Dietrich College Interdisciplinary Minors

Dietrich College interdepartmental minors are programs whose content and components span two or more academic departments to form coherent patterns of study.

A number of interdepartmental minors are offered by Dietrich College and are, in general, available to all Carnegie Mellon undergraduate students. As well, there are numerous other minors offered by other colleges in the university that are generally available to Dietrich College students. The full list of minors available to Carnegie Mellon students is located in the catalog index under "Minors."

Completion of the requirements for any of these minors is noted on the final transcript.

To declare a Dietrich College interdepartmental minor, students should contact the college's Academic Advisory Center (AAC) and the faculty advisor for that minor.

To discuss the possibility of declaring a non-Dietrich College minor, contact the advisor listed for the minor in question.

In general, unless noted, no course taken to fulfill requirements for these interdepartmental minors may apply toward any other program's requirements.

The Minor in African and African American Studies

Professor Edda L. Fields-Black, *Faculty Advisor,* History Department
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Mission

The African and African American Studies minor introduces students to several large regions of the world: sub-Saharan Africa, the Americas, and the Caribbean. Broad geographic coverage and a comparative framework encourage students to make connections between Africa and the African Diaspora, as well as among different Diasporan communities. The minor offers undergraduates the opportunity to undertake an empirical and theoretical examination of the cultural, political, social, and historical experiences of Africans and people of African descent.

This unique transnational minor brings together several departments and colleges within the university and allows students to develop analytical skills particular to the arts, humanities, social sciences, public policy, and management. The African and African American Studies minor allow students a considerable degree of freedom in their choice of electives and independent research projects, including opportunities to study and conduct research in a relevant foreign language.

Courses taken to fulfill requirements in other major or minor programs may only be applied to this minor with permission of the Faculty Advisor.

Requirements

- The minor is composed of 54 units - two core courses and four elective courses.
- The elective courses must include one course that requires a research paper or project.
- Students may take an additional two core courses as electives, but not more than four total courses.
- Students must take courses in at least two of the four regions (African, African American, Latin American, and the Caribbean) between their core and elective courses.

Core Courses   18 units

Choose two from the History and/or English Department courses listed below:

African

79-226	African History: Earliest Times to 1780	9
79-227	Modern Africa: The Slave Trade to the End of Apartheid	9

African American

76-232	Introduction to Black Literature	9
79-241	African American History: Africa to the Civil War	9
79-242	African American History: Reconstruction to the Present	9

Elective Courses   36 units

African

79-225	West African History in Film	9
79-237	Comparative Slavery *	9
79-290	The Slave Passage: From West Africa to the Americas	9
79-385	Out of Africa: The Making of the African Diaspora *	9
82-303	French & Francophone Cultures	9
82-304	French & Francophone Sociolinguistics **	9

African American

57-480	History of Black American Music	6
76-238	What Was the Hip-Hop Generation?	9
76-333	Race and Controversy in the Arts	9
76-407	Topics in Literary & Cultural Studies : There Are Black People in the Future	9
79-237	Comparative Slavery *	9
79-247	African Americans, Imprisonment, and the Carceral State	9
79-252	"Harriet": Harriet Tubman, Slavery, and the Underground Railroad	6
79-304	African Americans in Pittsburgh	6
79-333	African Americans, Race, and the Fight for Reparations	9
79-371	African American Urban History	9

Caribbean

79-237	Comparative Slavery *	9
79-385	Out of Africa: The Making of the African Diaspora *	9
82-303	French & Francophone Cultures	9
82-304	French & Francophone Sociolinguistics **	9

Latin American

79-317	Art, Anthropology, and Empire	9
82-343	Latin America Language and Culture	9
82-451	Studies in Latin American Literature and Culture	9

Notes:

* Denotes courses that require a research paper/project.

** Denotes courses taught in a foreign language

The Minor in Film and Media Studies

Laura E. Donaldson, *Academic Advisor*
Jeffrey Hinkelman, *Faculty Advisor*

Location: Department of English, Baker Hall 259

Film and the electronic media are a crucial part of contemporary culture and society; they constitute an important tool for under-standing social arrangements, historical changes, and play an increasingly important role in the development of aesthetic and cultural theory. The Dietrich College minor in Film and Media Studies offers students the opportunity to engage with film and visual media, from theoretical framing and historical-cultural contextualization to training skills in both creating and analyzing film, as well as the development of a complex blend of creative, professional, and technical competencies.

A maximum of two courses may double count with other programs.

The courses listed below are offered with at least general regularity. Participating departments may subsequently develop and offer other courses that, while not listed here, are deemed appropriate for this minor. A faculty advisor for the minor should be consulted (especially when the

schedule of courses to be offered for a given semester becomes available) to identify such additional courses.

