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

Faculty Advisor: Professor Edda L. Fields-Black; fieldsblack@andrew.cmu.edu, Baker Hall 362, 412-268-8012
Academic Advisor: Dr. Andrew Ramey; 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. Bread 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 allows 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>76-332</td>
<td>African American Literature: The African American Crime Novel</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>
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Caribbean

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>79-235</td>
<td>Caribbean Cultures</td>
<td>9</td>
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Elective Courses 36 units

African

<table>
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<tr>
<th>Course Code</th>
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<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>6</td>
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<tr>
<td>79-291</td>
<td>Globalization in East African History</td>
<td>6</td>
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<tr>
<td>79-385</td>
<td>Out of Africa: The Making of the African Diaspora</td>
<td>9</td>
</tr>
<tr>
<td>79-386</td>
<td>Entrepreneurs in Africa, Past, Present and Future</td>
<td>9</td>
</tr>
<tr>
<td>82-304</td>
<td>The Francophone World **</td>
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African American

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<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>
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<tr>
<td>76-332</td>
<td>African American Literature: The African American Crime Novel</td>
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<td>76-333</td>
<td>Race and Controversy in the Arts</td>
<td>9</td>
</tr>
<tr>
<td>76-432</td>
<td>Advanced Seminar in African American Studies *</td>
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<tr>
<td>79-237</td>
<td>Comparative Slavery</td>
<td>9</td>
</tr>
<tr>
<td>79-304</td>
<td>African Americans in Pittsburgh</td>
<td>6</td>
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<tr>
<td>79-371</td>
<td>African American Urban History</td>
<td>9</td>
</tr>
<tr>
<td>79-376</td>
<td>Doing Transnational History From Western Africa to Gullah/Geechee and Back</td>
<td>9</td>
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Caribbean

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tr>
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<td>Comparative Slavery</td>
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<tr>
<td>79-295</td>
<td>Race Relations in the Atlantic World</td>
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<tr>
<td>79-385</td>
<td>Out of Africa: The Making of the African Diaspora</td>
<td>9</td>
</tr>
<tr>
<td>82-304</td>
<td>The Francophone World **</td>
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Latin American

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<th>Course Title</th>
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<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

Faculty Co-Advisors: David Shumway (shumway@cmu.edu) and Jeffrey Hinkelmann (jh51@andrew.cmu.edu)
Office: Department of English, Baker Hall 259

Film and the electronic media have become 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 takes an interdisciplinary approach to the study of film and other electronic media. Courses provide techniques for analyzing and criticizing film and other media, for assessing their value as historical, anthropological and social scientific data, and for understanding the aesthetic and philosophical premises of various media texts.

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
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:

- 76-238 What Was the Hip-Hop Generation? 9
- 76-269 Survey of Forms: Screenwriting 9
- 76-312 Crime and Justice in American Film 9
- 76-338 The American Cinema 9
- 76-339 Special Topics: Film and Media 9
- 76-353 Transnational Feminisms: Fiction and Film 9
- 76-367 Fact Into Film: Translating History into Cinema 9
- 76-374 iDeaTe - Dietrich College Cuban Interactive Documentary Project 9
- 76-377 Shakespeare and Film 9
- 76-381 Mad-Men, Television, and the History of Advertising 9
- 76-419 Media in a Digital Age 9
- 76-438 The Wire: Crime, Realism, and Long-Form TV 9
- 76-439 Seminar in Film and Media Studies 9
- 76-448 Shakespeare on Film 9
- 76-456 Independent Study in Film & Media Studies Var.
- 76-469 Screenwriting Workshop: Screenwriting/Television Writing 9
- 76-472 Multimedia Storytelling in a Digital Age 9
- 79-214 Paris in Revolt: History, Literature, Film 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 9
- 79-340 Juvenile Delinquency & Film: From "Juvenile Court" (1973) to "The Wire"(2002-08) 6
- 79-341 The Cold War in Documents and Film 6
- 79-391 Stardom, Gender, and American Film 9
- 82-215 Arab Culture Through Film & Literature 9
- 82-278 Japanese Film and Literature: The Art of Storytelling 9
- 82-296 A Century of Russian Film 9
- 82-362 Italian Language and Culture II 9
- 82-253 Korean Culture Through Film 9
- 82-428 History of German Film 9
- 82-456 Topics in Hispanic Studies 9
- 82-533 Cultural Topics in Chinese Studies 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 that concentrates on film/media directly or that uses it as a tool of social or cultural analysis.

