
Arts and Science

**ARSC 167-010: SEMINAR
CAREER READINESS - HUMANITIES**

Students will be introduced to resources to identify internships and research opportunities, discuss career competencies, develop essential documents (i.e. resume, cover letter, personal statement), as well as practice interview skills. This section is specifically for students in the following departments: Art & Design; School of Music; Africana Studies; Art Conservation; Art History; English; History; Philosophy; Languages, Literature & Cultures; and Global & Area Studies.

**ARSC 167-011: SEMINAR
CAREER READINESS - SOC SCIENCE**

Students will be introduced to resources to identify internships and research opportunities, discuss career competencies, develop essential documents (i.e. resume, cover letter, personal statement), as well as practice interview skills. This section is specifically for students in the following departments: Anthropology; Communication; Fashion & Apparel Studies; Political Science & International Relations; Sociology & Criminal Justice; Women & Gender Studies.

**ARSC 300-010: Issues in Global Studies:
MIGRANT/NATIVE KNOWLEDGES**

The migrant and the native are often placed in opposition, whether in discussions of people, ideas, or plants. What are the histories of this opposition, and how does it function in our current discourse? When is this distinction essential, and when does it limit our thinking?

Art Conservation

**ARTC 467-013: SEMINAR
STUDIO MATERIALS & TECHNIQUES OF TEXTILE MAKING**

Studio course on terminology & techniques of textile making. Students will complete a variety of small projects from knitting & felting, weaving & embroidery. Explore a variety of tools & manufacturing methods from around the world & learn basic stitches that can be used in craft & conservation practice.

**ARTC 467-014: SEMINAR
PHOTODOCUMENTATION**

**ARTC 667-016: SEMINAR
PREVS CONS: RESEARCH & APPS**

**ARTC 667-020: SEMINAR
WOODEN OBJECTS**

Art History

ARTH 402-010, 080: Undergraduate Seminar in the History of Art ANCIENT INFLUENCERS IN NILE VALLEY ART AND ARCHITECTURE

We will explore named Nubian and Egyptian artists who influenced one another, as they also impacted the development of art across two ancient African culture spaces.

ARTH 406-010: Seminar in Medieval Art MATERIAL CULTURE IN THE AGE OF CRUSADE

Explores how objects and images can travel physically and through collective imagination to make and re-make religious meaning. Covers textiles, art, and architecture from the greater Mediterranean world between the 10th and 14th centuries. All primary texts are provided in translation.

ARTH 606-010: Seminar in Medieval Art MATERIAL CULTURE IN THE AGE OF CRUSADE

Explores how objects and images can travel physically and through collective imagination to make and re-make religious meaning. Covers textiles, art, and architecture from the greater Mediterranean world between the 10th and 14th centuries. All primary texts are provided in translation.

ARTH 619-010: Studies in Art of the Iberian World, 1400-1800 ART & MATERIALITY

Art in diverse regions of the Spanish and Portuguese empires studied in light of the raw materials employed in their production—not only the techniques and properties associated with each material choice, but also the ways in which such substances were sourced and traded.

ARTH 636-010: Modern American Art: ECOCRITICAL ART HISTORY

Behavioral Health & Nutrition

BHAN 130-010, 011, 012, 018, 019: Health Topics COOK IT HEALTHY

BHAN 130-013: Health Topics CULINARY RX

BHAN 130-016: Health Topics COOKING SUSTAINABLY

An introduction to the use of local/seasonal produce and sustainable cooking, including an understanding of food cultivation at the UD Farm, strategies/tips for eating seasonally, getting the most out of local produce year-round, cooking methods and store-bought ingredients to produce meals at home.

BHAN 130-022, 028: Health Topics
PERSONAL RELATIONSHIPS

BHAN 130-025, 029: Health Topics
DEATH AND DYING

BHAN 130-031: Health Topics
TAKEOUT MAKEOVER

BHAN 130-035, 036: Health Topics
PERSONAL MANAGEMENT

BHAN 130-037: Health Topics
COOKING AROUND THE WORLD

BHAN 130-040: Health Topics
HEALTH & VIRTUES

BHAN 130-196, 197, 198, 199: Health Topics
MANAGING WORK STRESS

Biological Sciences

BISC 400-010: SPECIAL TOPICS IN BIOLOGY
MODERN BIOLOGICAL MICROSCOPY

BISC 400-013: SPECIAL TOPICS IN BIOLOGY
HONEY BEES: PARASITES, DISEASE

BISC 400-015: SPECIAL TOPICS IN BIOLOGY
ESCAPING CELL DEATH
Escaping Cell Death: Signaling Mechanisms of Cancer Cells

BISC 467-010: SEMINAR
EVOLUTIONARY BIOINFORMATICS

Course is designed to help students develop skills in using over twenty different bioinformatics software tools and data from primary research articles in order to investigate research problems in either an environmental, medical, public health, pharmaceutical, or agricultural context.

