

# 2012 Cognitive Science Program Curricular Revisions

## Justification

The revisions that we are proposing for the Cognitive Science curriculum are motivated by a desire to provide a more relevant computational dimension to the program, one grounded in cognitively-oriented computer science rather than engineering-oriented computer science. These changes will accomplish two goals.

1. They will, of course, enhance the computational dimension of the Cognitive Science Program by making it much more relevant to the needs and interests of Cognitive Science students.
2. They will invite a population of students to consider majoring or minoring in Cognitive Science who might otherwise be deterred by the more engineering-oriented perspective of computer science that is currently incorporated into the Cognitive Science curriculum.

The changes that we are seeking to the Cognitive Science curriculum can be viewed as directly addressing recommendations resulting from our 2012 Cognitive Science Program self-study, recommendations that were specifically endorsed by our external reviewer Dr. Alexander Nakhimovsky.

In 2006, as a result of our very first self-study, the Cognitive Science Program made significant enhancements to its curriculum by requiring all majors and minors to take a course whose focus was the brain, *per se*, and by requiring all majors (BA as well as BS) to take the Research Methods in Psychology course. The current revision, in response to our very recent self-study, propels the curriculum in the particularly significant direction of computational relevance. It is precisely this sort of completion to learning outcomes informed self-study that makes the demanding task of learning outcomes assessment worthwhile.

The revisions that we are proposing will significantly advance our goal of providing the most attractive undergraduate cognitive science curriculum of any comparable college or university in the country.

## Resources

The Cognitive Science program has already secured the resources needed to move forward with these significant curricular revisions.

- Theo Rhodes has joined the SUNY Oswego faculty with half-time responsibilities in Cognitive Science and half-time responsibilities in Psychology.
- Theo's addition to the faculty in support of the Cognitive Science Program will free Craig Graci to teach the new Cog labelled computer science courses that will be folded into the cognitive science curriculum.
- Leigh Bacher and David Vampola will also be teaching Cog labelled courses, which continues the tradition of the Psychology Department and the Computer Science Department providing very strong support for the Cognitive Science Program.

## Revision of the Cognitive Science B.A. Degree

→ Net change of 0 hours

**Support:** The proposed change to the B.A. Degree in Cognitive Science is supported by (1) the Cognitive Science Program Advisory Board, and (2) the Computer Science Department.

### Summary of Changes

1. Csc212 becomes [Cog212 or Csc212]
2. Csc241 becomes [Cog241 or Csc241]
3. Csc366/Cog366 becomes [Csc366/Cog366 or Cog356]
4. Phl309 becomes [Phl309 or Cog376]

### Side by Side Differences

Old Program Requirements	
Cognitive Science Major	
Arts and Sciences, B.A. Degree	50-51 sh
<b>Core Requirements</b>	<b>41-42 sh</b>
Cog 166 Introduction to Cognitive Science	3
Cog 266 Brains, Minds, and Consciousness	3
Cog 366 Computational Modeling of Cognitive Processes	3
Cog 468 Cognitive Science Capstone Seminar	3
Ant 344 Language and Culture OR	3
Cas 444 Semiotics and the Study of Meaning	
Csc 212 Principles of Programming	3
Csc 241 Abstract Data Types and Programming Methods	3
Lin 100 Introduction to Linguistics	3
Phl 309 Logic, Language and Thought	3
Phl 471 Philosophy of Mind	3
Psy 280 Analysis of Psychological Data	4
Psy 290 Research Methods in Psychology	4
Psy 305 / Psy 405 Cognition	3 / 4
<b>Cognate Requirements</b>	<b>None</b>
<b>Learning Agreement</b>	<b>9sh</b>

