

Course Book

2024

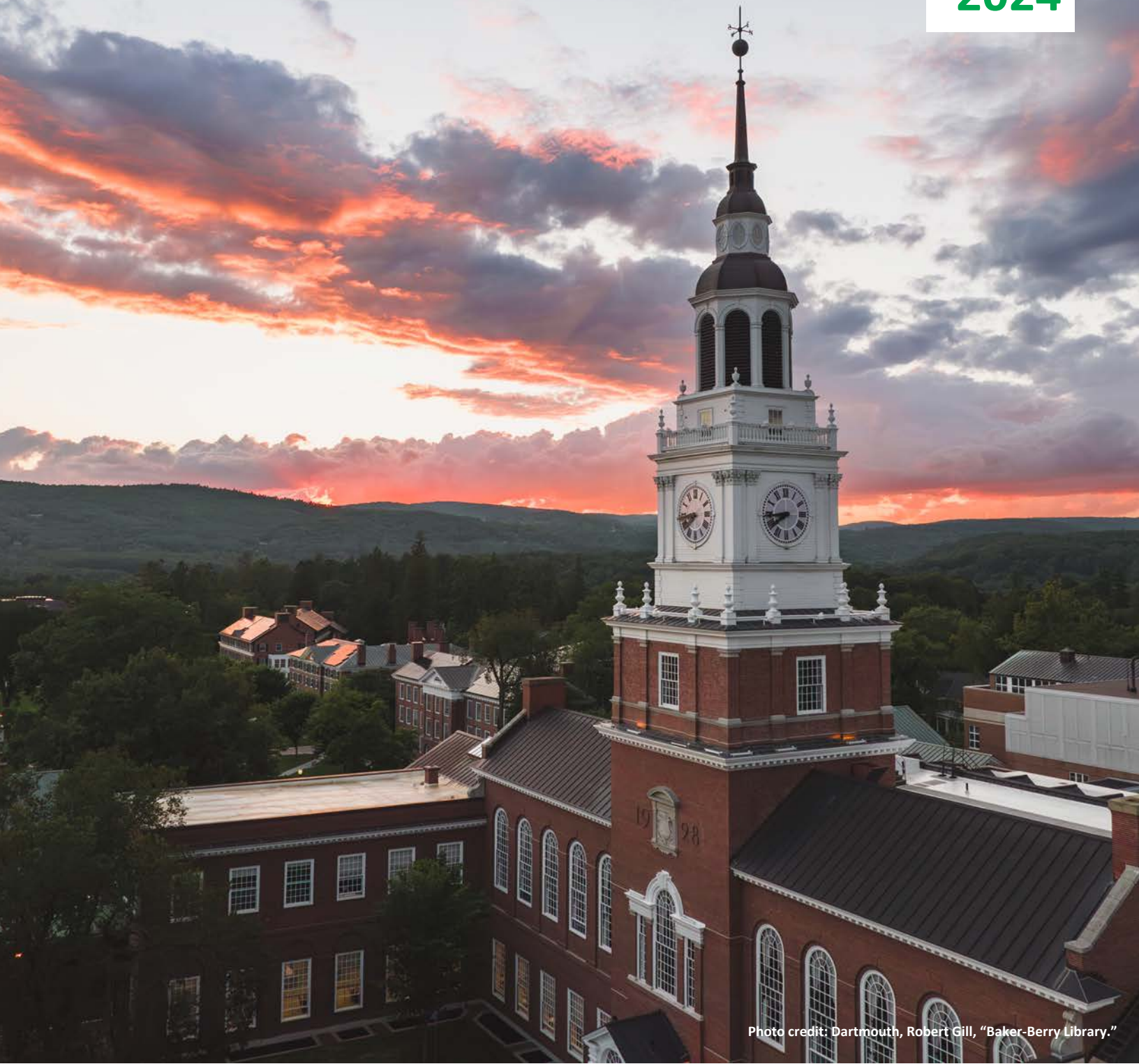


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DARTMOUTH SUMMER SCHOLARS
HIGH SCHOOL PRE-COLLEGE ENRICHMENT



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Table of Contents

- 02** BUSINESS
- 03** HUMANITIES
- 06** SOCIAL SCIENCE
- 08** STEAM

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COURSE TITLE

Business Foundations

SUBJECT AREA

Business; Finance

COURSE DESCRIPTION

This two-week experiential course is ideal for high school students interested in building business skills while learning the language of business. Structured around building a foundational real-life company valuation project, students will learn and apply concepts from key areas such as economics, finance, marketing, strategy, and accounting to consider how many of the concepts and methodologies used in business apply to our daily lives and decision-making. Students will engage in hands-on learning through expert instruction, dynamic classroom discussions facilitated by the instructor, and small teams evaluation of modern case-studies. The course's hands-on valuation project models realistic workplace teamwork while providing the opportunity to build and enhance collaboration and leadership skills. The class will culminate with a presentation of individual project findings and analysis and students are evaluated on their findings.

LEARNING OUTCOMES

Upon completing this course, students will:

1. Develop a solid grasp of concepts in areas such as economics, finance, strategy, and accounting.
2. Be well versed in the ways businesses evaluate and make decisions about new projects.
3. Understand the effects of compounding, financial leverage, and risk on expected returns.
4. Be able to apply financial analysis methodologies to issues of personal finance.
5. Be able to discuss the differences between breakthrough and disruptive innovation to identify relevant opportunities.
6. Practice relevant teamwork and collaboration with real-life scenarios.
7. Gain confidence in creating and delivering persuasive presentations.
8. Gain insight into potential career areas in business.

Taught by instructor Patroklos Karantinos, MBA, from the Tuck School of Business at Dartmouth College. Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

The Art of Entrepreneurship

SUBJECT AREA

Business; Entrepreneurship