BISC 467-012: SEMINAR
INSECT-BORNE DISEASE ECOLOGY
Examines how humans have impacted the ecology of disease systems, and the measures we take to combat them using primary sources.

**BISC 467-014, 015, 060L, 070L: SEMINAR
EXPERIMENTAL MICROBIOLOGY**

**BISC 467-016: SEMINAR
ADVANCED BACTERIAL GENETICS**

**BISC 667-012: SEMINAR
ADVANCED BACTERIAL GENETICS**

A literature-based course focused on understanding classical and cutting-edge methods used for deciphering complex biological processes in diverse bacteria. Students should have an understanding of basic microbiology concepts such as those learned in an introductory microbiology course (eg BISC300)

Biomedical Engineering

**BMEG 867-011: SEMINAR
RESEARCH TECHNIQUES IN RODENTS**

**BMEG 867-012: SEMINAR
QUANTITATIVE HUMAN PHYSIOLOGY**

This course uses quantitative approaches to understand normal human physiology and in disease. Tissues and organs systems are examined in an integrated manner using principles from engineering kinetics and transport processes. Topics include: modeling anatomy, cardiovascular, renal, and respiratory.

Chemical Engineering

**CHEG 867-015: SEMINAR
COMP & DATA SCI FOR SOFT MAT**

This elective course will involve graduate students working together in teams to solve (over the semester) soft materials (MAT) problems submitted by academic labs, industry, and national laboratories using high-performance computing (HPC) and/or data science (DS) tools.

Chemistry and Biochemistry

**CHEM 667-015: SEMINAR
COMMUNICATING IN CHEMISTRY**

Scientific communication and strategies for crafting original research ideas at a level appropriate for graduate students. Covers scientific presentations, conference abstracts, and developing proposals, with other topics at the instructor's discretion.

Civil and Environmental Engineering

CIEG 367-010: SEMINAR ENGINEERING SURVEY AND GEOMATICS

Fundamentals of engineering surveying/field practices. Distance measurement, angles, azimuths/bearings, total station instruments, angle observations, traversing, area/volume calculations, state plane coordinates and other map projections, photogrammetry/laser scanning, and construction surveys.

CIEG 467-010: SEMINAR ECOHYDROLOGY

Movement of water and energy through the soil-plant-atmosphere continuum. Calculate estimates of evapotranspiration, design a bucket model to simulate ecohydrologic processes, explain implications of climate change-induced alterations in water and energy fluxes for ecosystem processes and services.

CIEG 667-010: SEMINAR ECOHYDROLOGY

Movement of water and energy through the soil-plant-atmosphere continuum. Calculate estimates of evapotranspiration, design a bucket model to simulate ecohydrologic processes, explain implications of climate change-induced alterations in water and energy fluxes for ecosystem processes and services.

Computer and Information Sciences

CISC 367-010: SEMINAR GEOSPATIAL DATA SCIENCE

Introduces principles, techniques, and applications of data science in geospatial contexts. Focuses on geospatial and statistical concepts and algorithms for processing, analyzing, and visualizing spatial data; hypothesis testing; and model building. Examines impacts and ethics of geospatial data.

CISC 367-011: SEMINAR DEVELOPMENT OF ASSISTIVE TECHNOLOGY

This is a project-based course designed to teach the basic concepts of assistive technology (AT), including user-centered design, universal design, an introduction to different AT categories, and a basic understanding of real-life challenges and realities of designing AT. Pre-requisite: CISC220

CISC 367-012: SEMINAR INTRODUCTION TO MOBILE ROBOT PROGRAMMING

A hands-on approach to implementing mobile robot algorithms on a small wheeled platform, both in simulation and reality. We will review the fundamentals of kinematics, planning, sensing, and control, as well as getting acquainted with higher-level concepts related to navigation, tracking, mapping. Pre-requisite: CISC220

CISC 467-011: SEMINAR
HUMAN-COMPUTER SYSTEMS FOR SOCIAL GOOD

From human-computer interaction and systems perspectives, we will examine the role of computing in addressing social, environmental, and other high-value societal challenges. Students will also iteratively design and evaluate an interactive computing system aimed at mitigating a societal challenge. PREREQ: CISC 275.

