BXA Intercollege Degree Programs

Mission Statement

The BXA Intercollege Degree Programs are designed for students who want to turn talent and passion into viable professions for the future through a challenging academic curriculum. BXA students pursue their goals with the help of multifaceted advising, innovative pedagogical strategies and a focus on the impact arts have on technology and vice versa.

The goal of the Bachelor of Computer Science and Arts (BCSA), the Bachelor of Humanities and Arts (BHA), the Bachelor of Science and Arts (BSA) and the additional major in Engineering and Arts (EA), housed under the BXA Intercollege Degree Programs, is to allow a select group of students who demonstrate interest and accomplishment in the fine arts and computer science, engineering, humanities, social sciences or natural sciences to explore beyond the traditional academic major, or integrate more than one field of study across disciplines. These programs foster the creativity of students who explore innovative approaches to the academic environments of two colleges. By merging the components in the arts and computer science, engineering, natural sciences or humanities into an interdisciplinary/multidisciplinary study, a unique, complex product is born. BXA students produce new information, challenging questions and innovative theory. BXA students are models of independence, motivation and well-rounded scholarship as humanists, scientists and artists at the same time.

In the context of the Carnegie Mellon University environment, the BXA Intercollege Degree Programs hold a special role. BXA provides access to five strong colleges that offer specialized training with expert faculty and researchers. The BXA Programs challenge students to utilize those resources as they explore and develop their own approach to interdisciplinary studies in the fine arts and computer science, engineering, humanities and social sciences, or the natural and mathematical sciences.

BXA students balance courses in their CFA concentration with courses in their academic concentration, as well as BXA-specific courses. These BXA-specific courses give students the opportunity to integrate their areas of concentration by focusing on interdisciplinary approaches and arts-based research techniques. The curricula in the concentration areas provide students with a solid disciplinary foundation upon which they can draw for interdisciplinary projects.

A BXA intercollege degree prepares students for graduate study and careers in an enormous variety of fields, including traditional graduate training in the arts as well as academic areas, positions in arts and education non-profits such as museums and foundations, and technical positions with media and technology companies.

Program Objectives

The skills developed by BXA students span the creative, the technical, the academic and the practical. The objective of the BXA Intercollege Degree Programs is to prepare graduates for careers in which they will draw on their creative and academic skills to create, educate, communicate and innovate across disciplines.

Students who complete the BXA curriculum will graduate with the following skills:

- Foundational knowledge and technical expertise in the CFA concentration area and the DC/E/MCS/SCS concentration area
- Ability to describe the connections between these concentrations and how the student integrates them
- Ability to communicate ideas textually, visually and orally
- Knowledge of how the concentration disciplines intersect with history, society and culture from local and global perspectives
- Ability to use cognitive, behavioral and ethical dimensions within the concentration disciplines to make decisions on individual and social levels
- Experience in engaging in art research to produce new knowledge both within the CFA concentration and the DC/E/MCS/SCS concentration
- Experience in designing, researching and completing a large-scale, object-based project that integrates both areas of concentration

Bachelor of Computer Science and Arts Degree Program

Carnegie Mellon University recognizes that there are students who are naturally gifted in both the fine arts and computer science. In order to accommodate students who want to pursue an education simultaneously in these areas, we offer a degree that combines the strengths of the College of Fine Arts (CFA) and the School of Computer Science (SCS). The Intercollege degree, called the Bachelor of Computer Science and Arts (BCSA), is a rigorous program that offers a unique group of qualified students the opportunity to develop their talents and interests in an area of the fine arts and computer science.

The BCSA curriculum is divided into three parts: 1) BCSA General Education coursework, 2) CFA concentration coursework, and 3) SCS concentration coursework.

The BCSA Degree Program is governed by faculty and administrators from both colleges and led by the director of the BXA Intercollege Degree Programs. The director and associate director of the BXA Intercollege Degree Programs are the primary advisors and liaisons between CFA and SCS. Students receive extensive advising support. Each student has two additional academic advisors: an advisor in the admitting school of CFA for their fine arts concentration and an advisor in SCS for their computer science concentration. This network of advisors guides each student through their curriculum.

BCSA Curriculum

(15 courses, 122 units minimum)

- Writing (1 course, 9 units, 76-101 required)
- Mathematics (2 courses, 19 units minimum, 21-122 and either 21-259 or 21-241 required), Probability (1 course, 9 units minimum)
- Science & Engineering (2 courses, 18 units minimum)
- Economic, Political, & Social Institutions OR Cognition, Choice & Behavior (1 course, 9 units minimum)
- Two additional courses from Dietrich or CFA (2 course, 18 units minimum)
- University Requirement (1 course, 3 units, 99-101 required)
- BCSA Required Courses (5 courses, 36 units minimum, 52-190 or 52-291, 52-391, 52-392, 52-401, 52-402)

Writing (1 course, 9 units)

Broadly considered, language is a tool used to communicate, as well as a way to organize non-visual and non-mathematical thinking. This requirement focuses on the social nature of language and the ways in which writing constitutes thinking.

76-101 Interpretation and Argument

or 76-102 Advanced First Year Writing: Special Topics

or 76-106 Writing about Literature, Art and Culture & 76-107 and Writing about Data & 76-108 and Writing about Public Problems

All undergraduate students must complete the First-Year Writing requirement—the Department of English does not accept any Advanced Placement exemptions. This requirement can be completed in two different ways. Enroll in one of two full-semester courses 101 or 102 (by invitation only), 9 units, or enroll in two of three half-semester mini courses (back-to-back within a single semester) 106/107/108, 4.5 + 4.5 units. Course options and topics: www.cmu.edu/hss/english/first_year/index.html

BXA Required Courses (5 courses, 36 units minimum)

- University Requirement (1 course, 3 units, 99-101 required)
- CFA concentration coursework
- SCS concentration coursework
- University Requirement (1 course, 3 units, 99-101 required)
- BCSA Required Courses (5 courses, 36 units minimum, 52-190 or 52-291, 52-391, 52-392, 52-401, 52-402)
Mathematics & Probability (3 courses, 28 units minimum)

Choose two mathematics courses (19 units minimum):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-122</td>
<td>Integration and Approximation</td>
<td></td>
</tr>
<tr>
<td>21-259</td>
<td>Calculus in Three Dimensions</td>
<td></td>
</tr>
<tr>
<td>or 21-241</td>
<td>Matrices and Linear Transformations</td>
<td></td>
</tr>
</tbody>
</table>

Choose one probability course (9 units minimum):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-259</td>
<td>Probability and Computing</td>
<td></td>
</tr>
<tr>
<td>21-325</td>
<td>Probability</td>
<td></td>
</tr>
<tr>
<td>36-218</td>
<td>Probability Theory for Computer Scientists</td>
<td></td>
</tr>
</tbody>
</table>

Science & Engineering (2 courses, 18 units minimum)

Choose two science courses from different departments or one science and one engineering course from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-223</td>
<td>Personalized Medicine: Understanding Your Own Genome</td>
<td>9</td>
</tr>
<tr>
<td>02-261</td>
<td>Quantitative Cell and Molecular Biology Laboratory</td>
<td>9</td>
</tr>
<tr>
<td>03-121</td>
<td>Modern Biology</td>
<td>9</td>
</tr>
<tr>
<td>03-125</td>
<td>Evolution</td>
<td>9</td>
</tr>
<tr>
<td>03-132</td>
<td>Basic Science to Modern Medicine</td>
<td>9</td>
</tr>
<tr>
<td>03-133</td>
<td>Neurobiology of Disease</td>
<td>9</td>
</tr>
<tr>
<td>06-100</td>
<td>Introduction to Chemical Engineering</td>
<td></td>
</tr>
<tr>
<td>09-105</td>
<td>Introduction to Modern Chemistry I</td>
<td>10</td>
</tr>
<tr>
<td>09-217</td>
<td>Organic Chemistry I</td>
<td>9</td>
</tr>
<tr>
<td>09-225</td>
<td>Climate Change: Chemistry, Physics and Planetary Science</td>
<td></td>
</tr>
<tr>
<td>12-100</td>
<td>Exploring CEE: Infrastructure and Environment in a Changing World</td>
<td>12</td>
</tr>
<tr>
<td>12-201</td>
<td>Geology</td>
<td>9</td>
</tr>
<tr>
<td>18-100</td>
<td>Introduction to Electrical and Computer Engineering</td>
<td>12</td>
</tr>
<tr>
<td>24-101</td>
<td>Fundamentals of Mechanical Engineering</td>
<td></td>
</tr>
<tr>
<td>27-100</td>
<td>Engineering the Materials of the Future</td>
<td></td>
</tr>
<tr>
<td>33-104</td>
<td>Experimental Physics</td>
<td>9</td>
</tr>
<tr>
<td>33-114</td>
<td>Physics of Musical Sound</td>
<td>9</td>
</tr>
<tr>
<td>33-120</td>
<td>Science and Science Fiction</td>
<td>9</td>
</tr>
<tr>
<td>33-121</td>
<td>Physics I for Science Students</td>
<td>12</td>
</tr>
<tr>
<td>33-151</td>
<td>Matter and Interactions I</td>
<td>12</td>
</tr>
<tr>
<td>42-101</td>
<td>Introduction to Biomedical Engineering</td>
<td></td>
</tr>
<tr>
<td>85-219</td>
<td>Biological Foundations of Behavior</td>
<td>9</td>
</tr>
</tbody>
</table>

Economic, Political & Social Institutions OR Cognition, Choice & Behavior (1 course from either category, complete 9 units minimum)

Economic, Political & Social Institutions

This requirement explores the processes by which institutions organize individual preferences and actions into collective outcomes.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-101</td>
<td>Introduction to Engineering and Public Policy</td>
<td></td>
</tr>
<tr>
<td>70-332</td>
<td>Business, Society and Ethics</td>
<td>9</td>
</tr>
<tr>
<td>73-102</td>
<td>Principles of Microeconomics</td>
<td></td>
</tr>
<tr>
<td>73-103</td>
<td>Principles of Macroeconomics</td>
<td></td>
</tr>
<tr>
<td>79-245</td>
<td>Capitalism and Individualism in American Culture</td>
<td></td>
</tr>
<tr>
<td>79-320</td>
<td>Women, Politics, and Protest</td>
<td></td>
</tr>
<tr>
<td>79-331</td>
<td>Body Politics: Women and Health in America</td>
<td></td>
</tr>
<tr>
<td>79-341</td>
<td>The Cold War in Documents and Film</td>
<td></td>
</tr>
<tr>
<td>79-382</td>
<td>The History of Capitalism</td>
<td></td>
</tr>
<tr>
<td>80-135</td>
<td>Introduction to Political Philosophy</td>
<td></td>
</tr>
<tr>
<td>80-136</td>
<td>Social Structure, Public Policy &amp; Ethics</td>
<td></td>
</tr>
<tr>
<td>80-244</td>
<td>Environmental Ethics</td>
<td></td>
</tr>
<tr>
<td>80-245</td>
<td>Medical Ethics</td>
<td></td>
</tr>
<tr>
<td>80-335</td>
<td>Social and Political Philosophy</td>
<td></td>
</tr>
<tr>
<td>84-104</td>
<td>Decision Processes in American Political Institutions</td>
<td></td>
</tr>
<tr>
<td>84-275</td>
<td>Comparative Politics</td>
<td></td>
</tr>
</tbody>
</table>

Cognition, Choice, and Behavior

This requirement explores the process of thinking, decision making, and behavior in the context of the individual.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-311</td>
<td>Organizational Behavior</td>
<td>9</td>
</tr>
<tr>
<td>80-130</td>
<td>Introduction to Ethics</td>
<td>9</td>
</tr>
<tr>
<td>80-150</td>
<td>Nature of Reason</td>
<td>9</td>
</tr>
<tr>
<td>80-180</td>
<td>Nature of Language</td>
<td>9</td>
</tr>
<tr>
<td>80-221</td>
<td>Philosophy of Social Science</td>
<td>9</td>
</tr>
<tr>
<td>80-242</td>
<td>Conflict and Dispute Resolution</td>
<td>9</td>
</tr>
<tr>
<td>80-270</td>
<td>Philosophy of Mind</td>
<td>9</td>
</tr>
<tr>
<td>80-271</td>
<td>Philosophy and Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-102</td>
<td>Introduction to Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-211</td>
<td>Cognitive Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-213</td>
<td>Human Information Processing and Artificial Intelligence</td>
<td>9</td>
</tr>
<tr>
<td>85-221</td>
<td>Principles of Child Development</td>
<td>9</td>
</tr>
<tr>
<td>85-241</td>
<td>Social Psychology</td>
<td>9</td>
</tr>
<tr>
<td>85-251</td>
<td>Personality</td>
<td>9</td>
</tr>
<tr>
<td>85-261</td>
<td>Abnormal Psychology</td>
<td>9</td>
</tr>
<tr>
<td>88-120</td>
<td>Reason, Passion and Cognition</td>
<td>9</td>
</tr>
</tbody>
</table>

* Indicates co-requisites and/or prerequisites required.

Complete Two additional courses from Dietrich or CFA (2 courses, complete 18 units minimum)

These courses must be non-technical/non-studio. Each CFA concentration has recommended courses for this category; consult with your BXA advisor to determine the best courses to fulfill this requirement.

University Requirement (1 course, 3 units)

This is a mini-course, pass/no pass, to be completed in the first semester or online in the summer prior to the first semester.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>99-101</td>
<td>Computing @ Carnegie Mellon</td>
<td>3</td>
</tr>
</tbody>
</table>

BXA Required Courses (5 courses, 36 units minimum)

BXA-specific courses give students the opportunity to integrate their areas of concentration by focusing on interdisciplinary approaches and arts-based research techniques.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-190</td>
<td>BXA Seminar I: Building the Wunderkammer</td>
<td>9</td>
</tr>
<tr>
<td>52-291</td>
<td>BXA Seminar II: Transferring Knowledge</td>
<td></td>
</tr>
<tr>
<td>52-391</td>
<td>BXA Junior Portfolio</td>
<td>0</td>
</tr>
<tr>
<td>52-392</td>
<td>BXA Seminar III: Deconstructing Disciplines</td>
<td>9</td>
</tr>
<tr>
<td>52-401</td>
<td>BXA Seminar IV: Capstone Project Research</td>
<td>9</td>
</tr>
<tr>
<td>52-402</td>
<td>BXA Seminar V: Capstone Project Production</td>
<td>9</td>
</tr>
</tbody>
</table>

School of Computer Science Concentration

Computer Science Concentration (111 units minimum)

Prerequisite

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-112</td>
<td>Fundamentals of Programming and Computer Science</td>
<td>12</td>
</tr>
</tbody>
</table>

Computer Science Core Requirements (5 courses, 56 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-122</td>
<td>Principles of Imperative Computation</td>
<td>10</td>
</tr>
<tr>
<td>15-150</td>
<td>Principles of Functional Programming</td>
<td>10</td>
</tr>
<tr>
<td>15-210</td>
<td>Parallel and Sequential Data Structures and Algorithms</td>
<td>12</td>
</tr>
</tbody>
</table>
15-213  Introduction to Computer Systems  12
15-251  Great Ideas in Theoretical Computer Science  12

Concepts of Mathematics (1 course, 10 units)
21-127  Concepts of Mathematics (co-requisite for 15-122; prerequisite for 15-150)  10

Applications Courses or CS Electives (5 courses, 45 units minimum)
Choose a minimum of five courses from SCS beyond the core requirements, 200-level or higher, not including 02-201, 02-223, 02-250, 02-261, 15-351, 16-223, 17-206, 17-333, 17-562. Listed below are suggested choices for these electives. Consult with the CS advisor if interested in courses not listed.
05-391  Designing Human Centered Software  12
05-418  Design Educational Games  12
10-335  Art and Machine Learning  12
11-291  Applied Computational Intelligence Lab  9
11-344  Machine Learning in Practice  12
11-411  Natural Language Processing  12
15-322  Introduction to Computer Music  9
15-323  Computer Music Systems and Information Processing  9
15-365  Experimental Animation  12
15-381  Artificial Intelligence: Representation and Problem Solving  9
15-388  Practical Data Science  9
15-415  Database Applications  12
15-451  Algorithm Design and Analysis  12
15-458  Discrete Differential Geometry  12
15-462  Computer Graphics  12
15-463  Computational Photography  12
15-464  Technical Animation  12
15-465  Animation Art and Technology  12
15-466  Computer Game Programming  12
15-494  Cognitive Robotics: The Future of Robot Toys  12
16-264  Humanoids  12
16-362  Mobile Robot Algorithms Laboratory  12
16-374  IDEATe: Art of Robotic Special Effects  12
16-384  Robot Kinematics and Dynamics  12
16-385  Computer Vision  12
16-423  Designing Computer Vision Apps  12
16-455  IDEATe: Human-Machine Virtuosity  12
16-465  Game Engine Programming  10
16-467  Human Robot Interaction  12
17-214  Principles of Software Construction: Objects, Design, and Concurrency  12
17-313  Foundations of Software Engineering  12
17-356  Software Engineering for Startups  12
17-437  Web Application Development  12

62-125  Drawing I -Fall, Freshman year  6
62-126  Drawing II -Spring, Freshman year  6
48-240  Historical Survey of World Architecture and Urbanism I -Spring, Freshman year  9
48-241  Modern Architecture -Fall, Sophomore year  9

College of Fine Arts Concentration
(number of courses vary, 108 units minimum)
BCSA students choose one of the following concentrations:
- Architecture (108 units)
- Art (108 units)
- Design (108 units)
- Drama (108 units)
- Music (108 units)

Architecture Concentration (108 units minimum)
Architecture Required Courses (7 courses, 52 units minimum)
48-100  Architecture Design Studio: Foundation I -Fall, Freshman year  10-15
or 48-095  Spatial Concepts for Non-Majors  10
62-122  Digital Media I -Fall, Freshman year  6

62-101  Concept Studio: The Self and the Human Being  10
62-102  Concept Studio: Systems and Processes  10
62-150  2D Media Studio: Drawing  10
62-160  2D Media Studio: Imaging  10
62-131  3D Media Studio I (mini-1)  5
62-132  3D Media Studio I (mini-2)  5
62-133  3D Media Studio II (mini-3)  5
62-134  3D Media Studio II (mini-4)  5
62-250  2D Media Studio: Painting  10
62-251  2D Media Studio: Print Media  10
62-110  Electronic Media Studio: Introduction to the Moving Image  10
or 60-210  Electronic Media Studio: Introduction to Interactivity  10-12
or 60-212  Electronic Media Studio: Interactivity and Computation for Creative Practice  10

Advanced Studios (4 courses, 40 units)
Complete four courses. Courses may be offered in the fall and/or spring. Students may take courses in any media area (ETB, SIS, CP or DP3). They may take all courses in one media area if a focus is desired.
60-401/402  Senior Studio  10
60-403  Senior Critique Seminar  10
Advanced Electronic and Time-Based Work (ETB) (course numbers 60-410 through 60-429)  10
Advanced Sculpture, Installation and Site-Work (SIS) (course numbers 60-430 through 60-447)  10
Advanced Contextual Practice (CP) (course numbers 60-448 through 60-449)  10
Advanced Drawing, Painting, Print Media and Photography (DP3) (course numbers 60-450 through 60-498)  10
60-499  Studio Independent Study (one only)  10

* Courses offered intermittently; speak with a BXA advisor to determine course availability.

Critical Studies (2 courses, 18 units)
60-205  Critical Theory in Art II -Fall  9
60-206  Critical Theory in Art IV -Spring  9

Note: Critical Theory I & II are strongly recommended.

Review Requirement (complete 2 required reviews, 0 units)
A review is required at the end of the sophomore and senior years. Pass/no pass only.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>54-121</td>
<td>Visualizing</td>
<td>10</td>
</tr>
<tr>
<td>54-171</td>
<td>Placing</td>
<td>10</td>
</tr>
<tr>
<td>54-102</td>
<td>Design Lab</td>
<td>10</td>
</tr>
<tr>
<td>54-122</td>
<td>Collaborative Visualizing</td>
<td>10</td>
</tr>
<tr>
<td>54-172</td>
<td>Systems</td>
<td>9</td>
</tr>
</tbody>
</table>

Design Electives (13 units)

A minimum of 13 additional Design units must be approved by the Design advisor. A list of these selected courses must be filed in the BXA office.

**Drama Concentration (108 units minimum)**

**Required Courses for All Concentration Options (5 courses, 20 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>54-101</td>
<td>Studio: Survey of Design</td>
<td>10</td>
</tr>
<tr>
<td>54-121</td>
<td>Visualizing</td>
<td>10</td>
</tr>
<tr>
<td>54-171</td>
<td>Placing</td>
<td>10</td>
</tr>
<tr>
<td>54-172</td>
<td>Systems</td>
<td>9</td>
</tr>
</tbody>
</table>

**Choose Two Corresponding Labs (Fall, Sophomore year):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>54-225</td>
<td>Communications Studio I: Understanding Form &amp; Context</td>
<td>4.5+4.5</td>
</tr>
<tr>
<td>or 54-245</td>
<td>Products Studio I: Understanding Form &amp; Context</td>
<td>4.5</td>
</tr>
<tr>
<td>or 54-265</td>
<td>Environments Studio I: Understanding Form &amp; Context</td>
<td>4.5+4.5</td>
</tr>
</tbody>
</table>

**Design Electives (13 units)**

A minimum of 13 additional Design units must be approved by the Design advisor. A list of these selected courses must be filed in the BXA office.

**Drama Concentration (108 units minimum)**

Options available in the following areas: 1) Design, 2) Directing, 3) Dramaturgy, 4) Production Technology and Management

**Note:** There is no BHA Acting or Musical Theatre option.

**Required Courses for All Concentration Options (5 courses, 20 units)**

<table>
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<tr>
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<th>Units</th>
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</thead>
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<td>54-101</td>
<td>Studio: Survey of Design</td>
<td>10</td>
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<tr>
<td>54-121</td>
<td>Visualizing</td>
<td>10</td>
</tr>
<tr>
<td>54-171</td>
<td>Placing</td>
<td>10</td>
</tr>
<tr>
<td>54-172</td>
<td>Systems</td>
<td>9</td>
</tr>
</tbody>
</table>

**Choose Two Corresponding Labs (Fall, Sophomore year):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>54-225</td>
<td>Communications Studio I: Understanding Form &amp; Context</td>
<td>4.5+4.5</td>
</tr>
<tr>
<td>or 54-245</td>
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<tr>
<td>or 54-265</td>
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</tbody>
</table>

**Design Electives (13 units)**

A minimum of 13 additional Design units must be approved by the Design advisor. A list of these selected courses must be filed in the BXA office.

