Technology and Innovation (301)

Elective (ELES 301)

ELES 301
The Gold Star Journal
In this course, students will gain real world experience in the publishing business as they produce marketing and conference materials for the annual Gold Star Journal Academic Conference (GSJAC). Students will also learn how to plan and to work along with the editors of The Gold Star Journal on executing a scholarly conference, the GSJAC. Students will learn and hone both hard and soft skills. Hard skills are the technology and knowledge required for a job. Soft skills help people work well together. Hard skills open the door for employment, but soft skills keep one employed longer.
Students will learn the publishing software InDesign to create marketing and conference materials for the GSJAC. They may also gain some experience with Power Point, Photoshop, and/or Illustrator. They will work on adaptability, attention to detail, conflict resolution, creativity, interpersonal skills, leadership, problem solving, teamwork, time management, oral and written communication, and work ethic. This course may be taken again for credit.

ELES 301
CAD for 3D Printing
In this course, students will be introduced to the Computer-Aided Design (CAD) software SolidWorks and will learn how to employ this software to create high-quality parts to be produced via additive manufacturing, or 3D printing. Students will learn how to create virtual 3D parts and build assemblies of multiple parts. The advantages and disadvantages of different methods of 3D printing will be discussed, and practical concerns related to consistently successful 3D printing projects will be explored. Students who complete the course will have a greater understanding of how they can use 3D printing to independently create products for an entrepreneurial venture as well as the sustainable benefits 3D printing offers as a manufacturing method.

ELES 301
Financial Technology
This is an introductory finance course that describes the structure of financial technology (fintech) and practical usage.

English (ENGS 301)

ENGS 301
From Robots to A.I.
While technology often fulfils its promise to make our lives easier, innovations that replicate human intelligence, dexterity, and efficacy can also create significant challenges, anxieties, and hazards. Spanning the last hundred years, the literature you will read for this course addresses these concerns by raising important questions: How will A.I. affect the need for human labor, particularly if used in the service of corporations and other profit-motivated institutions? What are our moral responsibilities to these artificial yet conscious entities? To what extent could these developments blur the distinction between human and mechanical? Could A.I. ultimately threaten our existence? Course content will include Carel Kapek's play *R.U.R.* (1920), which originated the word "robot"; Ray Bradbury's "There Will Come Soft Rains," which envisions a future in which our sentient creations survive human extinction; Philip K. Dick's post-apocalyptic novel *Do Androids Dream of Electric Sheep?* (1968); Ridley Scott's *Bladerunner* (1982), a cyberpunk film based on Dick's novel; Morna Pearson's play *Dark Lands* (2019), in which a corporation induces a vulnerable young couple to raise a cyborg child; and Nobel Prize-winning author Kazuo Ishiguro's *Klara and the Sun* (2021). Through a series of activities and assignments, you will connect the concepts and concerns raised in this speculative fiction to contemporary aspirations and anxieties.

ENGS 301
The Literature of Social Design: Utopias, Dystopias, and Beyond
For millennia, men and women have imagined new and (in their minds) ideal new human communities, communities that are nowadays referred to as utopias. Their creators design these ideal communities specifically to eradicate the worst elements of their own social formations and to help humans reach their highest states. Of course, what one designer might argue is of benefit to a society may be seen by another as terrible for humanity, and thus no two utopias are ever the same. Indeed, some authors have created literary dystopias (harmful, malign imagined communities) as a means to warn against the perceived dangers of what others would call utopian innovations in human society. In this class, we will explore how various authors of utopian and dystopian literature imagine the benefits and/or harms of large-scale social design, whether on the societal level, the individual level, or both. Our topics will include both the designing of social structures to shape human development and behavior and also the shaping, augmenting, and even partially replacing human individuals in a society. In the course of our studies, we will seek to apply the ideas and questions raised by the texts we read to our own lives and to the future of our own communities.

ENGS 301
The Future Now: Reading Sci-Fi
This elective investigates the ways in which the genres of Science-Fiction and Fantasy allow us to examine our present while preparing for the future. We will work through a variety of different works, classical and contemporary, to glean a better understanding of this exciting genre of fiction. As in all classes in the English department, it is intended that through reading, writing, and discussion, students in this course will develop the capacity to better understand and respect the views and concerns of others, especially regarding gender, ethnicity, and religion.

ENGS 301
Future Troubles: Technoparanoia
From Galileo to Neil Armstrong, our quest to map and later travel the cosmos has paralleled a story of humanity pushed to the limits of its understanding. Such advances in technology are often paraded as shining examples of a civilization's achievements. But below these narratives of triumph and ingenuity lies the persistent fear that, one day, humanity's reach will exceed its grasp, and some creation (think Frankenstein and Skynet) will unravel our control over the world and perhaps even our minds. In this course, we will explore the genre of Technoparanoia/Technophobia in order to think through ways in which this unique link between hope and terror, possibility and catastrophe, has been a driving force in art and popular culture since the dawn of the Age of Enlightenment. Course texts will include 1984 as well as select stories from Jorge Louis Borges, and our analysis will extend to films such as Event Horizon and the television series Black Mirror.