COURSE DESCRIPTION

This immersive, hands-on course builds on Dartmouth's strong liberal arts foundation to expose students to the Art of Entrepreneurship. From opportunity recognition to solution creation and business model formulation, students will be guided through the new venture journey across various business types and scales. Borrowing from their current real-life experiences, students will learn the shared elements that underpin all entrepreneurial endeavors whether applied to social media influencers, local retail businesses, non-profit enterprises, or venture-scale startups. Bringing together a unique cross-section of perspectives from the arts and sciences, students will explore how innovation can be sparked by integrating existing ideas in new ways. Throughout the first week of the course, the instructor will deliver interactive content, supported by case study discussions and guest speakers. The second week will focus on application of course content, including hands-on activities such as a rapid-business challenge and culminating pitch contest. The instructional content will mimic that of a traditional investor pitch deck, allowing students to continually integrate their learning along a clear storyline.

Bonus Feature: Borrowing from successful startup accelerator and incubator programs, Summer Scholars will create an alumni network and online forum for students who complete the program. Students will be encouraged to share updates on their entrepreneurial journeys and seek collaboration and support from fellow summer scholars across cohorts, helping them establish social networks for their future business ventures.

LEARNING OUTCOMES

Upon completing the course, students will:

1. Gain a deeper understanding of how to develop a "lens" for opportunity recognition in their daily lives and continued pursuits.
2. Gain a foundational understanding and framework to develop and evaluate entrepreneurial ideas and their viability.
3. Acquire critical concepts which are necessary to operate a business and solicit the appropriate investment and support.
4. Be able to articulate and understand the importance of "failing well" and appreciate that entrepreneurship is a continual process rather than a destination.
5. Develop deep connections with their peers in recognizing the necessity of a strong support network when pursuing entrepreneurial endeavors.

