

Dietrich College Interdisciplinary Minors

Dietrich College interdepartmental minors are programs whose content and components span two or more academic departments to form coherent patterns of study.

A number of interdepartmental minors are offered by Dietrich College and are, in general, available to all Carnegie Mellon undergraduate students. As well, there are numerous other minors offered by other colleges in the university that are generally available to Dietrich College students. The full list of minors available to Carnegie Mellon students is located in the catalog index under "Minors."

Completion of the requirements for any of these minors is noted on the final transcript.

To declare a Dietrich College interdepartmental minor, students should contact the college's Academic Advisory Center (AAC) and the faculty advisor for that minor.

To discuss the possibility of declaring a non-Dietrich College minor, contact the advisor listed for the minor in question.

In general, unless noted, no course taken to fulfill requirements for these interdepartmental minors may apply toward any other program's requirements.

The Minor in African and African American Studies

Faculty Advisor: Professor Edda L. Fields-Black; fieldsblack@andrew.cmu.edu, Baker Hall 362, 412-268-8012
Academic Advisor: Dr. Andrew Ramey; aramey@andrew.cmu.edu, Baker Hall 240, 412-268-7906

Mission

The African and African American Studies minor introduces students to several large regions of the world: sub-Saharan Africa, the Americas, and the Caribbean. 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		
79-226	African History: Earliest Times to 1780	9
79-227	Modern Africa: The Slave Trade to the End of Apartheid	9
African American		
76-232	Introduction to 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

Caribbean		
79-235	Caribbean Cultures	9

Elective Courses

36 units

African		
79-225	West African History in Film	9
79-237	Comparative Slavery *	9
79-290	The Slave Passage: From West Africa to the Americas	6
79-291	Globalization in East African History	6
79-385	Out of Africa: 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	History of Black American Music	6
76-238	What Was the Hip-Hop Generation?	9
76-332	African American Literature: The African American Crime Novel	9
76-333	Race and Controversy in the Arts	9
76-432	Advanced Seminar in African American Studies *	9
79-237	Comparative Slavery *	9
79-304	African Americans in Pittsburgh	6
79-371	African American Urban History	9
79-376	Doing Transnational History From Western Africa to Gullah/Geechee and Back	9

Caribbean		
79-237	Comparative Slavery *	9
79-295	Race Relations in the Atlantic World	9
79-385	Out of Africa: The Making of the African Diaspora	9

82-304	The Francophone World **	9
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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.

** Denotes courses taught in a foreign language

The Minor in Film and Media Studies

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

Film and the electronic media have become a crucial part of contemporary culture and society; they constitute an important tool for understanding social arrangements, historical changes, and play an increasingly important role in the development of aesthetic and cultural theory. The Dietrich College minor in Film and Media Studies takes an interdisciplinary approach to the study of film and other electronic media. Courses provide techniques for analyzing and criticizing film and other media, for assessing their value as historical, anthropological and social scientific data, and for understanding the aesthetic and philosophical premises of various media texts.

A maximum of two courses may double count with other programs.

The courses listed below are offered with at least general regularity. Participating departments may subsequently develop and offer other

courses that, while not listed here, are deemed appropriate for this minor. A faculty advisor for the minor should be consulted (especially when the schedule of courses to be offered for a given semester becomes available) to identify such additional courses.

Required Introductory Course 9 units

76-239	Introduction to Film Studies (prerequisite for 76-439)	9
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Required Intermediate Course 9 units

76-310	Advanced Studies in Film and Media	9
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Film and Media Electives 27 units

Complete a minimum of 27 units of course work at the 200-level or above when the primary topic is film and media. Courses may include, but are not limited to, the following:

