

2024 - 2025 Certificate Map

Symbolic, Cognitive and Linguistic Systems

School/College: [The College of Liberal Arts and Sciences](#)

Location: [Tempe](#)

Program Requirements

The certificate requires 18 credit hours, of which at least 12 must be upper-division. At least six upper-division credit hours must be taken through The College of Liberal Arts and Sciences. A grade of "C" (2.00 on a 4.00 scale) or higher is required for all courses used toward the certificate.

Required Course (choose one) -- 3 credit hours

[CSE 110: Principles of Programming \(QTRS OR CS\)](#) (3)

[CSE 205: Object-Oriented Programming and Data Structures \(QTRS OR CS\)](#) (3)

[CSE 240: Introduction to Programming Languages](#) (3)

Upper Division Philosophy Course (choose one) -- 3 credit hours

[PHI 313: Probability, Evidence, and Decision](#) (3)

[PHI 319: Philosophy, Computing and Artificial Intelligence \(QTRS OR CS\)](#) (3)

[PHI 330: Theory of Knowledge \(HUAD OR HU\)](#) (3)

[PHI 331: Philosophy of Language \(HU\)](#) (3)

[PHI 333: Symbolic Logic](#) (3)

[PHI 334: Philosophy of Mind \(HUAD OR HU\)](#) (3)

[PHI 401: Rationalism](#) (3)

[PHI 402: Empiricism](#) (3)

[PHI 413: Advanced Symbolic Logic](#) (3)

Electives -- 12 credit hours

Elective (3)

Upper Division Electives (9)

Students must complete at least one course each from the cognitive, linguistic and symbolic systems course lists below to earn the certificate. The required CSE course above also satisfies the requirement for a symbolic systems course, but students must cover the other two categories within the electives and upper division PHI course requirement. Once all three categories are satisfied, students may choose any courses from the cognitive, linguistic and symbolic systems lists for the remaining electives.

Cognitive Systems

PHI 313: Probability, Evidence, and Decision (3)
PHI 330: Theory of Knowledge (HUAD OR HU) (3)
PHI 334: Philosophy of Mind (HUAD OR HU) (3)
PHI 401: Rationalism (3)
PHI 402: Empiricism (3)
PSY 323: Sensation and Perception (3)
PSY 324: Memory and Cognition (3)
PSY 434: Cognitive Psychology (L) (3)
PSY 437: Human Factors (L) (3)

Linguistic Systems

ENG 213: Introduction to the Study of Language (SOBE OR SB) (3)
ENG 312: English in its Social Setting (SOBE OR L or HU or SB) (3)
ENG 313: Phonology and Morphology (3)
ENG 314: Modern Grammar (3)
ENG 413: History of English Language (HU) (3)
PHI 331: Philosophy of Language (HU) (3)

Symbolic Systems

CSE 110: Principles of Programming (QTRS OR CS) (3)
CSE 205: Object-Oriented Programming and Data Structures (QTRS OR CS) (3)
CSE 240: Introduction to Programming Languages (3)
CSE 471: Introduction to Artificial Intelligence (3)
MAT 243: Discrete Mathematical Structures (3)
MAT 300: Mathematical Structures (L) (3)
MAT 420: Scientific Computing (3)
PHI 319: Philosophy, Computing and Artificial Intelligence (QTRS OR CS) (3)
PHI 333: Symbolic Logic (3)
PHI 413: Advanced Symbolic Logic (3)

With the approval of the director of undergraduate studies, students may substitute one course not on the approved course lists. Please obtain approval prior to enrolling in any course not on the approved list.

Prerequisite courses may be needed in order to complete the requirements of this certificate.