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
fieldsblack@andrew.cmu.edu, Baker Hall 362, 412-268-8012

Dr. Andrew Ramey, Senior Academic Advisor, History
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 may take an additional two core courses as electives, but not more than four total courses.
• Students must take courses in at least two of the four regions (African, African American, Latin American, and the Caribbean) between their core and elective courses.

Core Courses 18 units

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

African

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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<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>
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African American

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<thead>
<tr>
<th>Course</th>
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<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>
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Caribbean

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>79-235</td>
<td>Caribbean Cultures</td>
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</table>

Elective Courses 36 units

African

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<thead>
<tr>
<th>Course</th>
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<tr>
<td>79-225</td>
<td>West African History in Film</td>
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<tr>
<td>79-237</td>
<td>Comparative Slavery *</td>
<td>9</td>
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<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>79-385</td>
<td>Out of Africa: The Making of the African Diaspora</td>
<td>9</td>
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<tr>
<td>82-303</td>
<td>French &amp; Francophone Cultures</td>
<td>9</td>
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<tr>
<td>82-304</td>
<td>French &amp; Francophone Sociolinguistics **</td>
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African American

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<tr>
<td>57-480</td>
<td>History of Black American Music</td>
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<tr>
<td>76-238</td>
<td>What Was the Hip-Hop Generation?</td>
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<td>76-333</td>
<td>Race and Controversy in the Arts</td>
<td>9</td>
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<tr>
<td>79-237</td>
<td>Comparative Slavery *</td>
<td>9</td>
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<tr>
<td>79-247</td>
<td>African Americans, Imprisonment, and the Carceral State</td>
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<tr>
<td>79-252</td>
<td>&quot;Harriet&quot;: Harriet Tubman, Slavery, and the Underground Railroad</td>
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<td>79-304</td>
<td>African Americans in Pittsburgh</td>
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<td>79-371</td>
<td>African American Urban History</td>
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Caribbean

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Latin American

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<th>Units</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>
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</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 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 (prerequisite for 76-439) 9 units

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

Film and Media Electives  
Complete 3 or more courses totaling at least 18 units.

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

Required Introductory Course  
76-238 What Was the Hip Hop Generation? 9 units
76-269 Survey of Forms: Screenwriting 9 units
76-312 Crime and Justice in American Film 9 units
76-338 Internship Mini 9 units
76-339 Topics in Film and Media * 9 units
76-353 Transnational Feminisms: Fiction and Film 9 units
76-367 Fact Into Film: Translating History into Cinema 9 units
76-374 Mediated Narrative, English-IDeATe 9 units
76-377 Shakespeare on Film 9 units
76-419 Media in a Digital Age 9 units
76-438 The Wire: Crime, Realism, and Long-Form TV 9 units
76-439 Seminar in Film and Media Studies: Class, Race, & Gender in Film 9 units
76-448 Shakespeare on Film 9 units
76-456 Independent Study in Film & Media Studies Var. units
76-469 Advanced Screen/TV Writing Workshop 9 units
76-472 Topics in Journalism: Storytelling in a Digital Age 9 units
76-220 Screening Mexico: Mexican Cinema, 1898 to Present 6 units
79-306 Fact into Film: Translating History into Cinema 9 units
79-308 Crime and Justice in American Film 9 units
79-309 The Chinese Revolution Through Film (1949-2000) 9 units
79-319 India Through Film 6 units
79-340 Juvenile Delinquency & Film: From "Boyz N the Hood"(1991) to "The Wire"(2002-08) 6 units
79-341 The Cold War in Documents and Film 9 units
82-215 Arab Culture Through Dialogue, Film, and Literature 9 units
82-278 Japanese Film and Literature: The Art of Storytelling 9 units
82-296 A Century of Russian Film 9 units
82-362 Italian Language and Culture II 9 units
82-253 Korean Culture Through Film 9 units
82-428 History of German Film 9 units
82-456 Topics in Hispanic Studies 9 units
82-533 Cultural Topics in Chinese Studies 9 units

* 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.

76-219 Media in a Digital Age 9 units
76-438 The Wire: Crime, Realism, and Long-Form TV 9 units
76-439 Seminar in Film and Media Studies: Class, Race, & Gender in Film 9 units
76-448 Shakespeare on Film 9 units
76-456 Independent Study in Film & Media Studies Var. units
76-469 Advanced Screen/TV Writing Workshop 9 units
76-472 Topics in Journalism: Storytelling in a Digital Age 9 units

** If not taken as a requirement.

The Minor in Global Systems and Management

Corey Dandy, Academic Advisor
Location: HBH 3051

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 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  63

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

This course introduces the effective fundamentals of global project management and the mechanics of sourcing arrangements including offshore outsourcing.