76-238	What Was the Hip-Hop Generation?	9
76-269	Survey of Forms: Screenwriting	9
76-312	Crime and Justice in American Film	9
76-338	The American Cinema	9
76-339	Special Topics: Film and Media	9
76-353	Transnational Feminisms: Fiction and Film	9
76-367	Fact Into Film: Translating History into Cinema	9
76-374	IDeATe - Dietrich College Cuban Interactive Documentary Project	9
76-377	Shakespeare and Film	9
76-381	Mad-Men, Television, and the History of Advertising	9
76-419	Media in a Digital Age	9
76-438	The Wire: Crime, Realism, and Long-Form TV	9
76-439	Seminar in Film and Media Studies	9
76-448	Shakespeare on Film	9
76-456	Independent Study in Film & Media Studies	Var.
76-469	Screenwriting Workshop: Screenwriting/Television Writing	9
76-472	Multimedia Storytelling in a Digital Age	9
79-214	Paris in Revolt: History, Literature, Film	6
79-220	Screening Mexico: Mexican Cinema, 1898 to Present	6
79-306	Fact into Film: Translating History into Cinema	9
79-308	Crime and Justice in American Film	9
79-309	The Chinese Revolution Through Film (1949-2000)	9
79-319	India through Film	9
79-340	Juvenile Delinquency & Film: From "Juvenile Court" (1973) to "The Wire"(2002-08)	6
79-341	The Cold War in Documents and Film	9
79-391	Stardom, Gender, and American Film	9
82-215	Arab Culture Through Film & Literature	9
82-278	Japanese Film and Literature: The Art of Storytelling	9
82-296	A Century of Russian Film	9
82-362	Italian Language and Culture II	9
82-253	Korean Culture Through Film	9
82-428	History of German Film	9
82-456	Topics in Hispanic Studies	9
82-533	Cultural Topics in Chinese Studies	9

* May be taken up to three times and counted for additional credit toward Film and Media Electives if topics differ.

Students should consult with a faculty advisor for the minor regarding courses not listed above.

400-level Film and Media Course 9 units

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

76-419	Media in a Digital Age	9
76-438	The Wire: Crime, Realism, and Long-Form TV	9
76-439	Seminar in Film and Media Studies	9
76-448	Shakespeare on Film	9

76-456	Independent Study in Film & Media Studies	Var.
76-469	Screenwriting Workshop: Screenwriting/Television Writing	9
76-472	Multimedia Storytelling in a Digital Age	9

The Minor in Gender Studies

Faculty Advisor:
Lisa Tetrault, Professor of History
tetrault@cmu.edu

Office to declare minor: English Department, Baker Hall 259

Gender studies is an interdisciplinary field that investigates how gender is embedded in social, cultural, and political relationships. It understands gender as a category of power that intersects with other power relations, including race, class, and sexuality.

Courses allow students to develop a deeper understanding of how gender operates, and to transfer the analytical skills they acquire to other courses as well as to their personal and professional lives. The minor combines coursework in some combination of the following fields: English, history, anthropology, psychology, philosophy, economics, and modern languages.

Courses listed are only examples. Course offerings change regularly, so please consult semester offerings and the minor advisor for other courses.

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

Curriculum 54 units

The courses listed below are offered with at least general regularity. Participating departments may develop and offer other courses that, while not listed here, are appropriate for the study of gender. Consult the minor advisor to confirm the relevance of unlisted, gender-focused courses.

Complete 1 of the following required courses. 9 units

76-241	Introduction to Gender Studies	9
79-320	Women, Politics, and Protest	9
79-331	Body Politics: Women and Health in America	9

Complete 5 or more additional courses totaling at least 45 units. 45 units

See examples below, but other courses may fulfill this requirement.*

76-205	Jane Austen	9
76-311	Acting Out in the London Theatre	9
76-327	Influential Women Writers	9
76-329	Unruly Women in Early Modern Drama	9
76-341	Gender and Sexuality in Performance	9
76-353	Transnational Feminisms: Fiction and Film	9
76-412	Performance and 18th Century Theatrical Culture	9
76-422	Gender and Sexuality Studies	4.5
76-441	Theorizing Sexuality	9
79-222	Between Revolutions: The Development of Modern Latin America	9
79-244	Women in American History	9
79-320	Women, Politics, and Protest **	9
79-323	Family, Gender, and Sexuality in European History, 500-1800	9
79-324	#MeToo: Naming and Resisting Gender Violence	6
79-325	U.S. Gay and Lesbian History	6
79-327	Modern Girlhood: Historical and Contemporary Perspectives	6
79-331	Body Politics: Women and Health in America **	9
79-333	Sex, Gender & Anthropology	9
79-391	Stardom, Gender, and American Film	9
80-224	Race, Gender and Science	9
82-300	Topics in Cross-Cultural Studies	9
84-312	Gender and Development in Sub-Saharan Africa	6
85-350	Psychology of Prejudice	9
85-446	Psychology of Gender	9

* Consult with Gender Studies Minor Advisor Professor Lisa Tetrault at tetrault@andrew.cmu.edu.