76-419 Media in a Digital Age 9
76-438 The Wire: Crime, Realism, and Long-Form TV 9
76-439 Seminar in Film and Media Studies 9
76-448 Shakespeare on Film 9
76-456 Independent Study in Film & Media Studies Var.
76-469 Screenwriting Workshop: Screenwriting/Television Writing 9
76-472 Multimedia Storytelling in a Digital Age 9

The Minor in Gender Studies

Faculty Advisor: Lisa Tetrault, Professor of History
tetrault@cmu.edu
Office to declare minor: 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.

Courses taken to fulfill requirements in other major or minor programs may not be applied to the Gender Studies minor requirements (and vice versa).

Curriculum
54 units

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.*

76-205 Jane Austen 9
76-311 Acting Out in the London Theatre 9
76-327 Influential Women Writers 9
76-329 Unruly Women in Early Modern Drama 9
76-341 Gender and Sexuality in Performance 9
76-353 Transnational Feminisms: Fiction and Film 9
76-412 Performance and 18th Century Theatrical Culture 9
76-422 Gender and Sexuality Studies 4.5
76-441 Theorizing Sexuality 9
79-222 Between Revolutions: The Development of Modern Latin America 9
79-244 Women in American History 9
79-320 Women, Politics, and Protest ** 9
79-233 Family, Gender, and Sexuality in European History, 500-1800 9
79-324 #MeToo: Naming and Resisting Gender Violence 6
79-325 U.S. Gay and Lesbian History 6
79-327 Modern Girlhood: Historical and Contemporary Perspectives 6
79-331 Body Politics: Women and Health in America ** 9
79-333 Sex, Gender & Anthropology 9
79-391 Stardom, Gender, and American Film 9
80-224 Race, Gender and Science 9
82-300 Topics in Cross-Cultural Studies 9
84-312 Gender and Development in Sub-Saharan Africa 6
85-350 Psychology of Prejudice 9
85-446 Psychology of Gender 9
The Minor in Global Systems and Management

Faculty Advisor: Brandy Wilson
Office: HBH 3029

Graduates across all disciplines are increasingly likely to find themselves working as part of a global development team on a wide variety of business, consumer, and intellectual products and services.

The Global Systems and Management minor (GSM) is intended for students wishing to develop skills essential for participating in emerging opportunities in global business systems, systems development, product development and global project management. GSM exposes students to contemporary issues and practices facing organizations, managers and individuals working on a global scale across political, cultural and temporal boundaries. GSM presents an opportunity for students to learn about being part of an organization that works globally with its employees, business partners, customers and supply chains.

Students will learn about global project management, outsourcing and cross-cultural communications from theoretical and practical viewpoints. An organized elective structure enables students to tailor the minor to reflect their specific interests.

Curriculum

GSM is offered jointly across the departments and programs of the Dietrich College of Humanities and Social Sciences with participation from the Tepper School of Business. The minor is administered by the Dietrich College Information Systems program. The minor requires students to complete 63 units. Note that the courses listed below may be subject to change:

- one Information Systems course: 67-329 Contemporary Themes in Global Systems (offered annually)
- two courses in Communications
- a combination of 36 units with at least 9 units in each of the categories of:
  - Humanities, Heritage and Culture
  - International Management

Study Abroad Options

Students are encouraged to complete a semester of study abroad. With prior approval from the GSM Advisor, study abroad courses may be applied to GSM minor requirements except for 67-329 Contemporary Themes in Global Systems. Please consult with the GSM Advisor before embarking on the semester of study abroad.

Double Counting of Courses

Students may double count up to three courses with other major and minor programs.