Required course:

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

Communications  18 units

Courses from this category focus on expanding students’ communication skills, particularly those necessary to be successful in a professional environment. These skills may include written, oral, and interpersonal communication, as well as presentation, teamwork, and public speaking skills.

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
- 70-350 Acting for Business 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
- 76-386/786 Language & Culture 9
- 76-428 Visual Verbal Communication 9
- 85-375 Crosscultural Psychology 9
- 88-418 Domestic Negotiation 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

Courses from this category focus on expanding students’ knowledge and understanding of societies and cultures outside of the United States.

Students are expected to gain a broader cultural understanding of individuals with whom they will interact in global business systems.

- 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 Dialogues, Film, and Literature Var. 9
- 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 Russian Cinema: From the Bolshevik Revolution to Putin’s Russia 9
- 82-303 French & Francophone Cultures 9
- 82-304 French & Francophone Sociolinguistics 9
- 82-305 French in its Social Contexts 9
- 82-311 Advanced Arabic I 9
- 82-312 Advanced Arabic II 9
- 82-320 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. 9
- 82-342 Spain: Language and Culture 9
- 82-343 Latin America: Language and Culture 9
- 82-345 Introduction to Hispanic Literary and 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. 9
- 82-400 Russian Studies Topics 6
- 82-415 Topics in French and Francophone Studies 9
- 82-416 or 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 or 82-474 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

Courses from this category focus on expanding students’ ability to effectively manage and make decisions that are important in operating and navigating a global businesses. Students are expected to gain an understanding of how to be an effective part of an organization that works globally with its employees, business partners, customers and supply chains.

- At least 9 units in total


- 67-319-67-331 Global Technology Consulting Groundwork - Technology Consulting in the Global Community (these two courses are taken sequentially) 6

- 67-331 Technology Consulting in the Global Community 3
- 70-342 Managing Across Cultures 9
- 70-364 Business Law 9
- 70-365 International Trade and International Law 9
- 70-430 International Management 9
- 70-480 International Marketing 9
- 73-341 Within the Firm: Managing through Incentives 9
- 73-372 International Money and Finance 9
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 27 units from the following:

- 79-330 Medicine and Society 9
- 90-836 Health Systems 6
- 90-721 Healthcare Management 6
- 90-861 Health Policy 6

Elective Courses

Complete a minimum of 18 units from these two sections:

Heinz College Courses

- 90-831 Advanced Financial Management of Health Care 6
- 94-705 Health Economics 12
- 90-832 Health Law 6
- 90-833 Population Health 6
- 90-818 Lean Performance Improvement Lab: Health Care 6
- 90-834 Health Care Geographical Information Systems 12

Other courses as approved

Humanities and Social Sciences Courses (9 units each)

- 80-245 Medical Ethics 9
- 76-494 Healthcare Communications 9

Units

- Behavioral Economics and Public Policy 9
- Innovation in Information Systems: Health Care 9
- Medical Devices 9

Other courses as approved

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

Elective Focus Areas

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

Health Management/Administration Focus

- 90-831 Advanced Financial Management of Health Care 6
- 90-832 Health Law 6
- 90-818 Lean Performance Improvement Lab: Health Care 6
- 80-245 Medical Ethics 9
- 76-494 Healthcare Communications 9

Units

- Health Economics 12
- Health Law 6
- Population Health 6
- Behavioral Economics and Public Policy 9

Other courses as approved

Health Analytics & IT Focus

- 90-834 Health Care Geographical Information Systems 12
- 67-476 Innovation in Information Systems: Health Care 9
- 42-444 Medical Devices 9

Other courses as approved

The Minor in Linguistics

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

Core (27 units)

Required

- 80-180 Nature of Language 9

Select 2 from the following 3 options

- 80-282 Phonetics and Phonology I 9
- 80-280 Linguistic Analysis 9
- 80-825 Natural Language Syntax 9
- 80-381 Meaning in Language 9
- 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
- 80-282 Phonetics and Phonology I 9
- 80-284 Invented Languages 9
- 80-385 Linguistics of Germanic Languages 9
- 80-388 Linguistic Typology: Diversity and Universals 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 or 80-311 Undecidability and Incompleteness

