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 Director: Edda L. Fields-Black
Undergraduate Advisor: Naum Kats
Office: Baker Hall 240

Mission
The African and African American Studies minor will expose students to the following regions: 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 Diasporan communities. The minor offers undergraduate students 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 minor brings together 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 is also designed to 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 not be applied to this minor.

Requirements
- The minor is composed of 54 units - two core courses and four elective courses.
- The elective courses must include one research course.
- 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.

18 unitsCore Courses
African
79-226 Introduction to African History: Earliest Times to 9 1780
79-227 Introduction to African History: 1780-1994 9

African American
76-232 African American Literature 9
76-332 African American Literature: The African American Crime Novel 9
79-241 African American History: Africa to the Civil War 9
79-242 African American History: Reconstruction to the Present 9

36 unitsElective Courses
African
79-225 West African History in Film 9
79-237 Comparative Slavery 9
79-290 States/Stateless Societies and Nationalism in West Africa 6
79-291 Globalization in East African History 6
79-385 The Making of the African Diaspora * 9
79-386 Entrepreneurs in Africa, Past, Present and Future * 9
82-304 The Francophone World ** 9

African American
57-480/79-357 History of Black American Music * 6
76-333 African American Studies 9
76-432 Advanced Seminar in African American Studies * 9
79-237 Comparative Slavery 9
79-243 African American Women’s History 9
79-304 African Americans in Pittsburgh 6
79-371 African American Urban History 9

Caribbean
79-235 Caribbean Cultures 9
79-237 Comparative Slavery 9
79-295 Race Relations in the Atlantic World 9
79-385 The Making of the African Diaspora * 9
82-304 The Francophone World ** 9
82-454 The Hispanic Caribbean: Rhyme, Reason and Song ** 9

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

Notes:
- * Denotes courses that require a research paper/project and fulfill requirement for research course
- ** Denotes courses taught in a foreign language

The Minor in Environmental Studies

Faculty Director: John Soluri
Office: Baker Hall 240
E-mail: j.soluri@andrew.cmu.edu

The minor in Environmental Studies draws on the expertise of faculty across several Carnegie Mellon colleges in order to provide students with an introduction to the interdisciplinary background and skills necessary to understand environmental problems and the means to mitigate them. It emphasizes three general areas: (1) natural science and technology; (2) social sciences; and (3) the humanities and arts. Coursework covers key environmental topics related to energy, pollution, and biological diversity; and a project course experience geared toward policy analysis and formulation.

Note that some courses carry prerequisites and/or reserve seats for primary majors. Students interested in pursuing the minor should meet with the Faculty Director to map out a course of study. Double counting follows guidelines set by the Dietrich College.
The Minor in Film and Media Studies
Faculty Advisor: David Shumway
Office to declare minor: Baker Hall 259
Film and the electronic media have become a crucial part of contemporary
culture and society; they constitute an important tool for under-standing
social arrangements, historical changes, and play an increasingly important
role in the development of aesthetic and cultural theory. The H&SS 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. In addition,
students may take courses in the processes of film-making, offered
through special arrangement with the Pittsburgh Filmmakers (a non-
profit media arts center, operating since 1971, that provides workshops,
seminars, screenings, exhibitions, and training programs in the media and
photographic arts).
Courses taken to fulfill requirements for other major or minor programs may
not be applied to the Film and Media Studies Minor requirements.

54 UnitsCurriculum
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.
The minor faculty advisor should be consulted (especially when the
schedule of courses to be offered for a given semester becomes available)
to identify such additional courses.

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

9 UnitsRequired Intermediate Course
76-339 Advanced Studies in Film and Media
(May be taken up to three times and counted for
additional credit toward Intermediate Courses if
topics differ) 9

27 UnitsIntermediate Courses
Complete a minimum of 27 units of course work, chosen in any combination
from the following three course groups. (All courses are 9 units unless
otherwise indicated).