**Drama Concentration (108 units minimum)**

Options available in the following areas: 1) Design, 2) Directing, 3) Dramaturgy, 4) Production Technology and Management

**Note:** There is no BHA Acting or Musical Theatre option.

**Required Courses for All Concentration Options (5 courses, 20 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>54-101</td>
<td>Studio: Survey of Design</td>
<td>10</td>
</tr>
<tr>
<td>54-121</td>
<td>Visualizing</td>
<td>10</td>
</tr>
<tr>
<td>54-171</td>
<td>Placing</td>
<td>10</td>
</tr>
<tr>
<td>54-172</td>
<td>Systems</td>
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</tr>
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**Drama Concentration (108 units minimum)**

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**Note:** There is no BHA Acting or Musical Theatre option.

**Required Courses for All Concentration Options (5 courses, 20 units)**

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<td>Environments Studio I: Understanding Form &amp; Context</td>
<td>4.5+4.5</td>
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**Design Electives (13 units)**

A minimum of 13 additional Design units must be approved by the Design advisor. A list of these selected courses must be filed in the BXA office.
A minimum of 18 additional Music units must be approved by the Music advisor. A list of these selected courses must be filed in the BXA office.

Audio Recording & Production Required Courses (7 courses, 40 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-101</td>
<td>Introduction to Music Technology</td>
<td>6</td>
</tr>
<tr>
<td>or 57-171</td>
<td>Introduction to Music Technology (self-paced)</td>
<td></td>
</tr>
<tr>
<td>57-181</td>
<td>Solfege I</td>
<td>3</td>
</tr>
<tr>
<td>or 57-180</td>
<td>Basic Solfege I</td>
<td></td>
</tr>
<tr>
<td>or 57-185</td>
<td>Advanced Solfege I</td>
<td></td>
</tr>
<tr>
<td>57-173</td>
<td>Survey of Western Music History (co-requisite: 57-118)</td>
<td>9</td>
</tr>
<tr>
<td>57-188</td>
<td>Repertoire and Listening for Musicians</td>
<td>1</td>
</tr>
<tr>
<td>57-337</td>
<td>Sound Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-338</td>
<td>Sound Editing and Mastering</td>
<td>6</td>
</tr>
<tr>
<td>57-438</td>
<td>Multitrack Recording</td>
<td>9</td>
</tr>
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</table>

Choose 59 units from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-153</td>
<td>Harmony II</td>
<td>9</td>
</tr>
<tr>
<td>or 57-150</td>
<td>Basic Harmony II</td>
<td></td>
</tr>
<tr>
<td>57-182</td>
<td>Solfege II</td>
<td>3</td>
</tr>
<tr>
<td>or 57-186</td>
<td>Advanced Solfege II</td>
<td></td>
</tr>
<tr>
<td>15-104</td>
<td>Introduction to Computing for Creative Practice</td>
<td>10</td>
</tr>
<tr>
<td>19-690</td>
<td>Twisted Signals: Multimedia Processing for the Arts</td>
<td>10</td>
</tr>
<tr>
<td>33-114</td>
<td>Physics of Musical Sound</td>
<td>9</td>
</tr>
<tr>
<td>54-166</td>
<td>Introduction to Sound Design for Theatre</td>
<td>6</td>
</tr>
<tr>
<td>54-275</td>
<td>History of Sound Design</td>
<td>3</td>
</tr>
<tr>
<td>54-666</td>
<td>Production Audio</td>
<td>6</td>
</tr>
<tr>
<td>57-344</td>
<td>Experimental Sound Synthesis</td>
<td>9</td>
</tr>
<tr>
<td>57-421</td>
<td>The Exploded Ensemble</td>
<td>6</td>
</tr>
<tr>
<td>57-425</td>
<td>Expanded Music Performance</td>
<td>9</td>
</tr>
<tr>
<td>57-427</td>
<td>Advanced Seminar in Film Musicology</td>
<td>9</td>
</tr>
<tr>
<td>57-478</td>
<td>Survey of Historical Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-622</td>
<td>Independent Study in Sound Recording Production</td>
<td>3</td>
</tr>
<tr>
<td>60-131</td>
<td>3D Media Studio I</td>
<td>5</td>
</tr>
<tr>
<td>60-210</td>
<td>Electronic Media Studio: Introduction to Interactivity</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: Students completing an IDeATe minor may double-count up to two of the IDeATe minor courses towards the Audio Recording & Production concentration.

Sound Theory & Practice Required Courses (7 courses, 47 units)

<table>
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<tr>
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<tbody>
<tr>
<td>57-101</td>
<td>Introduction to Music Technology</td>
<td>6</td>
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<tr>
<td>or 57-171</td>
<td>Introduction to Music Technology (self-paced)</td>
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</tr>
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<tr>
<td>57-188</td>
<td>Repertoire and Listening for Musicians</td>
<td>1</td>
</tr>
<tr>
<td>18-690</td>
<td>Twisted Signals: Multimedia Processing for the Arts</td>
<td>10</td>
</tr>
<tr>
<td>57-911</td>
<td>Music Since 1945</td>
<td>9</td>
</tr>
<tr>
<td>57-616</td>
<td>Independent Study in Sound Studies</td>
<td>9</td>
</tr>
</tbody>
</table>

Choose 52 units from:

<table>
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<tbody>
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<td>or 57-186</td>
<td>Advanced Solfege II</td>
<td></td>
</tr>
<tr>
<td>15-104</td>
<td>Introduction to Computing for Creative Practice</td>
<td>10</td>
</tr>
<tr>
<td>15-322</td>
<td>Introduction to Computer Music (pre-requisite: 57-112)</td>
<td>9</td>
</tr>
<tr>
<td>15-323</td>
<td>Computer Music Systems and Information Processing (pre-requisite: 57-122)</td>
<td>9</td>
</tr>
<tr>
<td>33-114</td>
<td>Physics of Musical Sound</td>
<td>9</td>
</tr>
<tr>
<td>57-337</td>
<td>Sound Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-343</td>
<td>Interdisciplinary Studies in Listening, Culture, and Technology</td>
<td>9</td>
</tr>
<tr>
<td>57-344</td>
<td>Experimental Sound Synthesis</td>
<td>9</td>
</tr>
<tr>
<td>57-347</td>
<td>Electronic and Computer Music (pre-requisite: 57-101 or 57-171)</td>
<td>6</td>
</tr>
<tr>
<td>57-421</td>
<td>The Exploded Ensemble</td>
<td>6</td>
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<td>57-425</td>
<td>Expanded Music Performance</td>
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<td>57-478</td>
<td>Survey of Historical Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-829</td>
<td>Contemporary Soundscapes</td>
<td>9</td>
</tr>
<tr>
<td>60-131</td>
<td>3D Media Studio I</td>
<td>5</td>
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<td>60-210</td>
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Note: Students completing an IDeATe minor may double-count up to two of the IDeATe minor courses towards the Sound Theory & Practice concentration.

Free Electives

(approximately 4 courses, 39 units minimum)

Take any Carnegie Mellon course. A maximum of 9 units of physical education and/or military science may be counted toward this requirement. Physical education and military science courses will not be calculated in a student's QPA.

Bachelor of Humanities and Arts Degree Program

Carnegie Mellon University offers an intercollege degree that combines the strengths of the College of Fine Arts (CFA) and the College of Dietrich College of Humanities and Social Sciences (DC). The intercollege degree, called the Bachelor of Humanities and Arts (BHA), offers depth of study in both the fine arts and the humanities, social and behavioral sciences. The BHA Degree Program enables a student to receive broader exposure to the humanities, social and behavioral sciences than is generally possible through a Bachelor of Arts degree in CFA, while obtaining deeper and more substantial training in the fine arts than is generally possible through a Bachelor of Arts degree in DC. Students receive extensive advising support. Each student has two additional academic advisors: an advisor in the admitting school of CFA and DC. Students receive extensive training in areas such as writing, social sciences, behavioral sciences or cultural studies. The program also provides enough flexibility to allow students to explore other areas of interest. The most important aspect of the BHA Program is for students to blend their interests and to explore the connections between their chosen disciplines.

The BHA curriculum is divided into three parts: 1) BHA General Education coursework, 2) CFA concentration coursework, and 3) DC concentration coursework.

The BHA Degree Program is governed by faculty and administrators from both colleges and led by the director of the BXA Intercollege Degree Programs. The director and associate director of the BXA Intercollege Degree Programs are the primary advisors and liaisons between CFA and DC. Students receive extensive advising support. Each student has two additional academic advisors: an advisor in the admitting school of CFA for their fine arts concentration and an advisor in DC for their humanities/social sciences concentration. This network of advisors guides each student through their curriculum.

BHA Curriculum

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. BHA General Education</td>
</tr>
<tr>
<td>II. DC Concentration</td>
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</tbody>
</table>
BHA General Education

(14 courses, 111 units minimum)

- Communicating: Language and Interpretations (3 courses, 27 units minimum, 76-101 required, two approved modern language courses required)
- Reflecting: Societies and Cultures (1 course, 9 units, 79-104 required)
- Modeling: Mathematics and Experiments (1 course, 9 units minimum)
- Deciding: Social Sciences and Values (3 courses, 27 units minimum, 36-200 required)
- University Requirement (1 course, 3 units, 99-101 required)
- BXA Required Courses (5 courses, 36 units minimum)

Communicating: Language and Interpretations (3 courses, 27 units minimum)

Courses in this category give special attention to the study of language as interpretation, expression and argument within and across multiple discourses. Students examine language for its internal logics and structures.

76-101 Interpretation and Argument
or 76-102 Advanced First Year Writing: Special Topics
or 76-106 Writing about Literature, Art and Culture
& 76-107 and Writing about Data
& 76-108 and Writing about Public Problems

All undergraduate students must complete the First-Year Writing requirement—the Department of English does not accept any Advanced Placement exemptions. This requirement can be completed in two different ways. Enroll in one of two full-semester courses 101 or 102 (by invitation only), 9 units, or enroll in two of three half-semester mini courses (back-to-back within a single semester) 106/107/108, 4.5 + 4.5 units. Course options and topics: www.cmu.edu/hss/english/first_year/index.html

82-xxx Modern Languages

Complete two courses taught in a language offered by the Modern Language Department. A wide selection of courses are offered in Arabic, Chinese Studies, European Studies, French and Francophone Studies, German Studies, Hispanic Studies, Italian, Japanese Studies, Russian Studies, and Spanish. Students must complete two courses in the same language. Languages taught at other institutions are also acceptable (with advisor approval).

Reflecting: Societies and Cultures (1 course, 9 units)

This category emphasizes the study of history, society, and culture from local and global perspectives.

79-104 Global Histories

Course topics can be found on the Department of History website (http://www.history.cmu.edu/undergraduate/fall.html).

Modeling: Mathematics and Experiments (1 course, 9 units minimum)

Courses in this category stress the interplay of mathematical (formal) theories and experimental work. Some courses investigate the internal structure of theories, whereas others use them as models for producing real-world knowledge. Such models may be drawn from a variety of disciplines including the natural sciences, but also, for example, psychology and computer science. The interactions between theorizing and experimenting (observing) can be understood within an intellectual framework that invites comparative assessment. Select one course from the following course options:

Mathematics

21-111 Differential Calculus
21-120 Differential and Integral Calculus
21-127 Concepts of Mathematics
80-110 Nature of Mathematical Reasoning

Other Courses

05-413 Human Factors
15-104 Introduction to Computing for Creative Practice
15-110 Principles of Computing
15-112 Fundamentals of Programming and Computer Science
33-120 Science and Science Fiction
80-220 Philosophy of Science
80-226 Revolutions in Science
80-312 Mathematical Revolutions
80-327 Philosophy of Neuroscience
85-370 Perception
88-275 Bubbles: Data Science for Human Minds
99-236 Introduction to Environmental Ideas

Deciding: Social Sciences and Values (3 courses, 27 units minimum)

The theme of this category is the exploration of cognitive, behavioral and ethical dimensions of decision-making on both the individual and social level. Making decisions requires a broad understanding of human rationality and social interaction. Some courses examine the critical collection and analysis of data for achieving such an understanding, whereas others emphasize the historical development of policies and values, which form the matrix for decision-making.

36-200 Reasoning with Data -REQUIRED
05-292 IDEaTE: Learning in Museums
73-102 Principles of Microeconomics
80-130 Introduction to Ethics
80-136 Social Structure, Public Policy & Ethics
80-208 Critical Thinking
80-221 Philosophy of Social Science
80-242 Conflict and Dispute Resolution
80-244 Environmental Ethics
80-245 Medical Ethics
80-270 Philosophy of Mind
80-271 Philosophy and Psychology
80-305 Choices, Decisions, and Games
80-330 Ethical Theory
80-348 Health, Human Rights, and International Development
80-405 Game Theory
80-447 Global Justice
84-104 Decision Processes in American Political Institutions
84-315 Contemporary Debates in Human Rights
85-102 Introduction to Psychology
85-211 Cognitive Psychology
85-219 Biological Foundations of Behavior
85-221 Principles of Child Development
85-241 Social Psychology
85-251 Personality
The BHA concentration in Anthropology provides students with the tools to link artistic practices to various aspects of globalization. It is highly recommended that Anthropology students study abroad in some capacity.

**Anthropological Perspectives (6 courses, 51 units minimum)**

Students gain knowledge of specialized theoretical and regional topics by choosing 51 units (typically six courses) selecting from the list below.

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>79-201</td>
<td>Introduction to Anthropology</td>
<td>9</td>
</tr>
<tr>
<td>79-400</td>
<td>Global Studies Research Seminar</td>
<td>12</td>
</tr>
<tr>
<td>79-379</td>
<td>Extreme Ethnography</td>
<td>9</td>
</tr>
<tr>
<td>79-380</td>
<td>Hostile Environments: The Politics of Pollution in Global Perspective</td>
<td>9</td>
</tr>
</tbody>
</table>

Note: Courses that count toward this category may be taken at another university, and the units transferred to the BHA concentration under the guidance of the BHA Anthropology faculty advisor.

**Behavioral Economics, Policy & Organizations Concentration (81 units minimum)**

Students in BEPO—the first and only major of its kind—will be uniquely trained in the integration of Economics and Psychology and will have a solid grounding in quantitative methods. The core includes courses in economics, psychology, behavioral economics, and quantitative methods. SDS offers the largest selection of behavioral economics courses anywhere in the world. Applied projects in courses will teach students how to collect original data, design field and laboratory experiments, analyze data, and develop interventions to improve economic outcomes and decisions. Students will be well equipped to enter a wide range of professions and graduate degree programs.
Quantitative Methods (3 courses, 27 units)
36-202 Statistics & Data Science Methods 9
88-251 Empirical Research Methods 9
88-252 Causal Inference in the Field 9

Economics Courses (2 courses, 18 units)
73-102 Principles of Microeconomics 9
73-160 Foundations of Microeconomics: Applications and Theory 9
or 73-230 Intermediate Microeconomics 9

Psychology Courses (2 courses, 18 units)
88-120 Reason, Passion and Cognition (freshman or sophomore year) 9
88-302 Behavioral Decision Making 9

Behavioral Economics Courses (2 courses, 18 units)
88-360 Behavioral Economics 9
88-367 Behavioral Economics in the Wild 9

Cognitive Neuroscience Concentration (81 units minimum)
Cognitive neuroscience is a science concerned with discovering biological bases of psychological functions. It addresses questions of how behavior is produced by neural circuits of the brain and also how those neural circuits are in turn influenced by behavioral experiences. Students with a concentration in Cognitive Neuroscience are expected to learn about the biological basis of behavior. This includes observing behavior, formulating hypotheses, designing experiments to test these hypotheses, running experiments, performing statistical analyses, and writing reports.

Introductory and Survey Coursework (4 courses, 36 units)
03-121 Modern Biology 9
03-363 Systems Neuroscience 9
85-219 Biological Foundations of Behavior 9
85-211 Cognitive Psychology 9
or 85-213 Human Information Processing and Artificial Intelligence 9

Research Methods Training (2 courses, 18 units)
36-309 Experimental Design for Behavioral & Social Sciences 9
or 85-309 Experimental Design for Behavioral & Social Sciences - Psychology 9
85-314 Cognitive Neuroscience Research Methods * 9

85-310 Research Methods in Cognitive Psychology may be substituted if necessary.

Distribution Requirements (3 courses, 27 units)
Complete three courses with at least one from each category below.

Approaches to Cognitive Neuroscience:
15-386 Neural Computation 9
15-883 Computational Models of Neural Systems 12
36-746 Statistical Methods for Neuroscience and Psychology 12
85-345 Meaning in Mind and Brain 9
85-412 Cognitive Modeling 9
85-414 Cognitive Neuropsychology 9
85-419 Introduction to Parallel Distributed Processing 9
85-429 Cognitive Brain Imaging 9

Cognitive Neuroscience Electives:
03-133 Neurobiology of Disease 9
03-362 Cellular Neuroscience 9
03-364 Developmental Neuroscience 9
85-356 Music and Mind: The Cognitive Neuroscience of Sound 9
85-370 Perception 9
85-385 Auditory Perception: Sense of Sound 9
85-390 Human Memory 9
85-406 Autism: Psychological and Neuroscience Perspectives 9
85-435 Neural and Cognitive Models of Adaptive Decisions 9
85-442 Health Psychology 9
85-501 Stress, Coping and Well-Being 9

Cognitive Science Concentration (81 units minimum)
The field of cognitive science has grown out of increasingly active interaction among psychology, linguistics, artificial intelligence, philosophy, and neuroscience. All of these fields share the goal of understanding intelligence. By combining these diverse perspectives, students of cognitive science are able to understand cognition at a deep level. Because this concentration is administered by the Psychology Department, it focuses on human cognition and the experimental study of the human mind as illuminated by the techniques of the above disciplines.

Pre-requisite Courses
15-112 Fundamentals of Programming and Computer Science 12
or 21-111 Differential Calculus and Integral Calculus 10-20
21-127 Concepts of Mathematics 10

Statistics Course (1 course, 9 units)
36-309 Experimental Design for Behavioral & Social Sciences 9
or 85-309 Experimental Design for Behavioral & Social Sciences - Psychology 9

Computational/Cognitive Modeling Core (3 courses, 29 units minimum)
Complete two of the following courses:
15-122 Principles of Imperative Computation 10
15-150 Principles of Functional Programming 10
15-251 Great Ideas in Theoretical Computer Science 12

Plus one of the following courses:
85-412 Cognitive Modeling 9
85-419 Introduction to Parallel Distributed Processing 9
85-435 Neural and Cognitive Models of Adaptive Decisions 9

Cognitive Psychology Core (4 courses, 36 units)
85-211 Cognitive Psychology 9
or 85-213 Human Information Processing and Artificial Intelligence 9
85-310 Research Methods in Cognitive Psychology 9

Plus two of the following (one of which must be 85-3xx or 85-4xx):
85-219 Biological Foundations of Behavior 9
85-359 Introduction to Music Cognition Research 9
85-370 Perception 9
85-390 Human Memory 9
85-395 Applications of Cognitive Science 9
85-408 Visual Cognition 9
85-414 Cognitive Neuropsychology 9
85-421 Language and Thought 9
80-310 Formal Logic 9
80-314 Causal Discovery, Statistics, and Machine Learning 9
80-315 Modal Logic 9
80-381 Meaning in Language 9
80-383 Language in Use 9

Cognitive Science Elective (1 course, 9 units)
Choose one elective in consultation with your Cognitive Science Advisor.
Creative Writing Concentration (81 units minimum)

In the Creative Writing concentration, BHA students develop their talents in writing fiction, poetry, and other imaginative forms. While studying with faculty members who are practicing poets and prose writers, students read widely in literature, explore the resources of their imaginations, sharpen their critical and verbal skills, and develop a professional attitude toward their writing. The Creative Writing program is based on a conservatory model, made up of faculty and students who have an intense commitment to their work.

Students in the Creative Writing concentration are required to take two of the introductory Survey of Forms courses, ideally in their sophomore year. Choices include Poetry (76-265), Fiction (76-260), Screenwriting (76-269), and Nonfiction (76-261). In order to proceed into the upper level courses in the major (and in each of the genres), students must do well in these introductory courses (receive a grade of A or B). After completing the Survey of Forms courses, students take four workshops in fiction, poetry, screenwriting, or nonfiction. At least two of the workshops must be taken in a single genre. In the writing workshops, students develop their critical and verbal abilities through close writing and analysis of poems, stories, and other literary forms. Their work is critiqued and evaluated by peers and the faculty.

Survey of Forms Courses (2 courses, 18 units)

76-222 Creative Writing Matters -Fall, Freshman year (co-requisite: 76-101) 9
76-260 Survey of Forms: Fiction 9
76-261 Survey of Forms: Creative Nonfiction 9
76-265 Survey of Forms: Poetry 9
76-269 Survey of Forms: Screenwriting 9

Note: A student must receive a grade of A or B in the Survey of Forms class in a specific genre in order to be eligible to enroll in a workshop of that genre. A student who receives a grade of C in a Survey of Forms course may enroll in a related workshop only with the permission of the workshop instructor. A student who receives a D or R in Survey of Forms may not take a workshop in that genre.

Creative Writing Workshops (4 courses, 36 units)

Complete four Creative Writing workshops, at least two in a single genre. Workshops in all genres may be taken more than once for credit.

76-365 Beginning Poetry Workshop 9
76-366 Essay Writing Workshop 9
76-460 Beginning Fiction Workshop 9
76-462 Advanced Fiction Workshop 9
76-464 Creative Nonfiction Workshop: Magazines and Journals 9
76-465 Advanced Poetry Workshop 9
76-469 Screenwriting Workshop: Screenwriting/Television Writing 9
76-4xx Elective Workshops (various forms) 9

English Electives (3 courses, 27 units)

Complete three courses from the English Department's offerings. Reading in Forms classes are recommended, as is 76-306 Editing and Publishing. Please consult the list of courses published each semester by the Department for current offerings. Students should discuss curriculum choices with the Creative Writing advisor to determine the best electives for their focus in Creative Writing.

Decision Science Concentration (81 units minimum)

Decision Science is grounded in theories and methods drawn from psychology, economics, philosophy, statistics, and management science. Courses in the BHA concentration in Decision Science cover the three aspects of decision science: (a) normative analysis, creating formal models of rational choice; (b) descriptive research, studying how cognitive, emotional, social, and institutional factors affect judgment and choice; and (c) prescriptive interventions, seeking to improve judgment and decision making. In addition to gaining a broad education in the principles of judgment and decision making, students with a concentration in Decision Science gain broadly applicable skills in research design and analysis. They also have the chance to think about and discuss decision making in many different areas.