CISC 667-011: SEMINAR
HUMAN-COMPUTER SYSTEMS FOR SOCIAL GOOD

From human-computer interaction and systems perspectives, we will examine the role of computing in addressing social, environmental, and other high-value societal challenges. Students will also iteratively design and evaluate an interactive computing system aimed at mitigating a societal challenge.

CISC 849-012: Advanced Topics in Computer Applications
HUMAN-CENTERED COMPUTING

This course introduces the fundamentals of how people interact with computers and digital systems. Human behavior understanding, measurement, and bias and fairness assessment will be key parts of this course. Specific areas of interest will include the education and healthcare sectors.

CISC 867-015: SEMINAR
COMP & DATA SCI FOR SOFT MAT

This elective course will involve graduate students working together in teams to solve (over the semester) soft materials (MAT) problems submitted by academic labs, industry, and national laboratories using high-performance computing (HPC) and/or data science (DS) tools.

CISC 889-010: Advanced Topics in Computer Applications
MULTI-AGENT LEARNING

How should we learn what actions to take when others (teammates or adversaries) are simultaneously learning to respond to us? Seminar format with primary focus on multi-agent reinforcement learning (stochastic games). Pre-requisite: CISC320 or CISC621 or equivalent.

CISC 889-011: Advanced Topics in Computer Applications
DEEP LEARNING

This course will cover advanced deep learning topics. Out of many possible topics, the course will cover generative adversarial networks, latent variable models (VAEs), graph neural networks, deep reinforcement learning, and foundation models (transformers). Pre-requisite: CISC681 or CISC684 or Permission of instructor.

- CISC 187-010: Vertically Integrated Projects I**
- CISC 287-010: Vertically Integrated Projects II**
- CISC 387-010: Vertically Integrated Projects III**
- CISC 487-010: Vertically Integrated Projects IV**
- VIP:GRID-INTEGRATED VEHICLES**

CISC 187-012: Vertically Integrated Projects I
CISC 287-012: Vertically Integrated Projects II
CISC 387-012: Vertically Integrated Projects III
CISC 487-012: Vertically Integrated Projects IV
VIP: CLOUD CRYPTO

CISC 187-013: Vertically Integrated Projects I
CISC 287-013: Vertically Integrated Projects II
CISC 387-013: Vertically Integrated Projects III
CISC 487-013: Vertically Integrated Projects IV
VIP: HIGH PERFORMANCE COMPUTING

CISC 187-015: Vertically Integrated Projects I
CISC 287-015: Vertically Integrated Projects II
CISC 387-015: Vertically Integrated Projects III
CISC 487-015: Vertically Integrated Projects IV
VIP: ACOUSTICS & SIGNAL PROCESS

CISC 187-016: Vertically Integrated Projects I
CISC 287-016: Vertically Integrated Projects II
CISC 387-016: Vertically Integrated Projects III
CISC 487-016: Vertically Integrated Projects IV
VIP: DRONE

CISC 187-019: Vertically Integrated Projects I
CISC 287-019: Vertically Integrated Projects II
CISC 387-019: Vertically Integrated Projects III
CISC 487-019: Vertically Integrated Projects IV
VIP: INTERNET OF THREATS

CISC 187-022: Vertically Integrated Projects I
CISC 287-022: Vertically Integrated Projects II
CISC 387-022: Vertically Integrated Projects III
CISC 487-022: Vertically Integrated Projects IV
COMPUTING FOR SOCIAL GOOD

CISC 187-024: Vertically Integrated Projects I
CISC 387-024: Vertically Integrated Projects III
CISC 487-024: Vertically Integrated Projects IV
DIGITAL EDUCATION

**CLIM 267-010: SEMINAR
MODELING WITH EN-ROADS**

Communication

**COMM 200-010: Topics in Communication
INTERPERSONAL COMMUNICATION AND TECHNOLOGY**

Modern communication technologies are used in nearly all communicative contexts. We will engage with theories to provide you with an understanding of both: why we behave like we do online and how we uses technologies to form and maintain relationships.

**COMM 367-010: SEMINAR
MEDIA PERFORMANCE**

From on-camera to on-mic, this 1-credit course explores techniques of media performance in various roles including news anchor, reporter, program host, and spokesperson. We'll review vocal skills and demeanor, along with an analysis of professional examples.

**COMM 38-010: VIDEO PRODUCTION PRACTICUM
TV SPORTS BROADCASTING**

Learn and practice the roles of Play-by-Play, Analyst, Studio Host, and Reporter. Gain hands-on experience and practical skills along with learning about sports communication, networking, staying connected, and how to stand out in this competitive industry.

**COMM 418-010: Advanced Topics in Media Communication
TEENS AND SCREENS**

We'll examine how adolescents use media and the extent to which it informs their social and psychological development, and how their development helps to explain how they choose to use particular media.