Core Course

Required course:
67-329 Contemporary Themes in Global Systems (offered annually) 9

Communications

18 units

Complete two courses:
05-341 Organizational Communication 9
70-321 Negotiation and Conflict Resolution 9
70-340 Business Communications 9
70/85/88-341 Team Dynamics and Leadership 9
70-342 Managing Across Cultures 9
70-483 Advertising and Marketing Communications 9
73-341 Within the Firm: Managing through Incentives 9
76-270 Writing for the Professions 9
76-318 Communicating in the Global Marketplace 9
76-386/76 Language & Culture 9
76-428 Visual Verbal Communication 9
85-375 Crosscultural Psychology 9
88-419 International Negotiation 9

Humanities, Heritage and Culture (HHC) & International Management (IM)

36 units (Complete at least 9 units of HHC or IM)

Humanities, Heritage and Culture

Humanities and Culture consists of:

- History Department courses: 79-200 level or above covering international/regional studies that are outside of U.S. history
- Modern Languages Department courses: 82-200 level or above, covering international or regional studies but not including elementary or intermediate language courses
- At least 9 units in total

History course 79-200 level or above covering international/regional studies that are outside of U.S. history
82-215 Arab Culture Through Film & Literature Var.
82-238 Topics in Chinese Culture 9
82-253 Korean Culture Through Film 9
82-254 World of Korea, Then and Now 9
82-273 Introduction to Japanese Language and Culture 9
82-278 Japanese Film and Literature: The Art of Storytelling 9
82-293 Introduction to Russian Culture 9
82-303 Introduction to French Culture 9
82-304 The Francophone World 9
82-305 French in its Social Contexts 9
82-311 Advanced Arabic I 9
82-312 Advanced Arabic II 9
82-319 Contemporary Society in Germany, Austria and Switzerland 9
82-323 Germany, Austria and Switzerland in the 20th Century 9
82-333 Introduction to Chinese Language and Culture Var.
82-342 Spain: Language and Culture 9
82-343 Latin America: Language and Culture 9
82-345 Introduction to Hispanic Literary & Cultural Studies 9
82-361 Italian Language and Culture I 9
82-362 Italian Language and Culture II 9
82-399 Special Topics: Russian in Context Var.
82-400 Russian Studies Topics 6
82-415 Topics in French and Francophone Studies 9
82-416 Topics in French and Francophone Studies 9
82-425 Topics in German Literature and Culture 9
82-433 Topics in Contemporary Culture of China 9
82-441 Studies in Peninsular Literature and Culture 9
82-450 Advanced Research in Hispanic Language & Culture 9
82-456 Topics in Hispanic Studies 9
82-473 Topics in Japanese Studies 9
82-474 Topics in Japanese Studies 9
84-275 Comparative Politics 9
84-312 Gender and Development in Sub-Saharan Africa 6
84-315 Contemporary Debates in Human Rights 9
84-389 Terrorism and Insurgency 9

International Management

- At least 9 units in total
19-411 Global Competitiveness: Firms, Nations and Technological Change 9
67-319-67-331 Global Technology Consulting Groundwork - Technology Consulting in the Global Community (these two courses are taken sequentially) 6
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 domains of diagnosis and treatment.

Required Courses for HCPM Minor (45 Unit minimum)
A total of 69 units are required to complete this minor. Entry into the minor requires completion of 73-102 Principles of Microeconomics and 88-221 Analytical Foundations of Public Policy or the equivalent by approval.

Required Courses
Students are required to take the following courses.
79-330 Medicine and Society 9
94-705 Health Economics 12
90-836 Health Policy and Management Systems 6

Elective Courses 24 units
Complete a minimum of 24 units.

Heinz College Courses
90-721 Healthcare Management 6
90-818 Health Care Quality & Performance Improvement 6
90-723 Financial Statements and Analysis of Companies 6
90-831 Advanced Financial Management of Health Care 6
94-706 Healthcare Information Systems 12
90-832 Health Law 6

Humanities and Social Sciences Courses (9 units each)
76-494 Healthcare Communications 9
79-318 Sustainable Social Change: History and Practice 9
80-245 Medical Ethics 9
85-241 Social Psychology 9
85-442 Health Psychology 9
85-446 Psychology of Gender 9

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

The Minor in Linguistics

Tom Werner, Director
Office: Baker Hall 155F
Email: twerner@andrew.cmu.edu

The Interdepartmental Minor in Linguistics combines courses from the departments of Philosophy, English, Modern Languages, Psychology and the Language Technologies Institute. It synthesizes the linguistics related offerings in these departments and provides students with an academic experience that reflects the interdisciplinary character of the subject.

The Minor in Linguistics requires a total of 6 courses: the introductory linguistics course; two fundamental skills courses; and three additional electives. All courses counted towards the Minor must be taken for a letter grade and passed with a grade of “C” or above.