Disciplinary Perspectives (5 courses, 48 units)

73-102 Principles of Microeconomics 9
85-102 Introduction to Psychology 9
88-120 Reason, Passion and Cognition (freshman or sophomore year) 9
88-223 Decision Analysis 12
88-302 Behavioral Decision Making 9

Research Methods (2 courses, 18 units)

36-202 Statistics & Data Science Methods 9
88-251 Empirical Research Methods 9

Electives (2 courses, 18 units)

Complete at least 18 units from the following categories of courses. The selected courses may be from one category or from any combination of categories. Note that not all elective courses are offered every year. At least one of these courses (9 units) must be a Department of Social and Decision Sciences course (86-xxx).

Biological and Behavioral Aspects of Decision Making:

85-350 Psychology of Prejudice 9
85-352 Evolutionary Psychology 9
85-375 Crosscultural Psychology 9
85-377 Attitudes and Persuasion 9
85-442 Health Psychology 9
85-444 Relationships 9
85-446 Psychology of Gender 9
88-230 Human Intelligence and Human Stupidity 9
88-342 The Neuroscience of Decision Making 9
88-360 Behavioral Economics 9
88-365 Behavioral Economics and Public Policy 9
88-380 Dynamic Decisions 9

Managerial and Organizational Aspects of Decision Making:

70-311 Organizational Behavior 9
70-381 Marketing I 9
70-460 Mathematical Models for Consulting 9
88-150 Managing Decisions 9
88-221 Analytical Foundations of Public Policy 9
88-406 Behavioral Economics in Organizations 9
88-418 Domestic Negotiation 9
88-419 International Negotiation 9
88-444 Public Policy and Regulation 9
88-451/452 Policy Analysis Senior Project 12

Philosophical and Ethical Perspectives on Decision Making:

70-332 Business, Society and Ethics 9
80-208 Critical Thinking 9
80-221 Philosophy of Social Science 9
80-244 Environmental Ethics 9
80-245 Medical Ethics 9
80-246 Moral Psychology 9
80-249 AI, Society, and Humanity 9
80-271 Philosophy and Psychology 9
80-305 Choices, Decisions, and Games 9
80-321 Causation, Law, and Social Policy 9
80-324 Philosophy of Economics 9
88-275 Bubbles: Data Science for Human Minds 9
88-409 Behavioral Economics Perspectives on Ethical Issues 9

Economic and Statistical Methods for Decision Science:

70-374 Data Mining & Business Analytics 9
70-455 Modern Data Management 9
70-460 Mathematical Models for Consulting 9
73-265 Economics and Data Science 9
73-347 Game Theory for Economists 9
80-405 Game Theory 9
Environmental & Sustainability Studies Concentration (81 units minimum)

The BHA concentration in Environmental & Sustainability Studies (ESS) focuses on human-environment interactions from a multitude of disciplinary perspectives. The curriculum draws on the expertise of faculty across several Carnegie Mellon colleges in order to provide students with the interdisciplinary background and skills necessary to understand environmental problems and the means to mitigate them. The curriculum is designed to help students apply social and scientific perspectives to environmental problems; to distinguish among scientific methods for evaluating environmental problems; to identify and assess sources of environmental data; and to identify environmental justice issues within the context of proposed policy solutions.

Environmental Core Course (1 course, 9 units)

- 99-236 Introduction to Environmental Ideas

Scientific Foundation Course (1 course, 9 units)

Take one of the following courses:

- 03-128 Biology for Life Special Topics (Fall 2019, Section A only)
- 09-105 Introduction to Modern Chemistry I
- 09-103 Atoms, Molecules and Chemical Change
- 09-225 Climate Change: Chemistry, Physics and Planetary Science
- 33-115 Physics for Future Presidents
- 12-201 Geology

Environmental Electives (7 courses, 63 units)

Students must take seven elective courses addressing aspects of environment and sustainability chosen from the list below. Other courses may fulfill these requirements, with permission of the ESS concentration advisor. At least five Environmental Elective courses must come from Dietrich College departments.

- 73-427 Sustainability, Energy, and Environmental Economics
- 76-319 Environmental Rhetoric
- 79-278 How (NOT) to Change the World
- 79-280 Coffee and Capitalism
- 79-283 Hungry World: Food and Famine in Global Perspective
- 79-288 Bananas, Baseball, and Borders: Latin America and the United States
- 79-289 Animal Planet: An Environmental History of People and Animals
- 79-315 Thirsty Planet: The Politics of Water in Global Perspective
- 79-334 Climate Change and Climate Justice: Global Perspectives
- 79-380 Hostile Environments: The Politics of Pollution in Global Perspective
- 80-244 Environmental Ethics
- 80-348 Health, Human Rights, and International Development
- 09-108 The Illusion and Magic of Food
- 09-225 Climate Change: Chemistry, Physics and Planetary Science
- 12-201 Geology
- 51-377 Design Center: Sensing Environments
- 62-315 IDEAtE: Shaping the Built Environment: Experiments in Geometry and Matter
- 70-376 Energy Systems

Ethics, History, & Public Policy Concentration (81 units minimum)

The BHA concentration in Ethics, History, & Public Policy (EHPP) provides students with a rigorous, interdisciplinary humanistic and social-scientific education. The concentration in EHPP encourages the development of a broad technical skill set that will benefit students in whatever career they ultimately choose to pursue. Students with a concentration in EHPP learn how to analyze and construct arguments; to evaluate evidentiary statements; to persuade people to agree with their particular claims; to conduct research under time and resource constraints; and to craft

Economics Concentration (81 units minimum)

The BHA concentration in Economics provides a solid understanding of economic theory and quantitative economic analysis. The core disciplinary sequences in economic theory and quantitative analysis are combined with calculus and data analysis to provide students with knowledge and skills that allow for creative problem-solving.

Mathematics Pre-requisites

These courses are not counted as part of your DC Concentration. It may be used to satisfy general education or free elective requirements.

- 21-120 Differential and Integral Calculus
- 21-256 Multivariate Analysis

Economic Theory Requirements (4 courses, 36 units)

- 73-102 Principles of Microeconomics
- 73-103 Principles of Macroeconomics
- 73-230 Intermediate Microeconomics
- 73-240 Intermediate Macroeconomics

Quantitative Analysis Requirements (2 courses, 18 units)

These courses require 36-200 Reasoning with Data as a pre-requisite; 36-200 fulfills a general education Deciding requirement, as well.

- 73-265 Econometrics I
- 73-274 Econometrics II

Advanced Economics Electives (2 courses, 18 units)

Students must take two advanced elective courses. Advanced elective courses are those numbered 73-300 through 73-495, as well as courses designated by the program offered by other departments/programs. Additionally, students may work with their economics advisor to structure alternative sets of courses to meet these requirements based on their particular interests, subject to course availability.

Senior Work (1 course, 9 units)

- 73-497 Senior Project

Note: Students who have already taken 73-100 Principles of Economics should take 73-230 Intermediate Microeconomics and 73-240 Intermediate Macroeconomics for their Economic Theory Requirements. They will then take 27 units of Advanced Economics Electives.
policies that address real world problems in a way that is sensitive both to history and competing sets of values. Comprised of courses in the departments of History, Philosophy, Economics, and Decision Science, the BHA concentration in EHP encourages specialization, internship experiences, and research in a wide range of policy areas.

Foundations of Public Policy Requirement (1 course, 9 units)
Choose one 9-unit course from the list below.
73-102 Principles of Microeconomics 9
84-104 Decision Processes in American Political Institutions 9
84-110 Foundations of Political Economy 9

History Core (3 courses, 27 units)
Choose one 9-unit course from each category below. (Students must earn a final grade of "C" or better for these courses to count toward the concentration).

Policy History:
79-300 Guns in American History: Culture, Violence, and Politics 9

U.S. History:
79-240 Development of American Culture 9
79-242 African American History: Reconstruction to the Present 9
79-244 Women in American History 9
79-245 Capitalism and Individualism in American Culture 9
79-249 20th & 21st Century U.S. History 9
79-320 Women, Politics, and Protest 9

Non-U.S. History:
79-202 Flesh and Spirit: Early Modern Europe, 1400-1750 9
79-203 Social and Political Change in 20th Century Central and Eastern Europe 9
79-205 20th Century Europe 9
79-223 Mexico: From the Aztec Empire to the Drug War 9
79-226 African History: Earliest Times to 1780 9
79-227 Modern Africa: The Slave Trade to the End of Apartheid 9
79-229 Origins of the Arab-Israeli Conflict, 1880-1948 9
79-230 Arab-Israeli Conflict Since 1948 9
79-237 Comparative Slavery 9
79-261 The Last Emperors: Chinese History and Society, 1600-1900 9
79-262 Modern China: From the Birth of Mao ... to Now 9
79-264 Tibet and China: History and Propaganda 6
79-265 Russian History: From the First to the Last Tsar 9
79-266 Russian History and Revolutionary Socialism 9
79-307 Religion and Politics in the Middle East 9

Philosophy Core (3 courses, 27 units)
Choose one course from three of the four categories below. No more than 9 units at the 100-level may be counted toward this requirement.

Ethics:
80-130 Introduction to Ethics 9
80-330 Ethical Theory 9

Political Philosophy:
80-135 Introduction to Political Philosophy 9
80-335 Social and Political Philosophy 9

Foundations of Social Science:
80-221 Philosophy of Social Science 9
80-321 Causation, Law, and Social Policy 9
80-324 Philosophy of Economics 9

Applied Philosophy:
80-136 Social Structure, Public Policy & Ethics 9
80-244 Environmental Ethics 9

80-245 Medical Ethics 9
80-249 AI, Society, and Humanity 9
80-336 Philosophy of Law 9
80-348 Health, Human Rights, and International Development 9
80-447 Global Justice 9

Elective Courses (2 courses, 18 units)
Choose any two courses from any of the following categories.

Engineering and Public Policy:
19-424 Energy and the Environment 9

Business:
70-311 Organizational Behavior 9
70-321 Negotiation and Conflict Resolution 9
70-332 Business, Society and Ethics 9
70-364 Business Law 9
70-365 International Trade and International Law 9
70-430 International Management 9

Economics:
73-352 Public Economics 9
73-359 Benefit-Cost Analysis 9
73-365 Firms, Market Structures, and Strategy 9
73-372 International Money and Finance 9
73-408 Law and Economics 9
73-476 American Economic History 9

English:
76-492 Rhetoric of Public Policy 9

History:
79-206 Crime and Punishment in Early Modern Europe 9
79-228 The Civil Rights Movement and the World 9
79-233 The United States and the Middle East since 1945 9
79-234 Technology and Society 9
79-242 African American History: Reconstruction to the Present 9
79-247 African Americans, Imprisonment, and the Carceral State 9
79-267 The Soviet Union in World War II: Military, Political, and Social History 9
79-288 Bananas, Baseball, and Borders: Latin America and the United States 9
79-298 Mobile Phones & Social Media in Development & Human Rights: A Critical Appraisal 6
79-299 From Newton to the Nuclear Bomb: History of Science, 1750-1950 9
79-301 History of Surveillance: From the Plantation to Data Capitalism 6
79-302 Killer Robots:The Ethics, Law, and Politics of Lethal Autonomous Weapons Systems 6
79-303 Pittsburgh and the Transformation of Modern Urban America 6
79-305 Moneyball Nation: Data in American Life 9
79-310 Modern U. S. Business History: 1870 to the Present 9
79-315 Thirsty Planet: The Politics of Water in Global Perspective 9
79-320 Women, Politics, and Protest 9
79-322 Stalin and the Great Terror 9
79-325 U.S. Gay and Lesbian History 6
79-330 Medicine and Society 9
79-331 Body Politics: Women and Health in America 9
79-336 Oil & Water: Middle East Perspectives 6
79-338 History of Education in America 9
79-339 Juvenile Delinquency & Film: From Soul of Youth (1920) to West Side Story (1961) 6
79-340 Juvenile Delinquency & Film: From "Boyz N the Hood"(1991) to "The Wire"(2002-08) 6

Non-US Survey:
79-202 Flesh and Spirit: Early Modern Europe, 1400-1750 9
79-203 Social and Political Change in 20th Century Central and Eastern Europe 9
79-205 20th Century Europe 9
79-223 Mexico: From the Aztec Empire to the Drug War 9
79-226 African History: Earliest Times to 1780 9
79-227 Modern Africa: The Slave Trade to the End of Apartheid 9
79-229 Origins of the Arab-Israeli Conflict, 1880-1948 9
79-230 Arab-Israeli Conflict Since 1948 9
79-237 Comparative Slavery 9
79-261 The Last Emperors: Chinese History and Society, 1600-1900 9
79-262 Modern China: From the Birth of Mao ... to Now 9
79-264 Tibet and China: History and Propaganda 6
79-265 Russian History: From the First to the Last Tsar 9
79-266 Russian History and Revolutionary Socialism 9
79-307 Religion and Politics in the Middle East 9

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80-135 Introduction to Political Philosophy 9
80-335 Social and Political Philosophy 9

Foundations of Social Science:
80-221 Philosophy of Social Science 9
80-321 Causation, Law, and Social Policy 9
80-324 Philosophy of Economics 9

Applied Philosophy:
80-136 Social Structure, Public Policy & Ethics 9
80-244 Environmental Ethics 9

80-245 Medical Ethics 9
80-249 AI, Society, and Humanity 9
80-336 Philosophy of Law 9
80-348 Health, Human Rights, and International Development 9
80-447 Global Justice 9

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70-321 Negotiation and Conflict Resolution 9
70-332 Business, Society and Ethics 9
70-364 Business Law 9
70-365 International Trade and International Law 9
70-430 International Management 9

Economics:
73-352 Public Economics 9
73-359 Benefit-Cost Analysis 9
73-365 Firms, Market Structures, and Strategy 9
73-372 International Money and Finance 9
73-408 Law and Economics 9
73-476 American Economic History 9

English:
76-492 Rhetoric of Public Policy 9

History:
79-206 Crime and Punishment in Early Modern Europe 9
79-228 The Civil Rights Movement and the World 9
79-233 The United States and the Middle East since 1945 9
79-234 Technology and Society 9
79-242 African American History: Reconstruction to the Present 9
79-247 African Americans, Imprisonment, and the Carceral State 9
79-267 The Soviet Union in World War II: Military, Political, and Social History 9
79-288 Bananas, Baseball, and Borders: Latin America and the United States 9
79-298 Mobile Phones & Social Media in Development & Human Rights: A Critical Appraisal 6
79-299 From Newton to the Nuclear Bomb: History of Science, 1750-1950 9
79-301 History of Surveillance: From the Plantation to Data Capitalism 6
79-302 Killer Robots:The Ethics, Law, and Politics of Lethal Autonomous Weapons Systems 6
79-303 Pittsburgh and the Transformation of Modern Urban America 6
79-305 Moneyball Nation: Data in American Life 9
79-310 Modern U. S. Business History: 1870 to the Present 9
79-315 Thirsty Planet: The Politics of Water in Global Perspective 9
79-320 Women, Politics, and Protest 9
79-322 Stalin and the Great Terror 9
79-325 U.S. Gay and Lesbian History 6
79-330 Medicine and Society 9
79-331 Body Politics: Women and Health in America 9
79-336 Oil & Water: Middle East Perspectives 6
79-338 History of Education in America 9
79-339 Juvenile Delinquency & Film: From Soul of Youth (1920) to West Side Story (1961) 6
79-340 Juvenile Delinquency & Film: From "Boyz N the Hood"(1991) to "The Wire"(2002-08) 6
**Philosophy:**

80-256 Modern Moral Philosophy  
80-305 Choices, Decisions, and Games  
80-405 Game Theory  

**Institute for Politics and Strategy:**

84-310 International Political Economy  
84-380 Grand Strategy in the United States  
84-393 Legislative Decision Making: US Congress  
84-402 Judicial Politics and Behavior  

**Social and Decision Sciences:**

88-223 Decision Analysis  
88-281 Topics in Law: 1st Amendment  
88-444 Public Policy and Regulation  

Note: Other elective courses may be approved at the discretion of the EHPP faculty advisor. A list of these courses must be filed in the BXA office.

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**Film & Visual Media Studies (81 units minimum)**

The BHA concentration in Film & Visual Media Studies trains students through a combination of coursework in visual media, film history and analysis, screenwriting, and production of film and other visual media. This concentration offers a comprehensive education in film and visual media, from theoretical framing and historical-cultural contextualization to training skills in both creating and analyzing film, and developing a complex blend of creative, professional, and technical competencies. CMU’s Department of English is an ideal home for the Film & Visual Media Studies concentration due to the department’s combination of creative writers, film and media studies scholars, film makers, digital humanities, and visual communication researchers.

**Introductory Courses (2 courses, 18 units)**

76-239 Introduction to Film Studies  
76-259 Introduction to Film History  

**Production Course (1 course, 9 units)**

76-292 Film Production  

**Screenwriting Course (1 course, 9 units)**

76-269 Survey of Forms: Screenwriting  

**Topics in Film & Visual Media Studies (2 courses, 18 units)**

76-312 Crime and Justice in American Film  
76-338 The American Cinema  
76-339 Topics in Film and Media: Hollywood vs. the World (Can be taken more than once.)  
76-353 Transnational Feminisms: Fiction and Film  
76-367 Fact Into Film: Translating History into Cinema  
76-377 Shakespeare and Film  
76-438 The Wire: Crime, Realism, and Long-Form TV  
76-439 Seminar in Film and Media Studies: Class, Race, & Gender in Film  
76-448 Shakespeare on Film  
76-449 Race and Media  
76-214 Paris in Revolt: History, Literature, Film  
76-225 West African History in Film  
76-306 Fact into Film: Translating History into Cinema  
76-308 Crime and Justice in American Film  
76-309 The Chinese Revolution Through Film (1949-2000)  
76-319 India Through Film  
76-326 German History through Film  
76-339 Juvenile Delinquency & Film: From Soul of Youth (1920) to West Side Story (1961)  
76-341 The Cold War in Documents and Film  
82-215 Arab Culture Through Film & Literature  
82-278 Japanese Film and Literature: The Art of Storytelling  
82-284 Multicultural Pittsburgh: A Creative Media Exploration of Cmmnty, Lang & Identit  
82-296 A Century of Russian Film  
82-355 Tpcs in Hispanic Std: Beyond the Film Screen: The Hispanic World Through Film  

Courses in Film Production, Screenwriting, Digital Media, Literature & Culture, and/or Film & Visual Media Studies (3 courses, 27 units)

Students may take an additional three Dietrich College courses for a minimum of 27 units of courses offered in the categories listed above. Because there are dozens of options available, including many of the courses listed above, please consult with the Department of English academic advisor for guidance.

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**German Studies Concentration (81 units minimum)**

A BHA concentration in German Studies promotes not just language proficiency but also an understanding of German culture. Students who arrive at Carnegie Mellon with previous language study and/or who have high Advanced Placement, an International Baccalaureate, a Cambridge GCE Advanced level, or internal placement exam scores will be able to begin taking courses in the concentration earlier in their undergraduate program. In all cases, progress in the concentration will be accelerated by study abroad, which is recommended for all students.

**Core Courses in German (3 courses, 27 units)**

82-320 Contemporary Society in Germany, Austria and Switzerland  
82-323 Germany, Austria and Switzerland in the 20th Century  
82-327 The Emergence of the German Speaking World  

Note: A 400-level course may be substituted with the major advisor's approval.

**Core Courses in Modern Languages (2 courses, 12 units)**

Complete one 9 unit course plus the Senior Seminar (3 units).

82-280 Learning About Language Learning  
82-281 Tutoring for Community Outreach  
82-282 Community Service Learning  
82-383 Second Language Acquisition: Theories and Research  
82-388 Understanding Second Language Fluency  
82-480 Social and Cognitive Aspects of Bilingualism  
82-580 Senior Seminar in Modern Languages  

Note: In consultation with the major advisor, students may substitute a Modern Languages course elective with one related to language analysis, language learning, or acquisition of language and culture from the listings in German Studies or from another department. Examples: 80-180 Nature of Language, 85-421 Language and Thought.

**German Studies and Interdisciplinary Electives (5 courses, 42 units minimum)**

Complete four courses from German Electives and one course from Interdisciplinary Electives, or a minimum of three courses from German Electives and two courses from Interdisciplinary Electives in consultation with the German advisor.
in Global Studies develop a broad understanding of their prospects and local cultures, and societal structures. BHA concentration students make sense of complex interactions among global processes, regional cultural studies, and advanced language training in order to help students Latin America, the Middle East, and the Pacific. The rigorous yet flexible underpinning the concentration in Global Studies, students select 18 units counted as Global Studies transnational, global, regional courses or Global category. Additional courses in a language other than English may also be degree program manager will also work with students to connect their theoretical and practical knowledge, which will contribute to their capstone research project. The capstone project may lead to the capstone research project (79-400 Global Studies Research Seminar), the BXA capstone project (52-401 and 52-402) or a Dietrich College senior honors thesis (https://www.cmu.edu/dietrich/students/undergraduate/programs/senior-honors). The faculty director and the academic program manager will also work with students to connect their academic interests and their participation in student organizations and/or organizations based in Pittsburgh with transnational reach.

Global Studies Introductory and Capstone Courses (2 courses, 21 units)

Students must earn a final grade of "C" or better for these courses to count toward the concentration.

79-275 Introduction to Global Studies 9
79-400 Global Studies Research Seminar 12

Language Proficiency Requirement

Demonstrating intermediate to advanced level proficiency in a language other than English is a crucial component of the concentration in Global Studies. Normally this requirement can be satisfied by successfully completing a course conducted in the second language at the 300-level or above for French, German, Italian, or Spanish, or the fourth semester (Intermediate II) level or above for Arabic, Chinese, Japanese, or Russian. Comparable proficiency for other languages can be considered. Additional advanced cultural, historical, and literary study in the second language is strongly recommended. If needed these courses may be counted toward the BHA General Education Communicating: Language and Interpretations category. Additional courses in a language other than English may also be counted as Global Studies transnational, global, regional courses or Global Studies electives as appropriate.

Theoretical and Topical Core Courses (2 courses, 18 units)

To gain a solid foundation in the theories, methods, and analytical topics underpinning the concentration in Global Studies, students select 18 units (typically two courses) from the core courses listed below. Students must earn a final grade of "C" or better in these courses to fulfill the theoretical and topical core course requirement.