1. Film and the Study of Society
76-238 Media and Film Studies 9
82-296 A Century of Russian Film 9

2. Film and Anthropology
79-278 Rights to Representation: Indigenous People and
their Media 9

3. Filmmaking
76-269 Survey of Forms: Screenwriting 9
FM 200 Intermediate Filmmaking (please go to CFA 100 to
register for this course) 12

Other 200 or 300 level courses in English, History, and Modern Languages
can be counted in this category when their primary topic is film and media.
Please consult the minor faculty advisor.

9 UnitsAdvanced Courses
Complete one advanced course that concentrates on film directly or that
uses it as a tool of social or cultural analysis. One additional advanced
course may be taken in place of an intermediate course.

FM 301 Advanced Filmmaking (please go to CFA 100 to register
for this course) 9

The Minor in Gender Studies
Faculty Advisor: Kristina Straub
Office to declare minor: English, Baker Hall 259
Gender studies is an interdisciplinary field that investigates how gender
is embedded in social, cultural, and political relationships. It understands

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

9 UnitsRequired Intermediate Course
76-339 Advanced Studies in Film and Media
(May be taken up to three times and counted for
additional credit toward Intermediate Courses if
topics differ) 9

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Complete a minimum of 27 units of course work, chosen in any combination
from the following three course groups. (All courses are 9 units unless
otherwise indicated).

1. Film and the Study of Society
76-238 Media and Film Studies 9
82-296 A Century of Russian Film 9

2. Film and Anthropology
79-278 Rights to Representation: Indigenous People and
their Media 9

3. Filmmaking
76-269 Survey of Forms: Screenwriting 9
FM 200 Intermediate Filmmaking (please go to CFA 100 to
register for this course) 12

Other 200 or 300 level courses in English, History, and Modern Languages
can be counted in this category when their primary topic is film and media.
Please consult the minor faculty advisor.

9 UnitsAdvanced Courses
Complete one advanced course that concentrates on film directly or that
uses it as a tool of social or cultural analysis. One additional advanced
course may be taken in place of an intermediate course.

FM 301 Advanced Filmmaking (please go to CFA 100 to register
for this course) 9

The Minor in Gender Studies
Faculty Advisor: Kristina Straub
Office to declare minor: English, 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 English, history,
anthropology, psychology, philosophy, economics, and modern languages.

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

54 UnitsCurriculum
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 appropriate for the study of gender. Consult the minor
advisor to confirm the relevance of unlisted, gender-focused courses.

18 UnitsRequired Introductory Courses
Complete one of the following (9 units)
76-241 Introduction to Gender Studies 9
79-331 Body Politics: Women and Health in America 9

and one of the following (9 units):
79-244 Women in American History 9
79-320 Women, Politics, and Protest 9

The Minor in Film and Media Studies
Faculty Advisor: David Shumway
Office to declare minor: Baker Hall 259
Film and the electronic media have become a crucial part of contemporary
culture and society; they constitute an important tool for under-standing
social arrangements, historical changes, and play an increasingly important
role in the development of aesthetic and cultural theory. The H&SS 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. In addition,
students may take courses in the processes of film-making, offered
through special arrangement with the Pittsburgh Filmmakers (a non-
profit media arts center, operating since 1971, that provides workshops,
seminars, screenings, exhibitions, and training programs in the media and
photographic arts).
Courses taken to fulfill requirements for other major or minor programs may
not be applied to the Film and Media Studies Minor requirements.

54 UnitsCurriculum
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.
The minor faculty advisor should be consulted (especially when the
schedule of courses to be offered for a given semester becomes available)
to identify such additional courses.
27 units Elective Intermediate Courses
Choose three of the following courses:

- 76-241 Introduction to Gender Studies * 9
- 76-245 Shakespeare: Tragedies and Histories 9
- 76-341 Advanced Gender Studies 9
- 79-243 African American Women’s History 9
- 79-244 Women in American History * 9
- 79-320 Women, Politics, and Protest * 9
- 79-322 Family and Gender in Russian History 9
- 79-331 Body Politics: Women and Health in America 9
- 85-221 Principles of Child Development 9
- 85-352 Evolutionary Psychology 9

* If not taken as required introductory course

9 units Elective Advanced Courses
Choose one of the following courses (9 units):

- 76-412 18th Century Literary and Cultural Studies 9
- 79-422 Theories of Sexuality and Gender 9
- 79-379 Extreme Ethnography 9
- 82-407 The Arts in Society Var.