Logic and Computation Electives 27 units

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

Neural Computation Minor

Dr. Tai Sing Lee, Director Melissa Stupka, Administrative Coordinator
www.cnbc.cmu.edu/upnc/nc_minor (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 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 intercollegiate 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, 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@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 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

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<th>Course Code</th>
<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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<tr>
<td>15-883</td>
<td>Computational Models of Neural Systems</td>
</tr>
<tr>
<td>85-419</td>
<td>Introduction to Parallel Distributed Processing</td>
</tr>
<tr>
<td>86-375</td>
<td>Computational Perception</td>
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<td>85-765</td>
<td>Cognitive Neuroscience</td>
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B. Neuroscience

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<tr>
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<td>Cellular Neuroscience</td>
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<td>03-363</td>
<td>Systems Neuroscience</td>
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<tr>
<td>03-365</td>
<td>Neural Correlates of Learning and Memory</td>
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<tr>
<td>42-630</td>
<td>Introduction to Neuroscience for Engineers (crosslisted with 18-690)</td>
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<tr>
<td>85-765</td>
<td>Cognitive 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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<td>85-213</td>
<td>Human Information Processing and Artificial Intelligence</td>
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<tr>
<td>85-412</td>
<td>Cognitive Modeling</td>
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<tr>
<td>85-419</td>
<td>Introduction to Parallel Distributed Processing</td>
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<tr>
<td>85-426</td>
<td>Learning in Humans and Machines</td>
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<tr>
<td>85-765</td>
<td>Cognitive Neuroscience</td>
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D. Intelligent System Analysis

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<tr>
<td>10-301</td>
<td>Introduction to Machine Learning (Undergrad)</td>
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<tr>
<td>or 10-315</td>
<td>Introduction to Machine Learning (SCS Majors)</td>
</tr>
<tr>
<td>15-201</td>
<td>Artificial Intelligence: Representation and Problem Solving</td>
</tr>
<tr>
<td>15-386</td>
<td>Neural Computation</td>
</tr>
<tr>
<td>15-387</td>
<td>Computational Perception</td>
</tr>
<tr>
<td>15-494</td>
<td>Cognitive Robotics: The Future of Robot Toys</td>
</tr>
<tr>
<td>16-299</td>
<td>Introduction to Feedback Control Systems</td>
</tr>
<tr>
<td>16-311</td>
<td>Introduction to Robotics</td>
</tr>
<tr>
<td>16-385</td>
<td>Computer Vision</td>
</tr>
<tr>
<td>18-290</td>
<td>Signals and Systems</td>
</tr>
<tr>
<td>24-352</td>
<td>Dynamic Systems and Controls</td>
</tr>
</tbody>
</table>
The Minor in Religious Studies

Professor Allyson Creasman, Faculty Advisor
acreasman@cmu.edu (aeowen@cmu.edu), Baker Hall 2420, 412-268-9832

Dr. Andrew Ramey, Senior Academic Advisor, History
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 Reformations, 1450-1650 9

Philosophical Approaches

80-276 Philosophy of Religion 9

Textual Approaches

76-346 Angels and Diplomats — Renaissance Poetry from Wyatt to Milton 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 may 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
79-349 United States and the Holocaust 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 can also be applied as Elective Courses.
institutions may count toward the Elective Requirement with the permission of
the Religious Studies minor's Faculty Advisor. The option to cross-
register for relevant courses at other local institutions allows students some flexibility in meeting the minor's requirements and gives them the opportunity to explore interests in religious subjects that might not otherwise be covered at CMU. Students who wish to cross-register for courses at other institutions should consult with the Faculty Advisor about whether the selected course(s) will meet the minor's Elective Requirement.

### The Minor in Science, Technology and Society

**Professor Christopher J. Phillips, Faculty Advisor**
cjp1@cmu.edu, Baker Hall 235C, 412-268-1753

Dr. Andrew Ramey, Senior Academic Advisor, History
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

**Core Courses**

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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>79-234</td>
<td>Technology and Society</td>
<td>9</td>
</tr>
<tr>
<td>79-299</td>
<td>From Newton to the Nuclear Bomb: History of Science, 1750-1950</td>
<td>9</td>
</tr>
<tr>
<td>79-305</td>
<td>Moneyball Nation: Data in American Life</td>
<td>9</td>
</tr>
<tr>
<td>79-330</td>
<td>Medicine and Society</td>
<td>9</td>
</tr>
<tr>
<td>79-342</td>
<td>Introduction to Science and Technology Studies</td>
<td>9</td>
</tr>
<tr>
<td>79-380</td>
<td>Hostile Environments: The Politics of Pollution in Global Perspective</td>
<td>9</td>
</tr>
</tbody>
</table>