Required Introductory Course   9 units

76-239	Introduction to Film Studies (prerequisite for 76-439)	9

Required Intermediate Course   9 units

76-310	Advanced Studies in Film and Media	9

Film and Media Electives   27 units

Complete a minimum of 27 units of course work at the 200-level or above when the primary topic is film and media. Courses may include, but are not limited to, the following:

54-191	Acting for Non-Majors	9
76-243	Introduction to Television	9
76-259	Film History	9
76-269	Introduction to Screenwriting	9
76-292	Introduction to Film Production	9
76-295	Russian Cinema: From the Bolshevik Revolution to Putin's Russia	9
76-312	Crime and Justice in American Film	9
76-313	Creative Visual Storytelling in Film Production	9
76-339	Topics in Film and Media *	9
76-353	Transnational Feminisms: Fiction and Film	9
76-367	Fact Into Film: Translating History into Cinema	9
76-374	Mediated Narrative	9
76-439	Seminar in Film and Media Studies	9
76-448	Shakespeare on Film	9
76-449	Race and Media	9
76-454	Rise of the Blockbuster	9
76-456	Independent Study in Film & Media Studies (requires prior approval)	Var.
76-469	Screenwriting Workshop	9
79-220	Screening Mexico: Mexican Cinema, 1898 to Present	6
79-306	Fact into Film: Translating History into Cinema	9
79-308	Crime and Justice in American Film	9
79-309	The Chinese Revolution Through Film (1949-2000)	9
79-319	India Through Film	6
79-340	Juvenile Delinquency & Film: From "Boyz N the Hood"(1991) to "The Wire"(2002-08)	6
82-215	Arab Culture Through Dialogues, Film, and Literature	9
82-278	Japanese Film and Literature: The Art of Storytelling	9
82-296	World War I - the View from Paris & St. Petersburg	6
82-362	Italian Language and Culture II (if significant portion of course pertains to film)	9
82-253	Korean Culture Through Film	9
82-428	History of German Film	9
82-456	Topics in Hispanic Studies (if significant portion of course pertains to film)	9
82-533	Cultural Topics in Chinese Studies (if significant portion of course pertains to film)	6

* May be taken up to three times and counted for additional credit toward Film and Media Electives if topics differ.

Students should consult with a faculty advisor for the minor regarding courses not listed above.

400-level Film and Media Course   9 units

Complete one 400-level course from the Department of English that concentrates on film/media directly or that uses it as a tool of social or cultural analysis.

76-439	Seminar in Film and Media Studies	9
76-448	Shakespeare on Film	9

76-454	Rise of the Blockbuster	9
76-449	Race and Media	9
76-456	Independent Study in Film & Media Studies (requires prior approval)	Var.
76-467	Crime Fiction and Film	9
76-469	Screenwriting Workshop	9

The Minor in Gender Studies

Lisa Tetrault, *Professor of History and Faculty Advisor*
tetrault@andrew.cmu.edu
Location: English Department, Baker Hall 259

Gender studies is an interdisciplinary field that investigates how gender is embedded in social, cultural, and political relationships. It understands gender as a category of power that intersects with other power relations, including race, class, and sexuality.

Courses allow students to develop a deeper understanding of how gender operates, and to transfer the analytical skills they acquire to other courses as well as to their personal and professional lives. The minor combines coursework in some combination of the following fields: English, history, anthropology, psychology, philosophy, economics, and modern languages.

Courses listed are only examples. Course offerings change regularly, so please consult semester offerings and the minor advisor for other courses.

The courses listed below are offered with at least general regularity. Participating departments may develop and offer other courses that, while not listed here, are appropriate for the study of gender. Consult the minor advisor to confirm the relevance of unlisted, gender-focused courses.

Complete 1 of the following required courses.   9 units

76-241	Introduction to Gender Studies	9
79-320	Women, Politics, and Protest	9
79-331	Body Politics: Women and Health in America	9

Complete 5 or more additional courses totaling at least 45 units.   45 units

See examples below, but other courses may fulfill this requirement.*

76-353	Transnational Feminisms: Fiction and Film	9
76-422	Gender and Sexuality Studies	4.5
76-441	Theorizing Sexuality	9
79-244	Women in American History	9
79-320	Women, Politics, and Protest **	9
79-323	Making Modern Cities	9
79-324	#MeToo: Naming and Resisting Gender Violence	6
79-325	U.S. Gay and Lesbian History	6
79-331	Body Politics: Women and Health in America **	9
82-300	Language & Society in the Arab World	9
84-312	Terrorism in Sub-Saharan Africa	6
85-350	Psychology of Prejudice	9
85-446	Psychology of Gender	9

*   Consult with Gender Studies Minor Advisor Professor Lisa Tetrault at tetrault@andrew.cmu.edu.
**   If not taken as a requirement.

Minor in Health Care Policy and Management

Sponsored by:
Heinz College of Information Systems and Public Policy
Dietrich College of Humanities and Social Sciences
Mellon College of Science

Faculty Advisors:
Jason D'Antonio, Mellon College of Science
James F. Jordan, H. John Heinz III College

The face of health care is changing. The practice of medicine is being fundamentally altered by the forces of change in public policy, health care organizations and in the industry as a whole. The role of individual professionals in this industry is changing as rapidly as the industry itself. Traditional career paths have disappeared overnight to be replaced by new

opportunities that require new skills. New organizations are placing new demands on their professional and medical staffs. The criteria of efficiency and financial stability are entering the domains of diagnosis and treatment.