**COMM 440-010: Topics in Interpersonal Communication
RELATIONAL COMMUNICATION**

Advanced introduction to social scientific theory and research on interpersonal communication. We'll concentrate on defining and understanding interpersonal communication processes that occur within the context of close relationships.

**COMM 446-010: SPECIAL TOPICS-PUB RELATIONS
ENVIRONMENTAL MESSAGING**

Focus on professional environmental communication. We analyze the best strategies to effectively connect with narrow audiences. Skills easily transfer to other practice areas. Includes: mutually beneficial relationships, persuasion, audience identification, social media content creation/curation.

**COMM 739-650: TOPICS IN DIGITAL MEDIA
THE POWER OF "OWNED" CONTENT**

Covers online newsrooms and how "owned media" is critical to helping brands save time and money while generating awareness. Students will learn how to analyze the effectiveness of online newsrooms while producing and publishing new content that is rooted in strategy and measurable goals.

**COMM 804-010: TOPICS IN COMM STATISTICS
MEDIATION AND MODERATION**

Learn the theoretical and statistical bases for mediation (the how) and moderation (the when). Think through whether a question should be asked with mediation or moderation, as well as both simultaneously, and how to perform such analyses. Basic knowledge of linear regression is required.

**COMM 832-010: PROSEMINAR IN POLITICAL COMM
MISINFORMATION**

This course explores misinformation, disinformation, and conspiracy theories through the lenses of psychology, sociology, politics, and media. We will explore the content, appeal, function, and effects of false information, as well as ways to remedy the harm they pose to democracy and society.

Comparative Literature

**CMLT 330-010: Topics: World Literatures and Cultures
ANCIENT RACE & ETHNICITY**

Ancient Mediterranean Race and Ethnicity explores how race and ethnicity are presented in the literature and art of Greece and Rome and the many diverse cultures they encountered. We also examine how inequalities based on race and ethnicity confronted by ancient societies remain relevant today.

Electrical Engineering

**ELEG 367-010: SEMINAR
GEOSPATIAL DATA SCIENCE**

Introduces principles, techniques, and applications of data science in geospatial contexts. Focuses on geospatial and statistical concepts and algorithms for processing, analyzing, and visualizing spatial data; hypothesis testing; and model building. Examines impacts and ethics of geospatial data.

**ELEG 187-010: Vertically Integrated Projects I
ELEG 287-010: Vertically Integrated Projects II
ELEG 387-010: Vertically Integrated Projects III
ELEG 487-010: Vertically Integrated Projects IV
GRID-INTEGRATED VEHICLES**

ELEG 187-012: Vertically Integrated Projects I
ELEG 287-012: Vertically Integrated Projects II
ELEG 387-012: Vertically Integrated Projects III
ELEG 487-012: Vertically Integrated Projects IV
VIP: CLOUD CRYPTO

ELEG 187-013: Vertically Integrated Projects I
ELEG 287-013: Vertically Integrated Projects II
ELEG 387-013: Vertically Integrated Projects III
ELEG 487-013: Vertically Integrated Projects IV
VIP: HIGH PERFORMANCE COMPUTING

ELEG 187-015: Vertically Integrated Projects I
ELEG 287-015: Vertically Integrated Projects II
ELEG 387-015: Vertically Integrated Projects III
ELEG 487-015: Vertically Integrated Projects IV
VIP: ACOUSTICS & SIGNAL PROCESS

ELEG 187-016: Vertically Integrated Projects I
ELEG 287-016: Vertically Integrated Projects II
ELEG 387-016: Vertically Integrated Projects III
ELEG 487-016: Vertically Integrated Projects IV
VIP: DRONE

ELEG 187-019: Vertically Integrated Projects I
ELEG 287-019: Vertically Integrated Projects II
ELEG 387-019: Vertically Integrated Projects III
ELEG 487-019: Vertically Integrated Projects IV
VIP: INTERNET OF THREATS

ELEG 187-022: Vertically Integrated Projects I
ELEG 287-022: Vertically Integrated Projects II
ELEG 387-022: Vertically Integrated Projects III
ELEG 487-022: Vertically Integrated Projects IV
COMPUTING FOR SOCIAL GOOD

ELEG 187-024: Vertically Integrated Projects I
ELEG 287-024: Vertically Integrated Projects II
ELEG 387-024: Vertically Integrated Projects III
ELEG 487-024: Vertically Integrated Projects IV
DIGITAL EDUCATION

ELEG 867-015: SEMINAR

COMP & DATA SCI FOR SOFT MAT

This elective course will involve graduate students working together in teams to solve (over the semester) soft materials (MAT) problems submitted by academic labs, industry, and national laboratories using high-performance computing (HPC) and/or data science (DS) tools.

