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 college’s Academic Advisory Center (AAC) and the faculty advisor for that minor.

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
Location: Baker Hall 231B, 412-268-8012
fieldblack@andrew.cmu.edu

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

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

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>79-226</td>
<td>African History: Earliest Times to 1780</td>
<td>9</td>
</tr>
<tr>
<td>79-227</td>
<td>Modern Africa: The Slave Trade to the End of Apartheid</td>
<td>9</td>
</tr>
<tr>
<td>76-232</td>
<td>Introduction to Black Literature</td>
<td>9</td>
</tr>
<tr>
<td>79-241</td>
<td>African American History: Africa to the Civil War</td>
<td>9</td>
</tr>
<tr>
<td>79-242</td>
<td>African American History: Reconstruction to the Present</td>
<td>9</td>
</tr>
</tbody>
</table>

Elective Courses

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>79-225</td>
<td>West African History in Film</td>
<td>9</td>
</tr>
<tr>
<td>79-237</td>
<td>Comparative Slavery *</td>
<td>9</td>
</tr>
<tr>
<td>79-290</td>
<td>The Slave Passage: From West Africa to the Americas</td>
<td>9</td>
</tr>
<tr>
<td>79-385</td>
<td>Out of Africa: The Making of the African Diaspora *</td>
<td>9</td>
</tr>
<tr>
<td>82-303</td>
<td>French &amp; Francophone Cultures</td>
<td>9</td>
</tr>
<tr>
<td>82-304</td>
<td>French &amp; Francophone Sociolinguistics **</td>
<td>9</td>
</tr>
</tbody>
</table>

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 understanding 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>76-239</td>
<td>Introduction to Film Studies</td>
<td>9</td>
</tr>
<tr>
<td>(prerequisite for 76-439)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Required Intermediate Course

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>76-310</td>
<td>Advanced Studies in Film and Media</td>
<td>9</td>
</tr>
</tbody>
</table>
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  Var. (requires prior approval)
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  Var. (requires prior approval)
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.

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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>79-330</td>
<td>Medicine and Society: Health, Healers, and Hospitals</td>
<td>9</td>
</tr>
<tr>
<td>90-436</td>
<td>Health Systems</td>
<td>6</td>
</tr>
<tr>
<td>90-472</td>
<td>Health Policy</td>
<td>6</td>
</tr>
</tbody>
</table>

Elective Courses
Complete a minimum of 24 units from these two sections:

Heinz College Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>94-409</td>
<td>Healthcare Information Systems</td>
<td>12</td>
</tr>
<tr>
<td>73-328</td>
<td>Health Economics</td>
<td>12</td>
</tr>
<tr>
<td>90-832</td>
<td>Health Law</td>
<td>6</td>
</tr>
<tr>
<td>90-433</td>
<td>Population Health</td>
<td>6</td>
</tr>
<tr>
<td>90-834</td>
<td>Health Care Geographical Information Systems</td>
<td>12</td>
</tr>
</tbody>
</table>

Other courses as approved

Humanities and Social Sciences Courses (9 units each)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-245</td>
<td>Medical Ethics</td>
<td>9</td>
</tr>
<tr>
<td>76-494</td>
<td>Healthcare Communications</td>
<td>9</td>
</tr>
<tr>
<td>88-365</td>
<td>Behavioral Economics and Public Policy</td>
<td>9</td>
</tr>
<tr>
<td>42-444</td>
<td>Medical Devices</td>
<td>9</td>
</tr>
</tbody>
</table>

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.

Selective 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-832</td>
<td>Health Law</td>
<td>6</td>
</tr>
<tr>
<td>80-245</td>
<td>Medical Ethics</td>
<td>9</td>
</tr>
<tr>
<td>76-494</td>
<td>Healthcare Communications</td>
<td>9</td>
</tr>
</tbody>
</table>

Health Policy Focus

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>73-328</td>
<td>Health Economics</td>
<td>12</td>
</tr>
<tr>
<td>90-832</td>
<td>Health Law</td>
<td>6</td>
</tr>
<tr>
<td>90-433</td>
<td>Population Health</td>
<td>6</td>
</tr>
<tr>
<td>88-365/90-882</td>
<td>Behavioral Economics and Public Policy</td>
<td>9</td>
</tr>
</tbody>
</table>

Other courses as approved

Health Analytics & IT Focus

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>94-409</td>
<td>Healthcare Information Systems</td>
<td>12</td>
</tr>
<tr>
<td>90-834</td>
<td>Health Care Geographical Information Systems</td>
<td>12</td>
</tr>
<tr>
<td>42-444</td>
<td>Medical Devices</td>
<td>9</td>
</tr>
</tbody>
</table>

Other courses as approved

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-150</td>
<td>Nature of Reason</td>
<td>9</td>
</tr>
<tr>
<td>80-211</td>
<td>Logic and Mathematical Inquiry</td>
<td>9</td>
</tr>
<tr>
<td>80-310</td>
<td>Formal Logic</td>
<td>9</td>
</tr>
<tr>
<td>80-311</td>
<td>Undecidability and Incompleteness</td>
<td>9</td>
</tr>
</tbody>
</table>

Logic and Computation Electives

Students must take two courses in the Philosophy Department at the 300-level or higher, in subjects related to logic and computation. 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

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/nii/) 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.