** If not taken as a requirement.

Complete 1 Advanced Course (9 units)	9 units
76-412 Performance and 18th Century Theatrical Culture	9
76-441 Theorizing Sexuality	9
85-446 Psychology of Gender	9

The Minor in Global Systems and Management

Faculty Advisor: Brandy Wilson
Office: HBH 3029

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

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

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

Curriculum

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

Required course:

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

18 units

Complete two courses:

05-341 Organizational Communication	9
70-321 Negotiation and Conflict Resolution	9
70-340 Business Communications	9
70/85/88-341 Team Dynamics and Leadership	9
70-342 Managing Across Cultures	9
70-483 Advertising and Marketing Communications	9
73-341 Within the Firm: Managing through Incentives	9

76-270 Writing for the Professions	9
76-318 Communicating in the Global Marketplace	9
76-386/786 Language & Culture	9
76-428 Visual Verbal Communication	9
85-375 Crosscultural Psychology	9
88-419 International Negotiation	9

Humanities, Heritage and Culture (HHC) & International Management (IM) 36 units

(Complete at least 9 units of HHC or IM)

Humanities, Heritage and Culture

Humanities 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
- At least 9 units in total

History course 79-200 level or above covering international/regional studies that are outside of U.S. history

82-215 Arab Culture Through Film & Literature	Var.
82-238 Topics in Chinese Culture	9
82-253 Korean Culture Through Film	9
82-254 World of Korea, Then and Now	9
82-273 Introduction to Japanese Language and Culture	9
82-278 Japanese Film and Literature: The Art of Storytelling	9
82-293 Introduction to Russian Culture	9
82-303 Introduction to French Culture	9
82-304 The Francophone World	9
82-305 French in its Social Contexts	9
82-311 Advanced Arabic I	9
82-312 Advanced Arabic II	9
82-320 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.
82-342 Spain: Language and Culture	9
82-343 Latin America: Language and Culture	9
82-345 Introduction to Hispanic Literary & Cultural Studies	9
82-361 Italian Language and Culture I	9
82-362 Italian Language and Culture II	9
82-399 Special Topics: Russian in Context	Var.
82-400 Russian Studies Topics	6
82-415 Topics in French and Francophone Studies	9
or 82-416 Topics in French and Francophone Studies	
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
or 82-474 Topics in Japanese Studies	
82-474 Topics in Japanese Studies	9
84-275 Comparative Politics	9
84-312 Gender and Development in Sub-Saharan Africa	6
84-315 Contemporary Debates in Human Rights	9
84-389 Terrorism and Insurgency	9

International Management

- At least 9 units in total

19-411 Global Competitiveness: Firms, Nations and Technological Change	9
67-319-67-331 Global Technology Consulting Groundwork - Technology Consulting in the Global Community (these two courses are taken sequentially)	6

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
84-310	International Political Economy	9
84-311	International Development: Theory and Praxis	9
84-319	U.S. Foreign Policy and Interventions in World Affairs	9
84-320	Domestic Politics and International Affairs	9
84-321	Autocrats and Democrats	9
84-322	Nonviolent Conflict and Revolution	9
84-323	War and Peace	9
84-362	Diplomacy and Statecraft	9
84-363	Comparative Legal Systems	9
84-387	Technology and Policy of Cyber War	9
84-388	Concepts of War and Cyber War	6
84-405	The Future of Warfare	9
84-414	International and Subnational Security	9
88-384	Conflict and Conflict Resolution in International Relations	9
88-411	Rise of the Asian Economies	9
88-412	Energy, Climate Change, and Economic Growth in the 21st Century	9
88-418	Domestic Negotiation	9

MINIMUM NUMBER OF UNITS REQUIRED FOR MINOR **63**

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 (45 Unit minimum)

A total of 69 units are required to complete this minor. Entry into the minor requires completion of 73-102 Principles of Microeconomics and 88-221 Analytical Foundations of Public Policy or the equivalent by approval.