This minor is designed to provide students considering a career in the health professions with an understanding of how these changes are likely to affect their careers. Students will become familiar with the critical policy and management issues and will begin to learn to operate effectively in the emerging health care environment. The curriculum combines economic, organizational, managerial, historical and psychological perspectives on these issues to provide a foundation for a deepened understanding of the changing structure of health care organizations and policy.

Required Courses for HCPM Minor

A total of 54 units are required to complete this minor. Entry into the minor requires completion of 73-102 Principles of Microeconomics or the equivalent by approval.

Required Courses

Complete a total of 21 units from the following:

79-330	Medicine and Society: Health, Healers, and Hospitals	9
90-436	Health Systems	6
90-472	Health Policy	6

Elective Courses

Complete a minimum of 24 units from these two sections:

Heinz College Courses

94-409	Healthcare Information Systems	12
73-328	Health Economics	12
90-832	Health Law	6
90-433	Population Health	6
90-834	Health Care Geographical Information Systems	12
Other courses as approved		

Humanities and Social Sciences Courses (9 units each)

80-245	Medical Ethics	9
76-494	Healthcare Communications	9
88-365	Behavioral Economics and Public Policy	9
42-444	Medical Devices	9
Other courses as approved		

Please note that some of these courses have prerequisites that will not count toward the completion of the requirements for this minor.

Elective Focus Areas

Focus areas are suggested groupings of electives based on student interest. Students *do not* need to take all electives within one focus area; they are free to choose their 18-unit elective minimum from any combination of focus areas.

Health Management/Administration Focus		Units
90-832	Health Law	6
80-245	Medical Ethics	9
76-494	Healthcare Communications	9

Health Policy Focus		Units
73-328	Health Economics	12
90-832	Health Law	6
90-433	Population Health	6
88-365/90-882	Behavioral Economics and Public Policy	9
Other courses as approved		

Health Analytics & IT Focus		Units
94-409	Healthcare Information Systems	12
90-834	Health Care Geographical Information Systems	12
42-444	Medical Devices	9
Other courses as approved		

The Minor in Linguistics

Linguistics is the scientific study of human language. The central goal of the Linguistics Program is to provide students with the analytical skills and linguistic concepts needed to understand language scientifically, whether formally, as researchers, or informally, as participants in daily linguistic interactions. The foundation of the Linguistics Minor is a set of rigorous core courses, informed by contemporary approaches to the study of linguistic form and meaning. The Core courses cover the principal domains of linguistic analysis: phonetics and phonology, syntax, and meaning. Students then move on to the Extended Core, which includes more advanced courses as well as courses on a wider range of topics, such as intonation and language variation. All courses counted towards the minor must be taken for a letter grade and passed with a grade of "C" or above.

Core (27 units)

Required

80-180	Nature of Language	9

Select 2 from the following 3 options

80-282	Phonetics and Phonology I	9
80-280	Linguistic Analysis	9
or 80-285	Natural Language Syntax	
80-381	Meaning in Language	9
or 80-383	Language in Use	

Extended Core: Choose 3 courses (27 units) from the Extended Core and/or additional courses from Core.

Extended Core

80-283	It Matters How You Say It	9
80-284	Invented Languages	9
80-286	Words and Word Formation: Introduction to Morphology	9
80-287	Language Variation and Change	9
80-288	Intonation: Transcription and Analysis	9
80-284	Invented Languages	9
80-382	Phonetics and Phonology II	9
80-384	Linguistics of Turkic Languages	9
80-385	Linguistics of Germanic Languages	9
80-388	Linguistic Typology: Diversity and Universals	9
80-488	Acoustics of Human Speech: Theory, Data, and Analysis	9

The Minor in Logic and Computation

The Minor in Logic and Computation provides students with general course work in logic, the theory of computation, and philosophy. Students must complete six courses, among them the following three core courses. All courses counted towards the minor must be taken for a letter grade and passed with a grade of "C" or above.

Logic and Computation Core Courses		27 units
80-150	Nature of Reason	9
80-211	Logic and Mathematical Inquiry	9
or 80-210	Logic and Proofs	
80-310	Formal Logic	9
or 80-311	Undecidability and Incompleteness	

Logic and Computation Electives		27 units

Students must take two courses in the Philosophy Department at the 300-level or higher, in subjects related to logic and computation. And an additional course at the 300-level or higher in an area that uses logical and computational tools, such as philosophy, computer science, linguistics, mathematics, psychology, or statistics. The choice of electives must be approved by the Academic Program Manager.

Neural Computation Minor

Dr. Tai Sing Lee, *Director*
Melissa Stupka, *Administrative Coordinator*
https://www.cmu.edu/ni/academics/minor-in-neural-computation.html

Neural computation is a scientific enterprise to understand the neural basis of intelligent behaviors from a computational perspective. Study of

neural computation includes, among others, decoding neural activities using statistical and machine learning techniques, and developing computational theories and neural models of perception, cognition, motor control, decision-making and learning. The neural computation minor allows students to learn about the brain from multiple perspectives, and to acquire the necessary background for graduate study in neural computation. Students enrolled in the minor will be exposed to, and hopefully participate in, the research effort in neural computation and computational neuroscience at Carnegie Mellon University.