Geography & Spatial Sciences

GEOG 367-010: SEMINAR GEOSPATIAL DATA SCIENCE

Introduces principles, techniques, and applications of data science in geospatial contexts. Focuses on geospatial and statistical concepts and algorithms for processing, analyzing, and visualizing spatial data; hypothesis testing; and model building. Examines impacts and ethics of geospatial data.

GEOG 417-010: SEMINAR Climate Change

GEOG 617-010: SEMINAR Climate Change

Geology

GEOL 467-010: SEMINAR ECOHYDROLOGY

GEOL 667-010: SEMINAR ECOHYDROLOGY

History

HIST 268-010: SEMINAR THE CRUSADES

HIST 268-011: SEMINAR JAPAN'S WORLD WAR II

HIST 268-012: SEMINAR THE JFK ASSASSINATION

HIST 268-013: SEMINAR VIETNAM CONFLICTS

HIST 337-010: TOPICS IN AMERICAN HISTORY SOCIAL VIOLENCE IN AMERICA

Examines historical roots and social and cultural significance of violence in American life. Students will examine social violence in U.S. history through specific case studies. Participation, in-class discussion, writing and citation exercises, and a 2000-word research essay required.

**HIST 339-010, 080: TOPICS IN EUROPEAN HISTORY
HISTORY OF POLITICAL COMMUNICATION**

Course surveys formal and informal modes of communication that shaped politics in Europe, Britain, and North America from the English Civil War to the 21st-century. Beginning with the “print revolution” the course will examine subsequent innovation with visual, electronic, and digital communication.

**HIST 400-000: History Capstone Seminar
20TH-CENTURY EUROPE**

**HIST 400-011: History Capstone Seminar
U.S. - CHINA RELATIONS**

**HIST 400-013: History Capstone Seminar
WORLD WAR II THRU ORAL HISTORY**

**HIST 467-010: SEMINAR
DISABILITIES HISTORIES**

This seminar investigates the historical variability of disability and the lived experiences of people with disabilities to offer new interpretations of classic themes in American history, including gender, race, class and activism.

**HIST 667-010: SEMINAR
DISABILITIES HISTORIES**

This seminar investigates the historical variability of disability and the lived experiences of people with disabilities to offer new interpretations of classic themes in American history, including gender, race, class and activism.

Human Development and Family Studies

**HDFS 867-010, 080: SEMINAR
SEXUAL ORIENTATION AND GENDER IDENTITY LIFESPAN DEVELOPMENT**

This seminar integrates an intersectional lens to review theories of sexual and gender minority development, explore methodological innovations and challenges in LGBTQ+ research, discuss LGBTQ+ development processes from childhood to older adulthood, and provide tools for dismantling cisheterosexist

Landscape Architecture

**LARC 367-010: SEMINAR
EDUCATIONAL EXHIBIT DESIGN AND INSTALLATION**

A hands on experience in which students participate in a collaborative design project culminating in a large scale educational exhibit at the 2024 Philadelphia Flower Show sponsored by the Pennsylvania Horticultural Society. Students will design and plan the 2024 exhibit. All majors welcome.

Languages, Literatures and Cultures

LLCU 220-010, 080: THE MEDITERRANEAN WORLD COMMUNICATION & CONFLICT IN ANTIQUITY

A survey of the peoples of the ancient Mediterranean (the Near East, North Africa, Greece, and Italy), ca. 3000 BCE to ca. 6th century CE. Topics include immigration and migration, cultural identity, and diversity. Special attention will be paid to the primary sources and material evidence.

LLCU 320-010: Varying Authors and Genres: THRILLERS, CHILLERS & KILLERS

LLCU 330-010, 080: Topics: World Literatures and Cultures ANCIENT RACE & ETHNICITY

Ancient Mediterranean Race and Ethnicity explores how race and ethnicity are presented in the literature and art of Greece and Rome and the many diverse cultures they encountered. We also examine how inequalities based on race and ethnicity confronted by ancient societies remain relevant today.

LLCU 330-012, 013, 080, 082: Topics: World Literatures and Cultures CONFUCIUS AND LAO ZI ON LIFE

LLCU 375-010, 011, 080: Topics: Russian and Soviet Culture in Translation BACK TO THE USSR: COLD WAR CULTURE

The Cold War (1946-1991) flavored politics inspired by a pervasive mutual hatred. As the US and USSR postured, Soviet citizens suffocated in endless food lines, cramped communal apartments and prescribed social activities. Come behind the Iron Curtain to explore the Soviet Cold War mindset!