Taught by instructor Derek Williamson. Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

Creative Writing

SUBJECT AREA

Humanities; Writing

COURSE DESCRIPTION

Creative writing is an inspiring process of exploration and self-discovery. This intensive creative writing workshop offers students an opportunity to investigate their creative ideas and reflect on their experiences. Students will be challenged to produce original work in both fiction and nonfiction through short stories, nonfiction narratives, and personal essays. They'll read excerpts from exemplary writers, and hear from inspirational guest speakers who will share their own journey of writing development. Students will be guided along the way by the instructor and their peers as they work in small groups and engage in constructive feedback to support the development of their writing, communication and collaboration skills. Throughout the course, students will receive personalized attention from the instructor with the aim of becoming more insightful writers, more perceptive readers, and more confident students.

LEARNING OUTCOMES

Upon completing this course, students will:

1. Harness their motivation to write confidently while enjoying the writing process.
2. Practice the self-reflection skills needed to continually improve and develop as a writer at every level of achievement.
3. Challenge themselves to grow as writers.
4. Deeply appreciate the writing process and openness to what others write.

Taught by Dr. Barbara Kreiger, Adjunct Associate Professor and Chair of Creative Writing in the Liberal Studies program at Dartmouth College. She received her Ph.D. in English from Brandeis University and is the author of *The Dead Sea and the Jordan River* (3rd edition) and *Divine Expectations: An American Woman in Nineteenth-Century Palestine*. She has written introductions for new editions of travel classics, and her work has appeared in *The New York Times* and *The Boston Globe* and was featured on the cover of the *Smithsonian* magazine. Students will receive a Dartmouth-branded certificate of completion at the end of the program **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

Eyes on the World: Language, Culture, and Diplomacy

SUBJECT AREA

Humanities; Language and Cross-Cultural Learning

COURSE DESCRIPTION

The late Professor John A. Rassias understood that language is diplomacy; language is how and where we first meet people. Before any of us began our earliest studies, we had and will have language and culture. With this in mind, he created The Rassias Method (RM) - a highly interactive and effective methodology for language learning founded for the advent of the Peace Corps, and focused on developing natural speech and writing skills. Given the connectivity of today's world, we all interact physically or virtually with other cultures. This connectivity is not just about language, and it is crucial to recognize ingrained cultural components embedded within these interactions. With the philosophy of the RM as the cornerstone, this course is designed specifically for high-school students whose mission is to examine the importance of cultural exploration, diplomacy, and understanding through language and culture.

In this course, students will choose a single language of study: French (beginner level), Spanish (beginner level), or English as Second Language (intermediate level). In the mornings, students will engage in intensive language study using the Rassias Method® fast paced interactive hands-on learning, and interweave strategies for linguistic improvement and intercultural competency. Students will turn their focus to cultural diplomacy in the afternoons, building on their language use and gaining an understanding of the field of diplomacy and cultural awareness. At the end of the course, students will conduct a culminating project in the form of a group presentation, expounding and debating on what they have learned about the connection between language and culture. This interactive activity will challenge students to evaluate how their personal perceptions have evolved over the course of the program.

LEARNING OUTCOMES

Upon completing this course, students will be able to:

1. French and Spanish (beginner level): Greet one another, introduce themselves, and talk about basic actions in the present tense, including many irregular verbs.
2. ESL (intermediate level): Speak with confidence, speak with fluidity on a number of subjects, and speak with fluidity in many tenses

This course is taught by Master Teachers (MTs) trained in the Rassias Method, including tenured professors, private school teachers, dramaturges, musicians, college deans, and literature specialists in our eclectic ranks. Together, our MTs provide a varied and interesting perspective on the language and culture that they teach. Assistant Teachers (ATs) come from Dartmouth College and beyond, including native speakers, graduate students, undergraduates, and general language enthusiasts. Our ATs, through their divergent backgrounds, share a passion for language, for teaching, and for bringing language to life. Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

Pan-Epidemics and Humanities Academy

SUBJECT AREA

Humanities; Public Health

COURSE DESCRIPTION

The COVID-19 pandemic began over four years ago and has impacted people in every country of the world. In this course, students will discuss the impacts of epidemics leading up to and including the COVID-19 pandemic. Through small group collaborative activities and simulated case studies, students will develop deeper understanding and empathy for the shared humanity of people enduring epidemics.

