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 fieldsblack@andrew.cmu.edu, Baker Hall 231B, 412-268-8012
Dr. Andrew Ramey, Senior Academic Advisor, History Department aramey@andrew.cmu.edu, Baker Hall 240, 412-268-7906

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 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>
</tbody>
</table>

African American

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<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>
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</table>

Elective Courses

<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>

African American

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>57-480</td>
<td>History of Black American Music</td>
<td>6</td>
</tr>
<tr>
<td>76-238</td>
<td>What Was the Hip-Hop Generation?</td>
<td>9</td>
</tr>
<tr>
<td>76-333</td>
<td>Race and Controversy in the Arts</td>
<td>9</td>
</tr>
<tr>
<td>76-407</td>
<td>Topics in Literary &amp; Cultural Studies: There Are Black People in the Future</td>
<td>9</td>
</tr>
<tr>
<td>79-237</td>
<td>Comparative Slavery *</td>
<td>9</td>
</tr>
<tr>
<td>79-247</td>
<td>African Americans, Imprisonment, and the Carceral State</td>
<td>9</td>
</tr>
<tr>
<td>79-252</td>
<td>&quot;Harriet&quot;: Harriet Tubman, Slavery, and the Underground Railroad</td>
<td>6</td>
</tr>
<tr>
<td>79-304</td>
<td>African Americans in Pittsburgh</td>
<td>6</td>
</tr>
<tr>
<td>79-371</td>
<td>African American Urban History</td>
<td>9</td>
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</tbody>
</table>

Caribbean

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>79-237</td>
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</table>

Latin American

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>79-317</td>
<td>Art, Anthropology, and Empire</td>
<td>9</td>
</tr>
<tr>
<td>82-343</td>
<td>Latin America: Language and Culture</td>
<td>9</td>
</tr>
<tr>
<td>82-451</td>
<td>Studies in Latin American Literature and Culture</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
76-239 Introduction to Film Studies 9 units
(prerequisite for 76-439)

Required Intermediate Course
76-310 Advanced Studies in Film and Media 9 units

Film and Media Electives
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 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 9
(requires prior approval)
76-457 Crime Fiction and Film 9
76-469 Screenwriting Workshop 9
76-491 Seminar in Film 9
9 units

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 new courses that are 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 9
79-325 U.S. Gay and Lesbian History 9
79-327 Making America Dry: A History of Prohibition, 1920-1933 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

* 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.
76-429 Seminar in Film 9
76-448 Shakespeare on Film 9
76-454 Rise of the Blockbuster 9

The 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:
90-832 Health Law 6
90-833 Population Health 6
90-834 Health Care Geographical Information Systems 12

Other courses as approved

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

Heinz College Courses
94-706 Healthcare Information Systems 12
94-705 Health Economics 12
90-832 Health Law 6
90-833 Population Health 6
90-818 Lean Performance Improvement Lab: H C 6
90-834 Health Care Geographical Information Systems 12

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 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.

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
90-832 Health Law 6
90-818 Lean Performance Improvement Lab: H C 6
80-245 Medical Ethics 9
76-494 Healthcare Communications 9

Health Policy Focus
94-705 Health Economics 12
90-832 Health Law 6
90-833 Population Health 6
88-365/90-882 Behavioral Economics and Public Policy 9
79-335 Banned Substances: Drugs and Alcohol in American History 9

Other courses as approved

Health Analytics & IT Focus
94-706 Healthcare Information Systems 12
90-834 Health Care Geographical Information Systems 12
42-444 Medical Devices 9

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
80-285 Natural Language Syntax 9
80-381 Meaning in Language 9
or 80-383 Language in Use 9

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 9
80-310 Formal Logic 9
or 80-311 Undecidability and Incompleteness 9

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
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, HSSS 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 year; 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

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Name</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>85-765</td>
<td>Cognitive Neuroscience</td>
<td>Var.</td>
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</table>

B. Neuroscience

<table>
<thead>
<tr>
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<th>Course Name</th>
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</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>42-630</td>
<td>Introduction to Neural Engineering</td>
<td>12</td>
</tr>
<tr>
<td>85-765</td>
<td>Cognitive Neuroscience</td>
<td>Var.</td>
</tr>
<tr>
<td>85-1000</td>
<td>Introduction to Neuroscience</td>
<td>9</td>
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</tbody>
</table>

C. Cognitive Psychology

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Name</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>
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<tr>
<td>85-412</td>
<td>Cognitive Modeling</td>
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</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>Var.</td>
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</tbody>
</table>