As an alternative, in extenuating circumstances, students may substitute another 9-unit course from the “Intermediate Course” list above with the approval of the minor faculty advisor. Students may also take more than 9 units from the “Advanced Course” list to count for the 54 unit total. For information about additional course offerings, contact Kristina Straub, ks3t@andrew.cmu.edu, 412-268-6458.

The Minor in Global Systems and Management
Faculty Advisor: Carol S. Young
Office: PH 222F

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 reflect their specific interests.

54 units 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:

- one Information Systems course: 67-329 Contemporary Themes in Global Systems (offered only in the Spring semester)
- two courses in Communications
- a combination of 27 units with at least 9 units in each of the categories of:
  - Humanities, Heritage and Culture
  - International Management

for a total of 54 units to complete the GSM minor.

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.

NOTE: Participating departments may develop and offer other courses that, while not listed here, are deemed appropriate for GSM. Students may develop and submit to the GSM Advisor customized plans that substantially meet the requirements of this minor while allowing the student a personally-crafted learning experience. Proposals should generally be developed no later than the sophomore year, and the minor program started no later than junior year. Proposals will be evaluated for clarity of focus, coherence and depth in areas related to global project development and viability within the context of the Dietrich College and University. Prior approval must be obtained to begin a customized course of study.

Double Counting of Courses
Students may apply one course taken to fulfill a requirement in another major or minor program toward the GSM minor.

Core Course
Required course:
70-321 Negotiation and Conflict Resolution 9

18 units Communications
Complete two courses:
70-340 Business Communications 9
70/85/88-341 Organizational Communication 9
70-342 Managing Across Cultures 9
76-270 Writing for the Professions 9
76-318 Communicating in the Global Marketplace 9
76-366 Language & Culture 9
85-375 Crosscultural Psychology 9
88-419 Negotiation 9

27 units Humanities, Heritage and Culture (HHC) & International Management (IM)
(Complete 9 units of HHC and 18 units of IM ---OR--- 18 units of HHC and 9 units of IM)

Humanities, Heritage and Culture

Humanities Heritage 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

79-203 Social and Political Change in 20th Century Central and Eastern Europe 9
79-205 20th Century Europe 9
79-212 China and Its Neighbors: Minorities, Conquerors, and Tribute Bearers 9
79-221 Development and Democracy in Latin America 9
79-225 West African History in Film 9
79-226 Introduction to African History: Earliest Times to 1780 9
79-227 Introduction to African History: 1780-1994 9
79-229 Origins of the Arab-Israeli Conflict, 1880-1948 9
79-230 Arab-Israeli Conflict and Peace Process since 1948 9
79-235 Caribbean Cultures 9
79-236 Introduction to African Studies 9
79-251 India/America: Democracy, Diversity, Development 9
79-254 The Jewish Diaspora in Latin America 9
79-255 Irish History 9
79-256 20th Century Germany 9
79-257 Germany and the Second World War 9
79-258 French History: From the Revolution to De Gaulle 9
79-259 France During World War II 9
79-261 Chinese Culture and Society 9
79-262 Modern China 9
79-263 China’s Cultural Revolution 9
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>82-241</td>
<td>Studies in Peninsular Literature and Culture</td>
</tr>
<tr>
<td>82-450</td>
<td>Advanced Research in Hispanic Language &amp; Culture</td>
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<tr>
<td>82-456</td>
<td>Topics in Hispanic Studies</td>
</tr>
<tr>
<td>82-473</td>
<td>Topics in Japanese Studies</td>
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<td>or 82-474</td>
<td>Topics of Japanese Studies</td>
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</table>