Instructor Daniel Lucey, MD MPH, will present stories from working as a physician during epidemics in the USA and overseas including China and Canada during SARS 2003, Egypt and Indonesia during Bird Flu 2006-2012, Ebola in Sierra Leone and Liberia 2014, Brazil 2016 during Zika, and the USA during HIV/AIDS and COVID-19. Students will also hear from international experts who will share some of their experiences with epidemics and the humanities either in-person or via zoom. Students will engage with videos, stories, photos, music, and other expressions of the humanities in the context of epidemics - such as the 2018-2022 Exhibit "Outbreak! Epidemics in a Connected World" proposed by the course instructor at the Smithsonian National Museum of Natural History in Washington, DC. Instruction will present both a US and an international perspective that encourages a deep understanding of and consideration for diversity, inclusion, community, and equity.

LEARNING OUTCOMES

Upon completing this course, students will be able to:

1. Articulate the general history of international epidemics that occurred before COVID-19.
2. Draw connections between their own lived experiences during COVID-19 to the impact of the pandemic on equity across diverse communities in the USA and world-wide.
3. Work collaboratively with peers in small groups on simulation exercises, sometimes also called tabletop exercises, to enact negotiation scenarios to prevent, slow, and stop future epidemics.
4. Contribute their understanding of epidemics to the humanities through videos, stories, exhibits, music, and more with regard to pandemics such as COVID-19, and epidemics still to come.

Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

Politics of Memory and Museums

SUBJECT AREA

Humanities; History

COURSE DESCRIPTION

How does remembering the past shape our present? Over the course of two weeks, this thought-provoking course will embark on a journey to address this question and understand, examine, and interrogate the tapestry of our collective past. Through engaging activities, debates, case studies, and encounters with historical memory, students will learn about the complexities of historical remembrance, weighing the perils and benefits of collective memory. The course culminates in two student-driven projects, including crafting a personal historical memory journal and designing a virtual museum exhibit. Students will engage with relevant reading materials, and hands-on activities and projects take center stage as the guide for student learning.

LEARNING OUTCOMES

Upon completing this course, students will be able to:

1. Define and articulate the concept of historical memory.
2. Critically evaluate the perils and benefits of remembering historical events, analyze diverse perspectives on historical memory, and engage in respectful and constructive debates on the topic.
3. Effectively communicate ideas through oral presentations, written work, and interactive learning methods.
4. Build time and project management skills to see two projects through to completion.
5. Connect knowledge acquired through the course to broader questions about how our past shapes our present.

This course is taught by Dr. Elsa Voytas, Assistant Professor of Quantitative Social Science at Dartmouth College. Her research centers on how societies use institutions of memory to influence contemporary politics, and she has conducted field work in countries ranging from Chile, Northern Ireland, to Uganda, and more. Her work has been published in The Washington Post, the Journal of Politics, the Journal of Peace Research, and the Oxford Handbook Series. Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

The Creative AI Lab: AI as Your Creative Writing Partner

DATES OFFERED

Session 3: 7/28/24 – 8/9/24

SUBJECT AREA

Humanities; Writing

COURSE DESCRIPTION

Take a dive into the future of creative writing powered by artificial intelligence in this immersive 2-week course. Learn techniques to spark new narratives and fictional worlds as we explore AI's expanding role in the creative process. Through hands-on workshops, students will unlock dimensions of imagination and innovation borrowed from Pixar's animation studios to develop compelling characters and stories amplified by AI. We will reflect on timeless storytelling principles, such as Pixar's rules for storytelling and Kurt Vonnegut's acclaimed story arcs, considering how AI might breathe new life into these frameworks. We will explore questions about the ethical application of creative AI. What societal biases could emerge in their generative models as these tools become more advanced? How does the writer's journey change by outsourcing part of the creative process to AI, and what does it mean for authenticity and connecting with humanity? Get ready to future-proof your writing craft by experimenting with AI co-creation of poems, scripts, and more while examining complex questions around originality and creative identity in the age of intelligent machines. Come amplify your creative voice and prepare for the new frontier of AI-human collaboration.