New Program Requirements	
Cognitive Science Major	
Arts and Sciences, B.A. Degree	50-51 sh
<b>Core Requirements</b>	<b>41-42 sh</b>
Cog 166 Introduction to Cognitive Science	3
Cog 266 Brains, Minds, and Consciousness	3
Csc/Cog 366 Computational Modeling of Cognitive Processes OR	3
Cog 356 Generative Processes and Abstract Machines	
Cog 468 Cognitive Science Capstone Seminar	3
Ant 344 Language and Culture OR	3
Cas 444 Semiotics and the Study of Meaning	
Cog 212 Programming and Problems Solving OR	3
Csc 212 Principles of Programming	
Cog 241 Programming and Knowledge Representation OR	3
Csc 241 Abstract Data Types and Programming Methods	
Lin 100 Introduction to Linguistics	3
Phl 309 Logic, Language and Thought OR	3
Cog 376 Natural Language Representation and Processing	
Phl 471 Philosophy of Mind	3
Psy 280 Analysis of Psychological Data	4
Psy 290 Research Methods in Psychology	4
Psy 305 / Psy 405 Cognition	3 / 4
<b>Cognate Requirements</b>	<b>None</b>
<b>Learning Agreement</b>	<b>9sh</b>

Note: A C- or better must be earned in all core courses. (no change: old and new programs)

**Revision of the Cognitive Science B.S. Degree**  
 → Net change of 0 hours

**Support:** The proposed change to the B.S. Degree in Cognitive Science is supported by (1) the Cognitive Science Program Advisory Board, and (2) the Computer Science Department.

**Summary of Changes**

1. Csc212 becomes [Cog212 or Csc212]
2. Csc241 becomes [Cog241 or Csc241]
3. Csc221 becomes Cog356
4. Csc350 becomes Cog411
5. Phl309 becomes [Phl309 or Cog376]

**Side by Side Differences**

Old Program Requirements	
Cognitive Science Major	
Arts and Sciences, B.S. Degree	69-71 sh
<b>Core Requirements</b>	<b>60-62 sh</b>
Cog 166 Introduction to Cognitive Science	3
Cog 266 Brains, Minds, and Consciousness	3
Cog 366 Computational Modeling of Cognitive Processes	3
Cog 468 Cognitive Science Capstone Seminar	3
Ant 344 Language and Culture	3
OR	
Cas 444 Semiotics and the Study of Meaning	3
Csc 212 Principles of Programming	
Csc 221 Foundations of Computer Science	3
Csc 241 Abstract Data Types and Programming Methods	3
Csc 350 Computational Linguistics	3
Csc 416 Artificial Intelligence Programming Languages	3
Csc 466 Artificial Intelligence and Heuristic Programming	3
Lin 100 Introduction to Linguistics	3
Phl 309 Logic, Language and Thought	3
Phl 471 Philosophy of Mind	3
Psy 280 Analysis of Psychological Data	4
Psy 290 Research Methods in Psychology	4
<i>All of the following three courses - one at the 400 level</i>	
Psy 301 / Psy 401 Perception	3 / 4
Psy 303 / Psy 403 Biopsychology	3 / 4
Psy 305 / Psy 405 Cognition	3 / 4
<b>Cognate Requirements</b>	<b>None</b>
<b>Learning Agreement</b>	<b>9sh</b>