Social Science (SCSS 301)

SCSS 301
Tech & Representative Government
Technological advances have government practices more efficient and transparent. This course focuses on the principles of representation that have guided how new technologies are implemented in how the public participates in government from paying taxes to voting in elections. It also offers students an introduction to the expertise and skills that the public now expects governments to have to reinforce equal access to our representative government.

SCSS 301
Sociology of Media
This course explores how individuals and collective society are impacted by mass media via framing and socialization practices. To explore the various forms of media are considered: board games, comics, movies, music videos, newspapers, and television. This course considers individual and societal benefits of mass media framing and socialization, but also social problems like biases, distortions, and moral panics. Finally, students will explore how theoretical perspectives frame mass media's impact on individuals and collective society.

SCSS 301
Democracy and Technology
Nearly two centuries ago, Alexis de Tocqueville noticed an almost irresistible drift within democratic nations toward administrative centralization or "soft despotism." Under this mild but degrading form of tyranny democratic citizens remain in "perpetual childhood," having exchanged their liberty for the security and comfort provided by the technical expertise of anonymous administrators or "schoolmasters." This three credit hour, social science "strand" course is a study of the basic principles and institutions of American democracy and their relation to modern science and technology. Guided if not somewhat alarmed by the future described by Tocqueville, our study aims to know which features of modern democracy, if any, leave American political life exposed to technological and administrative control. Are America's founding principles to blame, as some conservative and progressive admirers of Tocqueville say? Or have recent changes in American political thought and practice disposed citizens to identify their liberty with scientific and technological progress? Finally, how credible are Tocqueville's concerns about democracy's despotic tendencies? Is his "aristocratic" view of liberty still credible in our technological age?

SCSS 301
Tech & Society
This course examines the basic concepts and principles of technology. A scientific approach to the analysis and explanation of the complex cultural and sociological debates that surround modern technology.

HISTORY (HISS 301)

HISS 301
Technologies, 100BC-1400AD
This course will focus on some of the technologies that have helped societies excel during the period *c*. 100 BC to 1400 AD. We start with the Romans and their contribution to infrastructures, urban life and military conquest, through the Viking Age and beyond. The course will consider how technologies impacted the building of the Viking long ships, coin economies, the growth of cities, people and their use of landscapes, military weapons and fortifications, as well as architectural advancements and other topics. The course is designed for students interested in creating new technologies, as well as those looking to learn more about the past. The regional focus of the course will be mostly Europe and its neighbors.

HISS 301
The Gun and the Press
This course examines the impact on Western Europe, in the period 1450-1650, of two transformative technologies: the gun and the printing press. While the press was invented c. 1450 and the gun existed well before that, both technologies only began to realize their revolutionary potential decades later. We will explore how both profoundly altered the warfare, economy, politics, society, and culture and of Early Modern Europe. This course's learning objectives are to 1) chart the development of firearms technology in the period 1325-1650 and print technology in the period 1450-1650; 2) situate guns and the press in their economic, political, religious, social, and economic contexts; 3) interpret and analyze primary and secondary sources in the early history of firearms and print; 4) chart the transformative consequences, both tangible and psychological, of these transformative technologies on early modern Europeans.

NATURAL SCIENCE (NTSS 301)

NTSS 301
Technical Solutions to Climate Change
Climate change–the long-term change in average weather patterns that define our planet's various climates–is a reality that we are coping with now and far into the future. Doomsday

scenarios get significant media coverage however there are an array of innovations (some currently in existence, some to be developed) that could mitigate or help us adapt to the consequences of climate change. In this course we will discuss these technologies: how they (may) function; how they could address different aspects of climate change; and their potential drawbacks.

NTSS 301
Making Smart Tech
A number of innovative technologies use a mix of software and hardware to sense and respond to the surrounding world. Example devices include sensor-based toys, kinetic sculpture, low-cost scientific instruments, interactive wearables, and Internet of Things (IoT) connected devices. This course is an accessible, project-based introduction to conceiving, designing, and developing interactive sensor-based prototypes. Students will pursue projects based on their interests. Practical hands-on exercises will introduce the fundamentals of circuits, microcontroller programming, sensors, and actuators. No experience needed.

NTSS 301
How Airplanes Fly
The course has several components which are important in acquiring a physical understanding of How Airplanes Fly. Unlike training, educating means that you will have a knowledge of why something occurs in addition to how to bring about that something by pulling or pushing on a control knob. Lectures, measuring data using a wind tunnel, plotting and analyzing data, understanding the language of equations, describing in words observations, and experiencing flying using a sophisticated flight simulator will all be used to acquire that understanding. Team projects to include building model air foils, gliders, and other aerodynamic models will be performed if time during the semester permits.

NTSS 301
Nanomedicine
Nanomaterials, or materials with a dimension between 10-9 to 10-7 m, are an emerging technology that sees commercial application in the fields of engineering, biology, physics, and chemistry. Nanomedicine is the application of nanomaterials for the diagnosis, treatment and prevention of disease. Nanomedicine is a growing branch of medicine that you are likely to encounter in your lifetime. This course provides a survey of the fundamental theories and general principles of nanomedicine. This course is designed specifically for students without a strong background in chemistry and will begin by introducing elemental knowledge of chemistry. Then, the unique properties of nanomaterials are explored. In the final segment of the course, current and emerging applications in diagnosis, treatment, and drug delivery are discussed.