**International Management**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>19-411</td>
<td>Global Competitiveness: Firms, Nations and Technological Change</td>
</tr>
<tr>
<td>67-319-67-331</td>
<td>Global Technology Consulting Groundwork - Techno...</td>
</tr>
<tr>
<td>70-342</td>
<td>Managing Across Cultures</td>
</tr>
<tr>
<td>70-365</td>
<td>International Trade and International Law</td>
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<tr>
<td>70-430</td>
<td>International Management</td>
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<tr>
<td>70-480</td>
<td>International Marketing</td>
</tr>
<tr>
<td>73-372</td>
<td>International Money and Finance</td>
</tr>
<tr>
<td>79-384</td>
<td>Garbage Gone Global: Managing Surplus, Waste, and Desire</td>
</tr>
<tr>
<td>88-326</td>
<td>Theories of International Relations</td>
</tr>
<tr>
<td>88-378</td>
<td>International Economics</td>
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<tr>
<td>88-384</td>
<td>Conflict and Conflict Resolution in International Relations</td>
</tr>
<tr>
<td>88-411</td>
<td>The Rise of the Asian Economies</td>
</tr>
<tr>
<td>88-412</td>
<td>Energy, Climate Change, and Economic Growth in the 21st Century</td>
</tr>
<tr>
<td>88-415</td>
<td>Global Competitiveness: Firms Nations, and Technological Change</td>
</tr>
</tbody>
</table>

**MINIMUM NUMBER OF UNITS REQUIRED FOR MINOR**

54 units

**Minor in Health Care Policy and Management**

Sponsored by:

H. John Heinz III College

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.

60 units minimum

Curriculum

Seven courses (a minimum of 60 units) are required to complete this minor. Entry into the minor requires completion of 73-100 Principles of Economics or 88-220 Policy Analysis I or the equivalent by approval.

39 units Required Courses

Students are required to take the following courses.

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>79-330</td>
<td>Medicine and Society</td>
</tr>
<tr>
<td>90-836</td>
<td>Health Systems</td>
</tr>
<tr>
<td>90-861</td>
<td>Health Policy</td>
</tr>
<tr>
<td>94-705</td>
<td>Health Economics</td>
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<tr>
<td>27 units</td>
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</tbody>
</table>
Elective Courses
Complete a minimum of 27 units.

Heinz College Courses
90-708 Healthcare Ethics 6
90-721 Healthcare Management 6
90-818 Health Care Quality & Performance Improvement 6
90-830 Introduction to Financial Management of Health Care 6
90-831 Advanced Financial Management of Health Care 6
90-832 Health Law 12
90-863 Health Policy II 6
94-706 Healthcare Information Systems 12

Humanities and Social Sciences Courses (9 units each)
76-494 Healthcare Communications 9
79-335 Drug Use and Drug Policy 9
79-383 Epidemic, Disease, and Public Health 9
80-245 Medical Ethics 9
80-247 Ethics and Global Economics 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

Linguistics is the study of human language, and it encompasses a broad spectrum of research questions, approaches and methodologies. Some linguists are concerned with the cognitive aspects of language learning, production and comprehension; some are concerned with language as a social and cultural phenomenon; others engage in the analysis of linguistic form and meaning, some from a functional and others from a formal perspective. There are also computational approaches to linguistics with both applied and theoretical goals.

The interdepartmental Minor in Linguistics is sponsored by the departments of English, Modern Languages, Philosophy and Psychology and the Language Technologies Institute. It synthesizes the linguistics related offerings in these departments and provides students with an academic experience that reflects both the interdisciplinary character of the subject and its cross-departmental representation at Carnegie Mellon.

Curriculum
The Linguistics Minor requires a total of 6 courses. 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
80-280 Linguistic Analysis 9
76-389 Rhetorical Grammar 9
80-283 Syntax and Discourse 9

Meaning
80-381 Meaning in Language 9

80-383 Language in Use 9
76-385 Introduction to Discourse Analysis 9

Electives
Take three additional courses. These can be additional courses from the Fundamental Skills category above, or any other course which is approved by the director as a linguistics elective. Listed below are the additional electives taught on a regular basis. Other appropriate courses are offered irregularly or on a one-off basis. The director will provide students with a list of possible electives each semester.

Electives are listed below with an indication of the broad areas into which they fall. Students are free to select any configuration of courses from any areas. The director will assist students in selecting electives which are consistent with their goals and interests.