79-201 Introduction to Anthropology 9
79-211 Modern Southeast Asia: Colonialism, Capitalism, and Cultural Exchange 9
79-278 How (NOT) to Change the World 9
79-280 Coffee and Capitalism 9
79-289 Animal Planet: An Environmental History of People and Animals 9
79-314 The Politics and Culture of Memory 9
79-315 Thirsty Planet: The Politics of Water in Global Perspective 9
79-317 Art, Anthropology, and Empire 9
79-318 Sustainable Social Change: History and Practice 9
79-377 Food, Culture, and Power: A History of Eating 9
79-379 Extreme Ethnography 9
79-380 Hostile Environments: The Politics of Pollution in Global Perspective 9
79-381 Energy and Empire: How Fossil Fuels Changed the World 9
79-383 The History of Capitalism 9

Transnational, Global, and Regional Courses (3 courses, 27 units)

To gain insight into how complex transnational and global processes shape and are affected by local, national, and regional dynamics, students will select 27 units (typically three courses) from any subcategories below.

79-420 The Crucible of Modernity: Vienna 1900 9
82-425 or 82-426 Topics in German Literature and Culture 9
82-427 Nazi and Resistance Culture 9
82-428 History of German Film 9
82-505 Undergraduate Internship Var.
82-512 Special Topics: German Studies Var.
82-522 Special Topics: German Studies Var.

Interdisciplinary Electives:

This list is compiled from possibilities such as but not limited to the Architecture 48-338 European Cities in the XIX Century: Planning, Architecture, Preservation 9
48-340 Modern Architecture and Theory 1900-1945 9
48-350 Postwar Modern Architecture and Theory 9
English 76-239 Introduction to Film Studies 9
76-386 Language & Culture 9
76-387 Writing in the Disciplines 6
76-483 Corpus Analysis in Rhetoric 9
History 79-205 20th Century Europe 9
79-256 Sex, Guns, and Rock 'n Roll: Youth Rebellion in 1960s & 1970s Europe 6
79-349 United States and the Holocaust 6
Modern Languages 82-227 Germany & the European Union 9
82-280 Learning About Language Learning 9
82-281 Tutoring for Community Outreach Var.
82-282 Community Service Learning Var.
82-427 Nazi and Resistance Culture 9
82-428 History of German Film 9
82-383 Second Language Acquisition: Theories and Research 9
82-388 Understanding Second Language Fluency 9
82-480 Social and Cognitive Aspects of Bilingualism 9
Music 57-306 World Music 9
Philosophy 80-180 Nature of Language 9
80-251 Modern Philosophy 9
80-253 Continental Philosophy 9
80-256 Modern Moral Philosophy 9
80-275 Metaphysics 9
80-280 Linguistic Analysis 9
80-281 Language and Thought 9
80-380 Philosophy of Language 9
Psychology 85-375 Crosscultural Psychology 9
85-421 Language and Thought 9

Global Electives:

82-420 The Crucible of Modernity: Vienna 1900 9
82-425 or 82-426 Topics in German Literature and Culture 9
82-427 Nazi and Resistance Culture 9
82-428 History of German Film 9
82-505 Undergraduate Internship Var.
82-512 Special Topics: German Studies Var.
82-522 Special Topics: German Studies Var.

Global Studies Concentration (81 units minimum)

The BHA concentration in Global Studies is designed for students interested in humanistic approaches to understanding past and present processes of globalization. Participating faculty in the departments of History, Modern Languages, and English conduct research in Africa, Asia, Europe, Latin America, the Middle East, and the Pacific. The rigorous yet flexible Global Studies curriculum combines anthropology, history, literary and cultural studies, and advanced language training in order to help students make sense of complex interactions among global processes, regional and local cultures, and societal structures. BHA concentration students in Global Studies develop a broad understanding of their prospects and responsibilities as citizens of the world confronting challenging contemporary problems.

There are two required courses for the concentration: Introduction to Global Studies (79-275) and Global Studies Research Seminar (79-400). Students also choose among several courses focused on theory, research methods, transnational histories, and regional/national histories and cultures.

In addition to coursework at Carnegie Mellon, BHA students with a concentration in Global Studies are encouraged to incorporate a semester of study abroad into their course of study in order to immerse themselves in society different from their own with unfamiliar cultural practices, language, and history.

Students should consult frequently with the BHA advisor, the Global Studies academic program manager, and the faculty director who will help students to craft a coherent course of study on specific topics and/or regions that may lead to the capstone research project (79-400 Global Studies Research Seminar), the BXA capstone project (52-401 and 52-402) or a Dietrich College senior honors thesis (https://www.cmu.edu/dietrich/students/undergraduate/programs/senior-honors). The faculty director and the academic program manager will also work with students to connect their academic interests and their participation in student organizations and/or organizations based in Pittsburgh with transnational reach.

There are two required courses for the concentration:

- 79-275 Introduction to Global Studies
- 79-400 Global Studies Research Seminar

Global Studies Electives: Students must earn a final grade of "C" or better for these courses to count toward the concentration.

79-275 Introduction to Global Studies 9
79-400 Global Studies Research Seminar 12

Language Proficiency Requirement

Demonstrating intermediate to advanced level proficiency in a language other than English is a crucial component of the concentration in Global Studies. Normally this requirement can be satisfied by successfully completing a course conducted in the second language at the 300-level or above for French, German, Italian, or Spanish, or the fourth semester (Intermediate II) level or above for Arabic, Chinese, Japanese, or Russian. Comparable proficiency for other languages can be considered. Additional advanced cultural, historical, and literary study in the second language is strongly recommended. If needed these courses may be counted toward the BHA General Education Communicating: Language and Interpretations category. Additional courses in a language other than English may also be counted as Global Studies transnational, global, regional courses or Global Studies electives as appropriate.

Theoretical and Topical Core Courses (2 courses, 18 units)

To gain a solid foundation in the theories, methods, and analytical topics underpinning the concentration in Global Studies, students select 18 units (typically two courses) from the core courses listed below. Students must earn a final grade of "C" or better in these courses to fulfill the theoretical and topical core course requirement.

79-201 Introduction to Anthropology 9
79-211 Modern Southeast Asia: Colonialism, Capitalism, and Cultural Exchange 9
79-278 How (NOT) to Change the World 9
79-280 Coffee and Capitalism 9
79-289 Animal Planet: An Environmental History of People and Animals 9
79-314 The Politics and Culture of Memory 9
79-315 Thirsty Planet: The Politics of Water in Global Perspective 9
79-317 Art, Anthropology, and Empire 9
79-318 Sustainable Social Change: History and Practice 9
79-377 Food, Culture, and Power: A History of Eating 9
79-379 Extreme Ethnography 9
79-380 Hostile Environments: The Politics of Pollution in Global Perspective 9
79-381 Energy and Empire: How Fossil Fuels Changed the World 9
79-383 The History of Capitalism 9

Transnational, Global, and Regional Courses (3 courses, 27 units)

To gain insight into how complex transnational and global processes shape and are affected by local, national, and regional dynamics, students will select 27 units (typically three courses) from any subcategories below.

German Electives:

82-420 The Crucible of Modernity: Vienna 1900 9
82-425 or 82-426 Topics in German Literature and Culture 9
82-427 Nazi and Resistance Culture 9
82-428 History of German Film 9
82-505 Undergraduate Internship Var.
82-512 Special Topics: German Studies Var.
82-522 Special Topics: German Studies Var.
Transnational and Global Courses:

- 76-353 Transnational Feminisms: Fiction and Film
- 76-384 Race, Nation, and the Enemy
- 76-440 Postcolonial Theory: Diaspora and Transnationalism
- 79-224 Mayan America
- 79-233 The United States and the Middle East since 1945
- 79-237 Comparative Slavery
- 79-276 Beyond the Border
- 79-280 Coffee and Capitalism
- 79-282 Europe and the World Since 1800
- 79-283 Hungry World: Food and Famine in Global Perspective
- 79-288 Bananas, Baseball, and Borders: Latin America and the United States
- 79-333 Sex, Gender & Anthropology
- 79-350 Early Christianity
- 79-368 Un-natural Disasters: Societies and Environmental Hazards in Global Perspective
- 79-385 Out of Africa: The Making of the African Diaspora
- 80-348 Health, Human Rights, and International Development
- 80-447 Global Justice
- 82-283 Language Diversity & Cultural Identity
- 82-304 The Francophone World
- 82-345 Introduction to Hispanic Literary & Cultural Studies
- 84-322 Nonviolent Conflict and Revolution
- 84-326 Theories of International Relations
- 84-370 Global Nuclear Politics
- 84-389 Terrorism and Insurgency

Regional Courses:

Africa
- 79-225 West African History in Film
- 79-226 African History: Earliest Times to 1780
- 79-227 Modern Africa: The Slave Trade to the End of Apartheid
- 79-291 Globalization in East African History
- 79-386 Entrepreneurs in Africa, Past, Present and Future

Eastern and Southern Asia and the Pacific
- 79-211 Modern Southeast Asia: Colonialism, Capitalism, and Cultural Exchange
- 79-264 Tibet and China: History and Propaganda
- 88-411 Rise of the Asian Economies

Europe
- 79-202 Flesh and Spirit: Early Modern Europe, 1400-1750
- 79-203 Social and Political Change in 20th Century Central and Eastern Europe
- 79-205 20th Century Europe
- 79-208 Witchcraft and Witch-Hunting
- 79-268 World War I: The Twentieth Century’s First Catastrophe
- 79-270 Anti-Semitism Then and Now: Perspectives from the Middle Ages to the Present
- 79-232 Family, Gender, and Sexuality in European History, 500-1800
- 82-320 Contemporary Society in Germany, Austria and Switzerland
- 82-415 Topics in French and Francophone Studies
- 82-441 Studies in Peninsular Literature and Culture

The Middle East
- 79-229 Origins of the Arab-Israeli Conflict, 1880-1948
- 79-230 Arab-Israeli Conflict Since 1948
- 79-307 Religion and Politics in the Middle East
- 79-336 Oil & Water: Middle East Perspectives
- 79-398 Documenting the 1967 Arab-Israeli War
- 84-323 War and Peace in the Contemporary Middle East

The Americas
- 79-223 Mexico: From the Aztec Empire to the Drug War
- 79-235 Caribbean Cultures
- 82-245 New Directions in Hispanic Studies
- 82-343 Latin America Language and Culture
- 82-451 Studies in Latin American Literature and Culture
- 82-455 Topics in Hispanic Studies
- 82-456 Topics in Hispanic Studies
- 84-308 Political Economy of Latin America

Electives (2 courses, 15 units minimum)

Students are required to take an additional 15 units (typically two courses) of electives, selected from one or both of the subcategories below. "Theoretical and Topical Core Courses" and "Transnational, Global, and Regional Courses" listed above that are not used to fulfill those requirements may be counted as electives in addition to the courses listed below.

Global Studies offers students the opportunity to gain credit for a 9 unit elective while gaining first-hand experience interning with Pittsburgh-based organizations that work across borders. 79-506 Global Studies Internship is offered every semester and students should register for the course after consulting with the academic advisor and faculty director. The faculty director will assist students with matching their interests to local organizations and identifying an on-site supervisor available to collaborate in the ongoing and final evaluation of the student’s work.

Thematic Courses:

- 57-306 World Music
- 70-365 International Trade and International Law
- 76-241 Introduction to Gender Studies
- 76-386 Language & Culture
- 76-449 Race and Media
- 76-450 Law, Culture, and the Humanities
- 76-468 Space and Mobilities
- 79-218 The Civil Rights Movement and the World
- 79-281 Introduction to Religion
- 79-286 Archaeology: Understanding the Ancient World
- 79-313 “Unwanted”: Refugees, Asylum Seekers, and Patterns of Global Migration
- 79-316 Photography, the First 100 Years, 1839-1939
- 79-324 #MeToo: Naming and Resisting Gender Violence
- 79-330 Medicine and Society
- 79-343 Education, Democracy, and Civil Rights
- 79-349 United States and the Holocaust
- 79-397 Environmental Crises and the City
- 80-244 Environmental Ethics
- 80-335 Social and Political Philosophy
- 82-215 Arab Culture Through Film & Literature
- 82-541 Special Topics: Hispanic Studies
- 84-275 Comparative Politics
- 84-310 International Political Economy
- 84-318 Politics of Developing Nations
- 84-362 Diplomacy and Statecraft

Nation-based Courses:

- 79-214 Paris in Revolt: History, Literature, Film
- 79-216 Genghis Khan and the Mongol Empire
- 79-256 Sex, Guns, and Rock ‘n Roll: Youth Rebellion in 1960s & 1970s Europe
- 79-257 Germany and the Second World War
- 79-258 French History: From the Revolution to De Gaulle
- 79-259 France During World War II
- 79-261 The Last Emperors: Chinese History and Society, 1600-1900
- 79-262 Modern China: From the Birth of Mao ... to Now
- 79-263 Mao and the Chinese Cultural Revolution
- 79-265 Russian History: From the First to the Last Tsar
- 79-266 Russian History and Revolutionary Socialism
Students must take two courses from the list below. Other courses may be applied toward the concentration.

Required Communications Courses (2 courses, 18 units)

- 79-267 The Soviet Union in World War II: Military, Political, and Social History 9
- 79-269 Russian History: From Socialism to Capitalism 9
- 79-309 The Chinese Revolution Through Film (1949-2000) 9
- 79-319 India Through Film 6
- 79-320 Women, Politics, and Protest 9
- 79-322 Stalin and the Great Terror 9
- 79-326 German History through Film 9
- 79-331 Body Politics: Women and Health in America 9
- 79-392 America at War: From Vietnam to Afghanistan 9
- 82-253 Korean Culture Through Film 9
- 82-254 World of Korea, Then and Now 9
- 82-273 Introduction to Japanese Language and Culture 9
- 82-278 Japanese Film and Literature: The Art of Storytelling 9
- 82-293 Russian Cinema: From the Bolshevik Revolution to Putin’s Russia 9
- 82-294 Topics in Russian Language and Culture 9
- 82-303 Introduction to French Culture 9
- 82-305 French in its Social Contexts 9
- 82-333 Introduction to Chinese Language and Culture 9
- 82-342 Spain: Language and Culture 9
- 82-344 U.S. Latinos: Language and Culture 9
- 82-361 Italian Language and Culture I 9
- 82-420 The Crucible of Modernity: Vienna 1900 9
- 82-425 Topics in German Literature and Culture 9
- 82-427 Nazi and Resistance Culture 9
- 82-428 History of German Film 9
- 82-433 Topics in Contemporary Culture of China 9
- 82-434 Studies in Chinese Traditions 9
- 82-440 Studies in Chinese Literature & Culture 9
- 82-473 Topics in Japanese Studies 9

Global Systems & Management (81 units minimum)

The BHA concentration in Global Systems & Management (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 concentration to reflect their specific interests.

Required Information Systems Course (1 course, 9 units)

Students must earn a final grade of “C” or better for these courses to count toward the concentration.

- 67-329 Contemporary Themes in Global Systems 9

Required Communications Courses (2 courses, 18 units)

Students must take two courses from the list below. Other courses may fulfill these requirements, with permission of the BHA GSM advisor.

- 05-341 Organizational Communication 9
- 70-321 Negotiation and Conflict Resolution 9
- 70-340 Business Communications 9
- 70/85/88-341 Team Dynamics and Leadership 9
- 70-342 Managing Across Cultures 9
- 70-350 Acting for Business 9
- 70-483 Advertising and Marketing Communications 9
- 73-341 Within the Firm: Managing through Incentives 9
- 76-270 Writing for the Professions 9
- 76-318 Communicating in the Global Marketplace 9
- 76-366/786 Language & Culture 9
- 76-428 Visual Verbal Communication 9
- 85-375 Crosscultural Psychology 9
- 88-419 International Negotiation 9

Global Systems Management Electives (6 courses, 54 units)

Students distribute their electives between the two categories listed below. Students must complete a minimum of 18 units in each category.

Humans, Heritage and Culture:

- 82-215 Arab Culture Through Film & Literature 9
- 82-238 Topics in Chinese Culture 9
- 82-253 Korean Culture Through Film 9
- 82-254 World of Korea, Then and Now 9
- 82-273 Introduction to Japanese Language and Culture 9
- 82-278 Japanese Film and Literature: The Art of Storytelling 9
- 82-293 Russian Cinema: From the Bolshevik Revolution to Putin’s Russia 9
- 82-303 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 9
- 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 9
- 82-400 Russian Studies Topics 6
- 82-415/416 Topics in French and Francophone Studies 9
- 82-425 Topics in German Literature and Culture 9
- 82-433 Topics in Contemporary Culture of China 9
- 82-441 Studies in Pan-Asian Literature and Culture 9
- 82-450 Advanced Research in Hispanic Language & Culture 9
- 82-456 Topics in Hispanic Studies 9
- 82-473/474 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

Note: History Department courses numbered 79-200 or above covering humans, heritage and culture.

International Management:

- 19-411 Global Competitiveness: Firms, Nations and Technological Change 9
- 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 in the Contemporary Middle East 9
- 84-362 Diplomacy and Statecraft 9
International Relations and Politics Concentration (81 units minimum)

Offered through the Institute for Politics and Strategy (IPS), the International Relations and Politics (IRP) BHA concentration analyzes the role of politics at the national, regional, international, and transnational levels; examines political and institutional arrangements within and among these levels; and investigates the grand strategy of nation-states.

Statesmen, scholars, and policy makers often define grand strategy as the combination of diplomatic, economic, military, and political factors used by leaders to defend their respective nation-states. The IRP concentration investigates the way in which leaders and citizens construct grand strategy and national security policy more generally; the impact of domestic and international forces on states’ security and economic policies; and the significance of alliances, coalitions, and international institutions for world politics. Although the study of grand strategy and political institutions is the flagship initiative of the concentration, students are also able to study the effects of culture, economics, and society on the international system through a rich set of elective courses.

Thinking systematically about international and domestic politics is the core objective of the IRP concentration. The concentration is rooted in the discipline of political science but also utilizes the interdisciplinary strengths of decision science, economics, and political history. Thus, students pursuing this concentration will use the analytic tools of game theory, economic and statistical analysis, qualitative analysis, rational choice theory, and theories of behavioral decision making as they study alliances, coalitions, institutions, and political strategy.

The name of the concentration signifies that those studying IRP learn about international relations and domestic politics from the standpoint of the discipline of political science. Also, the concentration taps into and contributes to CMU’s strengths in other social sciences that combine the discipline of political science but also utilizes the interdisciplinary strengths of decision science, economics, and political history. Thus, students are required to complete the intermediate (200) level requirement in a modern language other than English. Advanced level study is strongly encouraged.

Open to all Carnegie Mellon undergraduates, the Carnegie Mellon University Washington Semester Program (CMU/WSP) allows students to study public policy and intern in Washington for one semester. Courses taken through CMU/WSP will count toward the elective sequence in politics and public policy for the IRP concentration.

IRP students interested in developing their research skills are encouraged to apply for a research position with the Center for International Relations and Politics or work directly with a member of the IPS faculty. Students are also encouraged to join student organizations focused on domestic or international politics. Becoming involved in the Institute for Politics and Strategy, as well as attending lectures and events sponsored by the Center for International Relations and Politics will provide additional opportunities for students. Students are also encouraged to submit their work for publication in the CIRP Journal (https://www.cmu.edu/ir/cirp-journal), an online and print publication that analyzes current problems facing the United States and the international system.

Pre-requisite
84-110 Foundations of Political Economy 9
or 73-102 Principles of Microeconomics

Core Courses (6 courses, 54 units)
84-104 Decision Processes in American Political Institutions 9
84-265 Political Science Research Methods 9
84-275 Comparative Politics 9
84-326 Theories of International Relations 9
84-369 Decision Science for International Relations 9
84-450 Policy Forum 6
36-202 Statistics & Data Science Methods 9

Electives (3 courses, 21 units minimum)
International Relations and Politics BHA students will either:

Option 1
Take 21 units (three courses) from the elective lists below. At least two courses must be from the Institute for Politics and Strategy (84-xxx).

Grand Strategy and Political Institutions
66-221 Topics of Law: Introduction to Intellectual Property Law 9
79-203 Social and Political Change in 20th Century Central and Eastern Europe 9
79-298 Mobile Phones & Social Media in Development & Human Rights: A Critical Appraisal 6
79-301 History of Surveillance: From the Plantation to Data Capitalism 6
79-302 Killer Robots:The Ethics, Law, and Politics of Lethal Autonomous Weapons Systems 6
80-135 Introduction to Political Philosophy 9
80-321 Causation, Law, and Social Policy 9
80-335 Social and Political Philosophy 9
84-250 Writing for Political Science and Policy 9
84-309 Political Behavior 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 in the Contemporary Middle East 9
84-324 The Future of Democracy 6
84-325 Contemporary American Foreign Policy 9
84-362 Diplomacy and Statecraft 9
84-363 Comparative Legal Systems 9
84-364 Comparative Presidential Behavior: Leadership, Personality, and Decision Making 9
84-366 The American Presidency 9
84-370 Global Nuclear Politics 9
84-372 Space and National Security 9
84-373 Emerging Technologies and the Law 9
84-380 Grand Strategy in the United States 9
84-386 The Privatization of Force 9
84-387 Technology and Policy of Cyber War 9
84-388 Concepts of War and Cyber War 6
84-389 Terrorism and Insurgency 9
84-390 Social Media, Technology, and Conflict 9
84-393 Legislative Decision Making: US Congress 6
84-402 Judicial Politics and Behavior 6
84-405 The Future of Warfare 9
84-414 International and Subnational Security 9
88-281 Topics in Law: 1st Amendment 9
88-284 Topics of Law: The Bill of Rights 9

Economics and Society
19-452 EPP Projects 12
70-342 Managing Across Cultures 9
70-365 International Trade and International Law 9
70-430 International Management 9
73-103 Principles of Macroeconomics 9
73-328 Health Economics 12
73-332 Political Economy 9
79-386 Entrepreneurs in Africa, Past, Present and Future 9
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>80-136</td>
<td>Social Structure, Public Policy &amp; Ethics</td>
</tr>
<tr>
<td>80-244</td>
<td>Environmental Ethics</td>
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<tr>
<td>80-249</td>
<td>AI, Society, and Humanity</td>
</tr>
<tr>
<td>80-348</td>
<td>Health, Human Rights, and International Development</td>
</tr>
<tr>
<td>80-447</td>
<td>Global Justice</td>
</tr>
<tr>
<td>84-330</td>
<td>The Shading of Democracy: The Influence of Race on American Politics</td>
</tr>
<tr>
<td>84-331</td>
<td>Money, Media, and the Power of Data in Decisionmaking</td>
</tr>
<tr>
<td>84-332</td>
<td>Effects of US Policy on Businesses: Perspectives of Asian Americans</td>
</tr>
<tr>
<td>84-333</td>
<td>Power and Levers for Change in Washington, DC</td>
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<td>84-334</td>
<td>Presidential Power in a Constitutional System</td>
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<tr>
<td>84-336</td>
<td>Implementing Public Policy: From Good Idea To Reality</td>
</tr>
<tr>
<td>84-337</td>
<td>Biomedical Science Research, Policy, and Governance</td>
</tr>
<tr>
<td>84-343</td>
<td>Language and Power: How to Understand and Use Political Speech</td>
</tr>
<tr>
<td>84-346</td>
<td>Legal Issues in Public Administration</td>
</tr>
<tr>
<td>84-348</td>
<td>Advocacy, Policy and Practice</td>
</tr>
</tbody>
</table>

**Japanese Studies Concentration (81 units minimum)**

A BHA concentration in Japanese Studies promotes not just language proficiency but also an understanding of Japanese culture. Students who arrive at Carnegie Mellon with previous language study and/or who have high Advanced Placement, an International Baccalaureate, a Cambridge GCE Advanced level, or internal placement exam scores will be able to begin taking courses in the concentration earlier in their undergraduate program. In all cases, progress in the concentration will be accelerated by study abroad, which is recommended for all students.