Required Courses

Students are required to take the following courses.

79-330	Medicine and Society	9
94-705	Health Economics	12
90-836	Health Policy and Management Systems	6

Elective Courses **24 units**

Complete a minimum of 24 units.

Heinz College Courses

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

Humanities and Social Sciences Courses (9 units each)

76-494	Healthcare Communications	9
79-318	Sustainable Social Change: History and Practice	9
80-245	Medical Ethics	9
85-241	Social Psychology	9
85-442	Health Psychology	9
85-446	Psychology of Gender	9

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

The Minor in Linguistics

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

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

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

Introductory Course

80-180	Nature of Language	9
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Fundamental Skills

Take **one** course from **two** of the following core subject areas:

Sounds		
80-282	Phonetics and Phonology I	9
Structure		
76-389	Rhetorical Grammar	9
80-280	Linguistic Analysis	9
80-285	Natural Language Syntax	9
Meaning		
80-381	Meaning in Language	9
80-383	Language in Use	9
76-385	Introduction to Discourse Analysis	9
or 76-484	Discourse Analysis	

Electives

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

Neural Computation Minor

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

Neural computation is a scientific enterprise to understand the neural basis of intelligent behaviors from a computational perspective. Study of neural computation includes, among others, decoding neural activities using statistical and machine learning techniques, and developing computational theories and neural models of perception, cognition, motor control, decision-making and learning. The neural computation minor allows students to learn about the brain from multiple perspectives, and to acquire the necessary background for graduate study in neural computation. Students enrolled

in the minor will be exposed to, and hopefully participate in, the research effort in neural computation and computational neuroscience at Carnegie Mellon University.

The minor in Neural Computation is an intercollege minor jointly sponsored by the School of Computer Science, the Mellon College of Science, and the Dietrich College of Humanities and Social Sciences, and is coordinated by the Center for the Neural Basis of Cognition (CNBC) (<http://www.cnbc.cmu.edu>).

The Neural computation minor is open to students in any major of any college at Carnegie Mellon. It seeks to attract undergraduate students from computer science, psychology, engineering, biology, statistics, physics, and mathematics from SCS, CIT, H&SS and MCS.

The Neural Computation minor is open to students in any major of any college at Carnegie Mellon. It seeks to attract undergraduate students from computer science, psychology, engineering, biology, statistics, physics, and mathematics from SCS, CIT, Dietrich College and MCS. The primary objective of the minor is to encourage students in biology and psychology to take computer science, engineering and mathematics courses, to encourage students in computer science, engineering, statistics and physics to take courses in neuroscience and psychology, and to bring students from different disciplines together to form a community. The curriculum and course requirements are designed to maximize the participation of students from diverse academic disciplines. The program seeks to produce students with both basic computational skills and knowledge in cognitive science and neuroscience that are central to computational neuroscience.

APPLICATION

Students must apply for admission no later than November 30 of their senior years; an admission decision will usually be made within one month. Students are encouraged to apply as early as possible in their undergraduate careers so that the director of the Neural Computation minor can provide advice on their curriculum, but should contact the program director any time even after the deadline.

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

	Units
15-386 Neural Computation	9
15-387 Computational Perception	9
15-883 Computational Models of Neural Systems	12
85-419 Introduction to Parallel Distributed Processing	9
86-375 Computational Perception	9
Pitt-Mathematics-1800 Introduction to Mathematical Neuroscience	9

B. Neuroscience

03-362 Cellular Neuroscience	9
03-363 Systems Neuroscience	9
03-761 Neural Plasticity	9
42-630 Introduction to Neuroscience for Engineers (crosslisted with 18-690)	12
85-765 Cognitive Neuroscience	Var.
Pitt-Neuroscience 1000 Introduction to Neuroscience	9

C. Cognitive Psychology

85-211 Cognitive Psychology	9
85-213 Human Information Processing and Artificial Intelligence	9
85-412 Cognitive Modeling	9
85-419 Introduction to Parallel Distributed Processing	9
85-426 Learning in Humans and Machines	9
85-765 Cognitive Neuroscience	Var.