The minor in Neural Computation is an intercollege minor jointly sponsored by the School of Computer Science, the Mellon College of Science, and the Dietrich College of Humanities and Social Sciences, and is coordinated by the Neuroscience Institute (https://www.cmu.edu/ni/) and the Center for the Neural Basis of Cognition (CNBC) (http://www.cnbc.cmu.edu/).

The Neural computation minor is open to students in any major of any college at Carnegie Mellon. It seeks to attract undergraduate students from computer science, psychology, engineering, biology, statistics, physics, and mathematics from SCS, CIT, H&SS and MCS.

The Neural Computation minor is open to students in any major of any college at Carnegie Mellon. It seeks to attract undergraduate students from computer science, psychology, engineering, biology, statistics, physics, and mathematics from SCS, CIT, Dietrich College and MCS. The primary objective of the minor is to encourage students in biology and psychology to take computer science, engineering and mathematics courses, to encourage students in computer science, engineering, statistics and physics to take courses in neuroscience and psychology, and to bring students from different disciplines together to form a community. The curriculum and course requirements are designed to maximize the participation of students from diverse academic disciplines. The program seeks to produce students with both basic computational skills and knowledge in cognitive science and neuroscience that are central to computational neuroscience.

APPLICATION

Students must apply for admission no later than November 30 of their senior years; an admission decision will usually be made within one month. Students are encouraged to apply as early as possible in their undergraduate careers so that the director of the Neural Computation minor can provide advice on their curriculum, but should contact the program director any time even after the deadline.

To apply, send email to the director of the Neural Computation minor Dr. Tai Sing Lee (tai@cnbc.cmu.edu) and copy Melissa Stupka (mstupka@andrew.cmu.edu). Include in your email:

- Full name
- Andrew ID
- Preferred email address (if different)
- Your class and College/School at Carnegie Mellon
- Semester you intend to graduate
- All (currently) declared majors and minors
- Statement of purpose (maximum 1 page) – Describes why you want to take this minor and how it fits into your career goals
- Proposed schedule of required courses for the Minor (this is your plan, NOT a commitment)
- Research projects you might be interested in

Curriculum

The Minor in Neural Computation will require a total of five courses: four courses drawn from the four core areas (A: neural computation, B: neuroscience, C: cognitive psychology, D: intelligent system analysis), one from each area, and one additional depth elective chosen from one of the core areas that is outside the student's major. The depth elective can be replaced by a one-year research project in computational neuroscience. No more than two courses can be double counted toward the student's major or other minors. However, courses taken for general education requirements of the student's degree are not considered to be double counted. A course taken to satisfy one core area cannot be used to satisfy the course requirement for another core area. The following listing presents a set of current possible courses in each area. Other computational neuroscience courses are being developed at Carnegie Mellon and University of Pittsburgh that will also satisfy core area A requirement and the requirements will be updated as they come on-line. Substitution is possible but requires approval.

A. Neural Computation

		Units
15-386	Neural Computation	9
15-387	Computational Perception	9
15-883	Computational Models of Neural Systems	12

85-419	Introduction to Parallel Distributed Processing	9
86-375	Computational Perception	9
Pitt-Mathematics-1800 Introduction to Mathematical Neuroscience		9

B. Neuroscience

03-362	Cellular Neuroscience	9
03-363	Systems Neuroscience	9
03-365	Neural Correlates of Learning and Memory	9
42-630	Introduction to Neural Engineering (crosslisted with 18-690)	12
85-765	Cognitive Neuroscience	9
Pitt-Neuroscience 1000 Introduction to Neuroscience		9

C. Cognitive Psychology

85-211	Cognitive Psychology	9
85-213	Human Information Processing and Artificial Intelligence	9
85-412	Cognitive Modeling	9
85-419	Introduction to Parallel Distributed Processing	9
85-426	Learning in Humans and Machines	9
85-765	Cognitive Neuroscience	9

D. Intelligent System Analysis

10-301 or 10-315	Introduction to Machine Learning (Undergrad) Introduction to Machine Learning (SCS Majors)	12
15-281	Artificial Intelligence: Representation and Problem Solving	12
15-386	Neural Computation	9
15-387	Computational Perception	9
15-494	Cognitive Robotics: The Future of Robot Toys	12
16-299	Introduction to Feedback Control Systems	12
16-311	Introduction to Robotics	12
16-385	Computer Vision	12
18-290	Signals and Systems	12
24-352	Dynamic Systems and Controls	12
36-225	Introduction to Probability Theory	9
36-247	Statistics for Lab Sciences	9
36-401	Modern Regression	9
36-410	Introduction to Probability Modeling	9
42-631	Neural Data Analysis	12
42-632	Neural Signal Processing	12
86-375	Computational Perception	9
86-631	Neural Data Analysis	12

Prerequisites

The required courses in the above four core areas require a number of basic prerequisites: basic programming skills at the level of 15-110 Principles of Computing and basic mathematical skills at the level of 21-122 Integration and Approximation or their equivalents. Some courses in Area D require additional prerequisites. Area B Biology courses require, at minimum, 03-121 Modern Biology. Students might skip the prerequisites if they have the permission of the instructor to take the required courses. Prerequisite courses are typically taken to satisfy the students' major or other requirements. In the event that these basic skill courses are not part of the prerequisite or required courses of a student's major, one of them can potentially count toward the five required courses (e.g. the depth elective), conditional on approval by the director of the minor program.