LLCU 383-010, 011 080, 081: Chinese Culture in Translation ANCIENT WISDOM IN THE POSTMODERN WORLD

Through a study of postmodern conditions and ancient worldviews, this course aims to teach students the cause of the East/West divergence of cultural values and the secrets of ancient wisdom. Hands-on practices of Chinese cultural knowledge, such as acupuncture and Tai Qi, are demonstrated.

LLCU 420-010, 080: Topics in Italian Literature ITALY ON SCREEN

Latin American Studies

LAMS 491-010: SPANISH STUDIES CAPSTONE IMAGINING CULTURE

In this course, taught entirely in Spanish, students will work with literary texts and audio and video materials to understand the process of fashioning cultural identities in the Hispanic World.

Liberal Studies

MALS 617-011: The Arts in Context MOZART AND THE ENLIGHTENMENT

MALS 626-010: Studies in Contemporary Culture THINKING OUTSIDE THE BINARIES

This course examines the binary polarization in politics, popular culture, and our educational system and develops strategies for how to think outside binaries: how to listen, how to trust, how to read the news, how to filter information, how to argue, and how to change your mind.

Marine Studies

MAST 467-012: SEMINAR PHILOSOPHY OF RESEARCH

This reading-and-discussion course explores the philosophical principles behind quantitative research.

MAST 467-021: SEMINAR MARINE ECOSYSTEM MODELING

An introduction to process-oriented ecosystem models to tackle contemporary environmental issues in marine research, with focuses on integration between biological principles and numerical methods to evaluate ecosystem interactions, and interpretation of results within assumptions and uncertainties.

MAST 667-010: SEMINAR ENVIRONMENTAL POLLUTION -FATE, TRANSPORT, & EFFECT

This course will introduce basic properties of contaminants and the principles used in studying chemical fate and transport. Students will learn ways of assessing toxicity and health risks associated with chemical exposures. Prior knowledge of basic organic and inorganic chemistry highly recommended.

MAST 667-021: SEMINAR MARINE ECOSYSTEM MODELING

An introduction to process-oriented ecosystem models to tackle contemporary environmental issues in marine research, with focuses on integration between biological principles and numerical methods to evaluate ecosystem interactions, and interpretation of results within assumptions and uncertainties.

MAST 667-012: SEMINAR PHILOSOPHY OF RESEARCH

This reading-and-discussion course explores the philosophical principles behind quantitative research.

Mathematics

MATH 367-010: SEMINAR APPLIED TOPOLOGY: THEORY AND IMPLEMENTATION

Introduction to applied topology and related tools. Topics include simplicial complexes, persistent homology, and applications of topology to real-world data. Prerequisites are a course in linear algebra and at least one proof-based course. No background in topology is expected or required.

Materials Science and Engineering

MSEG 467-016: SEMINAR SOFT MATTER MECHANICS

Provides overview of soft matter phenomena at the mesoscale. Theoretical and practical approaches in adhesion, wetting, and contact mechanics with emphasis on novel materials and biological systems.

MSEG 467-019: SEMINAR ELECTRONICALLY ACTIVE POLYMERS

This course will discuss the design, synthesis, characterization, properties, and applications of electronically and ionically active organic molecular and polymer materials. Current applications include chemical sensors, photovoltaics, batteries, and biomedical interfaces.

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MSEG 867-015: SEMINAR COMP & DATA SCI FOR SOFT MAT

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Museum Studies

MSST 411-010D: TOPICS IN MUSEUM ADMINISTRATION DISASTER MANAGEMENT

This course introduces students to best practices and practical considerations associated with developing, implementing, maintaining, and activating institutional disaster plans, and responding to internal and external threats to the well-being of people and collections.

MSST 411-011D: TOPICS IN MUSEUM ADMINISTRATION DESIGN THINKING

Students will be introduced to design thinking, an approach to all engagement that is premised on building experiences that meet people's needs, and will gain practical experience in applying design thinking approaches to a range of public engagement projects.

MSST 411-012D: TOPICS IN MUSEUM ADMINISTRATION PROJECT MANAGEMENT

This course will introduce you to the basic principles and tools for ensuring that your projects (and the teams involved in them) don't spin out of control or sputter out and fail. Students will learn how to plan out projects systematically, from experienced practitioners.

MSST 611-010D: TOPICS IN MUSEUM ADMINISTRATION DESIGN THINKING

Students will be introduced to design thinking, an approach to all engagement that is premised on building experiences that meet people's needs, and will gain practical experience in applying design thinking approaches to a range of public engagement projects.