Introductory Course
80-180 Nature of Language 9

Fundamental Skills
Take one course from two of the following core subject areas:
Sounds
80-282 Phonetics and Phonology I 9

Structure
76-389 Rhetorical Grammar 9
80-280 Linguistic Analysis 9
80-285 Natural Language Syntax 9

Meaning
80-381 Meaning in Language 9
80-383 Language in Use 9
76-385 Introduction to Discourse Analysis 9
or 76-484 Discourse Analysis 9

Electives
Take three additional linguistics courses. These can be additional courses from the Fundamental Skills categories above, or any other course which is approved by the Director as a linguistics elective. For electives taught on a regular basis, see courses listed as Breadth or Electives in the Undergraduate Catalog entry for the Linguistics Major.

Neural Computation Minor

Director: Dr. Tai Sing Lee
Administrative Coordinator: Melissa Stupka
Website: http://www.cnbc.cmu.edu/upnc/nc_minor/

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
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 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 even after the deadline.

To apply, send email to the director of the Neural Computation minor Dr. Tai Sing Lee (tai@cnbc.cmu.edu) (tai@cnbc.cmu.edu) and copy Melissa Stupka (m stupka@cnbc.cmu.edu) (m stupka@cnbc.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 3 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

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<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>15-386</td>
<td>Neural Computation</td>
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<tr>
<td>15-387</td>
<td>Computational Perception</td>
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<td>15-683</td>
<td>Computational Models of Neural Systems</td>
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<tr>
<td>85-419</td>
<td>Introduction to Parallel Distributed Processing</td>
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<tr>
<td>86-375</td>
<td>Computational Perception</td>
<td>9</td>
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<tr>
<td>Pitt-Mathematics-1800 Introduction to Mathematical Neuroscience</td>
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B. Neuroscience

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<tr>
<td>03-362</td>
<td>Cellular Neuroscience</td>
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<tr>
<td>03-363</td>
<td>Systems Neuroscience</td>
<td>9</td>
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<tr>
<td>03-761</td>
<td>Neural Plasticity</td>
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<tr>
<td>42-630</td>
<td>Introduction to Neuroscience for Engineers (crosslisted with 18-490)</td>
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<tr>
<td>85-765</td>
<td>Cognitive Neuroscience</td>
<td>Var.</td>
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<tr>
<td>Pitt-Neuroscience 1000 Introduction to Neuroscience</td>
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C. Cognitive Psychology

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<tr>
<td>85-211</td>
<td>Cognitive Psychology</td>
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<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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</table>

D. Intelligent System Analysis

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>10-601</td>
<td>Introduction to Machine Learning (Masters)</td>
<td>12</td>
</tr>
<tr>
<td>15-381</td>
<td>Artificial Intelligence: Representation and Problem Solving</td>
<td>9</td>
</tr>
<tr>
<td>15-386</td>
<td>Neural Computation</td>
<td>9</td>
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<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>
<td>12</td>
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<tr>
<td>16-299</td>
<td>Introduction to Feedback Control Systems</td>
<td>12</td>
</tr>
<tr>
<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>
<td>9</td>
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<tr>
<td>18-290</td>
<td>Signals and Systems</td>
<td>12</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>
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<tr>
<td>36-401</td>
<td>Modern Regression</td>
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<tr>
<td>36-410</td>
<td>Introduction to Probability Modeling</td>
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<tr>
<td>36-746</td>
<td>Statistical Methods for Neuroscience and Psychology</td>
<td>12</td>
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<tr>
<td>42-631</td>
<td>Neural Data Analysis</td>
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<td>42-632</td>
<td>Neural Signal Processing</td>
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<td>86-375</td>
<td>Computational Perception</td>
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<tr>
<td>86-631</td>
<td>Neural Data Analysis</td>
<td>9</td>
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</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 www.cnbc.cmu.edu/computational-neuroscience. The director of the minor program will be happy to discuss with students about their research interest and direct them to the appropriate faculty.
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/ 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/ for application information.