Research Requirements (Optional)

The minor itself does not require a research project. The student however may replace the depth elective with a year-long research project. In special circumstances, a research project can also be used to replace one of the five courses, as long as (1) the project is not required by the student's major or other minor, (2) the student has taken a course in each of the four core areas (not necessarily for the purpose of satisfying this minor's requirements), and (3) has taken at least three courses in this curriculum not counted toward the student's major or other minors. Students interested in participating in the research project should contact any faculty engaged in computational neuroscience or neural computation research at Carnegie Mellon or in the University of Pittsburgh. A useful webpage that provides listing of faculty in neural computation is https://www.cmu.edu/ni/academics/pnc/pnc-training-faculty.html. The director

of the minor program will be happy to discuss with students about their research interest and direct them to the appropriate faculty.

Fellowship Opportunities

The Program in Neural Computation (PNC) administered by the Center for the Neural Basis of Cognition currently provides 3-4 competitive full-year fellowships ($11,000) to Carnegie Mellon undergraduate students to carry out mentored research in neural computation. The fellowship has course requirements similar to the requirements of the minor. Students do not apply to the fellowship program directly. They have to be nominated by the faculty members who are willing to mentor them. Therefore, students interested in the full-year fellowship program should contact and discuss research opportunities with any CNBC faculty at Carnegie Mellon or University of Pittsburgh working in the area of neural computation or computational neuroscience and ask for their nomination by sending email to Dr. Tai Sing Lee, who also administers the undergraduate fellowship program at Carnegie Mellon. See www.cnbc.cmu.edu/training/ undergraduate/undergraduate-research-fellowships-in-computational-neuroscience/ (http://www.cnbc.cmu.edu/training/undergraduate/ undergraduate-research-fellowships-in-computational-neuroscience/) for details.

The Program in Neural Computation also offers a summer training program for undergraduate students from any U.S. undergraduate college. The students will engage in a 10-week intense mentored research and attend a series of lectures in neural computation. See www.cnbc.cmu.edu/training/ undergraduate/summer-undergraduate-research-program-in-computational-neuroscience/ (http://www.cnbc.cmu.edu/training/undergraduate/summer-undergraduate-research-program-in-computational-neuroscience/) for application information.

The Minor in Rationality, Uncertainty, and Choice: Formal Methods

Core Requirements

Complete all of the following:		Units
80-305	Game Theory	9
80-306	Decision Theory	9
88-223	Decision Analysis	12
or 88-312	Decision Models and Games	

Note: Students must complete three elective courses from the following two categories and must complete at least one course in each category.

Elective Category 1: Formal Foundations		9-18 units
80-201	Knowledge and Justified Belief	9
80-208	Critical Thinking	9
80-210	Logic and Proofs	9
80-315	Modal Logic	9
80-325	Foundations of Causation and Machine Learning	9
80-516	Causality and Machine Learning	9
80-521	Seminar on Formal Epistemology: Belief and Evidence	9
80-524	Topics in Formal Epistemology: Topological Philosophy of Science	9
88-223	Decision Analysis	12
88-312	Decision Models and Games	9
88-379	Data-Driven Decision Analysis	9

Elective Category 2: Theory and Applications		9-18 units
80-246	Moral Psychology	9
80-249	AI, Society, and Humanity	9
80-252	Kant	9
80-255	Pragmatism: Making Ideas Work	9
80-261	Experience, Reason, and Truth	9
80-321	Causation, Law, and Social Policy	9
80-324	Philosophy of Economics	9
80-330	Ethical Theory	9
80-335	Social and Political Philosophy	9

The Minor in Religious Studies

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acreasman@cmu.edu

Dr. Alexandra Garnhart-Bushakra, *Academic Program Manager*, History Department
Location: Baker Hall 240, 412-268-2880

The Religious Studies minor offers students a range of intellectual tools for thinking about religious ideas, behaviors and institutions. It also enables students to build a base of knowledge that extends beyond any one particular religious tradition.

Curriculum   54 units

The minor consists of six courses, totaling at least 54 units. Courses taken to fulfill requirements in other major or minor programs may only be applied to this minor with permission of the Faculty Advisor.

Religious Studies minors must satisfy the requirements listed below:

Required Core Course   9 units

All Religious Studies minors are required to take 79-281, Introduction to Religion. This required course introduces several modes of inquiry into religion, such as the philosophy of religion, sociological and behavioral approaches to religion, historical analysis of religious subject, literary and critical analysis of religious texts, theological modes of thought, and anthropological treatments of religion. This course is offered regularly, usually in the Spring semester.