MSST 611-011D: TOPICS IN MUSEUM ADMINISTRATION DISASTER MANAGEMENT

This course introduces students to best practices and practical considerations associated with developing, implementing, maintaining, and activating institutional disaster plans, and responding to internal and external threats to the well-being of people and collections.

MSST 611-012D: TOPICS IN MUSEUM ADMINISTRATION PROJECT MANAGEMENT

This course will introduce you to the basic principles and tools for ensuring that your projects (and the teams involved in them) don't spin out of control or sputter out and fail. Students will learn how to plan out projects systematically, from experienced practitioners.

Music

MUSC 467-011: SEMINAR GOSPEL CHOIR

Gospel Choir provides an opportunity for participants to prepare and perform music primarily from the modern gospel and African-American oral tradition. Students will use Gospel music as the primary vehicle of learning relevant skills (e.g. technique, diction, collaboration, improvisation, history).

MUSC 467-011: SEMINAR ADVANCED MB TECHNIQUES

MUSC 611-010: Studies in Music History POLITICS OF PERFORMANCE

MUSC 611-011: Studies in Music History ISSUES IN PERFORMANCE PRACTICE

MUSC 667-012: SEMINAR ADVANCED MB TECHNIQUES

MUSC 667-013: SEMINAR GOSPEL CHOIR

Gospel Choir provides an opportunity for participants to prepare and perform music primarily from the modern gospel and African-American oral tradition. Students will use Gospel music as the primary vehicle of learning relevant skills (e.g. technique, diction, collaboration, improvisation, history).

Nursing

NURS 411-010: Topics in Healthcare Delivery SEX AND THE CITY, AND OTHER WOMEN'S HEALTH ISSUES

An in depth look at women's health and gender-related issues. Women's Health Through the Lifespan scratched the surface on topics, we will take a deeper look into concerns that women seek care for and want to know more about; an investigation of career opportunities that are related is also included.

NURS 411-011: Topics in Healthcare Delivery CRITICAL CARE NURSING

Current trends in the field of critical care as well as management of common life-threatening illness seen in the intensive care settings will be explored. Psychological, legal, and ethical aspects of critical care nursing will be integrated throughout the course.

NURS 411-012: Topics in Healthcare Delivery**BIOPSYCHOSOCIAL NURSING CARE OF THE DYING PATIENT AND THE FAMILY**

Provides a comprehensive overview of the dying process, including biological, psychological, social, and spiritual aspects. Biopsychosocial nursing care of terminally ill patients and families is covered, including pain mgmt, non-pain symptom mgmt, nutrition and hydration as well as other areas.

NURS 467-080: SEMINAR**HONORS INTEGRATIVE PRACTICUM - CAPSTONE PRECEPTORSHIP**

A culminating and integrative experience that builds on the knowledge and skills obtained throughout the nursing curriculum. Synthesize learning and demonstrate achievement of curriculum goals in varied/diverse practice settings. Facilitates role transition to professional practice. PREREQ: NURS429 and NURS475.

Philosophy**PHIL 267-010: SEMINAR****PHILOSOPHY OF SEX & SEXUALITY**

The course concerns ethical and conceptual issues surrounding sex and sexuality. Topics include conceptual analyses of sex and sexuality, natural law, sexual perversion, consent, anonymous or casual sex, prostitution/sex work, marriage, adultery, polygamy and polyamory, pornography, among others.

PHIL 420-010: TOPICS IN PHILOSOPHY OF SCIENCE**PARTICLES AND FIELDS**

Exploration of foundational questions about particles and fields in classical physics, quantum mechanics, and quantum field theory. Are classical particles coherent? How are quantum particles individuated? Does relativity require fields? How can particles emerge from fields?

PHIL 620-010: TOPICS IN PHILOSOPHY OF SCIENCE**PARTICLES AND FIELDS**

Exploration of foundational questions about particles and fields in classical physics, quantum mechanics, and quantum field theory. Are classical particles coherent? How are quantum particles individuated? Does relativity require fields? How can particles emerge from fields?

Physics and Astronomy**PHYS 367-010: SEMINAR****GEOSPATIAL DATA SCIENCE**

Introduces principles, techniques, and applications of data science in geospatial contexts. Focuses on geospatial and statistical concepts and algorithms for processing, analyzing, and visualizing spatial data; hypothesis testing; and model building. Examines impacts and ethics of geospatial data.

Plant Science

PLSC 167-010: SEMINAR EXPLORING AND BUILDING UNIQUE CAREER PATHS IN STEM

Interactive introduction to career paths in STEM, including biotechnology (plant, animal or microbe), policy and advocacy, research and agriculture.