In the first week, students will focus on reinterpreting the building blocks of storytelling with AI. In interactive workshops, they will learn techniques to create convincing characters and compelling story arcs amplified by AI writing tools, and receive feedback from both human and AI writing assistants to sharpen creative voice and narrative style. In the second week of the course students will work in small teams to co-author a short story or script alongside an AI writing partner: they'll create mood boards using text, images, and video; learn strategies to integrate AI-generated ideas into original human-powered narratives; and reflect on the creative process of fusing AI and human imagination. Finally, they'll explore the future of the Creative AI Lab through the building blocks of storytelling, ending in a collaborative capstone project.

LEARNING OUTCOMES

Upon completing this course, students will be able to:

1. Be able to use archetypal character templates and story structure frameworks to develop compelling narratives.
2. Learn how to prompt AI to reinterpret storytelling frameworks leveraging tools such as GPT-4, Anthropic Claude, Adobe Firefly, MidJourney, and Runway.
3. Be more confident in developing fictional scenarios, personalities, and original plot points after experimenting with AI-powered brainstorming tools.
4. Be able to evaluate AI storytelling tools for potential biases and approach human-AI collaboration with ethical responsibility.
5. Understand the power of authenticity, human voice, and the ethical storyteller's journey. How does human writing build shared passions and community?

This course is taught by Sofia Fenichell, MBA, founder and CEO of StudyHall.IA, a generative AI platform for deep reading, reading comprehension and assessment. The platform uses generative AI to personalize the content that students are interested in and align it to the curriculum. StudyHall.AI was awarded a grant by Innovate UK to develop generative AI deep reading tools that accelerate reading age, engagement and comprehension. Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day*



Photo credit: Dartmouth, Robert Gill, "Students hanging out on the Green."

COURSE TITLE

Designing the Future of Education

DATES OFFERED

Session 2: 7/14/24 – 7/26/24

SUBJECT AREA

Social Science; Education

COURSE DESCRIPTION

Are you ready to roll up their proverbial sleeves and get to work designing education? Education is the vehicle by which we collectively decide what kind of citizens we need and want in a collectively productive population. However, who designs education and how? This two-week course is ideal for high school students interested in education's role in shaping a flourishing, equitable society. We'll explore the future of education through two mini-projects and investigations:

- **Project #1 - Teach as You.** *How might we design a lesson for 2031?*
- **Project #2 - Schools of the Future.** *How might we design the school of 2031?*

To fulfill each project, students will explore how design methodologies are used to create lessons and curricula aligned with learning objectives, student needs, societal outcomes, and how human-centered design can improve education systems. With supplemental readings and discussion, in addition to the projects, this course primarily cycles through *action* and *reflection*, thus modeling a form of pedagogy engaged personally and communally.

LEARNING OUTCOMES

Upon completing this course, students will:

1. Feel motivated to help effect change in education, while gaining a deeper appreciation for how challenging it might be to do so. (*Affective Objective*)
2. Feel more confidence and purpose as a learner, through the transition from high school to college. (*Affective Objective*)
3. Be able to articulate an inspiring viewpoint on the purposes of education that are aligned with personal experience and the writings of educational philosophers.
4. Be able to use a few design methods to develop and deliver a novel lesson plan that facilitates students' learning, and is informed by identified learner needs, well-framed societal objectives for education, and the student's own educational values.
5. Be able to identify the potential harms and benefits of educational and technological trends, and imagine a school that proactively creates an experience that is informed by identified learner needs, well-framed societal objectives for education, and the student's own educational values.