79-281	Introduction to Religion	9

Distribution Requirements   18 units

In addition to the required Core Course, students must complete Distribution Courses totaling 18 units (usually two 9-unit courses). A Distribution Course is one that applies a particular discipline to more than one religion. Some examples of qualifying Distribution Courses that have been offered include:

Historical Approaches

79-208	Witchcraft and Witch-Hunting	9
79-352	Christianity Divided: The Protestant and Catholic Reformations, 1450-1650	9

Philosophical Approaches

80-276	Philosophy of Religion	9

Textual Approaches

76-331	Dissenters and Believers: Romantics, Revolution, and Religions	9

In addition to the courses listed above, participating departments often offer other courses that may qualify as Distribution Courses for the minor. The Faculty Advisor should be consulted to identity qualifying courses (especially after the Schedule of Courses for a given semester becomes available).

Elective Courses   27 units

In addition to the required Core Course and the Distribution Courses, students must complete Elective Courses totaling at least 27 units (usually three 9-unit courses). Unlike Distribution Courses, an Elective Course may focus on the study of only one religion (although courses examining more than one religious tradition can also count as Elective Courses if not otherwise used to fulfill the Distribution Requirement).

Some examples of qualifying Elective Courses that have been offered include:

79-202	Flesh and Spirit: Early Modern Europe, 1400-1750	9
79-296	Religion in American Politics	6
79-350	Early Christianity	9
79-375	Science & Religion	6

In addition to the courses listed above, participating departments often offer other courses that may qualify as Elective Courses for the minor. The Faculty Advisor should be consulted to identify qualifying courses (especially after the Schedule of Courses for a given semester becomes available).

In addition to courses offered at CMU, relevant courses taken at the University of Pittsburgh, Duquesne University, or other Pittsburgh

institutions may count toward the Elective Requirement with the permission of the Religious Studies minor's Faculty Advisor. The option to cross-register for relevant courses at other local institutions allows students some flexibility in meeting the minor's requirements and gives them the opportunity to explore interests in religious subjects that might not otherwise be covered at CMU. Students who wish to cross-register for courses at other institutions should consult with the Faculty Advisor about whether the selected course(s) will meet the minor's Elective Requirement.

The Minor in Science, Technology and Society

Professor Christopher J. Phillips, *Faculty Advisor,* History Department
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cjp1@cmu.edu

Dr. Alexandra Garnhart-Bushakra, *Academic Program Manager*, History Department
Location: Baker Hall 240, 412-268-2880

This minor provides interdisciplinary perspectives on the development and meaning of science and technology in modern society. The core courses enable you to develop a historical and philosophical understanding of the interplay among science, technology, and society. Elective courses enable you to pursue in greater depth and variety subjects and approaches that build on both the core courses and your primary major.

Courses taken to fulfill requirements in other major or minor programs may only be applied to this minor with permission of the Faculty Advisor.

Curriculum   54 units

Core Courses   27 units

Complete one course from each area. Additional courses from the History of Science Core and the History of Philosophy Core may count as electives for the minor.

Area 1. History of Science Core

Take at least 1 course from the list below.

79-160	Introduction to the History of Science	9
79-170	Introduction to Science, Technology, and Society	9
79-175	Moneyball Nation: Data in American Life	9
79-234	Technology and Society	9
79-330	Medicine and Society: Health, Healers, and Hospitals	9
79-370	Technology in the United States	9
79-380	Hostile Environments: The Politics of Pollution in Global Perspective	9

Area 2. Philosophy of Science Core

Take at least 1 course from the list below.

80-220	Philosophy of Science	9
80-221	Philosophy of Social Science	9
80-226	The Nature of Scientific Revolutions	9
80-244	Environmental Ethics	9
80-245	Medical Ethics	9
80-249	AI, Society, and Humanity	9

Area 3. Science Core

Take at least 1 course (9 units total) from the following departments: 15-xxx Computer Science, 09-xxx Chemistry, 03-xxx Biological Sciences, 33-xxx Physics

Electives   27 units

Complete three courses from the approved list of elective courses. Courses listed in Areas 1 and 2 may also be taken as electives if not already completed for an Area requirement. To petition for a course not listed to be approved as an elective, contact the Faculty Advisor, cjp1@cmu.edu, directly.