PLSC 467-010: SEMINAR CONTROLLED ENVIRONMENT CROP PHYSIOLOGY AND TECHNOLOGY

Understanding of environmental crop physiology and technology (e.g., LEDs, sensors, and imaging) in controlled-environment agriculture. Applying knowledge of plant-environment interactions in specialty-crop production in greenhouses and indoor vertical farms.

PLSC 667-010: SEMINAR CONTROLLED ENVIRONMENT CROP PHYSIOLOGY AND TECHNOLOGY

Understanding of environmental crop physiology and technology (e.g., LEDs, sensors, and imaging) in controlled-environment agriculture. Applying knowledge of plant-environment interactions in specialty-crop production in greenhouses and indoor vertical farms.

Science

SCEN 367-010: SEMINAR PRACTICAL AND JOB READY DATA SCIENCE TOOLS

This class teaches practical tools and skills necessary on the Data Science job market including foundations of data ethics, collaborative working platforms (GitHub, AWK, google cloud), visualization/communication of data-driven results, and collaboration practices. Project-based, guest lectures.

Spanish

SPAN 475-010, 080: Topics in Hispanic Culture and Civilization SPANISH IN THE US: LANGUAGE, POWER & IDENTITY

Did you know that the U.S. has the second-largest Spanish-speaking population in the world? This course examines the relationship between language, individual, and society, with a focus on language use patterns, identities, and attitudes surrounding Spanish in the U.S.

SPAN 436-010, 080: TPCS: LIT OF THE SPAN GLDN AGE CERVANTES'S ALGORITHMS

This course will examine Cervantes's fascination with the possibility of other worlds in his literary works from the vantage point of the cultural, scientific, and intellectual pursuits of the period.

**SPAN 455-010, 080: SELECTED AUTHORS WORKS&THEMES
LATIN AMERICAN WOMEN WRITERS**

This course will consider different types of violence against women, including political, social, domestic, and migration-related. Students will engage in debates through literary texts, film, art, and scholarly readings that contextualize those moments through the works of writers and artists.

**SPAN 491-010, 080: SPANISH STUDIES CAPSTONE
IMAGINING CULTURE**

In this course, taught entirely in Spanish, students will work with literary texts and audio and video materials to understand the process of fashioning cultural identities in the Hispanic World.

**SPAN 636-010, 080: TPCS: LIT OF THE SPAN GLDN AGE
CERVANTES'S ALGORITHMS**

This course will examine Cervantes's fascination with the possibility of other worlds in his literary works from the vantage point of the cultural, scientific, and intellectual pursuits of the period.

**SPAN 655-010, 080: SELECTED AUTHORS WORKS&THEMES
LATIN AMERICAN WOMEN WRITERS**

This course will consider different types of violence against women, including political, social, domestic, and migration-related. Students will engage in debates through literary texts, film, art, and scholarly readings that contextualize those moments through the works of writers and artists.

**SPAN 875-010: Seminar: Topics in Spanish Literature
IMAGINING LATIN AMERICA**

What is "Latin America"? Throughout the semester, we will engage a broad range of nineteenth-century literary texts from various Latin American countries, such as Argentina, Peru, Mexico and Cuba, to understand how Spanish speakers in the New World established their national and cultural identities.

Urban Affairs and Public Policy

**SPPA 367-010: SEMINAR
GEOSPATIAL DATA SCIENCE**

Introduces principles, techniques, and applications of data science in geospatial contexts. Focuses on geospatial and statistical concepts and algorithms for processing, analyzing, and visualizing spatial data; hypothesis testing; and model building. Examines impacts and ethics of geospatial data.

Women and Gender Studies

WOMS 330-010: Topics: World Literatures and Cultures

ANCIENT RACE & ETHNICITY

Ancient Mediterranean Race and Ethnicity explores how race and ethnicity are presented in the literature and art of Greece and Rome and the many diverse cultures they encountered. We also examine how inequalities based on race and ethnicity confronted by ancient societies remain relevant today.

WOMS 336-010: FEMINIST CULTURAL STUDIES

HIP-HOP AND FEMINISM

Explorations of different cultural representations of the Goddess and her significance. The class will examine various historical examples of Goddess cultures as well as the renewal of the Goddess tradition and current debates about non-binary representations of the divine.

WOMS 339-010: TOPICS:WOMEN & HEALTH ISSUES

REPRODUCTIVE HEALTH AND JUSTICE

Reproductive Health and Justice focuses on how gender, sexuality, race, ethnicity, religion, migration, age, and class influence reproductive experiences. We address these subjects through rigorous engagement with course materials, as well as a commitment to productive debate and discussions.