Date	Commercial Realities and Considerations Short Quiz 3	Viggiano Anthology
11	Day, Date	Positive Outcomes? Guest Lecture	Blackboard Article
12	Day, Date	Pros and Cons Case Study: Video on Demand 1985 to Netflix 2021 Short Essay	Viggiano Anthology Blackboard Article
13	Day, Date	Dependencies and Vulnerabilities	Viggiano Anthology Mukhtar Blackboard Article
14	Day, Date	Trends and Trajectories Mid Term Quiz	Rogers
15	Day, Date	Anticipated Applications	Blackboard Articles
16	Day, Date	Unanticipated Applications	Blackboard Articles Morçöl
17	Day, Date	Unintended Effects Domino Chain Reactions Short Quiz 4	Mukhtar Morçöl Blackboard Articles
18	Day, Date	Good Accidents Guest Lecture	Viggiano Anthology

19	Day, Date	The New Space Race: 3 Dimensional Chess for 3 Players (Game Theory) Geopolitical Competition and Control Weaponization and Strategic Advantages	Blackboard Articles
20	Day, Date	Mutual Dependencies Constraints Energy and Structural Batteries	Blackboard Articles
21	Day, Date	Development Timelines Critical Components Short Quiz 5	Viggiano Anthology
22	Day, Date	Advanced Planning Video	Blackboard Articles
23	Day, Date	No "Off Button" Manual Overrides Video: The Ultimate Computer	Blackboard Article
24	Day, Date	Autopilot on a 10-year Projection Guest Lecture	Rodgers Blackboard Article
25	Day, Date	Putting the Genie Back in the Bottle Software Roll-backs	Viggiano Anthology
26	Day, Date	Love, Truth, God, and Beauty Critical Understanding and Optimism	Viggiano Anthology
27	Day, Date	Creative Project Presentations	
28	Day, Date	Final Exam	

***Other short readings may be given to you in class or via our class Blackboard site. These readings will be placed in a content folder named "Readings"**

Creative Projects Due/Presented: class session no. 27