Language Learning and Cognition
76-378 Literacy: Educational Theory and Community Practice 9
76-420 Process of Reading and Writing 9
80-281 Language and Thought 9
82-480 Social and Cognitive Aspects of Bilingualism 9
82-280 Learning About Language Learning 9
82-383 Second Language Acquisition: Theories and Research 9
82-388 Understanding Second Language Fluency 9
82-488 Language Learning in a Study Abroad Context 9
85-354 Infant Language Development 9
85-421 Language and Thought 9

Discourse, Society and Culture
76-318 Communicating in the Global Marketplace 9
76-325 Topics in Rhetoric: Intertextuality 9
76-373 Topics in Rhetoric: Argument 9
76-385 Introduction to Discourse Analysis 9
76-386 Language & Culture 9
76-457 Topics in Rhetoric 9
82-273 Introduction to Japanese Language and Culture 9
82-305 French in its Social Contexts 9
82-311 Arabic Language and Culture I 9
82-312 Arabic Language and Culture II 9
82-333 Introduction to Chinese Language and Culture Var. 9
82-345 Introduction to Hispanic Literary and Cultural Studies 9
82-378 Japanese Conversation Analysis 9
82-476 Japanese Discourse Analysis 9

Linguistic Analysis Conceptual Foundations
80-380 Philosophy of Language 9
82-373 Structure of the Japanese Language 9
82-442 Analysis of Spoken Spanish 9
82-444 The Structure of Spanish 9
80-382 Phonetics and Phonology II 9
11-721 Grammars and Lexicons 12
11-722 Grammar Formalisms 12

Notes
All 11-xxx and 15-xxx courses have significant Computer Science prerequisites. Interested students should check with the course instructor before registering.

The Minor in Neural Computation
Director: Dr. Tai Sing Lee
Administrative Coordinator: Melissa Stupka
## 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. Substitution is possible but requires approval by the director of the minor program.

### A. Neural Computation

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

### B. Neuroscience

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>03-362 Cellular Neuroscience</td>
<td>9</td>
</tr>
<tr>
<td>03-363 Systems Neuroscience</td>
<td>9</td>
</tr>
<tr>
<td>03-761 Neural Plasticity</td>
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<tr>
<td>85-765 Cognitive Neuroscience</td>
<td>Var.</td>
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<tr>
<td>Pitt-Neuroscience 1000 Introduction to Neuroscience</td>
<td>9</td>
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<tr>
<td>Pitt-Neuroscience 1012 Neurophysiology</td>
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### C. Cognitive Psychology

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<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>85-211 Cognitive Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-213 Human Information Processing and Artificial Intelligence</td>
<td>9</td>
</tr>
<tr>
<td>85-412 Cognitive Modeling</td>
<td>9</td>
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<tr>
<td>85-419 Introduction to Parallel Distributed Processing</td>
<td>9</td>
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<tr>
<td>85-426 Learning in Humans and Machines</td>
<td>9</td>
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<tr>
<td>85-765 Cognitive Neuroscience</td>
<td>Var.</td>
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### D. Intelligent System Analysis

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<tr>
<th>Course</th>
<th>Units</th>
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<tbody>
<tr>
<td>10-601 Introduction to Machine Learning</td>
<td>12</td>
</tr>
<tr>
<td>15-381 Artificial Intelligence: Representation and Problem Solving</td>
<td>9</td>
</tr>
<tr>
<td>15-386 Neural Computation</td>
<td>9</td>
</tr>
<tr>
<td>15-387 Computational Perception</td>
<td>9</td>
</tr>
<tr>
<td>15-486 Artificial Neural Networks</td>
<td>12</td>
</tr>
<tr>
<td>15-494 Special Topic: Cognitive Robotics</td>
<td>12</td>
</tr>
<tr>
<td>16-299 Introduction to Feedback Control Systems</td>
<td>12</td>
</tr>
<tr>
<td>16-311 Introduction to Robotics</td>
<td>12</td>
</tr>
<tr>
<td>16-385 Computer Vision</td>
<td>9</td>
</tr>
<tr>
<td>18-290 Signals and Systems</td>
<td>12</td>
</tr>
<tr>
<td>24-352 Dynamic Systems and Controls</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>36-225 Introduction to Probability Theory</td>
<td>9</td>
</tr>
<tr>
<td>36-247 Statistics for Lab Sciences</td>
<td>9</td>
</tr>
<tr>
<td>36-403 Modern Regression</td>
<td>9</td>
</tr>
<tr>
<td>36-410 Introduction to Probability Modeling</td>
<td>9</td>
</tr>
<tr>
<td>42-631 Neural Data Analysis</td>
<td>9</td>
</tr>
<tr>
<td>42-632 Neural Signal Processing</td>
<td>12</td>
</tr>
<tr>
<td>86-375 Computational Perception</td>
<td>9</td>
</tr>
<tr>
<td>86-631 Neural Data Analysis</td>
<td>9</td>
</tr>
</tbody>
</table>