D. Intelligent System Analysis

10-601 Introduction to Machine Learning (Masters)	12
15-381 Artificial Intelligence: Representation and Problem Solving	9
15-386 Neural Computation	9
15-387 Computational Perception	9
15-494 Cognitive Robotics: The Future of Robot Toys	12
16-299 Introduction to Feedback Control Systems	12
16-311 Introduction to Robotics	12
16-385 Computer Vision	9
18-290 Signals and Systems	12
24-352 Dynamic Systems and Controls	12
36-225 Introduction to Probability Theory	9
36-247 Statistics for Lab Sciences	9
36-401 Modern Regression	9
36-410 Introduction to Probability Modeling	9
36-746 Statistical Methods for Neuroscience and Psychology	12
42-631 Neural Data Analysis	9
42-632 Neural Signal Processing	12
86-375 Computational Perception	9
86-631 Neural Data Analysis	9

Prerequisites

The required courses in the above four core areas require a number of basic prerequisites: basic programming skills at the level of 15-110 Principles of Computing and basic mathematical skills at the level of 21-122 Integration and Approximation or their equivalents. Some courses in Area D require additional prerequisites. Area B Biology courses require, at minimum, 03-121 Modern Biology. Students might skip the prerequisites if they have the permission of the instructor to take the required courses. Prerequisite courses are typically taken to satisfy the students' major or other requirements. In the event that these basic skill courses are not part of the prerequisite or required courses of a student's major, one of them can potentially count toward the five required courses (e.g. the depth elective), conditional on approval by the director of the minor program.

Research Requirements (Optional)

The minor itself does not require a research project. The student however may replace the depth elective with a year-long research project. In special circumstances, a research project can also be used to replace one of the five courses, as long as (1) the project is not required by the student's major or other minor, (2) the student has taken a course in each of the four core areas (not necessarily for the purpose of satisfying this minor's requirements), and (3) has taken at least three courses in this curriculum not counted toward the student's major or other minors. Students interested in participating in the research project should contact any faculty engaged in computational neuroscience or neural computation research at Carnegie Mellon or in the University of Pittsburgh. A useful webpage that provides listing of faculty in neural computation is www.cnbc.cmu.edu/computational-neuroscience. The director of the minor program will be happy to discuss with students about their research interest and direct them to the appropriate faculty.

Fellowship Opportunities

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

The Program in Neural Computation also offers a summer training program for undergraduate students from any U.S. undergraduate college. The students will engage in a 10-week intense mentored research and attend a series of lectures in neural computation. See www.cnbc.cmu.edu/training/undergraduate/summer-undergraduate-research-program-in-computational-neuroscience/ for application information.

The Minor in Religious Studies

Faculty Advisor: Professor Allyson Creasman; acreasman@cmu.edu (aeowen@cmu.edu), Baker Hall 242D, 412-268-9832
Academic Advisor: Dr. Andrew Ramey; 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
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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
79-273	Jews and Muslims in History	9
79-307	Religion and Politics in the Middle East	9
79-352	Christianity Divided: The Protestant and Catholic Reformations, 1450-1650	9
79-353	Religious Identities and Religious Conflicts in Modern Europe	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 can also count as Elective Courses if not otherwise used to fulfill the Distribution Requirement).

Some examples of qualifying Elective Courses that have been offered include:

76-337	Representations of Islam in Early Modern England	9
79-202	Flesh and Spirit: Early Modern Europe, 1400-1750	9
79-296	Religion in American Politics	6
79-349	The Holocaust in Historical Perspective	9
79-350	Early Christianity	9

In addition to the courses listed above, participating departments often offer other courses that may qualify as Elective Courses for the minor. The Faculty Advisor should be consulted to identify qualifying courses (especially after the Schedule of Courses for a given semester becomes available).

