Natural Language Concentration

Symbolic Systems majors completing the new Core requirements effective for 2020-2021 must complete the following requirements to qualify for a Concentration in Natural Language. All courses must be taken for 3 units of more. Notes: Core requirements fulfilled by a course are noted in brackets "[]". "ASSR" denotes courses that fulfill the Advanced Small Seminar Requirement.

Students in the Natural Language Concentration must take four courses from at least 3 of areas 1-7, plus a course from area 8. If any of requirements 1-8 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses (see area 9) must be completed to total 5 courses beyond those that are taken for the Core.

1. **Mathematical/Computational Foundations.**
   - CS 154: Introduction to Automata and Complexity Theory [Cross-Area Requirement]
   - CS 221: Artificial Intelligence: Principles and Techniques [Post-CS 106B Computation]
   - PHIL 154: Modal Logic (PHIL 254) [Cross-Area Requirement]
   - PSYCH 204: Computation and Cognition: The Probabilistic Approach (CS 428) [Cross-Area Requirement]
   - PSYCH 209: Neural network and deep learning models for cognition and cognitive neuroscience [Cross-Area Requirement]
   - PSYCH 251: Experimental Methods (SYMSYS 195E) [Practicum, Integrative Requirement]

2. **Computational Linguistics.**
   - CS 124: From Languages to Information (LINGUIST 180, LINGUIST 280) [Cross-Area Requirement]
   - CS 224N: Natural Language Processing (LINGUIST 284, SYMSYS 195N) [Practicum, Integrative Requirement]
   - CS 224S: Spoken Language Processing (LINGUIST 285)
   - CS 224U: Natural Language Understanding (LINGUIST 188, LINGUIST 288) [Practicum, Integrative Requirement]
   - CS 276: Information Retrieval and Web Search (LINGUIST 286)

3. **Phonetics/Phonology/Speech.**
   - LINGUIST 105: Phonetics (LINGUIST 205A) [Linguistic Theory]
   - LINGUIST 110: Introduction to Phonetics and Phonology [Linguistic Theory]
4. **Morphosyntax.**
   - LINGUIST 121A: The Syntax of English [*Linguistic Theory*]
   - LINGUIST 121B: Crosslinguistic Syntax [*Linguistic Theory*]
   - LINGUIST 217: Morphosyntax
   - LINGUIST 222A: Foundations of Syntactic Theory I
   - LINGUIST 225D: Seminar in Syntax: Advanced Topics
   - LINGUIST 260B: Historical Morphosyntax

5. **Semantics/Pragmatics/Philosophy of Language.**
   - LINGUIST 130A: Introduction to Semantics and Pragmatics (LINGUIST 230A) [*Linguistic Theory, Cross-Area Requirement*]
   - LINGUIST 130B: Introduction to Lexical Semantics [*Linguistic Theory*]
   - LINGUIST 230B: Advanced Semantics
   - LINGUIST 230C: Advanced Topics in Semantics & Pragmatics [ASSR]
   - LINGUIST 232A: Lexical Semantics
   - LINGUIST 236: SEM IN SEMANTICS: Reasoning With Quantifiers [ASSR]
   - LINGUIST 272B: Structure of African Languages: Semantic Topics
   - PHIL 137: Wittgenstein (PHIL 237)
   - PHIL 181: Philosophy of Language (PHIL 281) [*Advanced Philosophy, Cross-Area Requirement*]
   - PHIL 182: Advanced Philosophy of Language (PHIL 282) [*Advanced Philosophy*]
   - PHIL 182A: Naturalizing Representation (PHIL 282A) [*Advanced Philosophy*]
   - PHIL 194D: Capstone Seminar: Analyticity [ASSR]
   - PHIL 194K: Capstone Seminar: Slurs [ASSR]
   - PHIL 348: Evolution of Signaling [ASSR]
   - PHIL 385D: Topics in Philosophy of Language [ASSR]

6. **Psycholinguistics.**
   - LINGUIST 140: Language Acquisition I (LINGUIST 240)
   - LINGUIST 245B: Methods in Psycholinguistics (SYMSYS 195L) [*Practicum, Integrative Requirement*]
   - LINGUIST 246: Foundations of Psycholinguistics
   - LINGUIST 248: Seminar in Developmental Psycholinguistics
   - PSYCH 131: Language and Thought (PSYCH 262)
   - PSYCH 132: Language and Thought
- PSYCH 140: Introduction to Psycholinguistics (LINGUIST 145) [*Cognition Language & Neuroscience*]
- PSYCH 209: Neural network and deep learning models for cognition and cognitive neuroscience [*Cross-Area Requirement*]

7. **Sociolinguistics and Language Change.**
   - LINGUIST 65: African American Vernacular English
   - LINGUIST 150: Language and Society [*Cognition Language & Neuroscience*]
   - LINGUIST 152: Sociolinguistics and Pidgin Creole Studies (LINGUIST 252)
   - LINGUIST 156: Language and Gender
   - LINGUIST 157: Sociophonetics

8. **Integrative Requirement.** Must be completed no earlier than the Junior Year:
   - Any of the *Standard Options* for all Concentrations specified under the Core Capstone requirement, or
   - A *Concentration-Specific Integrative Course* -- a course that integrates the themes of the Concentration with the Core requirements. One of the following [with more options to be added as they are approved -- some options may be removed if they are included in the list of SYMSYS 195* project courses, in order to avoid redundancy with the Standard Options]:
     - COMM 324: Language and Technology [*ASSR*]
     - CS 221: Artificial Intelligence: Principles and Techniques [*Post-CS 106B Computation*]
     - CS 276: Information Retrieval and Web Search (LINGUIST 286)
     - LINGUIST 180: From Languages to Information (CS 124, LINGUIST 280) [*Cross-Area Requirement*]
     - PHIL 137: Wittgenstein (PHIL 237)
     - PHIL 181: Philosophy of Language (PHIL 281) [*Advanced Philosophy, Cross-Area Requirement*]
     - PHIL 182: Advanced Philosophy of Language (PHIL 282) [*Advanced Philosophy*]
     - PHIL 182A: Naturalizing Representation (PHIL 282A) [*Advanced Philosophy*]
     - PHIL 194D: Capstone Seminar: Analyticity [*ASSR*]
     - PHIL 194K: Capstone Seminar: Slurs [*ASSR*]
     - PHIL 348: Evolution of Signaling [*ASSR*]
     - PHIL 356C: Logic and Artificial Intelligence [*ASSR*]
     - PHIL 357: Research Seminar in Logic and Cognition [*ASSR*]
     - PHIL 359: Topics in Logic, Information, and Interaction [*ASSR*]
     - PHIL 385D: Topics in Philosophy of Language [*ASSR*]
     - PSYCH 204: Computation and Cognition: the Probabilistic Approach [*Cross-Area Requirement*]
9. **Contingent Electives.** If any of requirements 1-8 are fulfilled with courses taken for Core requirements, then additional approved Contingent Elective courses must be completed to total 5 courses beyond those that are taken for the Core. These electives can be one or more courses from any of the areas above, or which are approved for a Core requirement that the student has fulfilled with a different course, or any of the following:
   ○ More courses may be added here as they are approved.