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**

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

**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
79-273 Jews and Muslims in History
79-307 Religion and Politics in the Middle East
79-352 Christianity Divided: The Protestant and Catholic Reformations, 1450-1650
79-353 Religious Identities and Religious Conflicts in Modern Europe

**Philosophical Approaches**

80-276 Philosophy of Religion

**Textual Approaches**

76-346 Angels and Diplomats -- Renaissance Poetry from Wyatt to Milton

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**

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:

76-337 Representations of Islam in Early Modern England
79-202 Flesh and Spirit: Early Modern Europe, 1400-1750
79-296 Religion in American Politics
79-349 The Holocaust in Historical Perspective
79-350 Early Christianity

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 Religious Studies minor provides interdisciplinary perspectives on the development and meaning of science and technology in modern society. The core courses enable you to explore the philosophical underpinnings, cultural and historical contexts, and economic and literary assessments 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 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:

**Core Courses**

Complete two courses from Area 1 and one course from Area 2.

**Area 1. History, Philosophy, and Social Studies of Science and Technology (18 units)**

79-234 Technology in American Society
79-299 From Newton to the Nuclear Bomb: History of Science, 1750-1950
79-305 Moneyball Nation: Data in American Life
79-330 Medicine and Society
79-342 Introduction to Science and Technology Studies
80-220 Philosophy of Science
80-226 Revolutions in Science

**Area 2. Language and Rhetoric in Science and Technology (9 units)**

76-319 Environmental Rhetoric
76-395 Science Writing
76-425 Science in the Public Sphere
76-476 Rhetoric of Science
Electives

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 (cpi1@cmu.edu) directly.

Area 3. Electives

18-482 Telecommunications Technology and Policy for the Internet Age 12
48-448 History of Sustainable Architecture 9
79-202 Flesh and Spirit: Early Modern Europe, 1400-1750 9
79-208 Witchcraft and Witch-Hunting 9
79-213 The American Railroad: Decline and Renaissance in the Age of Deregulation 6
79-283 Hungry World: Food and Famine in Global Perspective 9
79-302 Killer Robots: The Ethics, Law, and Politics of Lethal Autonomous Weapons System 6
79-331 Body Politics: Women and Health in America 9
79-332 Medical Anthropology 9
79-335 Drug Use and Drug Policy 9
79-381 Energy and Empire: How Fossil Fuels Changed the World 9
80-110 Nature of Mathematical Reasoning 9
80-150 Nature of Reason 9
80-214 Computing, AI, and Philosophy 9
80-221 Philosophy of Social Science 9
80-222 Measurement and Methodology 9
80-223 Causality and Probability 9
80-245 Medical Ethics 9
80-248 Engineering Ethics 9
80-312 Mathematical Revolutions 9
80-322 Philosophy of Physics 9
80-323 Philosophy of Biology 9
80-324 Philosophy of Economics 9
84-387 Technology and Policy of Cyber War 9
85-380 In Search of Mind: The History of Psychology 9
88-417 Scientific Integrity and Communication 9

The Minor in Sociology

Faculty Director, Saurabh Bhargava
Program Advisor, Connie Angermeyer
Office: Porter Hall 208A
Email: cla2@andrew.cmu.edu

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

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

A. Organizations

Complete one course.

70-311 Organizational Behavior 9

B. Methodology

Complete one course.

36-202 Statistics & Data Science Methods 9
70-208 Regression Analysis 9
85-340 Research Methods in Social Psychology 9
88-251 Empirical Research Methods 9

Elective Courses

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
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 Family, Gender, and Sexuality in European History, 500-1800 9
79-331 Body Politics: Women and Health in America 9
79-332 Medical Anthropology 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
80-305 Choices, Decisions, and Games 9
85-241 Social Psychology 9
85-446 Psychology of Gender 9

2. Sociology of Work, Organizations, and Technology

70-332 Business, Society and Ethics 9
70-414 Entrepreneurship for Engineers 9
73-331 Political Economy of Inequality and Redistribution 9
79-342 Introduction to Science and Technology Studies 9
88-275 Bubbles: Data Science for Human Minds 9
80-341 Computers, Society and Ethics 9
88-341 Team Dynamics and Leadership 9
88-402 Modeling Complex Social Systems 9
88-418 Domestic Negotiation 9
88-419 International Negotiation 9
88-435 Decision Science and Policy 9
88-451 Policy Analysis Senior Project 12
or 88-452 Policy Analysis Senior Project 9

Note: Some courses have additional prerequisites.