In addition to courses offered at CMU, relevant courses taken at the University of Pittsburgh, Duquesne University, or other Pittsburgh institutions may count toward the Elective Requirement with the permission of the Religious Studies minor's Faculty Advisor. The option to cross-register for relevant courses at other local institutions allows students some flexibility in meeting the minor's requirements and gives them the opportunity to explore interests in religious subjects that might not otherwise be covered at CMU. Students who wish to cross-register for courses at other institutions should consult with the Faculty Advisor about whether the selected course(s) will meet the minor's Elective Requirement.

The Minor in Science, Technology and Society

Faculty Advisor: Professor Christopher J. Phillips; cjp1@cmu.edu, Baker Hall 235C, 412-268-1753
Academic Advisor: Dr. Andrew Ramey; 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 explore the philosophical underpinnings, cultural and historical contexts, and economic and literary assessments of the interplay among science, technology, and society. Elective courses enable you to pursue in greater depth and variety subjects and approaches that build on both the core courses and your primary major.

Courses taken to fulfill requirements in other major or minor programs may only be applied to this minor with permission of the Faculty Advisor.

Curriculum 54 units

Core Courses 27 units

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

Area 1. History, Philosophy, and Social Studies of Science and Technology (18 units)		
79-234	Technology in American Society	9
79-299	From Newton to the Nuclear Bomb: History of Science, 1750-1950	9
79-305	Moneyball Nation: Data in American Life	9
79-330	Medicine and Society	9
79-342	Introduction to Science and Technology Studies	9
80-220	Philosophy of Science	9
80-226	Revolutions in Science	9
Area 2. Language and Rhetoric in Science and Technology (9 units)		
76-319	Environmental Rhetoric	9
76-395	Science Writing	9
76-425	Science in the Public Sphere	9
76-476	Rhetoric of Science	9

76-492	Rhetoric of Public Policy	9
76-494	Healthcare Communications	9

Electives 27 units

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

Area 3. Electives

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

The Minor in Sociology

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

The Sociology minor introduces the student to central concepts in sociological theory and methods of empirical inquiry needed to broadly understand social behavior, including its structure, history, and dynamics. Students choose among a range of methodological approaches and substantive topic areas including social psychology, work and organizations, social networks, technology and society, medical sociology, and gender and family. Exposure to these topics will help students understand and appreciate the processes by which families, groups, and organizations form and evolve over time; by which individuals affect and are affected by the society in which they live; and by which technology and institutions shape and influence society. This background in empirical tools and social theory will strengthen the student's ability to pursue graduate studies in sociology, social history, social science, and organizational theory; to begin professional careers involving social analysis, network analysis, data analysis of teams, groups and organizations, social analysis within journalism, political institutions, the government, and online; and to enter the corporate environment with a thorough understanding of organizational activity.

Curriculum 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
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B. Methodology

Complete one course.

36-202	Statistics & Data Science Methods	9
70-208	Regression Analysis	9
85-340	Research Methods in Social Psychology	9
88-251	Empirical Research Methods	9
88-252	Causal Inference in the Field: Using Data to Study Crime, Love, Sports & More	9

Elective Courses 36 units

Complete four courses (a minimum of 36 units) from the following list. Two courses (18 units) must be taken from one category to complete the depth requirement. One course (9 units) must be taken from the other category. The remaining course (9 units) may be taken from either category. Appropriate courses offered by the Department of Sociology at the University of Pittsburgh (available during the academic year through cross-registration) may also be included as part of this option. Contact the Sociology program advisor for more information.

1. Sociology of Gender, Family, and Culture

70-342	Managing Across Cultures	9
79-244	Women in American History	9
79-261	The Last Emperors: Chinese History and Society, 1600-1900	9
79-308	Crime and Justice in American Film	9
79-320	Women, Politics, and Protest	9
79-323	Family, Gender, and Sexuality in European History, 500-1800	9
79-331	Body Politics: Women and Health in America	9
79-332	Medical Anthropology	9
79-343	Education, Democracy, and Civil Rights	9
79-377	Food, Culture, and Power: A History of Eating	9
80-245	Medical Ethics	9
80-305	Choices, Decisions, and Games	9
85-241	Social Psychology	9
85-446	Psychology of Gender	9

2. Sociology of Work, Organizations, and Technology

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

Note: Some courses have additional prerequisites.