Taught by Dartmouth professor Dr. Rafe Steinhauer and Ted Munter. Students will receive a Dartmouth-branded certificate of completion at the end of the program.**This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*



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COURSE TITLE

Health Geography

SUBJECT AREA

Social Science; Geography

DATES OFFERED

Session 1: 6/30/24– 7/12/24

Session 2: 7/14/24 – 7/26/24

Session 3: 7/28/24 – 8/9/24

COURSE DESCRIPTION

At its core, health geography is the study of human-environment interactions and the influence of these interactions on population health – i.e., how people interact with their physical and social environment to promote health and wellbeing or to increase their vulnerability to disease and/or illness. This course surveys health geography, a subdiscipline of geography which encompasses a broad range of topics regarding human and environmental health.

In this class, instruction will focus on examining health-related issues (e.g., disease, illness, health care access, nutrition) from the perspective of populations. Major health issues and health care systems from around the world will be evaluated and discussed. The course covers three major integrated approaches to health geographic research: ecological (relationships between people and their environment), social (human behavior), and spatial (mapping and spatial analysis).

LEARNING OUTCOMES

Upon completing this course, students will:

1. Describe and explain how public health is an inherently geographical problem and how geography helps to illuminate health challenges.
2. Demonstrate an understanding of the function of geography in mediating health and health outcomes.
3. Illustrate how geography illuminates new perspectives in health data through organizing and disaggregating it in space.
4. Demonstrate how geographical thought and methods can be used to tailor more locally precise public health interventions.

This course is taught by Dr. Devin M. Parker, Ph.D., a doctoral graduate of the Geisel School of Medicine at Dartmouth, Department of Epidemiology (2023). Students will receive a Dartmouth-branded certificate of completion at the end of the program.**This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

How the Government Takes and Spends Your Money

SUBJECT AREA

Social Science; Political Science

DATES OFFERED

Session 1: 6/30/24– 7/12/24

COURSE DESCRIPTION

Public policy is the action of governments: from regulating businesses to fighting wars, from public education to paying pensions for retired government employees. Almost all actions by the government require funding. Fiscal policy is the area of public policy concerned with taxation and government spending and it is at the core of everything governments at all levels do. It is also about who pays and who benefits from the governments' decision. This course will cover the foundations of how governments raise revenue and make spending decisions in the name of the public good. We will focus on the US government, and may touch on state, local, and foreign governments as well.

The objective of this class is to encourage students to think critically about who decides how public money is spent, why they make the decisions they make, and how it affects the people. Students will engage in two projects during the course: The first will be a short policy memo outlining the current fiscal status of the US federal government and the government of their home state. The second project will be to draft a letter to their Congressional representative explaining whether they think the national debt is a concern and what they believe the best approach would be to deal with it.

LEARNING OUTCOMES

Upon completing this course, students will:

1. Find sources of information on federal spending, taxation, deficits, and debt.
2. Understand how fiscal policy impacts individuals and the public.
3. Apply skills necessary to communicate and participate in the policy process.

This course is taught by Dr. Michael Wales, a Postdoctoral Research Associate and co-manager of the Policy Research Shop at the Rockefeller center. His research focuses on policy evaluation with an emphasis on public budgeting and finance. Students will receive a Dartmouth-branded certificate of completion at the end of the program.**This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day*