A. Neural Computation

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-386</td>
<td>Neural Computation</td>
<td>9</td>
</tr>
<tr>
<td>15-387</td>
<td>Computational Perception</td>
<td>9</td>
</tr>
<tr>
<td>15-883</td>
<td>Computational Models of Neural Systems</td>
<td>12</td>
</tr>
<tr>
<td>85-419</td>
<td>Introduction to Parallel Distributed Processing</td>
<td>9</td>
</tr>
<tr>
<td>86-375</td>
<td>Computational Perception</td>
<td>9</td>
</tr>
<tr>
<td>20-1800</td>
<td>Introduction to Mathematical Neuroscience</td>
<td>9</td>
</tr>
</tbody>
</table>

B. Neuroscience

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-362</td>
<td>Cellular Neuroscience</td>
<td>9</td>
</tr>
<tr>
<td>03-363</td>
<td>Systems Neuroscience</td>
<td>9</td>
</tr>
<tr>
<td>03-365</td>
<td>Neural Correlates of Learning and Memory</td>
<td>9</td>
</tr>
<tr>
<td>42-630</td>
<td>Introduction to Neural Engineering</td>
<td>12 (croslisted with 18-690)</td>
</tr>
<tr>
<td>85-765</td>
<td>Cognitive Neuroscience</td>
<td>9</td>
</tr>
<tr>
<td>20-1800</td>
<td>Introduction to Neuroscience</td>
<td>9</td>
</tr>
</tbody>
</table>

C. Cognitive Psychology

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>85-211</td>
<td>Cognitive Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-213</td>
<td>Human Information Processing and Artificial Intelligence</td>
<td>9</td>
</tr>
<tr>
<td>85-412</td>
<td>Cognitive Modeling</td>
<td>9</td>
</tr>
<tr>
<td>85-419</td>
<td>Introduction to Parallel Distributed Processing</td>
<td>9</td>
</tr>
<tr>
<td>85-426</td>
<td>Learning in Humans and Machines</td>
<td>9</td>
</tr>
<tr>
<td>85-765</td>
<td>Cognitive Neuroscience</td>
<td>9</td>
</tr>
</tbody>
</table>

D. Intelligent System Analysis

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-301</td>
<td>Introduction to Machine Learning (Undergrad)</td>
<td>12</td>
</tr>
<tr>
<td>or 10-315</td>
<td>Introduction to Machine Learning (SCS Majors)</td>
<td>12</td>
</tr>
<tr>
<td>15-281</td>
<td>Artificial Intelligence: Representation and Problem Solving</td>
<td>9</td>
</tr>
</tbody>
</table>

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.cmue.edu/mlacademics/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 participating in the research fellowship program should contact any faculty engaged in computational neuroscience or neural computation research at Carnegie Mellon or in the University of Pittsburgh 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 program 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-305</td>
<td>Game Theory</td>
<td>9</td>
</tr>
</tbody>
</table>
Distribution Courses that have been offered include:

- Applies a particular discipline to more than one religion. Some examples of qualifying Elective Courses that have been offered include:
  - Historical Approaches
  - Textual Approaches
  - Philosophical Approaches

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 identify 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
- 79-296 Religion in American Politics
- 79-350 Early Christianity
- 79-375 Science & Religion

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 Religious Studies

Professor Allyson Creasman, Faculty Advisor, History Department
Location: Baker Hall 242D, 412-268-9832
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

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

- 79-281 Introduction to Religion 9 units

Distribution Requirements

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
  - 79-352 Christianity Divided: The Protestant and Catholic Reforms, 1450-1650

Elective Category 1: Formal Foundations 9-18 units

Elective Category 2: Theory and Applications 9-18 units

Elective Courses

The Minor in Science, Technology, and Society

Professor Christopher J. Phillips, Faculty Advisor, History Department
Location: Baker Hall 231C, 412-268-1753
cpj1@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

The Minor in Interdisciplinary Minors

Dietrich College Interdisciplinary Minors 5
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.

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
79-303 Pittsburgh and the Transformation of Modern Urban America 6
79-331 Body Politics: Women and Health in America 9
79-357 Science and the Bod 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

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

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
05-318 Design of Artificial Intelligence Products 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
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
The Minor in Sociology

Peter Schwardmann, Faculty Director
Connie Angermeier, Senior Academic Program Manager and Advisor
Location: Porter Hall 208H
cla20@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.