**Prerequisites**

Low-intermediate level proficiency in Japanese. This is equivalent to the completion of three courses (two at the 100-level and one at the 200-level) or exemption based on internal placement test scores.

**Core Courses in Japanese (4 courses, 39 units)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>82-272</td>
<td>Intermediate Japanese II *</td>
</tr>
<tr>
<td>82-273</td>
<td>Introduction to Japanese Language and Culture</td>
</tr>
<tr>
<td>82-371</td>
<td>Advanced Japanese I</td>
</tr>
<tr>
<td>82-372</td>
<td>Advanced Japanese II</td>
</tr>
</tbody>
</table>

* Students who place out of 82-272 Intermediate Japanese II must take 12 units chosen from the Japanese Studies and Interdisciplinary Electives category below.

**Core Courses in Modern Languages (2 courses, 12 units)**

Complete one 9 unit course plus the Senior Seminar (3 units).

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>82-280</td>
<td>Learning About Language Learning</td>
</tr>
<tr>
<td>82-281</td>
<td>Tutoring for Community Outreach</td>
</tr>
<tr>
<td>82-262</td>
<td>Community Service Learning</td>
</tr>
<tr>
<td>82-383</td>
<td>Second Language Acquisition: Theories and Research</td>
</tr>
<tr>
<td>82-388</td>
<td>Understanding Second Language Fluency</td>
</tr>
<tr>
<td>82-480</td>
<td>Social and Cognitive Aspects of Bilingualism</td>
</tr>
<tr>
<td>82-580</td>
<td>Senior Seminar in Modern Languages</td>
</tr>
</tbody>
</table>

**Japanese Studies and Interdisciplinary Electives (4 courses, 30 units minimum)**

Complete three courses from Japanese Electives and one course from Interdisciplinary Electives, or a minimum of two courses from Japanese Electives and two courses from Interdisciplinary Electives in consultation with the Japanese advisor. One course from Interdisciplinary Electives must be chosen from the History department courses, with permission of the advisor students are encouraged to complete at least one Japanese history course at the University of Pittsburgh, one in Japan when they study abroad, or in a summer program at any other university.

**Japanese Electives**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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</thead>
<tbody>
<tr>
<td>82-373</td>
<td>Structure of the Japanese Language</td>
</tr>
<tr>
<td>82-374</td>
<td>Technical Japanese</td>
</tr>
<tr>
<td>82-473/474</td>
<td>Topics in Japanese Studies (Students may repeat with new topics.)</td>
</tr>
<tr>
<td>82-505</td>
<td>Undergraduate Internship</td>
</tr>
<tr>
<td>82-571/572</td>
<td>Special Topics in Japanese Studies</td>
</tr>
</tbody>
</table>
Interdisciplinary Electives

This list is compiled from possibilities such as but not limited to the following. Students should consult SIO and their advisor for the most up to date interdisciplinary electives appropriate for the Japanese Studies curriculum. Courses may be suggested to the advisor for approval as a substitute.

English
76-239 Introduction to Film Studies 9
76-386 Language & Culture 9
76-387 Writing in the Disciplines 6

History
79-261 The Last Emperors: Chinese History and Society, 1600-1900 9
79-262 Modern China: From the Birth of Mao ... to Now 9
79-275 Introduction to Global Studies 9

Modern Languages
82-234 Topics in Chinese History 9
82-278 Japanese Film and Literature: The Art of Storytelling 9
82-280 Learning About Language Learning 9
82-281 Tutoring for Community Outreach Var.
82-282 Community Service Learning Var.
82-283 Language Diversity & Cultural Identity 9
82-373 Structure of the Japanese Language 9
82-374 Technical Japanese 9
82-383 Second Language Acquisition: Theories and Research 9
82-480 Understanding Second Language Fluency 9
82-480 Social and Cognitive Aspects of Bilingualism 9

Music
57-306 World Music 9

Philosophy
80-180 Nature of Language 9
80-280 Linguistic Analysis 9
80-380 Philosophy of Language 9

Psychology
85-375 Crosscultural Psychology 9
85-421 Language and Thought 9

Linguistics Concentration (81 units minimum)

The BHA concentration in Linguistics combines courses from the departments of English, Modern Languages, Philosophy and Psychology and the Language Technologies Institute. 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.

Introductory Course (1 course, 9 units)
80-180 Nature of Language 9

Linguistics Core (2 courses, 18 units)
Take one course each in two of the following three areas.

Sounds:
80-282 Phonetics and Phonology I 9

Structure:
80-280 Linguistic Analysis 9
80-285 Natural Language Syntax 9

Meaning:
80-381 Meaning in Language 9
80-383 Language in Use 9

Extended Core (3 courses, 27 units)
Choose three courses from Extended Core or additional courses from the Linguistics Core above.
80-283 It Matters How You Say It 9
80-284 Invented Languages 9
80-286 Words and Word Formation: Introduction to Morphology 9
80-287 Language Variation and Change 9
80-288 Intonation: Transmission and Analysis 9
80-382 Phonetics and Phonology II 9
80-384 Linguistics of Turkic Languages 9
80-385 Linguistics of Germanic Languages 9
80-388 Linguistic Typology: Diversity and Universals 9

Elective Courses (3 courses, 27 units)
Take three additional electives. These can be additional courses from the Core or Extended Core courses listed above, the electives list below, or any other course which must be approved by the Director as a linguistics elective. Listed below are the additional electives taught on a regular basis. Additional appropriate courses are offered irregularly or on a one-off basis. The Director will provide students with a list of possible electives each semester, and will assist students in selecting electives that are consistent with their goals and interests. A list of these courses must be filed in the BXA office.

Philosophy:
80-380 Philosophy of Language 9
80-484 Language and Thought 9

English:
76-318 Communicating in the Global Marketplace 9
76-325 Intertextuality 9
76-385 Introduction to Discourse Analysis 9
76-386 Language & Culture 9
76-389 Rhetorical Grammar 9

Modern Languages:
82-283 Language Diversity & Cultural Identity 9
82-305 French in its Social Contexts 9
82-373 Structure of the Japanese Language 9
82-383 Second Language Acquisition: Theories and Research 9
82-585 Topics in Second Language Acquisition 9

Psychology:
85-354 Infant Language Development 9
85-421 Language and Thought 9

Language Technologies Institute:
11-411 Natural Language Processing 12
11-492 Speech Processing 12
11-661 Language and Statistics 12
11-722 Grammar Formalisms 12

Philosophy Concentration (81 units minimum)

The BHA Concentration in Philosophy provides students with a broad humanities education and sharpens their analytical skills. We encourage, but do not require, students to choose a thematic concentration through their electives. Sample curricula emphasizing Pre-Law, Metaphysics and Epistemology, Ethics and Social Philosophy, and Philosophy of Mind are suggested below. However, alternative emphases can be proposed and approved by the Director.

In any of the areas listed, substitutions of courses that cohere with a student’s interest may be allowed with approval from the Advisor.

Introduction to Philosophy (1 course, 9 units)
80-100 Introduction to Philosophy 9
Area 1: Values and Normative Theory (1 course, 9 units)
80-130 Introduction to Ethics 9
80-135 Introduction to Political Philosophy 9
80-136 Social Structure, Public Policy & Ethics 9
80-244 Environmental Ethics 9
80-245 Medical Ethics 9
80-248 Engineering Ethics 9
80-330 Ethical Theory 9
80-335 Social and Political Philosophy 9
80-348 Health, Human Rights, and International Development 9
80-430 Ethics and Medical Research 9
80-447 Global Justice 9

Area 2: Philosophy of Mind/Language/Metaphysics (1 course, 9 units)
80-180 Nature of Language 9
80-270 Philosophy of Mind 9
80-271 Philosophy and Psychology 9
80-276 Philosophy of Religion 9
80-280 Linguistic Analysis 9
80-281 Language and Thought 9
80-282 Phonetics and Phonology I 9
80-283 It Matters How You Say It 9
80-284 Invented Languages 9
80-327 Philosophy of Neuroscience 9
80-371 Philosophy of Perception 9
80-380 Philosophy of Language 9
80-381 Meaning in Language 9
80-382 Phonetics and Phonology II 9
80-383 Language in Use 9
80-384 Linguistics of Turkic Languages 9
80-580 Seminar on the Philosophy of Language 9

Area 3: Logic/Philosophy of Mathematics (1 course, 9 units)
80-110 Nature of Mathematical Reasoning 9
80-210 Logic and Proofs 9
80-211 Logic and Mathematical Inquiry 9
80-310 Formal Logic 9
80-311 Undecidability and Incompleteness 9
80-312 Mathematical Revolutions 9
80-315 Modal Logic 9
80-411 Proof Theory 9
80-413 Category Theory 9
80-513 Seminar on Philosophy of Mathematics 9
80-514 Categorical Logic 9

Area 4: Epistemology/Metaphysics (1 course, 9 units)
80-150 Nature of Reason 9
80-201 Knowledge and Justified Belief 9
80-208 Critical Thinking 9
80-214 Computing, AI, and Philosophy 9
80-220 Philosophy of Science 9
80-221 Philosophy of Social Science 9
80-222 Measurement and Methodology 9
80-223 Causality and Probability 9
80-226 Revolutions in Science 9
80-305 Choices, Decisions, and Games 9
80-321 Causation, Law, and Social Policy 9
80-322 Philosophy of Physics 9
80-323 Philosophy of Biology 9
80-324 Philosophy of Economics 9
80-327 Philosophy of Neuroscience 9
80-405 Game Theory 9
80-515 Seminar on the Foundations of Statistics 9
80-516 Causality and Learning 9

Area 5: History of Philosophy (1 course, 9 units)
80-150 Nature of Reason 9
80-226 Revolutions in Science 9
80-250 Ancient Philosophy 9
80-251 Modern Philosophy 9
80-252 Kant 9
80-253 Continental Philosophy 9
80-254 Analytic Philosophy 9
80-255 Pragmatism 9
80-256 Modern Moral Philosophy 9
80-257 Nietzsche 9
80-261 Experience, Reason, and Truth 9
80-362 Russell 9
80-363 19th Century Foundations of Science 9

Area 6: Electives (3 courses, 27 units)
Three other philosophy courses, or appropriate courses from other departments, with the permission of the Director.

Professional Writing Concentration (81 units minimum)
Professional Writing combines liberal and professional education with a strong foundation in rhetorical studies. The concentration in Professional Writing has a strong career orientation and is specifically designed to prepare students for successful careers as writers and communications specialists in a range of fields: publishing, government, journalism, the non-profit sector, education, public and media relations, corporate communications, advocacy writing, and the arts. The concentration is designed to develop articulate and reflective communications professionals with both the skills needed to enter and negotiate current work contexts (including writing for the web and other digital media) and the analytic and problem-solving skills needed to understand and keep pace with cultural and technological change.

Prerequisite English Elective
Students with a concentration in Professional Writing must complete one prerequisite course from the English Department’s offerings, which focuses on the relationships between texts and their cultural and historical contexts. The course must be at or above the 200 level. 76-270 Writing for the Professions, 76-272 Language in Design, and 76-271 Introduction to Professional and Technical Writing may not count as English electives. Appropriate courses are advertised every semester in the English department’s “What Counts for What” publication.

Foundation Courses (5 courses, 39 units)
76-26x Survey of Forms (Nonfiction, Fiction, Poetry, or Screenwriting) 9
76-271 Introduction to Professional and Technical Writing 9
76-300 Professional Seminar 3
76-373 Argument 9
76-390 Style 9

Rhetoric/Language Studies Course (1 course, 9 units)
Students with a concentration in Professional Writing complete one course from designated Rhetoric courses offered and advertised each semester by the English Department. Rhetoric courses focus on understanding the role of language and language practices in both personal and professional contexts.Courses emphasize the relationships between texts and their contexts and pay particular attention to textual features, meaning, processes of reading and writing, and the ways in which language practices vary over time and across situations and cultures. The courses also equip students with explicit techniques for analyzing, understanding, and exploring language practices. The Rhetoric/Language Studies courses may also be taken as part of the concentration requirements for three additional, Advanced Writing/Rhetoric courses and include but are not limited to the following list.
76-319 Environmental Rhetoric 9
76-351 Rhetorical Invention 9
76-355 Leadership, Dialogue, and Change 9
76-386 Language & Culture 9
76-388 Coding for Humanists 9
76-396 Non-Profit Message Creation 9
76-415 Mediated Power and Propaganda 9
76-419 Media in a Digital Age 9
76-428 Visual Verbal Communication 9
76-474 Software Documentation 9
76-476 Rhetoric of Science 9
76-484 Discourse Analysis 9
76-491 Rhetorical Analysis 9

Advanced Writing/Rhetoric Courses (3 courses, 27 units minimum)
Students with a concentration in Professional Writing complete three Advanced Writing/Rhetoric courses at the 300- or 400-level. Options for these courses include all of the Rhetoric/Language Studies courses listed above plus the writing-focused courses listed below. Additional courses that fulfill these requirements are advertised on a semester-by-semester basis. For help in choosing which of the possible options are most appropriate for various professional goals – journalism, writing for new media, editing and publishing, public relations/communications, or science and technical writing – consult your English Department advisor. All students with a concentration in PW, regardless of their career focus, are encouraged to take 76-391 Document & Information Design and 76-487 Web Design to extend their skills in writing for print to include information design for digital media. Both courses focus on the role of the writer in these specializations and provide lab instruction in the relevant software and related computer skills.

76-301 Internship Var.
76-302 Global Communication Center Practicum 6
76-319 Environmental Rhetoric 9
76-351 Rhetorical Invention 9
76-355 Leadership, Dialogue, and Change 9
76-372 News Writing 9
76-375 Magazine Writing 9
76-386 Language & Culture 9
76-389 Rhetorical Grammar 9
76-391 Document & Information Design 12
76-396 Non-Profit Message Creation 9
76-425 Science in the Public Sphere 9
76-428 Visual Verbal Communication 9
76-476 Rhetoric of Science 9
76-481 Introduction to Multimedia Design 12
76-484 Discourse Analysis 9
76-487 Web Design 12
76-491 Rhetorical Analysis 9

English Elective (1 course, 6 units minimum)
Students with a concentration in Professional Writing complete one additional course from the English Department’s offerings. This course should be one that focuses on the relationships between texts and their cultural and historical contexts. Courses in literature, cultural studies, rhetoric, and media studies that meet this requirement are advertised on a semester-by-semester basis. The English Elective may be any course offered by the Department with the exception of 76-270 Writing for the Professions and 76-272 Language in Design, both of which are designed for non-majors and overlap with 76-271 Introduction to Professional and Technical Writing.

Psychology Concentration (81 units minimum)
Psychology is a science that embraces both biological and social sciences. It is a science concerned with establishing principles and laws regarding the ways in which people think, feel, and behave through the scientific study of human behavior. Students with a concentration in Psychology are expected not only to learn about findings already established by psychologists, but also to become proficient in the investigation and analysis of behavior. This includes observing behavior, formulating hypotheses, designing experiments to test these hypotheses, running experiments, performing statistical analyses, and writing reports.

Breadth Courses (4 courses, 36 units)
To gain familiarity with the breadth of the field of Psychology, students take 85-102 Introduction to Psychology and three survey courses.

Required Intro Course:
85-102 Introduction to Psychology 9

Survey Courses:
85-211 Cognitive Psychology 9
85-212 Human Information Processing and Artificial Intelligence 9
85-219 Biological Foundations of Behavior 9
85-221 Principles of Child Development 9
85-241 Social Psychology 9
85-251 Personality 9

Research Methods and Statistics (2 courses, 18 units)
Students complete one course in Research Methods (9 units). The corresponding survey course is a prerequisite for this course.
85-310 Research Methods in Cognitive Psychology 9
85-314 Cognitive Neuroscience Research Methods 9
85-320 Research Methods in Developmental Psychology 9
85-330 Analytic Research Methods 9
85-340 Research Methods in Social Psychology 9

The following Statistics course is a prerequisite for all the Research Methods courses. This Statistics course counts toward the Psychology concentration.
36-309 Experimental Design for Behavioral & Social Sciences - Fall 9
or 85-309 Experimental Design for Behavioral & Social Sciences - Psychology 9

Advanced Courses (3 courses, 27 units)

Social & Political History Concentration (81 units minimum)
The BHA concentration in Social & Political History focuses on new ways to understand the past and new ways to use what we know, as well as on connections between past and present and on how historical knowledge facilitates understanding of social, cultural, and policy change. The History concentration emphasizes empirical methods and conceptual analysis, as well as specific research skills relevant to many types of jobs and further professional training. The History concentration combines a structured sequence of courses, training in research methods, theoretical concepts, and analytical writing skills, plus a considerable array of electives.

The BHA concentration in Social & Political History emphasizes broad-based, cumulative knowledge and interpretive skills in the study of the past. Offerings at the 200- and 300-level are designed to allow maximum flexibility in meeting requirements and maximum choice in focusing on particular themes, places, or eras. Upper-level courses aim to give students majoring in History more time together in smaller classes and more experience working with primary and secondary sources. The Senior capstone seminar, Advanced Studies in History, provides training and experience in conducting original research and in interpretive, analytical writing—skills that prepare graduates for professional careers as well as for graduate or law school.

Required History Courses (2 courses, 21 units)
Students must earn a final grade of “C” or better for these courses to count toward the concentration.
79-200 Introduction to Historical Research & Writing - Sophomore or junior year 9
79-420 Historical Research Seminar - Fall, Senior year 12

Required Survey Courses (2 courses, 18 units)
79-202 Flesh and Spirit: Early Modern Europe, 1400-1750 9
79-203 Social and Political Change in 20th Century Central and Eastern Europe 9
79-205 20th Century Europe 9
79-206 Crime and Punishment in Early Modern Europe 9
79-211 Modern Southeast Asia: Colonialism, Capitalism, and Cultural Exchange 9
79-223 Mexico: From the Aztec Empire to the Drug War 9
79-225 West African History in Film 9
79-226 African History: Earliest Times to 1780 9
79-227 Modern Africa: The Slave Trade to the End of Apartheid 9
Students may satisfy the elective requirements in SPH with up to 27 units of the following courses offered by other departments in Dietrich College:

- 73-476 American Economic History
- 76-230 Literature & Culture in the 19th Century: Environmentalisms
- 76-239 Introduction to Film Studies
- 76-295 Topics in Russian Language & Culture: 20th Century Russian Masterpieces
- 76-449 Race and Media
- 80-135 Introduction to Political Philosophy
- 80-226 Revolutions in Science
- 80-335 Social and Political Philosophy
- 82-208 Topics in European Studies
- 82-245 New Directions in Hispanic Studies
- 82-247 The Hispanic World: History, Culture and Globalization
- 82-293 Russian Cinema: From the Bolshevik Revolution to Putin’s Russia
- 82-327 The Emergence of the German Speaking World
- 82-420 The Crucible of Modernity: Vienna 1900
- 82-427 Nazi and Resistance Culture
- 84-275 Comparative Politics
- 84-308 Political Economy of Latin America
- 84-322 Nonviolent Conflict and Revolution
- 84-324 The Future of Democracy
- 84-325 Contemporary American Foreign Policy
- 84-362 Diplomacy and Statecraft
- 84-364 Comparative Presidential Behavior: Leadership, Personality, and Decision Making
- 84-366 The American Presidency
- 84-380 Grand Strategy in the United States
- 84-386 The Privatization of Force
- 84-389 Terrorism and Insurgency
- 85-380 In Search of Mind: The History of Psychology
- 88-281 Topics in Law: 1st Amendment
- 88-284 Topics in Law: The Bill of Rights

Statistics Concentration (81 UNITS MINIMUM)

In the BHA concentration in Statistics, students develop and master a wide array of skills in computing, mathematics, statistical theory, and the interpretation and display of complex data. In addition, students with a BHA concentration in Statistics gain experience in applying statistical tools to real problems in other fields and learn the nuances of interdisciplinary collaboration.

Mathematics Pre-requisites

These courses are not counted as part of your DC Concentration. They may be used to satisfy general education or free elective requirements.

- 21-120 Differential and Integral Calculus
- 21-256 Multivariate Analysis
- 21-259 Calculus in Three Dimensions
- 21-240 Matrix Algebra with Applications
- 21-241 Matrices and Linear Transformations
- 21-242 Matrix Theory

Note: 21-240, 21-241, 21-242 must be completed before taking 36-401 Modern Regression. 21-241 and 21-242 are intended only for students with a very strong mathematical background.

Statistics Pre-requisite

This course is not counted as part of your DC Concentration. It fulfills the BHA General Education Statistics Requirement.

- 36-200 Reasoning with Data

Statistics Core (6 courses, 54 units)

- 36-202 Statistics & Data Science Methods
- 36-290 Introduction to Statistical Research Methodology
- 36-225 Introduction to Probability Theory
an elective that best fits their area of interest. This course may have a very strong mathematical background.