COURSE TITLE

**AI for Creatives: Ethics and Aesthetics
in the Age of Chat GPT**

DATES OFFERED

Session 2: 7/14/24 – 7/26/24

SUBJECT AREA

STEAM; Computer Science and Technology

COURSE DESCRIPTION

Rapid advances in so-called large language models (LLMs) – i.e., models with billions or even trillions of parameters – have opened a new era in which generative AI models can write engaging text, paint photorealistic images and compose music. On one level, this course aims to foster discussion of the ethical implications and social impacts of generative AI. In the first part of the course, we will explore questions such as: How does generative AI work? What forces (technological, political and economic) have shaped its evolution? What are some important uses for generative AI? What are some of the genuine ethical concerns surrounding the future direction of synthetic language? On a second level, this course will explore current applications of artificial intelligence in the visual arts, literature, music, and other creative fields. Here, particular attention will be given to questions that pertain to the creativity and aesthetic value that can be ascribed to content generated by artificial intelligence systems. For their final project, students will be asked to use AI systems such as DALL-E 3 and Magenta Studio to develop artworks that are in critical dialogue with other forms of technology-guided creation. These projects will ultimately serve to foster a discussion of what defines creativity in this era and whether artistic production is fundamentally linked to processes that are distinctively human in nature.

LEARNING OUTCOMES

Upon completing the course, students will be able to:

1. Explain how large language models (LLMs) and generative AI systems, such as ChatGPT, work in creating diverse forms of creative content.
2. Understand some of the technological, political, and economic forces that have shaped the evolution of generative AI, leading to the current era of large language models.
3. Identify and critically assess important use cases for generative AI in various domains, including the visual arts, literature, music, and other creative fields.
4. Discuss and analyze genuine ethical concerns associated with the development and application of synthetic language in generative AI, considering both current and potential future implications.
5. Use and assess current applications of artificial intelligence in the visual arts, literature, and music, with a focus on understanding the impact of AI on creativity.
6. Develop the ability to critically analyze the creativity and aesthetic value of content generated by artificial intelligence systems, addressing questions of originality and human-like expression.

This course is taught by Dr. Chad Elias, Associate Professor of Art History at Dartmouth College. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

**Extremely Online: Digital Technology
and Social Connections**

DATES OFFERED

Session 3: 7/28/24 – 8/9/24

SUBJECT AREA

STEAM; Computer Science and Technology

COURSE DESCRIPTION

Rapid advances in digital technology have transformed the way we live, work, and communicate. Yet many people are ambivalent about its role in society. On the one hand, networked devices such as the cell phone are enormously useful tools that allow users to move between diverse personal and professional spaces. On the other hand, these technologies can also serve to undermine traditional notions of social connection and authentic expression. The course uses theoretical tools drawn from art history, computer science and media studies to shed light on the power dynamics embedded in digitally mediated communication.

LEARNING OUTCOMES

Upon completing the course, students will be able to:

1. Develop digital literacy skills including techniques for decoding content within the dynamic context of social media platforms.
2. Develop techniques to assess the credibility of information as critical digital citizens.
3. Explore the ethical implications of digital culture—is it a space of agency or social control?
4. Discuss the ways technology shapes artistic and social expression from a micro and macro perspective, including how content is produced, curated and shared online.
5. Examine how digital platforms are used to redefine notions of intimacy, attention, authenticity and connection.

This course is taught by Dr. Chad Elias, Associate Professor of Art History at Dartmouth College. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*

COURSE TITLE

The New Essentials of Medicine

DATES OFFERED

Session 1: 6/30/24– 7/12/24

SUBJECT AREA

STEAM; Medicine

COURSE DESCRIPTION

Modern medicine is in crisis – from concerns of equitable access and healthcare disparities, to workforce shortages and demoralized clinicians, to rising costs of care. Within this context, being a leader requires a unique knowledge base and set of skills than that offered by traditional pre-medical education. This summer course is designed to provide advanced high school students with innovative knowledge and skills combining the humanities and social sciences to strengthen students' preparation for pre-medical education and their future work in healthcare.

Centered around humanistic inquiry, this course introduces students to foundational concepts and skills from diverse fields, including psychology, anthropology, literature, music, and sports. The premise is to prepare future leaders in healthcare with the “new essentials of medicine” to foster compassion, creativity, and resilience in clinical care, research, scholarships, policy, and advocacy. Over the course of two weeks, experts guide students through modern medicine, public health, medical anthropology, and the humanities to explore the following themes: (1) Becoming a Doctor, (2) Centering Patient Experience, and (3) Building a Future of Compassionate Care. In this highly interactive course, students will use a range of learning strategies, utilizing opportunities to engage in seminar-style discussions of readings and films, panel discussions with clinical and community leaders, small group work, and professor-led didactics.

