Symbolic, Cognitive and Linguistic Systems, Certificate

LAPHICERT

The logic of mathematics and computing is combined with the deep-thinking process of philosophy in this program that challenges both your right and left brain, preparing you for future goals with skills in language, theory and logic.

Description

The certificate program in symbolic, cognitive and linguistic systems takes a transdisciplinary approach to the symbolic representation and processing of information in human cognition; natural languages; and formal mathematical, logical and computing systems.

Coursework covers three areas: human cognition and theories of mind, philosophy of language and linguistics, and computing and logic.

At a glance

- **College/School:** [The College of Liberal Arts and Sciences](#)
- **Location:** [Tempe](#)

Program requirements

[2024 - 2025 Certificate Map](#)
[Certificate Map (Archives)](#)

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.

Enrollment requirements

A student pursuing an undergraduate certificate must be enrolled as a degree-seeking student at ASU. Undergraduate certificates are not awarded prior to the award of an undergraduate degree. A student already holding an undergraduate degree may pursue an undergraduate certificate as a nondegree-seeking graduate student.

Program learning outcomes

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Evaluate arguments for formal validity and construct formal proofs. Students will be able to capture the logical form of English sentences.
- Explain and apply key philosophical concepts or theories in the study of human cognition, including techniques and challenges for modeling human cognition using formal or programming languages.

Career opportunities

Students become more marketable to employers and advance their career options when they have complemented their major with this specialization in symbolic, cognitive and linguistic systems, which develops their analytical and reasoning skills, particularly reasoning with computer programming languages and other symbolic systems.

Students who complete this undergraduate certificate often pursue employment in business, engineering, information systems or psychology. Advanced degrees or certifications may be required for academic or clinical positions.

Contact information

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