Modern Regression

Corporate Capstone Project

Science in the Public Sphere

Coding for Humanists

Corpus Rhetorical Analysis

Environmental Rhetoric

Corporate Capstone Project

Technology to the Public

Deep Reinforcement Learning & Control

Topics in Deep Learning

Natural Language Processing

Machine Learning for Text Mining

Language and Statistics

Language and Statistics

Artificial Intelligence: Representation and Problem Solving

Neural Computation

Neural Computation

Computational Perception

Computational Perception

Technical Writing Concentration (81 units minimum)
The concentration in Technical Writing is specifically designed to prepare students for successful careers involving scientific, technical, and computer-related communication, including writing and designing for digital media. Technical communicators develop and design web sites, explain science and technology to the public, develop print and multimedia materials, develop information management systems, design and deliver corporate training, and develop support systems for consumer products ranging from software to complex data management. The Technical Writing concentration includes with a common core of foundation courses in print and on-line communication as well as a set of prerequisites in math, statistics, and computer programming.

Students with a TW concentration take two Theory/Specialization courses specific to either the Technical Communication or the Scientific and Medical Communication track. In addition, students in the SMC track take two courses in the natural sciences or engineering relevant to their areas of interest, while TC students take two electives in management, technology, and social issues.

Prerequisite Courses

Differential and Integral Calculus

Integral Calculus

Differential Calculus

or 21-120 Integral Calculus

or 21-256 Concepts of Mathematics

or 21-259 Concepts of Mathematics

or 21-259 Matrix Theory

or 21-259 Calculus in Three Dimensions

Matrix Algebra with Applications

Matrix Theory

Matrix Theory

15-112 Fundamentals of Programming and Computer Science

Note: 21-240, 21-241, 21-242 must be completed before taking 36-401 Modern Regression. 21-241 and 21-242 are intended only for students with a very strong mathematical background.

Statistics Core (5 courses, 45 units)

Introduction to Probability Theory

Introduction to Statistical Inference

Statistical Computing

Modern Regression

Advanced Methods for Data Analysis

Data Analysis Electives (1 course, 9 units)

Students must take one course from the Statistics Electives listed below. Students will consult the Statistics advisor to select the Special Topics and Electives courses that best fit for their areas of interest.

Sampling, Survey and Society

Statistical Analysis of Networks

Statistical Graphics and Visualization

Undergraduate Research

Corporate Capstone Project

Machine Learning Core (2 courses, 22 units)

Principles of Imperative Computation

Introduction to Machine Learning

Machine Learning Elective (1 course, 9 units minimum)

Students must take one course from the ML Electives listed below. Students will consult with the Statistics & Machine Learning advisor to choose an elective that best fits their area of interest. This course may have additional pre-requisites. Keep in mind this is not an exhaustive list and other applicable courses can be reviewed to be approved as an ML elective - please speak with your Statistics & Machine Learning advisor about this.
Architecture Required Courses (7 courses, 52 units minimum)

76-428 Visual Verbal Communication 9
76-474 Software Documentation 9
76-476 Rhetic of Science 9
76-481 Introduction to Multimedia Design 12
76-491 Rhetorical Analysis 9
76-494 Healthcare Communications 9

Architecture Concentration (108 units minimum)

BHA students choose one of the following concentrations:
• Architecture (108 units)
• Art (108 units)
• Design (108 units)
• Drama (108 units)
• Music (108 units)

**ARCHITECTURE CONCENTRATION (108 UNITS MINIMUM)**

Architecture Required Courses (7 courses, 52 units minimum)

48-100 Architecture Design Studio: Foundation I - Fall, Freshman year 10-15

**Additional Options include but are not limited to the following:**

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<tr>
<th>Course</th>
<th>Units</th>
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<tr>
<td>76-301 Internship</td>
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<td>76-302 Global Communication Center Practicum</td>
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<td>76-318 Communicating in the Global Marketplace</td>
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<td>76-319 Environmental Rhetoric</td>
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<td>76-325 Intertextuality</td>
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<td>76-351 Rhetorical Invention</td>
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<td>76-355 Leadership, Dialogue, and Change</td>
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<td>76-359 User Experience Methods for Documents</td>
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<td>76-360 Literary Journalism Workshop</td>
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<td>76-361 Corpus Rhetorical Analysis</td>
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<td>76-372 News Writing</td>
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<td>76-375 Magazine Writing</td>
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<td>76-378 Literacy: Educational Theory and Community Practice</td>
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<td>76-386 Language &amp; Culture</td>
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<td>76-388 Coding for Humans</td>
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<td>76-389 Rhetorical Grammar</td>
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<td>76-391 Document &amp; Information Design</td>
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<td>76-395 Science Writing</td>
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<td>76-396 Non-Profit Message Creation</td>
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<td>76-419 Media in a Digital Age</td>
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<td>76-420 The Cognition of Reading and Writing: Introduction to a Social/Cognitive Process</td>
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<td>76-425 Science in the Public Sphere</td>
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<td>76-428 Visual Verbal Communication</td>
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<td>76-472 Topics in Journalism: Storytelling in a Digital Age</td>
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<td>76-474 Software Documentation</td>
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<td>76-475 Law, Performance, and Identity</td>
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<td>76-476 Rhetic of Science</td>
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<td>76-481 Introduction to Multimedia Design</td>
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<td>76-484 Discourse Analysis</td>
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<td>76-487 Web Design</td>
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<td>76-491 Rhetorical Analysis</td>
<td>9</td>
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<tr>
<td>39-605 Engineering Design Projects</td>
<td>12</td>
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Electives (1 course, 9 units)

Students with a TW concentration take one course outside of English to deepen their area of specialty in their track. Typically, students in the SMC track select courses in the natural sciences, psychology, and social and decision sciences, or (for example) healthcare-related courses in the Heinz School. Students in the TC track typically select courses from engineering, design, HCL, computer science, math or statistics. Students should work with their faculty advisor to select courses that are meaningful for their track.

**College of Fine Arts Concentration**

(number of courses vary, 108 units minimum)

BHA students choose one of the following concentrations:
• Architecture (108 units)
• Art (108 units)
• Design (108 units)
• Drama (108 units)
• Music (108 units)

**ART CONCENTRATION (108 UNITS MINIMUM)**

Concept Studios (2 courses, 20 units)

Complete two courses:
60-101 Concept Studio: The Self and the Human Being 10
60-201 Concept Studio: Space and Time 10
60-202 Concept Studio: Systems and Processes 10
60-280 Introduction to Contextual Practice 10

Media Studios (3 courses, 30 units minimum)

Complete three courses. 3D mini courses count as half a course:
60-150 2D Media Studio: Drawing 10
60-160 2D Media Studio: Imaging 10
60-131 3D Media Studio I (mini-1) 5
60-132 3D Media Studio I (mini-2) 5
60-133 3D Media Studio II (mini-3) 5
60-134 3D Media Studio II (mini-4) 5
60-250 2D Media Studio: Painting 10
60-251 2D Media Studio: Print Media 10
60-110 Electronic Media Studio: Introduction to the Moving Image 10
60-210 Electronic Media Studio: Introduction to Interactivity 10-12
60-212 Electronic Media Studio: Interactivity and Computation for Creative Practice

Advanced Studios (4 courses, 40 units)

Complete four courses. Courses may be offered in the fall and/or spring. Students may take courses in any media area (ETB, SIS, CP or DP3). They may take all courses in one media area if a focus is desired.
60-401/402 Senior Studio 10
60-403 Senior Critique Seminar 10
Advanced Electronic and Time-Based Work (ETB) (course numbers 60-410 through 60-429) 10
Advanced Sculpture, Installation and Site-Work (SIS) (course numbers 60-430 through 60-447) 10
Advanced Contextual Practice (CP) (course numbers 60-448 through 60-449) 10
Advanced Drawing, Painting, Print Media and Photography (DP3) (course numbers 60-450 through 60-498) 10
60-499 Studio Independent Study (one only) 10
* Courses offered intermittently; speak with a BXA advisor to determine course availability.

**Critical Studies (2 courses, 18 units)**

60-205 Critical Theory in Art III - Fall 9
60-206 Critical Theory in Art IV - Spring 9

Note: Critical Theory I & II are strongly recommended.
Review Requirement (complete 2 required reviews, 0 units)
A review is required at the end of the sophomore and senior years. Pass/no pass only.

60-200 Sophomore Review -Fall 0
60-400 Senior Review -Fall 0

**DESIGN CONCENTRATION (108 UNITS MINIMUM)**

Design Required Courses (13 courses, 95 units)

- 51-101 Studio: Survey of Design (Fall, Freshman year) 10
- 51-121 Visualizing I (Fall, Freshman year) 10
- 51-171 Placing I (Fall, Freshman year) 10
- 51-102 Design Lab I (Spring, Freshman year) 10
- 51-122 Collaborative Visualizing I (Spring, Freshman year) 10
- 51-172 Systems I (Spring, Freshman year) 9

Choose Two Studios (Fall, Sophomore year): 4.5+4.5
- 51-225 Communications Studio I: Understanding Form & Context
  - or 51-245 Products Studio I: Understanding Form & Context
  - or 51-265 Environments Studio I: Understanding Form & Context

Choose Two Corresponding Labs (Fall, Sophomore year): 4.5+4.5
- 51-227 Prototyping Lab I: Communications
  - or 51-247 Prototyping Lab I: Products
  - or 51-267 Prototyping Lab I: Environments
- 51-271 How People Work I (Fall, Sophomore year) 9
- 51-371 Futures I (Fall, Junior year or later) 4.5
- 51-373 Futures II (Fall, Junior year or later) 4.5

Design Electives (13 units)
A minimum of 13 additional Design units must be approved by the Design advisor. A list of these selected courses must be filed in the BXA office.

**DRAMA CONCENTRATION (108 UNITS MINIMUM)**

Options available in the following areas: 1) Design, 2) Directing, 3) Dramaturgy, 4) Production Technology and Management

Note: There is no BHA Acting or Musical Theatre option.

Required Courses for All Concentration Options (5 courses, 20 units)

- 54-175-54-176 Conservatory Hour-Conservatory Hour (1 unit each) 2
- 54-177 Foundations of Drama I 6
- 54-281 Foundations of Drama II (prerequisite: 54-177) 6
- 54-381 Special Topics in Drama: History, Literature and Criticism 6

Work with Drama Faculty Option Coordinator to Approve Concentration Option (88 units minimum):

Design Required Courses (2 courses, 26 units)

- 54-151-54-152 Stagecraft-Stagecraft (13 units + 13 units) 26

A minimum of 62 additional Design units must be approved by the Design faculty option coordinator. A list of these selected courses must be filed in the BXA office.

Directing Required Courses (10 courses, 52 units)

- 54-121-54-122 Directing I: Sources-Directing I: Sources 18
- 54-221-54-222 Directing II: Fundamentals-Directing II: Fundamentals 18

A minimum of 29 additional Dramaturgy units must be approved by the Dramaturgy faculty option coordinator. A list of these selected courses must be filed in the BXA office.

- 54-159-54-159 Production Practicum-Production Practicum (two times, 12 units total) 12
- 54-517 Director's Colloquium (four times, 4 units total) 1

A minimum of 36 additional Directing units must be approved by the Directing faculty option coordinator. A list of these selected courses must be filed in the BXA office.

- 54-109 Dramaturgy 1: Approaches to Text 9
- 54-184 Dramaturgy 2: Introduction to Production Dramaturgy 9
- 54-121 Directing I: Sources 9
- 54-159-54-159 Production Practicum-Production Practicum (two times, 12 units total) 12
- 54-200-54-200 Dramaturgy Forum-Dramaturgy Forum -Fall (minimum of two; every semester it is offered while enrolled) 2
- 54-zzz Dramaturgy 3, 4, 5 or 6 (minimum of two; all four if enrolled as BXA for six semesters or more) 18

Music Performance and Composition Required Courses (12 courses, 76 units)

- 57-161 Eurythmics I (recommended co-requisite: 57-181) 3
- 57-181 Solfege I or 57-180 Basic Solfege I or 57-185 Advanced Solfege I 3
- 57-173 Survey of Western Music History (co-requisite: 57-188) 9
- 57-188 Repertoire and Listening for Musicians 1
- 57-49x BXA Studio (4 semesters) 36
- 57-zzz Major Ensemble (4 semesters) 24

A minimum of 23 additional Music units must be approved by the Music advisor. A list of these selected courses must be filed in the BXA office.

- 57-283 Music History I (co-requisite: 57-190) 9
- 57-284 Music History II (co-requisite: 57-289) 9
- 57-285 Music History III (co-requisite: 57-290) 9
- 57-189 Introduction to Repertoire and Listening for Musicians 3
- 57-190 Repertoire and Listening for Musicians I 3
- 57-289 Repertoire and Listening for Musicians II 3
Choose 36 units from:

57-209 The Beatles 9
57-306 World Music 9
57-404 String Quartet: A Social History 9
57-405 Concerto: Virtuosity and Contrast 9
57-409 Puccini's Operas 9
57-427 Advanced Seminar in Film Musicology 9
57-476 How Music Works: An Affective History 6
57-477 Music of the Spirit 6
57-478 Survey of Historical Recording 6
57-480 History of Black American Music 6
57-485 History of the Symphony 9

A minimum of 18 additional Music units must be approved by the Music advisor. A list of these selected courses must be filed in the BXA office.

Audio Recording & Production Required Courses (7 courses, 40 units)

57-101 Introduction to Music Technology 6
57-181 Solfege I 3
57-182 Solfege II 3
57-183 Basic Solfege I 3
57-184 Advanced Solfege I 3
57-173 Survey of Western Music History 9
57-188 Repertoire and Listening for Musicians 1
57-337 Sound Recording 6
57-338 Sound Editing and Mastering 6
57-438 Multitrack Recording 9

Choose 59 units from:

57-153 Harmony II 9
57-154 Basic Harmony II 9
57-182 Solfege II 3
57-155 Advanced Solfege II 3
15-104 Introduction to Computing for Creative Practice 10
18-090 Twisted Signals: Multimedia Processing for the Arts 10
33-114 Physics of Musical Sound 9
54-166 Introduction to Sound Design for Theatre 6
54-275 History of Sound Design 3
54-666 Production Audio 6
57-344 Experimental Sound Synthesis 9
57-421 The Exploded Ensemble 6
57-425 Expanded Music Performance 9
57-427 Advanced Seminar in Film Musicology 9
57-478 Survey of Historical Recording 6
57-622 Independent Study in Sound Recording Production 3
60-131 3D Media Studio I 5
60-210 Electronic Media Studio: Introduction to Interactivity 10

Note: Students completing an IDeATe minor may double-count up to two of the IDeATe minor courses towards the Audio Recording & Production concentration.

Sound Theory & Practice Required Courses (7 courses, 47 units)

57-101 Introduction to Music Technology 6
57-102 Introduction to Music Technology (self-paced) 6
57-181 Solfege I 3
57-182 Solfege II 3
57-183 Basic Solfege I 3
57-184 Advanced Solfege I 3
57-173 Survey of Western Music History 9
57-188 Repertoire and Listening for Musicians 1
18-090 Twisted Signals: Multimedia Processing for the Arts 10
57-911 Music Since 1945 9
57-616 Independent Study in Sound Studies 9

Choose 52 units from:

57-153 Harmony II 9
57-154 Basic Harmony II 9
57-182 Solfege II 3
57-183 Advanced Solfege II 3
15-104 Introduction to Computing for Creative Practice 10
15-322 Introduction to Computer Music (pre-requisite: 15-112) 9
15-323 Computer Music Systems and Information Processing (pre-requisite: 15-122) 9
57-337 Sound Recording 6
57-343 Interdisciplinary Studies in Listening, Culture, and Technology 9
57-344 Experimental Sound Synthesis 9
57-347 Electronic and Computer Music (pre-requisite: 57-101 or 57-171) 6
57-421 The Exploded Ensemble 6
57-425 Expanded Music Performance 9
57-438 Multitrack Recording 9
57-478 Survey of Historical Recording 6
57-829 Contemporary Soundscapes 9
60-131 3D Media Studio I 5
60-210 Electronic Media Studio: Introduction to Interactivity 10

Note: Students completing an IDeATe minor may double-count up to two of the IDeATe minor courses towards the Sound Theory & Practice concentration.

Free Electives

(approximately 9 courses, 78 units)

Take any Carnegie Mellon course. Many BHA students use their electives to broaden or deepen their concentrations. A maximum of 9 units of physical education and/or military science may be counted toward this requirement. Physical education and military science courses will not be calculated in a student's QPA.

Bachelor of Science and Arts Degree Program

Carnegie Mellon University recognizes that there are students who are naturally gifted in both the fine arts and the natural sciences or mathematics. In order to accommodate students who want to pursue an education simultaneously in these areas, we offer a degree that combines the strengths of the College of Fine Arts (CFA) and the Mellon College of Science (MCS). The intercollege degree, called the Bachelor of Science and Arts (BSA), is a rigorous program that offers a unique group of qualified students the opportunity to develop their talents and interests in an area of the fine arts and an area of the natural sciences or mathematics.

The BSA curriculum is divided into three parts: 1) BSA General Education coursework, 2) CFA concentration coursework, and 3) MCS concentration coursework.

The BSA Degree Program is governed by faculty and administrators from both colleges and led by the director of the BXA Intercollege Degree Programs. The director and associate director of the BXA Intercollege Degree Programs are the primary advisors and liaisons between CFA and MCS. Students receive extensive advising support. Each student has two additional academic advisors: an advisor in the admitting school of CFA for their fine arts concentration and an advisor in MCS for their natural sciences/mathematics concentration. This network of advisors guides each student through their curriculum.
BSA Curriculum

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. BSA General Education</td>
</tr>
<tr>
<td>II. MCS Concentration</td>
</tr>
<tr>
<td>III. CFA Concentration</td>
</tr>
<tr>
<td>IV. Free Electives</td>
</tr>
<tr>
<td><strong>Total BSA Degree Requirements</strong></td>
</tr>
</tbody>
</table>

BSA General Education

(18 courses, 129 units minimum)

- Mathematics (2 courses, 20 units, 21-120 and 21-122 or 21-124 required)
- Science (3 courses, 31 units, 03-121, 09-105, and 33-111 or 33-151 required)
- First-year Courses (2 courses, 12 units, 76-101 and 99-101 required)
- ENGAGE (3 courses, 3 units)
- Cultural/Global Understanding (1 course, 9 units)
- Humanities and Social Sciences (2 courses, 18 units)
- BXA Required Courses (5 courses, 36 units minimum, 52-190 or 52-291, 52-391, 52-392, 52-401, 52-402)

Technical Breadth Requirements (5 courses, 51 units)

As a 21st Century practicing scientist or mathematician, our graduates will work with others from a variety of technical backgrounds. Therefore, all of our students will be broadly trained within the technical fields of science and math. Students will fulfill this training by completing five (5) introductory technical courses in the Mellon College of Science at Carnegie Mellon University.

A student must take the five (5) courses listed below. AP/IB/Cambridge credit may be used to fulfill some of these requirements, but STEM electives must be taken at CMU or at another university for transfer credit to reach the total of five (5) Technical Breadth courses. A list of STEM electives can be found in the MCS general education requirements (http://coursecatalog.web.cmu.edu/schools-colleges/melloncollegeofscience/#generaleducationrequirementstextcontainer).

Mathematics (2 courses, 20 units)

21-120 Differential and Integral Calculus 10
21-122 Integration and Approximation 10
or 21-124 Calculus II for Biologists and Chemists

Science (3 courses, 31 units)

03-121 Modern Biology 9
09-105 Introduction to Modern Chemistry I 10
33-121 Physics I for Science Students 12
or 33-151 Matter and Interactions I

Nontechnical Breadth Requirements (8 courses, 42 units)

MCS aspires for all of our undergraduates to leave our campus with a strong sense of personal integrity, social responsibility, ethics, working with diverse others, global engagement, and personal health and well-being. The following non-technical breadth requirements will require students to develop a personalized plan for their course selection and meta-curricular participation to maximize their CMU experience. Our graduates will be well trained to be life-long and life-wide learners that will lead the scientific community and the world at large.

All candidates for BSA degree must complete the following non-technical breadth requirements:

First-year Courses (2 courses, 12 units)

76-101 Interpretation and Argument 9
or 76-102 Advanced First Year Writing: Special Topics
or 76-106 Writing about Literature, Art and Culture
& 76-107 and Writing about Data
& 76-108 and Writing about Public Problems

ENGAGE (3 courses, 3 units)

The ENGAGE courses are self-directed learning opportunities (using the MyCORE online platform) designed to enhance students' engagement with wellness and community service. Choose three courses from the list below:

38-110 ENGAGE in Service 1
38-230 ENGAGE in Wellness: Looking Inward 1
38-330 ENGAGE in Wellness: Looking Outward 1
38-430 ENGAGE in Wellness: Looking Forward 1

Cultural/Global Understanding (1 course, 9 units)

Cultural or global understanding course(s) may be taken at any time. Nine (9) or more units from the following group of courses will fulfill this requirement. Any student who finds an appropriate Carnegie Mellon course not on the list below that might fulfill this requirement should contact their academic advisor to review the course description to determine if it can be substituted. Cultural and global understanding courses that are taken while studying abroad can be used to fulfill this category. In addition, transfer courses will also be considered for this category. However, this course requirement cannot be satisfied with AP/IB/Cambridge exam credit.