#### Area 2. Philosophy of Science Core

Take at least 1 course from the list below.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-220</td>
<td>Philosophy of Science</td>
<td>9</td>
</tr>
<tr>
<td>80-221</td>
<td>Philosophy of Social Science</td>
<td>9</td>
</tr>
<tr>
<td>80-226</td>
<td>Revolutions in Science</td>
<td>9</td>
</tr>
<tr>
<td>80-244</td>
<td>Environmental Ethics</td>
<td>9</td>
</tr>
<tr>
<td>80-245</td>
<td>Medical Ethics</td>
<td>9</td>
</tr>
<tr>
<td>80-249</td>
<td>AI, Society, and Humanity</td>
<td>9</td>
</tr>
</tbody>
</table>

#### 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

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-482</td>
<td>Telecommunications Technology and Policy for the Internet Age</td>
<td>12</td>
</tr>
<tr>
<td>48-448</td>
<td>History of Sustainable Architecture</td>
<td>9</td>
</tr>
<tr>
<td>73-427</td>
<td>Sustainability, Energy, and Environmental Economics</td>
<td>9</td>
</tr>
<tr>
<td>76-319</td>
<td>Environmental Rhetoric</td>
<td>9</td>
</tr>
<tr>
<td>76-395</td>
<td>Science Writing</td>
<td>9</td>
</tr>
<tr>
<td>76-425</td>
<td>Rhetoric, Science, and the Public Sphere</td>
<td>9</td>
</tr>
<tr>
<td>76-476</td>
<td>Rhetoric of Science</td>
<td>9</td>
</tr>
<tr>
<td>76-492</td>
<td>Rhetoric of Public Policy</td>
<td>9</td>
</tr>
<tr>
<td>76-494</td>
<td>Healthcare Communications</td>
<td>9</td>
</tr>
<tr>
<td>79-202</td>
<td>Flesh and Spirit: Early Modern Europe, 1400-1750</td>
<td>9</td>
</tr>
<tr>
<td>79-204</td>
<td>American Environmental History</td>
<td>9</td>
</tr>
<tr>
<td>79-208</td>
<td>Witchcraft and Witch-Hunting</td>
<td>9</td>
</tr>
<tr>
<td>79-213</td>
<td>The American Railroad: Decline and Renaissance in the Age of Deregulation</td>
<td>9</td>
</tr>
<tr>
<td>79-246</td>
<td>Industrial America</td>
<td>9</td>
</tr>
<tr>
<td>79-263</td>
<td>Hungry World: Food and Famine in Global Perspective</td>
<td>9</td>
</tr>
<tr>
<td>79-297</td>
<td>Technology and Work</td>
<td>9</td>
</tr>
<tr>
<td>79-302</td>
<td>Killer Robots: The Ethics, Law, and Politics of Lethal Autonomous Weapons Systems</td>
<td>6</td>
</tr>
<tr>
<td>79-331</td>
<td>Body Politics: Women and Health in America</td>
<td>9</td>
</tr>
<tr>
<td>79-354</td>
<td>Kids and Schools in the 20th Century</td>
<td>6</td>
</tr>
<tr>
<td>79-357</td>
<td>Science and the Body</td>
<td>9</td>
</tr>
<tr>
<td>79-381</td>
<td>Energy and Empire: How Fossil Fuels Changed the World</td>
<td>9</td>
</tr>
<tr>
<td>79-397</td>
<td>Environmental and Public Health Crimes in the City</td>
<td>6</td>
</tr>
<tr>
<td>80-110</td>
<td>Nature of Mathematical Reasoning</td>
<td>9</td>
</tr>
<tr>
<td>80-150</td>
<td>Nature of Reason</td>
<td>9</td>
</tr>
<tr>
<td>80-214</td>
<td>Computing, AI, and Philosophy</td>
<td>9</td>
</tr>
<tr>
<td>80-222</td>
<td>Measurement and Methodology</td>
<td>9</td>
</tr>
<tr>
<td>80-223</td>
<td>Causality and Probability</td>
<td>9</td>
</tr>
<tr>
<td>80-248</td>
<td>Engineering Ethics</td>
<td>9</td>
</tr>
<tr>
<td>80-312</td>
<td>Mathematical Revolutions</td>
<td>9</td>
</tr>
<tr>
<td>80-321</td>
<td>Causation, Law, and Social Policy</td>
<td>9</td>
</tr>
<tr>
<td>80-322</td>
<td>Philosophy of Physics</td>
<td>9</td>
</tr>
<tr>
<td>80-323</td>
<td>Philosophy of Biology</td>
<td>9</td>
</tr>
<tr>
<td>80-324</td>
<td>Philosophy of Economics</td>
<td>9</td>
</tr>
<tr>
<td>84-387</td>
<td>Technology and Policy of Cyber War</td>
<td>9</td>
</tr>
<tr>
<td>85-380</td>
<td>In Search of Mind: The History of Psychology</td>
<td>9</td>
</tr>
</tbody>
</table>