18-482	Telecommunications Technology and Policy for the Internet Age	12
48-448	History of Sustainable Architecture	9
73-427	Sustainability, Energy, and Environmental Economics	9

76-319	Environmental Rhetoric	9
76-395	Science Writing	9
76-425	Rhetoric, Science, and the Public Sphere	9
76-476	Rhetoric of Science	9
76-492	Rhetoric of Public Policy	9
76-494	Healthcare Communications	9
79-202	Flesh and Spirit: Early Modern Europe, 1400-1750	9
79-204	American Environmental History	9
79-208	Witchcraft and Witch-Hunting	9
79-215	Environmental Justice from Conservation to Climate Change	9
79-246	Industrial America	9
79-283	Hungry World: Food and Famine in Global Perspective	9
79-297	Technology and Work	9
79-302	Killer Robots:The Ethics, Law, and Politics of Lethal Autonomous Weapons Systems	9
79-303	Pittsburgh and the Transformation of Modern Urban America	6
79-331	Body Politics: Women and Health in America	9
79-357	Science and the Body	6
79-368	Un-natural Disasters: Societies and Environmental Hazards in Global Perspective	6
79-372	The Rise and Fall of Pittsburgh Steel	6
80-101	Dangerous Ideas in Science and Society	9
80-150	Nature of Reason	9
80-312	Mathematical Revolutions	9
80-321	Causation, Law, and Social Policy	9
80-324	Philosophy of Economics	9
84-387	Remote Systems and the Cyber Domain in Conflict	9
85-380	In Search of Mind: The History of Psychology	9

The Minor in Societal & Human Impacts of Future Technologies (SHIFT)

Core Courses (2 courses, 10 to 18 units total)		Units
80-249	AI, Society, and Humanity	9
80-445	Shift Capstone Experience	1-9

Area Courses (6 courses, 54 units total)
Note: Five of the six Area Courses must be taken in different departments

Technology area (18 units)
Courses that build basic technological competence, and teach concepts and frameworks that provide high-level understanding of computational technologies, including their possibilities and limits.

Complete two courses		Units
05-317	Design of Artificial Intelligence Products	12
05-318	Human AI Interaction	12
05-320	Social Web	12
05-452	Service Design	12
15-110	Principles of Computing	10
15-112	Fundamentals of Programming and Computer Science	12
16-467	Human Robot Interaction	12
17-303	Cryptocurrencies, Blockchains and Applications	9
17-313	Foundations of Software Engineering	12
17-331	Information Security, Privacy, and Policy	12
17-333	Privacy Policy, Law, and Technology	9
17-355	Program Analysis	12
36-202	Methods for Statistics & Data Science	9
67-250	The Information Systems Milieux	9
88-300	Programming and Data Analysis for Social Scientists	9

Social & Behavioral Sciences area (18 units)
Courses that teach the concepts and frameworks of social and behavioral sciences (e.g., economics, psychology, sociology), including methods and

analyses such as experimental design and quantitative and qualitative data analysis.

Complete two courses		Units
05-413	Human Factors	9
17-224	Influence, Persuasion, and Manipulation Online	9
36-200	Reasoning with Data	9
70-311	Organizational Behavior	9
70-321	Negotiation and Conflict Resolution	9
70-341	Team Dynamics and Leadership	9
73-102	Principles of Microeconomics	9
73-103	Principles of Macroeconomics	9
84-266	Research Design for Political Science	9
84-267	Data Science for Political Science	9
84-369	Decision Science for International Relations	9
88-406	Behavioral Economics @ Work	9
88-418	Negotiation: Strategies and Behavioral Insights	9
88-419	International Negotiation	9
88-435	Decision Science and Policy	9

Ethics, Policy & Design Area (18 units)
Courses that teach core concepts and frameworks to address and analyze ethical, policy, and design challenges relevant to current and near-future computational technologies.

Complete two courses		Units
05-413	Human Factors	9
08-200	Ethics and Policy Issues in Computing	9
16-161	ROB Freshman Seminar: Artificial Intelligence and Humanity	9
17-224	Influence, Persuasion, and Manipulation Online	9
36-200	Reasoning with Data	9
51-173	Design Center: Human Experience in Design	9
51-241	How People Work	9
51-371	Futures I	4.5
51-373	Futures II	4.5
51-382	Design Center: Design for Social Innovation	9
70-311	Organizational Behavior	9
70-321	Negotiation and Conflict Resolution	9
70-332	Business, Society and Ethics	9
70-341	Team Dynamics and Leadership	9
70-364	Business Law	6
73-102	Principles of Microeconomics	9
73-103	Principles of Macroeconomics	9
79-175	Moneyball Nation: Data in American Life	9
79-234	Technology and Society	9
79-302	Killer Robots:The Ethics, Law, and Politics of Lethal Autonomous Weapons Systems	9
80-130	Introduction to Ethics	9
80-135	Introduction to Political Philosophy	9
80-330	Ethical Theory	9
80-335	Social and Political Philosophy	9
84-266	Research Design for Political Science	9
84-267	Data Science for Political Science	9
84-275	Comparative Politics	9
84-319	Civil-Military Relations	9
84-325	Contemporary American Foreign Policy	9
84-369	Decision Science for International Relations	9
84-370	Nuclear Security & Arms Control	9
84-372	Space and National Security	9
84-373	Emerging Technologies and International Law	9
84-380	US Grand Strategy	9
84-386	The Privatization of Force	9
84-387	Remote Systems and the Cyber Domain in Conflict	9
84-389	Terrorism and Insurgency	9
84-390	Social Media, Technology, and Conflict	9
84-405	The Future of Warfare	9
88-221	Markets, Democracy, and Public Policy	9
88-406	Behavioral Economics @ Work	9
88-418	Negotiation: Strategies and Behavioral Insights	9
88-419	International Negotiation	9
88-435	Decision Science and Policy	9