57-173 Survey of Western Music History 9
57-209 The Beatles 9
57-306 World Music 9
70-342 Managing Across Cultures 9
76-221 Books You Should Have Read by Now: 16th & 17th C. Pop Culture 9
76-227 Comedy 9
76-232 Introduction to Black Literature 9
76-239 Introduction to Film Studies 9
76-241 Introduction to Gender Studies 9
76-386 Language & Culture 9
79-104 Global Histories 9
79-201 Introduction to Anthropology 9
79-202 Flesh and Spirit: Early Modern Europe, 1400-1750 9
79-205 20th Century Europe 9
79-210 Identity, Nationhood, and State 9
79-211 Modern Southeast Asia: Colonialism, Capitalism, and Cultural Exchange 9
79-223 Mexico: From the Aztec Empire to the Drug War 9
79-227 Modern Africa: The Slave Trade to the End of Apartheid 9
79-229 Origins of the Arab-Israeli Conflict, 1880-1948 9
79-230 Arab-Israeli Conflict Since 1948 9
79-232 Arabian Peninsula Environmental History 9
79-233 The United States and the Middle East since 1945 9
79-235 Caribbean Cultures 9
79-240 Development of American Culture 9
79-241 African American History: Africa to the Civil War 9
79-242 African American History: Reconstruction to the Present 9
79-244 Women in American History 9
79-245 Capitalism and Individualism in American Culture 9
79-261 The Last Emperors: Chinese History and Society, 1600-1900 9
79-262 Modern China: From the Birth of Mao ... to Now 9
79-263 Mao and the Chinese Cultural Revolution 9
79-265 Russian History: From the First to the Last Tsar 9
79-266 Russian History and Revolutionary Socialism 9
79-267 The Soviet Union in World War II: Military, Political, and Social History 9

All undergraduate students must complete the First-Year Writing requirement—the Department of English does not accept any Advanced Placement exemptions. This requirement can be completed in two different ways. Enroll in one of two full-semester courses 101 or 102 (by invitation only), 9 units, or enroll in two of three half-semester mini courses (back-to-back within a single semester) 106/107/108, 4.5 + 4.5 units. Course options and topics: www.cm.edu/hss/english/first_year/index.html
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-231</td>
<td>Honors Biochemistry - Spring, Sophomore year</td>
<td>9</td>
</tr>
<tr>
<td>03-320</td>
<td>Cell Biology - Fall, Junior year</td>
<td>9</td>
</tr>
<tr>
<td>03-343</td>
<td>Experimental Techniques in Molecular Biology - Fall, Junior year</td>
<td>12</td>
</tr>
<tr>
<td>09-106</td>
<td>Modern Chemistry II</td>
<td>10</td>
</tr>
<tr>
<td>09-207</td>
<td>Techniques in Quantitative Analysis</td>
<td>9</td>
</tr>
<tr>
<td>09-208</td>
<td>Techniques for Organic Synthesis and Analysis</td>
<td>9</td>
</tr>
<tr>
<td>or 03-344</td>
<td>Experimental Biochemistry</td>
<td></td>
</tr>
<tr>
<td>or 03-345</td>
<td>Experimental Cell and Developmental Biology</td>
<td></td>
</tr>
<tr>
<td>or 03-346</td>
<td>Experimental Neuroscience</td>
<td></td>
</tr>
<tr>
<td>09-217</td>
<td>Organic Chemistry I</td>
<td>9</td>
</tr>
<tr>
<td>09-218</td>
<td>Organic Chemistry II</td>
<td>9</td>
</tr>
<tr>
<td>33-122</td>
<td>Physics II for Biological Sciences and Chemistry</td>
<td>9</td>
</tr>
<tr>
<td>Students</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Chemistry Concentration (121 units minimum)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>09-106</td>
<td>Modern Chemistry II</td>
<td>10</td>
</tr>
<tr>
<td>09-219</td>
<td>Modern Organic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>09-220</td>
<td>Modern Organic Chemistry II</td>
<td>10</td>
</tr>
<tr>
<td>09-214</td>
<td>Physical Chemistry or 09-344</td>
<td></td>
</tr>
<tr>
<td>or 09-345</td>
<td>Physical Chemistry (Quantum): Microscopic Principles of Physical Chemistry</td>
<td></td>
</tr>
<tr>
<td>or 09-345</td>
<td>Physical Chemistry (Thermo): Macroscopic Principles of Physical Chemistry</td>
<td></td>
</tr>
<tr>
<td>09-348</td>
<td>Inorganic Chemistry</td>
<td>10</td>
</tr>
<tr>
<td>09-221</td>
<td>Laboratory I: Introduction to Chemical Analysis</td>
<td>12</td>
</tr>
<tr>
<td>09-222</td>
<td>Laboratory II: Organic Synthesis and Analysis</td>
<td>12</td>
</tr>
<tr>
<td>09-321</td>
<td>Laboratory III: Molecular Design and Synthesis</td>
<td>12</td>
</tr>
<tr>
<td>or 09-323</td>
<td>Bioorganic Chemistry Laboratory</td>
<td></td>
</tr>
<tr>
<td>09-204</td>
<td>Professional Communication Skills in Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>09-201-09-202</td>
<td>Undergraduate Seminar I - Undergraduate Seminar I</td>
<td>3</td>
</tr>
<tr>
<td>09-402</td>
<td>Undergraduate Seminar VI</td>
<td>3</td>
</tr>
<tr>
<td>33-122</td>
<td>Physics II for Biological Sciences and Chemistry</td>
<td>9</td>
</tr>
<tr>
<td>Students</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Students who have a strong chemistry background, should enroll in this rather than 09-105. Students who complete 09-107 with an "A" grade will be exempted from the requirement to take 09-106 Modern Chemistry II.

**Advanced Chemistry Electives (2 courses, 18 units)**

May be any upper level chemistry course, 09-3xx or higher, or Biochemistry I, 03-231 or 03-232, with the exception of 09-435 Independent Study, which can be used only by permission of the Director of Undergraduate Studies.

**Mathematical Sciences Concentration (123 units minimum)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-110</td>
<td>Principles of Computing</td>
<td>10</td>
</tr>
<tr>
<td>21-127</td>
<td>Concepts of Mathematics</td>
<td>10</td>
</tr>
<tr>
<td>or 21-128</td>
<td>Mathematical Concepts and Proofs</td>
<td></td>
</tr>
<tr>
<td>21-228</td>
<td>Discrete Mathematics</td>
<td>9</td>
</tr>
<tr>
<td>21-241</td>
<td>Matrices and Linear Transformations</td>
<td>10</td>
</tr>
<tr>
<td>or 21-242</td>
<td>Matrix Theory</td>
<td></td>
</tr>
<tr>
<td>21-259</td>
<td>Calculus in Three Dimensions</td>
<td>9</td>
</tr>
<tr>
<td>or 21-268</td>
<td>Multidimensional Calculus</td>
<td></td>
</tr>
<tr>
<td>21-260</td>
<td>Differential Equations</td>
<td>9</td>
</tr>
<tr>
<td>or 21-261</td>
<td>Introduction to Ordinary Differential Equations</td>
<td></td>
</tr>
<tr>
<td>or 33-231</td>
<td>Physical Analysis</td>
<td></td>
</tr>
<tr>
<td>21-355</td>
<td>Principles of Real Analysis</td>
<td>9</td>
</tr>
</tbody>
</table>

Note: Reasonable substitutions within the core program will be allowed. All BSA students wishing to change their concentration must consult with their advisor of their intended concentration area to complete a new Declaration form. BSA students who are admitted through internal transfer are undeclared until they consult with their BXA advisor and the MCS concentration advisors. A completed MCS Concentration Declaration form must be approved by the concentration advisor and submitted to the BXA office, by the end of the student's first year.

- Biological Sciences (114 units)
- Chemistry (121 units minimum)
- Mathematics (123 units minimum)

BSA students who are admitted as freshmen are undeclared until they have met with a concentration advisor and have submitted their signed Declaration form. BSA students who are admitted through internal transfer must have chosen an MCS concentration at the time of their application (which serves as declaration). All BSA students wishing to change their MCS concentration at any time following the initial declaration must meet with the advisor of their intended concentration area to complete a new Declaration form, which will be reviewed during the internal transfer application period.

**Mellon College of Science Concentration**

(number of courses vary, 114-134 units)

BSA students declare one of the following concentrations, through consultation with their BXA advisor and the MCS concentration advisors. A completed MCS Concentration Declaration form must be approved by the concentration advisor and submitted to the BXA office, by the end of the student’s first year.

- Biological Sciences (114 units)
- Chemistry (121 units)
- Mathematical Sciences (123 units)
- Neurobiology (114 units)
- Physics (134 units)

BSA students who are admitted as freshmen are undeclared until they have met with a concentration advisor and have submitted their signed Declaration form. BSA students who are admitted through internal transfer must have chosen an MCS concentration at the time of their application (which serves as declaration). All BSA students wishing to change their MCS concentration at any time following the initial declaration must meet with the advisor of their intended concentration area to complete a new Declaration form, which will be reviewed during the internal transfer application period.

**Biological Sciences Concentration (114 units minimum)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-201</td>
<td>Undergraduate Colloquium for Sophomores</td>
<td>2</td>
</tr>
<tr>
<td>03-220</td>
<td>Genetics (co-requisite: 03-343)</td>
<td>9</td>
</tr>
</tbody>
</table>

Biological Sciences Required Courses (11 courses, 96 units minimum)

- Introduction to Global Studies
- Religion and Politics in the Middle East
- Roots of Rock & Roll
- Early Christianity
- Food, Culture, and Power: A History of Eating
- Introduction to Philosophy
- Ancient Philosophy
- Modern Philosophy
- Continental Philosophy
- Analytic Philosophy
- Pragmatism
- Philosophy of Religion

Any course from Modern Languages

Humans and Social Sciences (2 courses, 18 units)

To fulfill this requirement, students must complete a minimum of two (2) nontechnical courses totaling at least 18 units in the Tepper School of Business and/or the Dietrich College of Humanities and Social Sciences. Courses counted toward the Cultural/Global Understanding requirement, and 76-101, do not count toward this requirement.

Check our web site for courses from DC, CFA, and Tepper that may NOT be used (http://www.cmu.edu/mcs/undergrad/advising/hss-finearts/deletions.html) to satisfy this requirement because they are too technical in nature, plus a list of courses in other colleges (including SCS, CIT, Tepper, and Heinz College) that do satisfy (http://www.cmu.edu/mcs/undergrad/advising/hss-finearts/additions.html) this requirement.

**BXA Required Courses (5 courses, 36 units minimum)**

- BXA-specific courses give students the opportunity to integrate their areas of concentration by focusing on interdisciplinary approaches and arts-based research techniques.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>52-190</td>
<td>BXA Seminar I: Building the Wunderkammer</td>
<td>9</td>
</tr>
<tr>
<td>or 52-291</td>
<td>BXA Seminar II: Transferring Knowledge</td>
<td></td>
</tr>
<tr>
<td>52-391</td>
<td>BXA Junior Portfolio</td>
<td>0</td>
</tr>
<tr>
<td>52-392</td>
<td>BXA Seminar III: Deconstructing Disciplines</td>
<td>9</td>
</tr>
<tr>
<td>52-401</td>
<td>BXA Seminar IV: Capstone Project Research</td>
<td>9</td>
</tr>
<tr>
<td>52-402</td>
<td>BXA Seminar V: Capstone Project Production</td>
<td>9</td>
</tr>
</tbody>
</table>
Mathematical Sciences Electives (2 courses, 18 units)
Students with a Music concentration should take 21-272 Introduction to Partial Differential Equations.

Mathematical Sciences, Statistics, or Computer Science Electives (2 courses, 18 units)
May be computer science course above the 100-level, mathematical science courses beyond the calculus sequence, and statistics courses at the level of 36-225 or higher.

Neurobiology Concentration (114 units minimum)

Neurobiology Required Courses (12 courses, 96 units)

- 03-161 Molecules to Mind 9
- 03-220 Genetics - Fall, Sophomore year 9
- 03-231 Honors Biochemistry - Spring, Sophomore year 9
- 03-320 Cell Biology - Fall, Junior year 9
- 03-342 Introduction to Biological Laboratory Practices - Fall, Junior year 1
- 03-343 Experimental Techniques in Molecular Biology - Fall, Junior year 12
- 03-362 Cellular Neuroscience 9
- 03-363 Systems Neuroscience 9
- 09-217 Organic Chemistry I 9
- 33-122 Physics II for Biological Sciences and Chemistry 9 Students

Neurobiology Electives (2 courses, 18 units)
One course must be an advanced elective selected from 03-3xx or higher.

Physics Concentration (134 units minimum)

Physics Required Courses (16 courses, 116 units)

- 21-259 Calculus in Three Dimensions 9
- 33-104 Experimental Physics 9
- 33-142 Physics II for Engineering and Physics Students 12
- 33-201 Undergraduate Colloquium for Sophomores 2
- 33-220 Genetics - Fall, Sophomore year 9
- 33-231 Honors Biochemistry - Spring, Sophomore year 9
- 33-320 Cell Biology - Fall, Junior year 9
- 33-342 Introduction to Biological Laboratory Practices - Fall, Junior year 1
- 33-343 Experimental Techniques in Molecular Biology - Fall, Junior year 12
- 03-161 Molecules to Mind 9
- 03-220 Genetics - Fall, Sophomore year 9
- 03-231 Honors Biochemistry - Spring, Sophomore year 9
- 03-320 Cell Biology - Fall, Junior year 9
- 03-342 Introduction to Biological Laboratory Practices - Fall, Junior year 1
- 03-343 Experimental Techniques in Molecular Biology - Fall, Junior year 12
- 03-362 Cellular Neuroscience 9
- 03-363 Systems Neuroscience 9
- 09-217 Organic Chemistry I 9
- 33-122 Physics II for Biological Sciences and Chemistry 9 Students

Physics Electives (2 courses, 18 units)
Two courses to be pre-approved by the Physics Department.

Advanced Studios (4 courses, 40 units)
Complete four courses. Courses may be offered in the fall and/or spring. Students may take courses in any media area (ETB, SIS, CP or DP3). They may take all courses in one media area if a focus is desired.

College of Fine Arts Concentration
(number of courses vary, 108 units minimum)
BSA students choose one of the following concentrations:
- Architecture (108 units)
- Art (108 units)
- Design (108 units)
- Drama (108 units)
- Music (108 units)

ARCHITECTURE CONCENTRATION (108 UNITS MINIMUM)

Architecture Required Courses (7 courses, 52 units minimum)

- 48-100 Architecture Design Studio: Foundation I -Fall, Freshman year 10-15
- 62-095 Spatial Concepts for Non-Majors 6
- 62-122 Digital Media I -Fall, Freshman year 6
- 62-123 Digital Media II -Spring, Freshman year 6
- 62-126 Drawing I -Spring, Freshman year 6
- 48-204 Historical Survey of World Architecture and Urbanism I -Spring, Freshman year 9
- 48-241 Modern Architecture -Fall, Sophomore year 9

Architecture Electives (56 units minimum)
A minimum of 56 additional Architecture units must be approved by the Architecture advisor. A list of these selected courses must be filed in the BXA office.

ART CONCENTRATION (108 UNITS MINIMUM)

Concept Studios (2 courses, 20 units)
Complete two courses:

- 60-101 Concept Studio: The Self and the Human Being 10
- 60-201 Concept Studio: Space and Time 10
- 60-202 Concept Studio: Systems and Processes 10
- 60-280 Introduction to Contextual Practice 10

Media Studios (3 courses, 30 units minimum)
Complete three courses. 3D mini courses count as half a course:

- 60-150 2D Media Studio: Drawing 10
- 60-160 2D Media Studio: Imaging 10
- 60-131 3D Media Studio I (mini-1) 5
- 60-132 3D Media Studio I (mini-2) 5
- 60-133 3D Media Studio II (mini-3) 5
- 60-134 3D Media Studio II (mini-4) 5
- 60-250 2D Media Studio: Painting 10
- 60-251 2D Media Studio: Print Media 10
- 60-110 Electronic Media Studio: Introduction to the Moving Image 10
- 60-210 Electronic Media Studio: Introduction to Interactivity 10-12
- 60-212 Electronic Media Studio: Interactivity and Computation for Creative Practice 10

Advanced Studios (4 courses, 40 units)
Complete four courses. Courses may be offered in the fall and/or spring. Students may take courses in any media area (ETB, SIS, CP or DP3). They may take all courses in one media area if a focus is desired.

- 60-401/402 Senior Studio 10
- 60-403 Senior Critique Seminar 10
- Advanced Electronic and Time-Based Work (ETB) (course numbers 60-410 through 60-429)
Advanced Sculpture, Installation and Site-Work (SIS) (course numbers 60-430 through 60-447) 10
Advanced Contextual Practice (CP) (course numbers 60-448 through 60-449) 10
Advanced Drawing, Painting, Print Media and Photography (DP3) (course numbers 60-450 through 60-498) 10
60-499 Studio Independent Study (one only) 10

* Courses offered intermittently; speak with a BXA advisor to determine course availability.

Critical Studies (2 courses, 18 units)
60-205 Critical Theory in Art III -Fall 9
60-206 Critical Theory in Art IV -Spring 9

Note: Critical Theory I & II are strongly recommended.

Review Requirement (complete 2 required reviews, 0 units)
A review is required at the end of the sophomore and senior years. Pass/no pass only.
60-200 Sophomore Review -Spring 0
60-400 Senior Review -Fall 0

**DESIGN CONCENTRATION (108 UNITS MINIMUM)**

Design Required Courses (13 courses, 95 units)
51-101 Studio: Survey of Design (Fall, Freshman year) 10
51-121 Visualizing (Fall, Freshman year) 10
51-171 Placing (Fall, Freshman year) 10
51-102 Design Lab (Spring, Freshman year) 10
51-122 Collaborative Visualizing (Spring, Freshman year) 10
51-172 Systems (Spring, Freshman year) 9

Choose Two Studios (Fall, Sophomore year): 4.5+4.5
51-225 Communications Studio I: Understanding Form & Context or 51-245 Products Studio I: Understanding Form & Context or 51-265 Environments Studio I: Understanding Form & Context

Choose Two Corresponding Labs (Fall, Sophomore year): 4.5+4.5
51-227 Prototyping Lab I: Communications or 51-247 Prototyping Lab I: Products or 51-267 Prototyping Lab I: Environments
51-271 How People Work (Fall, Sophomore year) 9
51-371 Futures I (Fall, Junior year or later) 4.5
51-373 Futures II (Fall, Junior year or later) 4.5

Design Electives (13 units)
A minimum of 13 additional Design units must be approved by the Design advisor. A list of these selected courses must be filed in the BXA office.

**DRAMA CONCENTRATION (108 UNITS MINIMUM)**

Options available in the following areas: 1) Design, 2) Directing, 3) Dramaturgy, 4) Production Technology and Management

Note: There is no BHA Acting or Musical Theatre option.

Required Courses for All Concentration Options (5 courses, 20 units)
54-175-54-176 Conservatory Hour-Conservatory Hour (1 unit each) 2
54-177 Foundations of Drama I 6
54-281 Foundations of Drama II (prerequisite: 54-177) 6

54-381 Special Topics in Drama: History, Literature and Criticism 6

Work with Drama Faculty Option Coordinator to Approve Concentration Option (88 units minimum):

Design Required Courses (2 courses, 26 units)
54-151-54-152 Stagecraft-Stagecraft (13 units + 13 units) 26

A minimum of 62 additional Design units must be approved by the Design faculty option coordinator. A list of these selected courses must be filed in the BXA office.

Directing Required Courses (10 courses, 52 units)
54-121-54-122 Directing I: Sources-Directing I: Sources 18
54-221-54-222 Directing II: Fundamentals-Directing II: Fundamentals 18
54-159-54-159 Production Practicum-Production Practicum (two times, 12 units total) 12
54-517 Director's Colloquium (four times, 4 units total) 1

A minimum of 36 additional Directing units must be approved by the Directing faculty option coordinator. A list of these selected courses must be filed in the BXA office.

Dramaturgy Required Courses (9 courses, 53 units minimum)
54-109 Dramaturgy I: Approaches to Text 9
54-184 Dramaturgy 2: Introduction to Production 9
54-121 Directing I: Sources 9
54-159-54-159 Production Practicum-Production Practicum (two times, 12 units total) 12
54-200-54-200 Dramaturgy Forum-Dramaturgy Forum (Fall; minimum of two; every semester it is offered while enrolled) 2
54-xxx Dramaturgy 3, 4, 5 or 6 (minimum of two; all four if enrolled as BXA for six semesters or more) 18

A minimum of 29 additional Dramaturgy units must be approved by the Dramaturgy faculty option coordinator. A list of these selected courses must be filed in the BXA office.

Production Technology and Management Required Courses (2 courses, 26 units)
54-151-54-152 Stagecraft-Stagecraft (13 units + 13 units) 26

A minimum of 62 additional PTM units must be approved by the PTM faculty option coordinator. A list of these selected courses must be filed in the BXA office.

**MUSIC CONCENTRATION (108 UNITS MINIMUM)**

Options available in the following areas: 1) Music Performance (instrumental, piano, organ, voice), 2) Composition 3) Musicology, 4) Audio Recording & Production 5) Sound Theory & Practice

Required Course for All Concentration Options (1 course, 9 units)
57-152 Harmony I or 57-149 Basic Harmony I 9

Work with Music Advisor to Approve Concentration Option (99 units minimum):

Music Performance and Composition Required Courses (12 courses, 76 units)
57-161 Eurhythmics I (recommended co-requisite: 57-181) 3
57-181 or 57-180 or 57-185 Solfege I or Basic Solfege I or Advanced Solfege I 3
57-173 Survey of Western Music History (co-requisite: 57-188) 9
57-188 Repertoire and Listening for Musicians 1
A minimum of 23 additional Music units must be approved by the Music advisor. A list of these selected courses must be filed in the BXA office.

Musicology Required Courses (8 courses, 45 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-283</td>
<td>Music History I (co-requisite: 57-190)</td>
<td>9</td>
</tr>
<tr>
<td>57-284</td>
<td>Music History II (co-requisite: 57-289)</td>
<td>9</td>
</tr>
<tr>
<td>57-285</td>
<td>Music History III (co-requisite: 57-290)</td>
<td>9</td>
</tr>
<tr>
<td>57-189</td>
<td>Introduction to Repertoire and Listening for Musicians</td>
<td>3</td>
</tr>
<tr>
<td>57-190</td>
<td>Repertoire and Listening for Musicians I</td>
<td>3</td>
</tr>
<tr>
<td>57-289</td>
<td>Repertoire and Listening for Musicians II</td>
<td>3</td>
</tr>
<tr>
<td>57-290</td>
<td>Repertoire and Listening for Musicians III</td>
<td>3</td>
</tr>
<tr>
<td>57-611</td>
<td>Independent Study in History</td>
<td>6</td>
</tr>
</tbody>
</table>

Choose 36 units from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-209</td>
<td>The Beatles</td>
<td>9</td>
</tr>
<tr>
<td>57-306</td>
<td>World Music</td>
<td>9</td>
</tr>
<tr>
<td>57-404</td>
<td>String Quartet: A Social History</td>
<td>9</td>
</tr>
<tr>
<td>57-405</td>
<td>Concerto: Virtuosity and Contrast</td>
<td>9</td>
</tr>
<tr>
<td>57-409</td>
<td>Puccini’s Operas</td>
<td>9</td>
</tr>
<tr>
<td>57-427</td>
<td>Advanced Seminar in Film Musicology</td>
<td>6</td>
</tr>
<tr>
<td>57-476</td>
<td>How Music Works: An Affective History</td>
<td>6</td>
</tr>
<tr>
<td>57-477</td>
<td>Music of the Spirit</td>
<td>6</td>
</tr>
<tr>
<td>57-478</td>
<td>Survey of Historical Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-480</td>
<td>History of Black American Music</td>
<td>6</td>
</tr>
<tr>
<td>57-485</td>
<td>History of the Symphony</td>
<td>9</td>
</tr>
</tbody>
</table>

A minimum of 18 additional Music units must be approved by the Music advisor. A list of these selected courses must be filed in the BXA office.