This course is relevant for students interested in pursuing a variety of college majors and future careers, especially beneficial for students pursuing clinical careers, students engaging with healthcare and science as writers or advocates, and students in the humanities and social sciences interested in exploring lived experiences of health, illness, and medicine.

LEARNING OUTCOMES

Upon completing the course, students will be able to:

1. Draw upon experiential accounts to understand the ‘worlds’ of illness and healing and build attunement to suffering and efforts to heal.
2. Make meaning of complex lived realities building on experiential accounts with relevant theoretical and scientific constructs intended to offer multiple ‘frames’ of understanding.
3. Apply interdisciplinary approaches to analyze strategies and capacities that enhance compassion in medicine.
4. Apply humanistic inquiry to be responsive to urgent challenges in medicine as future leaders in medicine.

Taught by instructors Elizabeth Carpenter-Song, Ph.D. & Manish K. Mishra, M.D., M.P.H. Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*



Photo credit: Dartmouth, Robert Gill, “Baker Tower surrounded by summer flowers.”

COURSE TITLE

Data Science

SUBJECT AREA

STEAM; Computer Science & Technology

DATES OFFERED

Session 1: 6/30/24– 7/12/24**Session 2:** 7/14/24 – 7/26/24**Session 3:** 7/28/24 – 8/9/24

COURSE DESCRIPTION

Data Science is a multidisciplinary field blending data inference, algorithm development and technology, that stands at the forefront of transforming raw data into meaningful insights and innovations. At its core, data science involves extracting knowledge and insights from structured and unstructured data, using methods rooted in statistics, machine learning, and data analysis. This field is pivotal in today's information age, driving decision-making in industries ranging from healthcare to finance, and influencing societal advancements at an unprecedented scale.

This course emphasizes the dual importance of quantitative analysis and qualitative interpretation to understand and leverage critical data. Beginning with Python programming fundamentals - a cornerstone in the data science toolkit - the curriculum advances through vital concepts such as data structures, manipulation, and exploratory data analysis (EDA). A special focus on Natural Language Processing (NLP) underscores the interdisciplinary nature of data science, integrating computational methods with linguistic insights. The course intertwines theoretical understanding with practical application, ensuring students not only learn the mechanics of data science, but also develop a critical, data-driven mindset. From engaging in hands-on projects to delving into real-world datasets, students will acquire the skills to convert data into compelling stories and actionable intelligence. This program is not just a technical journey: it's a gateway into the expansive world of data science, where machine learning, artificial intelligence, and big data are pivotal tools in shaping our future.

LEARNING OUTCOMES

Upon completing this course, students will:

1. Gain hands-on experience in Python, focusing on its application in data science. This includes understanding data structures, libraries like Pandas and NumPy, and utilizing Python for data manipulation and analysis.
2. Perform exploratory data analysis (EDA), interpret data through statistical methods, and create meaningful visualizations using tools like Matplotlib and Seaborn.
3. Acquire skills in the basics of NLP, learning to process and analyze text data. Skills acquired will include text manipulation, sentiment analysis, and creating visual representations like word clouds.
4. Execute data science to consistently work towards exercises on a dataset that aligns with each day's topic and reflect on their discoveries at the end of the course.
5. Develop critical thinking skills specific to data science, learning to approach problems analytically, question assumptions, and interpret results within context.

Taught by instructors Carly Bobak, Ph.D., Courtney Schiebout, Ph.D. and Christian Darabos, Ph.D. Students will receive a Dartmouth-branded certificate of completion at the end of the program. **This is an academy-style class. Students will choose one course that will meet in the morning and afternoon for a total of five hours per class day.*



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