The Minor in Sociology

Peter Schwardmann, *Faculty Director*
Connie Angermeier, *Senior Academic Program Manager and Advisor*
Location: Porter Hall 208H
cla2@andrew.cmu.edu
Schedule an appointment: https://go.oncehub.com/ConnieAngermeier (https://go.oncehub.com/ConnieAngermeier/)

The Sociology minor introduces the student to central concepts in sociological theory and methods of empirical inquiry needed to broadly understand social behavior, including its structure, history, and dynamics. Students choose among a range of methodological approaches and substantive topic areas including social psychology, work and organizations, social networks, technology and society, medical sociology, and gender and family. Exposure to these topics will help students understand and appreciate the processes by which families, groups, and organizations form and evolve over time; by which individuals affect and are affected by the society in which they live; and by which technology and institutions shape and influence society. This background in empirical tools and social theory will strengthen the student's ability to pursue graduate studies in sociology, social history, social science, and organizational theory; to begin professional careers involving social analysis, network analysis, data analysis of teams, groups and organizations, social analysis within journalism, political institutions, the government, and online; and to enter the corporate environment with a thorough understanding of organizational activity.

Curriculum   54 units

In addition to the general education requirements of the student's college and the requirements of the student's major, Sociology minors must satisfy the following requirements. The Core courses comprise 18 units of the minor. One course is taken from the Organizations cluster, and one course is taken from the Methodology cluster. The Elective courses comprise 36 units of the minor. Sociology minors should consult with the program advisor to plan a course schedule prior to registration.

NOTE: The core courses are offered regularly; the elective courses are offered with at least general regularity. Participating departments may subsequently develop and offer other courses that, while not listed here, are deemed appropriate for this minor. The program advisor should be consulted (especially when the schedule of courses to be offered for a given semester becomes available) to identify such additional courses.

No more than two courses (18 units) in the Sociology minor may be counted to fulfill any other major or minor's requirements.

Core Courses   18 units

A. Organizations

Complete one course.		
70-311	Organizational Behavior	9

B. Methodology

Complete one course.		
36-202	Methods for Statistics & Data Science	9
70-208	Regression Analysis	9
85-310	Research Methods in Cognitive Psychology	9
85-340	Research Methods in Social Psychology	9
88-251	Empirical Research Methods	9
88-252	Cause and Effect	9

Elective Courses   36 units

Complete four courses (a minimum of 36 units) from the following list. Two courses (18 units) must be taken from one category to complete the depth requirement. One course (9 units) must be taken from the other category. The remaining course (9 units) may be taken from either category. Appropriate courses offered by the Department of Sociology at the University of Pittsburgh (available during the academic year through cross-registration) may also be included as part of this option. Contact the Sociology program advisor for more information.

1. Sociology of Gender, Family, and Culture

70-342	Managing Across Cultures	9
70-385	Consumer Behavior	9
76-241	Introduction to Gender Studies	9

79-244	Women in American History	9
79-261	The Last Emperors: Chinese History and Society, 1600-1900	9
79-308	Crime and Justice in American Film	9
79-320	Women, Politics, and Protest	9
79-323	Making Modern Cities	9
79-331	Body Politics: Women and Health in America	9
79-343	Education, Democracy, and Civil Rights	9
79-377	Food, Culture, and Power: A History of Eating	9
80-245	Medical Ethics	9
80-246	Moral Psychology	9
80-256	Modern Moral Philosophy	9
80-305	Game Theory	9
80-335	Social and Political Philosophy	9
80-348	Health, Human Rights, and International Development	9
84-369	Decision Science for International Relations	9
85-241	Social Psychology	9
85-350	Psychology of Prejudice	9
85-352	Evolutionary Psychology	9
85-358	Pro-Social Behavior	9
85-377	Attitudes and Persuasion	9
85-442	Health Psychology	9
85-446	Psychology of Gender	9
88-230	Human Intelligence and Human Stupidity	9
88-231	Thinking in Person vs. Thinking Online	9
88-380	Dynamic Decisions	9
88-388	Psychological Models of Decision Making	9

2. Sociology of Work, Organizations, and Technology

70-332	Business, Society and Ethics	9
73-348	Behavioral Economics	9
79-275	Introduction to Global Studies	9
88-255	Strategic Decision Making	9
88-261	Health Policy	9
88-275	Bubbles: Data Science for Human Minds	9
88-341	Team Dynamics and Leadership	9
88-344	Systems Analysis: Environmental Policy	9
88-365	Behavioral Economics and Public Policy	9
88-366	Behavioral Economics of Poverty and Development	9
88-367	Behavioral Economics & Field Experiments in Organizations	9
88-406	Behavioral Economics @ Work	9
88-418	Negotiation: Strategies and Behavioral Insights	9
88-419	International Negotiation	9
88-435	Decision Science and Policy	9
88-451	Policy Analysis Senior Project	12
88-452	Policy Analysis Senior Project	12

Note: Some courses have additional prerequisites.