### 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)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-249</td>
<td>AI, Society, and Humanity</td>
<td>9</td>
</tr>
<tr>
<td>80-445</td>
<td>Shift Capstone Experience</td>
<td>Var.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>05-317</td>
<td>Design of Artificial Intelligence Products</td>
<td>12</td>
</tr>
<tr>
<td>05-318</td>
<td>Human AI Interaction</td>
<td>12</td>
</tr>
<tr>
<td>05-320</td>
<td>Social Web</td>
<td>12</td>
</tr>
<tr>
<td>05-452</td>
<td>Service Design</td>
<td>12</td>
</tr>
<tr>
<td>15-110</td>
<td>Principles of Computing</td>
<td>10</td>
</tr>
<tr>
<td>15-112</td>
<td>Fundamentals of Programming and Computer Science</td>
<td>12</td>
</tr>
<tr>
<td>16-467</td>
<td>Human Robot Interaction</td>
<td>12</td>
</tr>
<tr>
<td>17-303</td>
<td>Cryptocurrencies, Blockchains and Applications</td>
<td>Var.</td>
</tr>
<tr>
<td>17-313</td>
<td>Foundations of Software Engineering</td>
<td>12</td>
</tr>
<tr>
<td>17-331</td>
<td>Information Security, Privacy, and Policy</td>
<td>12</td>
</tr>
</tbody>
</table>

The Minor in Science, Technology and Society
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 Domestic Negotiation 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
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
66-161 DC Grand Challenge First-Year Seminar: Artificial Intelligence and Humanity 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 9
73-102 Principles of Microeconomics 9
73-103 Principles of Macroeconomics 9
79-234 Technology and Society 9
79-299 From Newton to the Nuclear Bomb: History of Science, 1750-1950 9
79-302 Killer Robots: The Ethics, Law, and Politics of Lethal Autonomous Weapons Systems 6
79-305 Moneyball Nation: Data in American Life 9
80-130 Introduction to Ethics 9
80-135 Introduction to Political Philosophy 9
80-248 Engineering Ethics 9
80-330 Ethical Theory 9
80-335 Social and Political Philosophy 9
84-265 Political Science Research Methods 9
84-275 Comparative Politics 9
84-319 U.S. Foreign Policy and Interventions in World Affairs 9
84-325 Contemporary American Foreign Policy 9
84-369 Decision Science for International Relations 9
84-370 Global Nuclear Politics 9
84-372 Space and National Security 9
84-373 Emerging Technologies and the Law 9
84-380 Grand Strategy in the United States 9
84-386 The Privatization of Force 9
84-387 Technology and Policy of Cyber War 9
84-389 Terrorism and Insurgency 9
84-390 Social Media, Technology, and Conflict 9
84-405 The Future of Warfare 9
84-414 International and Subnational Security 9
88-221 Analytical Foundations of Public Policy 9
88-406 Behavioral Economics @ Work 9
88-418 Domestic Negotiation 9
88-419 International Negotiation 9
88-435 Decision Science and Policy 9

The Minor in Sociology
Saurabh Bhargava, Faculty Director
Connie Angermeyer, Senior Academic Program Manager and Advisor
Location: Porter Hall 208A
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
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

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
   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
   79-331 Body Politics: Women and Health in America 9

2. Sociology of Work, Organizations, and Technology
   70-332 Business, Society and Ethics 9
   70-348 Behavioral Economics 9
   79-275 Introduction to Global Studies 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
   88-255 Strategic Decision Making 9
   88-365 Behavioral Economics and Public Policy 9
   88-366 Behavioral Economics of Poverty and Development 9
   88-402 Modeling Complex Social Systems 9
   88-406 Behavioral Economics @ Work 9
   88-409 Behavioral Economics Perspectives on Ethical Issues 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

Note: Some courses have additional prerequisites.