D. Intelligent System Analysis

<table>
<thead>
<tr>
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<th>Course Name</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>10-301</td>
<td>Introduction to Machine Learning (Undergrad)</td>
<td>12</td>
</tr>
<tr>
<td>15-281</td>
<td>Artificial Intelligence: Representation and Problem Solving</td>
<td>12</td>
</tr>
<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>
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<tr>
<td>15-494</td>
<td>Cognitive Robotics: The Future of Robot Toys</td>
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<tr>
<td>16-299</td>
<td>Introduction to Feedback Control Systems</td>
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<td>16-311</td>
<td>Introduction to Robotics</td>
<td>12</td>
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<tr>
<td>16-385</td>
<td>Computer Vision</td>
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<tr>
<td>18-290</td>
<td>Signals and Systems</td>
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<tr>
<td>24-352</td>
<td>Dynamic Systems and Controls</td>
<td>12</td>
</tr>
<tr>
<td>36-225</td>
<td>Introduction to Probability Theory</td>
<td>9</td>
</tr>
<tr>
<td>36-247</td>
<td>Statistics for Lab Sciences</td>
<td>9</td>
</tr>
<tr>
<td>36-401</td>
<td>Modern Regression</td>
<td>9</td>
</tr>
<tr>
<td>36-410</td>
<td>Introduction to Probability Modeling</td>
<td>9</td>
</tr>
<tr>
<td>36-746</td>
<td>Statistical Methods for Neuroscience and Psychology</td>
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<tr>
<td>42-631</td>
<td>Neural Data Analysis</td>
<td>12</td>
</tr>
<tr>
<td>42-632</td>
<td>Neural Signal Processing</td>
<td>12</td>
</tr>
<tr>
<td>86-375</td>
<td>Computational Perception</td>
<td>9</td>
</tr>
<tr>
<td>86-631</td>
<td>Neural Data Analysis</td>
<td>12</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 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 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/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-research-fellowships-in-computational-neuroscience/ (http://www.cnbc.cmu.edu/training/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/summer-undergraduate-research-program-in-computational-neuroscience/ (http://www.cnbc.cmu.edu/training/summer-undergraduate-research-program-in-computational-neuroscience/) for application information.

The Minor in Religious Studies
Professor Allyson Creasman, Faculty Advisor, History Department acreasman@cmu.edu (aeowen@cmu.edu), Baker Hall 242D, 412-268-9832
Dr. Andrew Ramey, Senior Academic Advisor, History Department aramey@andrew.cmu.edu, Baker Hall 240, 412-268-7906
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
79-307 Religion and Politics in the Middle East 9
79-352 Christianity Divided: The Protestant and Catholic Reformation, 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 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 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 interest 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 cjphillips@cmu.edu, Baker Hall 231C, 412-268-1753
Dr. Andrew Ramey, Senior Academic Advisor, History Department aramey@andrew.cmu.edu, Baker Hall 240, 412-268-7906
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.

79-234 Technology and Society 9
79-299 Introduction to the History of Science 9
79-305 Moneyball Nation: Data in American Life 9
79-330 Medicine and Society: Health, Healers, and Hospitals 9
79-342 Introduction to Science and Technology Studies 9
79-370 Technology in the United States 9
The Minor in Societal & Human Impacts of Future Technologies (SHIFT)

Students pursuing the SHIFT minor will gain the skills, knowledge, and experience to successfully take on roles in integrated, multidisciplinary analyses of current and near-future computational technologies. The SHIFT minor requires eight total courses, with no limit to double-counting with other majors or minors. All courses counted towards the minor must be taken for a letter grade and passed with a grade of "C" or above.

Core Courses (2 courses, 18 units total)
80-249 AI, Society, and Humanity 9
80-445 Shift Capstone Experience 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 & frameworks that provide high-level understanding of computational technologies, including their possibilities and limits.

Technology area
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 Var.
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
36-201 Statistical Reasoning and Practice 9
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 & behavioral sciences (e.g., economics, psychology, sociology), including methods and analyses such as experimental design and quantitative & qualitative data analysis.

Social & Behavioral Science area
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
84-265 Political Science Research Methods 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.

Ethics, Policy & Design Area
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
The Minor in Sociology

Peter Schwardmann, Faculty Director
Connie Angermeier, Senior Academic Program Manager and Advisor
Location: Porter Hall 208H
cia2@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 9 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 Causal Inference in the Field 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 Decision 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
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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>79-275</td>
<td>Introduction to Global Studies</td>
<td>9</td>
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<tr>
<td>79-342</td>
<td>Introduction to Science and Technology Studies</td>
<td>9</td>
</tr>
<tr>
<td>88-275</td>
<td>Bubbles: Data Science for Human Minds</td>
<td>9</td>
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<tr>
<td>88-255</td>
<td>Strategic Decision Making</td>
<td>9</td>
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<td>88-341</td>
<td>Team Dynamics and Leadership</td>
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<td>88-344</td>
<td>Systems Analysis: Environmental Policy</td>
<td>9</td>
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<tr>
<td>88-365</td>
<td>Behavioral Economics and Public Policy</td>
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<td>88-366</td>
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<td>or 88-452</td>
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Note: Some courses have additional prerequisites.