### Prerequisites

The required courses in the above four core areas require a number of basic prerequisites: basic programming skills at the level of 15-110 Principles of Computing and basic mathematical skills at the level of 21-122 Integration and Approximation or their equivalents. Some courses in Area B 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 http://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.

### Fellowship Opportunities

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

### The Minor in Religious Studies

Faculty Director: Allyson Creasman  
Undergraduate Advisor: Naum Kats  
Office: Baker Hall 240  

The Religious Studies minor provides the student with a range of intellectual tools with which to think about religious ideas, behaviors and institutions. A further objective is to enable the student to build a base of knowledge which extends beyond any one particular religious tradition. The minor consists of six courses, totaling at least 54 units.

Courses taken to fulfill requirements in other major or minor programs may not be applied to this minor.
54 units
Curriculum
In addition to the general education requirements of the student's college and the requirements of the student’s major, Religious Studies minors must satisfy the requirements as outlined below.

The “required” course listed below is offered regularly; the “distribution” and “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 minor faculty advisor should be consulted (especially when the schedule of courses to be offered for a given semester becomes available) to identify such additional courses.

9 units
Core Course
This required course introduces a variety of methods of religious inquiry such as philosophy of religion, sociological and behavioral approaches to religion, historical analysis of religious subject matter, literary and critical analysis of religious texts, theological modes of thought, and anthropological treatments of religion.

### Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>79-281</td>
<td>Introduction to Religion</td>
</tr>
</tbody>
</table>

18 units
Distribution Requirements
A distribution course is one that applies a particular discipline to more than one religion. Complete a course from each of two different disciplinary approaches. See the faculty advisor for other options.

### Anthropological Approaches

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>79-272</td>
<td>Iberian Encounters: Muslims, Christians, and Jews in Spain</td>
</tr>
<tr>
<td>79-307</td>
<td>Religion and Politics in the Middle East</td>
</tr>
<tr>
<td>79-353</td>
<td>Religious Identities and Religious Conflicts in 19th Century Europe</td>
</tr>
</tbody>
</table>

### Historical Approaches

<table>
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<tr>
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<tbody>
<tr>
<td>79-310</td>
<td>Religions of China</td>
</tr>
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### Philosophical Approaches

<table>
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<tr>
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<tbody>
<tr>
<td>80-276</td>
<td>Philosophy of Religion</td>
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</table>

### Textual Approaches

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>76-346</td>
<td>Angels and Diplomats -- Renaissance Poetry from Wyatt to Milton</td>
</tr>
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### Special Topics

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<tbody>
<tr>
<td>80-313</td>
<td>Special Topics</td>
</tr>
</tbody>
</table>

27 units
Elective Courses
Complete courses totaling at least 27 units. In addition to the Carnegie Mellon courses listed below, electives may be chosen from among any of the courses listed above under “Distribution Requirements” that were not used to fulfill that requirement.