New Program Requirements	
Cognitive Science Major	
Arts and Sciences, B.S. Degree	69-71 sh
<b>Core Requirements</b>	<b>60-62 sh</b>
Cog 166 Introduction to Cognitive Science	3
Cog 266 Brains, Minds, and Consciousness	3
Cog 366 Computational Modeling of Cognitive Processes	3
Cog 468 Cognitive Science Capstone Seminar	3
Ant 344 Language and Culture	3
OR	
Cas 444 Semiotics and the Study of Meaning	3
Cog 212 Programming and Problems Solving	
OR	3
Csc 212 Principles of Programming	
Cog 356 Generative Processes and Abstract Machines	3
Cog 241 Programming and Knowledge Representation	3
OR	
Csc 241 Abstract Data Types and Programming Methods	3
Cog 411 Neural Networks	
Csc 416 Artificial Intelligence Programming Languages	3
Csc 466 Artificial Intelligence and Heuristic Programming	3
Lin 100 Introduction to Linguistics	3
Phl 309 Logic, Language and Thought	3
OR	
Cog 376 Natural Language Representation and Processing	3
Phl 471 Philosophy of Mind	
Psy 280 Analysis of Psychological Data	4
Psy 290 Research Methods in Psychology	4
<i>All of the following three courses - one at the 400 level</i>	
Psy 301 / Psy 401 Perception	3 / 4
Psy 303 / Psy 403 Biopsychology	3 / 4
Psy 305 / Psy 405 Cognition	3 / 4
<b>Cognate Requirements</b>	<b>None</b>
<b>Learning Agreement</b>	<b>9sh</b>

Note: A C- or better must be earned in all core courses. (no change: old and new programs)

## Revision of the Cognitive Science Minor

→ Net change of 0 hours

**Support:** The proposed change to the Minor in Cognitive Science is supported by (1) the Cognitive Science Program Advisory Board, and (2) the Computer Science Department.

### Summary of Changes

Five courses selected from the B. A. Degree required course list becomes five courses drawn from a pool of courses comprised of the B. A. Degree required course list and other upper-level Cog labelled courses.

### Side by Side Differences

Old Program Requirements	
Cognitive Science Minor	
Arts and Sciences, Minor	21 sh
<b>Core Requirements</b>	<b>6 sh</b>
Cog 166 Introduction to Cognitive Science	3
Cog 266 Brains, Minds, and Consciousness	3
<b>Cognate Requirements</b>	<b>None</b>
<b>Electives</b>	<b>15 sh</b>
<i>Five additional courses selected from the following, subject to the constraint that both Ant344 and Cas444 may not both be taken.</i>	
Cog 366 Computational Modeling of Cognitive Processes	3
Cog 468 Cognitive Science Capstone Seminar	3
Ant 344 Language and Culture OR Cas 444 Semiotics and the Study of Meaning	3
Csc 212 Principles of Programming	3
Csc 241 Abstract Data Types and Programming Methods	3
Lin 100 Introduction to Linguistics	3
Phil 309 Logic, Language and Thought	3
Phil 471 Philosophy of Mind	3
Psy 280 Analysis of Psychological Data	4
Psy 290 Research Methods in Psychology	4
Psy 305 / Psy 405 Cognition	3 / 4

New Program Requirements	
Cognitive Science Minor	
Arts and Sciences, Minor	21 sh
<b>Core Requirements</b>	<b>6 sh</b>
Cog 166 Introduction to Cognitive Science	3
Cog 266 Brains, Minds, and Consciousness	3
<b>Cognate Requirements</b>	<b>None</b>
<b>Electives</b>	<b>15 sh</b>
<i>Five additional courses selected from the following list, subject to the constraint that at most one can be taken from each box.</i>	
Csc/Cog 366 Computational Modeling of Cognitive Processes OR Cog 356 Generative Processes and Abstract Machines Cog 468 Cognitive Science Capstone Seminar	3
Ant 344 Language and Culture OR Cas 444 Semiotics and the Study of Meaning	3
Cog 212 Programming and Problems Solving OR Csc 212 Principles of Programming	3
Cog 241 Programming and Knowledge Representation OR Csc 241 Abstract Data Types and Programming Methods	3
Lin 100 Introduction to Linguistics	3
Phil 309 Logic, Language and Thought OR Cog 376 Natural Language Representation and Processing	3
Phil 471 Philosophy of Mind	3
Psy 280 Analysis of Psychological Data	4
Psy 290 Research Methods in Psychology	4
Psy 305 / Psy 405 Cognition	3 / 4
Cog 316 Cognitive Musicology	3
Cog 411 Neural Networks	3