Audio Recording & Production Required Courses (7 courses, 40 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-101</td>
<td>Introduction to Music Technology</td>
<td>6</td>
</tr>
<tr>
<td>57-181</td>
<td>Solfege I</td>
<td>3</td>
</tr>
<tr>
<td>57-182</td>
<td>Solfege II</td>
<td>3</td>
</tr>
<tr>
<td>57-173</td>
<td>Survey of Western Music History (co-requisite: 57-188)</td>
<td>9</td>
</tr>
<tr>
<td>57-188</td>
<td>Repertoire and Listening for Musicians I</td>
<td>1</td>
</tr>
<tr>
<td>57-337</td>
<td>Sound Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-338</td>
<td>Sound Editing and Mastering</td>
<td>6</td>
</tr>
<tr>
<td>57-438</td>
<td>Multitrack Recording</td>
<td>9</td>
</tr>
</tbody>
</table>

Choose 59 units from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-153</td>
<td>Harmony II</td>
<td>9</td>
</tr>
<tr>
<td>57-150</td>
<td>Basic Harmony II</td>
<td>9</td>
</tr>
<tr>
<td>57-182</td>
<td>Solfege II</td>
<td>3</td>
</tr>
<tr>
<td>57-186</td>
<td>Advanced Solfege II</td>
<td>3</td>
</tr>
<tr>
<td>15-104</td>
<td>Introduction to Computing for Creative Practice</td>
<td>10</td>
</tr>
<tr>
<td>18-090</td>
<td>Twisted Signals: Multimedia Processing for the Arts</td>
<td>10</td>
</tr>
<tr>
<td>33-114</td>
<td>Physics of Musical Sound</td>
<td>9</td>
</tr>
<tr>
<td>54-166</td>
<td>Introduction to Sound Design for Theatre</td>
<td>6</td>
</tr>
<tr>
<td>54-275</td>
<td>History of Sound Design</td>
<td>3</td>
</tr>
<tr>
<td>54-666</td>
<td>Production Audio</td>
<td>6</td>
</tr>
<tr>
<td>57-344</td>
<td>Experimental Sound Synthesis</td>
<td>9</td>
</tr>
<tr>
<td>57-421</td>
<td>The Exploded Ensemble</td>
<td>6</td>
</tr>
<tr>
<td>57-425</td>
<td>Expanded Music Performance</td>
<td>6</td>
</tr>
<tr>
<td>57-427</td>
<td>Advanced Seminar in Film Musicology</td>
<td>9</td>
</tr>
<tr>
<td>57-478</td>
<td>Survey of Historical Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-622</td>
<td>Independent Study in Sound Recording Production</td>
<td>3</td>
</tr>
<tr>
<td>60-131</td>
<td>3D Media Studio I</td>
<td>5</td>
</tr>
</tbody>
</table>

60-210 Electronic Media Studio: Introduction to Interactivity 10

Note: Students completing an IDEaTe minor may double-count up to two of the IDEaTe minor courses towards the Audio Recording & Production concentration.

Sound Theory & Practice Required Courses (7 courses, 47 units)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-101</td>
<td>Introduction to Music Technology</td>
<td>6</td>
</tr>
<tr>
<td>57-181</td>
<td>Solfege I</td>
<td>3</td>
</tr>
<tr>
<td>57-182</td>
<td>Solfege II</td>
<td>3</td>
</tr>
<tr>
<td>57-173</td>
<td>Survey of Western Music History (co-requisite: 57-188)</td>
<td>9</td>
</tr>
<tr>
<td>57-188</td>
<td>Repertoire and Listening for Musicians I</td>
<td>1</td>
</tr>
<tr>
<td>18-090</td>
<td>Twisted Signals: Multimedia Processing for the Arts</td>
<td>10</td>
</tr>
<tr>
<td>57-911</td>
<td>Music Since 1945</td>
<td>9</td>
</tr>
<tr>
<td>57-616</td>
<td>Independent Study in Sound Studies</td>
<td>9</td>
</tr>
</tbody>
</table>

Choose 52 units from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>57-152</td>
<td>Harmony II</td>
<td>9</td>
</tr>
<tr>
<td>57-150</td>
<td>Basic Harmony II</td>
<td>9</td>
</tr>
<tr>
<td>57-182</td>
<td>Solfege II</td>
<td>3</td>
</tr>
<tr>
<td>57-186</td>
<td>Advanced Solfege II</td>
<td>3</td>
</tr>
<tr>
<td>15-104</td>
<td>Introduction to Computing for Creative Practice</td>
<td>10</td>
</tr>
<tr>
<td>15-322</td>
<td>Introduction to Computer Music (pre-requisite: 15-112)</td>
<td>9</td>
</tr>
<tr>
<td>15-323</td>
<td>Computer Music Systems and Information Processing (pre-requisite: 15-122)</td>
<td>9</td>
</tr>
<tr>
<td>33-114</td>
<td>Physics of Musical Sound</td>
<td>9</td>
</tr>
<tr>
<td>57-337</td>
<td>Sound Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-343</td>
<td>Interdisciplinary Studies in Listening, Culture, and Technology</td>
<td>9</td>
</tr>
<tr>
<td>57-344</td>
<td>Experimental Sound Synthesis</td>
<td>9</td>
</tr>
<tr>
<td>57-347</td>
<td>Electronic and Computer Music (pre-requisite: 57-101 or 57-171)</td>
<td>6</td>
</tr>
<tr>
<td>57-421</td>
<td>The Exploded Ensemble</td>
<td>6</td>
</tr>
<tr>
<td>57-425</td>
<td>Expanded Music Performance</td>
<td>9</td>
</tr>
<tr>
<td>57-438</td>
<td>Multitrack Recording</td>
<td>9</td>
</tr>
<tr>
<td>57-478</td>
<td>Survey of Historical Recording</td>
<td>6</td>
</tr>
<tr>
<td>57-829</td>
<td>Contemporary Soundscales</td>
<td>9</td>
</tr>
<tr>
<td>60-131</td>
<td>3D Media Studio I</td>
<td>5</td>
</tr>
</tbody>
</table>

60-210 Electronic Media Studio: Introduction to Interactivity 10

Note: Students completing an IDEaTe minor may double-count up to two of the IDEaTe minor courses towards the Sound Theory & Practice concentration.

Free Electives

(approximately 1-3 courses, 9-29 units)

Take any Carnegie Mellon course. A maximum of 9 units of physical education and/or military science may be counted toward this requirement. Physical education and military science courses will not be calculated in a student’s QPA.

Engineering and Arts Additional Major

Carnegie Mellon recognizes that there are STEM-minded students who want the opportunity to formally incorporate their fine arts talents with their current study in engineering. In order to accommodate students who wish to pursue an education in both areas, while retaining the full engineering curriculum and licensure, we offer an additional major that combines the strengths of the College of Fine Arts (CFA) and the College of Engineering (E). The Engineering and Arts (EA) additional major is an interdisciplinary program that offers a unique group of qualified Engineering students the foundation to develop their skills and interests in an area of the fine arts and engineering.
The EA curriculum has two main components: BXA requirements and fine arts concentration requirements. Each student’s course of study is structured so it can be completed alongside their primary engineering major.

The EA Additional Major Program is governed by faculty and administrators from both colleges and led by the director of the BXA Intercollege Degree Programs. Students receive extensive advising support. The academic advisors in the BXA Intercollege Degree Programs are the advisors and liaisons between CFA and Engineering. Each student has two additional academic advisors: an advisor in the admitting school of CFA to guide their focus in the arts, and their primary advisor in Engineering to guide their full major in engineering.

### EA Curriculum

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. BXA Requirements</strong></td>
</tr>
<tr>
<td><strong>II. CFA Concentration</strong></td>
</tr>
<tr>
<td><strong>Total EA Additional Major Requirements</strong></td>
</tr>
</tbody>
</table>

### BXA Requirements

**BXA Required Courses (5 courses, 36 units minimum)**

BXA-specific courses give students the opportunity to integrate their areas of concentration by focusing on interdisciplinary approaches and arts-based research techniques.

- BXA Seminar I: Building the Wunderkammer (9 units)
- BXA Seminar II: Transferring Knowledge (9 units)
- BXA Junior Portfolio (0 units)
- BXA Seminar III: Deconstructing Disciplines (9 units)
- BXA Seminar IV: Capstone Project Research (9 units)
- BXA Seminar V: Capstone Project Production (9 units)

### College of Fine Arts Concentration

#### Art Concentration (108 units minimum)

**Concept Studios (2 courses, 20 units)**

Complete two courses:

- 60-101 Concept Studio: The Self and the Human Being (10 units)
- 60-201 Concept Studio: Space and Time (10 units)
- 60-202 Concept Studio: Systems and Processes (10 units)
- 60-280 Introduction to Contextual Practice (10 units)

**Media Studios (3 courses, 30 units Minimum)**

Complete three courses. 3D mini courses count as half a course:

- 60-150 2D Media Studio: Drawing (10 units)
- 60-160 2D Media Studio: Imaging (10 units)
- 60-131 3D Media Studio I (mini-1) (5 units)
- 60-132 3D Media Studio I (mini-2) (5 units)
- 60-133 3D Media Studio II (mini-3) (5 units)
- 60-134 3D Media Studio II (mini-4) (5 units)
- 60-250 2D Media Studio: Painting (10 units)
- 60-251 2D Media Studio: Print Media (10 units)
- 60-110 Electronic Media Studio: Introduction to the Moving Image (10 units)
- 60-210 Electronic Media Studio: Interactivity (10-12 units)
- or 60-212 Electronic Media Studio: Interactivity and Computation for Creative Practice (10-12 units)

**Advanced Studios (4 courses, 40 units)**

Complete four courses. Courses may be offered in the fall and/or spring. Students may take courses in any media area (ETB, SIS, CP or DP3). They may take all courses in one media area if a focus is desired.

- 60-401/402 Senior Studio (10 units)
- 60-403 Senior Critique Seminar (10 units)
- 60-410 - 60-429 Advanced Electronic and Time-Based Work (ETB) (10 units)
- 60-430 - 60-447 Advanced Sculpture, Installation and Site-Work (SIS) (10 units)
- 60-448 - 60-449 Advanced Contextual Practice (CP) (10 units)
- 60-450 - 60-498 Advanced Drawing, Painting, Print Media and Photography (DP3) (10 units)
- 60-499 Studio Independent Study (one only) (10 units)

**Critical Studies (2 courses, 18 units)**

- 60-205 Critical Theory in Art III -Fall (9 units)
- 60-206 Critical Theory in Art IV -Spring (9 units)

Note: Critical Theory I & II are strongly recommended.

**Review Requirement (Complete 2 Required Reviews, 0 units)**

A review is required at the end of the sophomore and senior years. Pass/no pass only.

- 60-200 Sophomore Review -Spring (0 units)
- 60-400 Senior Review -Fall (0 units)

### Academic Policies

#### Professional and Community Standards

As a condition of enrollment BXA, and as a student in the College of Fine Arts, we expect you to positively contribute to the community in order to fully engage in the intellectual life at CFA. Classrooms, studios, rehearsal and performance spaces, exhibition venues and off-campus curricular destinations are safe spaces for expression and self-identification. Students are expected to treat everyone with respect, regardless of race, country of origin, gender identity and expression, sexual orientation, disability, physical appearance, age, religion, political affiliation or marital status. Lack of respect and harassment includes offensive comments related to any protected personal characteristic, deliberate intimidation, sustained disruption of speech, inappropriate physical contact and unwelcome sexual attention. Violations of this agreement are subject to a response to be determined by the BXA Director and CFA Associate Deans.

#### Academic Standards and Actions

Academic standards are established to ensure a student is progressing well in their desired CMU degree. Deviation from these standards will prompt an academic action, which notifies both the student and their advisors so appropriate responses can be considered.

At the end of every semester, the academic performance of each BXA student is evaluated based on the established academic standards listed below. As the College of Fine Arts is the unifying body among the BXA degrees, the BXA Director presents recommendations for academic actions to the College of Fine Arts Academic Advisory Council (CFA-AAC) for a final review and council vote in accordance with CFA-AAC protocol. Once the actions are approved, the student will receive written notice of the action. Copies of all communications will also be sent to their BXA, CFA and academic college advisors.

#### Academic Standards

BXA students are expected to maintain a cumulative QPA of 2.0 or higher and to make satisfactory progress toward their academic degree. Meeting one or more of the following conditions in the semester will result in an academic action. Note that meeting a singular criterion more than once within the current semester is equivalent to meeting 2 or more criteria:

- Semester QPA below 2.0
- Cumulative QPA below 2.0
- Grade of D or R in a required concentration course*
- Grade of R in a general education course
• Completing fewer than 27 factorable units toward intended degree in a semester (free electives do not count toward total)

*as defined by each degree option.

**Academic Actions**

All academic actions are cumulative and sequential. Should a student resume good standing and later meet the criteria for another academic action, they will continue where they previously left off. All academic actions also transfer between colleges. BXA students who enter the program through internal transfer on action, will continue on the equivalent action.

After an action of probation, the student’s BXA advisor will initiate an intervention team. This team will include the student’s BXA college liaison and all three of their associated advisors (BXA, CFA and academic college advisors) to strategize a path to success and discuss available resources.

Students on an academic action are not allowed to overload classes, cross-register for classes or participate in study abroad during the semesters the action is in effect.

**First Academic Action:**

**Warning:** Warning will be administered if a student meets 1 criterion for an academic action within the current semester.

**Probation:** Probation will be administered if a student meets 2 or more criteria for an academic action.

**Second Academic Action:**

**Probation:** Probation will be administered if a student was previously on a “Warning” and now meets 1 or more criteria for an academic action within the current semester.

**Final Probation:** Final Probation will be administered if a student was previously on a “Probation” and now meets only 1 criterion for an academic action within the current semester.

**Suspension:** Suspension will be administered if a student was previously on a “Probation” and now meets 2 or more criteria for an academic action or meets an individual criterion multiple times within the current semester.

**Third Academic Action:**

**Final Probation:** Final Probation will be administered if a student was previously on a “Probation” and now meets 1 or more criteria for an academic action within the current semester.

**Suspension:** Suspension will be administered if a student was previously on a “Final Probation” and now meets only 1 criterion for an academic action within the current semester.

**Drop:** Drop will be administered if a student was previously on Final Probation and now meets 2 or more criteria for an academic action within the given semester. -OR- If a student was previously on a “Suspension” and now meets 1 or more of the criteria for an academic action within the current semester. (If the student has failed to secure admittance to a different program by this time, the student will also be dropped from the university.)

**Fourth Academic Action:**

**Suspension:** Suspension will be administered if a student was previously on a “Final Probation” and now meets 1 or more of the criteria for an academic action within the current semester.

**Drop:** Drop will be administered if a student was previously on a “Suspension” and now meets 1 or more of the criteria for an academic action within the current semester. (If the student has failed to secure admittance to a different program by this time, the student will also be dropped from the university.)

**Fifth Academic Action:**

**Drop:** Drop will be administered if a student was previously on a “Suspension” and now meets 1 or more of the criteria for an academic action within the current semester. (If the student has failed to secure admittance to a different program by this time, the student will also be dropped from the university.)

**Appeal of Academic Action**

Students have the right to appeal academic actions. If a student believes an academic action is inconsistent with BXA policies or merits additional review, a student should submit a formal written appeal, as specified in the initial academic action letter, to the assistant/associate deans listed below, with a copy to the deans of both CFA and their academic college. Appeals should include all relevant materials to substantiate their case and support their concerns.

A student may appeal to the relevant assistant/associate deans within seven days from the date of their academic action letter. All appeals should be in written form, under three pages in length (not including appendices) and authored by the student.

**BCSA Appeals** should be addressed to:

Kristen Letts Kovak, Senior Associate Dean for Academics, College of Fine Arts
Guy Bellocq, Associate Dean for Undergraduate Education, Computer Science Department

**BHA Appeals** should be addressed to:

Kristen Letts Kovak, Senior Associate Dean for Academics, College of Fine Arts
Ana Maria Ulloa-Shields, Assistant Dean and Director, Dietrich College Academic Advisory Center

**BSA Appeals** should be addressed to:

Kristen Letts Kovak, Senior Associate Dean for Academics, College of Fine Arts
Maggie Braun, Associate Dean for Undergraduate Affairs, Mellon College of Science

If, after carrying out the steps of the process described above, the student believes that the matter has not been adequately resolved, or if no decision has been rendered by the appropriate date, the student may appeal at the university level. To appeal at the university level, the student must present copies of all previously submitted documents and a formal letter of appeal to the provost. The provost or another designated university officer will respond in writing with a final resolution, including the basis for it, within thirty (30) days when possible.

**Disabilities**

Students with a learning disability or a physical disability are encouraged to email access@andrew.cmu.edu. The circumstances will remain confidential to the extent desired. The university has a formal procedure for documenting disabilities, notifying advisors and faculty, and making arrangements to utilize university resources in support of expressed needs, but will take no action until contacted by the student. The BXA academic advisors will work with the student to coordinate assistance. Please note that requests for accommodations are not retroactive; you must ask that accommodation requests be put in place before you anticipate needing them.

**Grading Policies**

University grading policies may vary depending on the particular school/department. Please consult the Undergraduate Academic Regulations (http://coursecatalog.web.cmu.edu/servicesandoptions/undergraduateacademicregulations).

**Intercollege Deans’ List**

Students who earn 36 graded units (no “pass/no pass” grades) with a grade point average of 3.5 or higher, no “incompletes” and no “grades” qualify for BCSA, BHA or BSA Deans' List. The BXA Intercollege Deans’ List Honors are posted online each semester.

**Intercollege Honors**

BXA students who successfully complete a BXA Capstone Project under the guidance of a faculty member will graduate with BCSA, BHA, BSA or EA Intercollege Honors if all of the following conditions are met:

• grade of “A” achieved in 62-401 and 62-402
• overall QPA of 3.25 or higher
• research results presented at Meeting of the Minds Undergraduate Research Symposium

As a citizen of two colleges, a BXA student also has the opportunity to graduate with CFA College Honors, DC College Honors, E College Honors and MCS College Honors. These particular honors are defined by each college. BXA students will receive honors cords during the BXA/CFA Commencement Honors Ceremony and EA additional major students at the College of Engineering Commencement Honors Ceremony.

**University Honors**

Students who graduate with an overall QPA of 3.5 or higher will graduate with University Honors. Students will receive an honors medallion during the BXA/CFA Commencement Honors Ceremony.
Internal Transfer/Additional Major Process

For current Carnegie Mellon students who wish to apply to a BXA program, an internal transfer and additional major (EA) application process takes place in both the fall and spring semester. Applications are available online and in the BXA office and are reviewed by a committee of BCSA, BHA, BSA and EA advisors in October and in March. However, certain concentrations consider applications only once a year; please consult with a BXA advisor for guidance on scheduling your application.

All students applying for internal transfer should meet with their current advisor, a BXA advisor, and an advisor in their target area, as well as take preliminary coursework in their target area before applying. For all concentrations, there are required courses that must be taken before an application will be considered; please consult with a BXA advisor for guidance on scheduling these courses.

Current BXA students who wish to change their BXA program (e.g. BHA to BCSA) or change their CFA concentration (e.g. BHA architecture to BHA art) or delineated options within CFA concentrations (e.g. music performance to music composition) must apply for that change through the internal transfer process. Current BHA and BSA students who wish to change their academic college concentration after declaring (e.g. BHA creative writing to BHA psychology, BSA physics to BSA mathematical sciences) must submit a new DC/MCS Concentration Declaration form for approval of that change, which will be reviewed at the internal transfer committee meeting each semester. Current BXA students seeking internal transfer out of BXA into another college program must apply and meet entry requirements to that program.

Study Abroad

Studying abroad is encouraged to broaden BXA students’ interdisciplinary experiences through traditional and non-traditional study abroad, from coursework and artistic studios to for-credit internships, volunteer service and research opportunities.

Courses taken while studying abroad may count toward your BXA concentration requirements, your general education requirements or your free electives. Spending an entire year abroad is not typically possible for BXA students without intending to take an additional semester at Carnegie Mellon. Many students study abroad during the spring of their sophomore year or the fall semester of their junior year, as well during the summer, and over winter and spring breaks. Talk to your BXA academic advisor early in your academic career to identify the best time for study abroad.

When studying abroad, students are still enrolled at Carnegie Mellon. A student never takes a leave of absence to study abroad. Prior to studying abroad, all students must attend a required pre-departure orientation offered by the Office of International Education (OIE).

Students must also complete a Study Abroad Transfer Credit (SATC) form prior to departure for study abroad, which must be signed after completion by the BXA advisor. The SATC will guarantee transfer credit for courses taken abroad, and is filled out by the corresponding departments to the coursework being transferred. Unlike regular transfer credit, there is no limit to the number of courses transferable from study abroad, but there may exist stricter limits on the use of coursework to fulfill concentration or general education requirements.

Students will receive credit for courses for which they receive a grade of “C” or better. However, grades received abroad do not count toward a student’s Carnegie Mellon University QPA.

Transfer Credit

Once a BXA student enrolls at Carnegie Mellon University as a degree candidate, they may transfer a maximum of five courses from another institution (excluding official study abroad programs through the CMU Office of International Education) for credit towards their BXA degree. This applies to courses taken at other institutions in the United States, as well as courses taken internationally in the student’s home country.

Individual departments may impose stricter limits regarding the number or type of courses students propose to take elsewhere to fulfill requirements. Some departments may not accept transfer credit from online courses.

Withdrawal or Leave of Absence

A student who decides to leave the university must meet with their BXA advisor and complete a Withdrawal or Leave of Absence form. Withdrawal means leaving the university with no intention of returning. Leave of Absence means temporarily leaving the university with a stated intention to return. A withdrawal or leave of absence from the university at any time up to and including the last day of classes (excluding the final examination period), means that grades of W will be recorded for all classes for the semester. Financial responsibility for the semester is dependent upon the date of and the reasons for filing the form. Questions about financial responsibility should be directed to the HUB.

A leave of absence may be voluntary or involuntary. If the leave is voluntary, the student may return any time within four years following the beginning of the leave by filing an Application for Return from Leave of Absence form. If the leave is involuntary, that is, required for academic or disciplinary reasons, the conditions for return will be stated.