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<td>76-330</td>
<td>Medieval Literature</td>
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<td>76-430</td>
<td>Arthurian Legends in the 20th Century</td>
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<tr>
<td>79-202</td>
<td>Flesh and Spirit: Early Modern Europe, 1400-1750</td>
</tr>
<tr>
<td>79-254</td>
<td>The Jewish Diaspora in Latin America</td>
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<td>79-349</td>
<td>The Holocaust in Historical Perspective</td>
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<tr>
<td>79-350</td>
<td>Early Christianity</td>
</tr>
<tr>
<td>79-352</td>
<td>Christendom Divided: The Protestant and Catholic Reformations 1450-1650</td>
</tr>
<tr>
<td>82-313</td>
<td>Readings in Islamic History</td>
</tr>
</tbody>
</table>

27 units
Electives
Complete three courses from the approved list of elective courses. Courses listed in Areas 1, 2 and 3 may also be taken as electives if not already completed for an Area requirement. For a listing of approved courses, consult the description of the minor in Science, Technology and Society on the Dietrich College of Humanities and Social Sciences’ webpage (http://www.hss.cmu.edu/index.html), or contact the faculty advisor directly at aronson@andrew.cmu.edu.

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<td>80-276</td>
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<tr>
<td>79-332</td>
<td>Medical Anthropology</td>
</tr>
<tr>
<td>79-333</td>
<td>Biology and Society: Evolution, Animal Experimentation, and Eugenics</td>
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<td>79-334</td>
<td>Law, Ethics, and the Life Sciences</td>
</tr>
<tr>
<td>79-342</td>
<td>Introduction to Science and Technology Studies</td>
</tr>
<tr>
<td>79-382</td>
<td>History of Biomedical Research</td>
</tr>
<tr>
<td>80-226</td>
<td>Revolutions in Science</td>
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The Minor in Science, Technology and Society

Faculty Advisor: Jay Aronson,
Undergraduate Advisor: Naum Kats
Office: Baker Hall 240

This minor provides varied perspectives on the development and meaning of science and technology in modern society. The core courses provide for the exploration of the philosophical underpinnings, cultural and historical contexts, and economic and literary assessments of the interplay among science, technology, and society. Elective courses allow students to pursue more deeply subjects and approaches that build on both core courses and students' primary majors.

Courses taken to fulfill requirements in other major or minor programs may not be applied to this minor.
The Minor in Sociology

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

The Sociology minor provides the student with a solid introduction to the central concepts in sociological theory and a grounding in the methods of empirical inquiry needed to understand societies, their histories, and how they change over time. Students choose among selected topics 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 students' ability to enter 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 to enter the corporate environment with a thorough understanding of organizational activity.

54 unitsCurriculum

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  
88-260 Organizations 9

b. Methodology

Complete one course.  
36-202 Statistical Methods 9  
70-208 Regression Analysis 9  
85-340 Research Methods in Social Psychology 9  
88-251 Empirical Research Methods 9  

36 unitsElective 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 Chinese Culture and Society 9  
79-308 18th Century China Through Literature 9  
79-320 Women, Politics, and Protest 9  
79-322 Family and Gender in Russian History 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  
79-339 Juvenile Delinquency and Film (1920-1950) 6  
79-343 History of American Urban Life 9  
79-368 Poverty, Charity, and Welfare 9  
79-377 Food, Culture, and Power: A History of Eating 9  
79-379 Extreme Ethnography 9  
80-230 Ethical Theory 9  
80-245 Medical Ethics 9  
80-305 Rational Choice 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  
73-432 Economics of Education 9  
79-342 Introduction to Science and Technology Studies 9  
80-341 Computers, Society and Ethics 9  
88-341 Organizational Communication 9  
88-345 Perspectives on Industrial Research and Development 9  
88-347 Complex Technological Systems: Past, Present, and Future 9  
88-371 Entrepreneurship, Regulation and Technological Change 9  
88-391 Technology and Economic Growth 9  
88-402 Modeling Complex Social Systems 9  
88-413 Energy and Climate: History, Science, Technology, & Policy in the US 1776-2076 9  
88-415 Global Competitiveness: Firms Nations, and Technological Change 9  
88-419 Negotiation 9  
88-423 Institutions, Entrepreneurship, and Innovation 9  
88-435 Analysis of Uncertain Social Systems 9  
88-451 Policy Analysis Senior Project 12  
or 88-452 Policy Analysis Senior Project 9

Note: Some courses have additional prerequisites.