Cognitive Science Program
State University of New York at Oswego

General Education
Writing Across the Curriculum (WAC)
Assessment Report, Fall 2018
2019 Self Study - Appendix W

CG, for Cognitive Science at Oswego

Contents

1   About this document ...

This document presents the Writing Across the Curriculum (WAC) Assessment Report, required by General Education, for Cognitive Science at Oswego that was performed in the Cognitive Science Capstone Seminar during the Fall 2018 semester. In order to render the report more meaningful, several related documents are presented in this document (Sections 2, 3, 4), prior to presenting the assessment report proper (Section 5).

A sampling of student writing that that was taken from the Fall 2018 instance of the Capstone course was compiled to serve as an accompanying document to this report, and intended be read along side this report.

2   Writing Across the Curriclum Plan

The structure of this plan was dictated by the authority of the Writing Across the Curriculum committee of the General Education program in the early years of the Cognitive Science program. The content, subject to the sturcture, has changed occasionally since that time.

Structure

1. Learning Outcomes
2. Pedagotical Considerations
3. Summary of the Plan

2.1   Learning Outcomes for Writing Across the Curriculum

Upon completion of the degree requirements in either of the Baccalaureate of Arts or Baccalaureate of Sciences degree programs in Cognitive Science, it is expected that a student will be functional with respect to the following learning outcomes:

1. **Vocabulary**: Demonstrate understanding of vocabulary relating to basic concepts in cognitive science by using it effectively in expository compositions.

2. **Foundational Assumptions**: Concisely state, explain and debate, from diverse perspectives, the two driving forces which lend definitional credance to the field of cognitive science, the "computational/representational assumption" which unifies the field, and the "interdisciplinary assumption" serves to enrich the field by affording multiple perspectives on the study of cognitive phenomena.

3. **Big Ideas**: Discuss cultural origins and cognitive consequences of the "big ideas" in cognitive science, either by summarizing from one source or by synthesizing from a number of sources.

4. **Technical Writing**: Present technical descriptions of software systems, linguistic models, and psychological experiments by means of texts which appeal to multiple levels of abstraction.

5. **Statistics and Big Data**: Compare/constrast statistical investigations with big data applications.

6. **Incremental Development**: Demonstrate skills of conceptual and analytical expression through incremental revision and editing techniques.

7. **Classic Papers**: Summarize various classical papers relating to cognitive science.

8. **Controversial/Emerging Topic**: Write an essay on some controversial topic or emerging discipline associated with the field of cognitive science which identifies and explores relevant ideas and issues from a variety of perspectives.

9. **Narrative Description of a Computational Investigation**: Contextualize, by means of narrative description from an interdisciplinary perspective, a program or system of the students own creation which serves to investigate some cognitive phenomenon in computational terms.

10. **Hypertext Journal**: Maintain a working journal in the form of a hypertext notebook corresponding to an original research project.

11. **Slide Show Presentation**: Present the results of an original research project in the form of a slide show which at once highlights points of interest for the "casual" observer and lines of reasoned exposition for the

"invested" observer.

12. **Research Paper**: Present a narrative description of an original research project in a reasonably professional written format.

2.2   Pedagogical Considerations

This section of the plan addresses the writing experiences that Cognitive Science students are expected to engage in from both a specific perspective and a generic perspective. It also presents the Cognitive Science program's instantiation of the required curricular design model for engaging students in writing across the curriculum.

Specific Writing Experiences

In pursuing the cognitive science major each student will engage in a variety of writing experiences, including:

1. conceptual expositions
2. summaries of ideas
3. methodological discourses
4. narative contextualizations of formal systems
5. presentations on statistical, research, and computational explorations
6. article reviews
7. position papers
8. research papers
9. blogging
10. hypertext notebooking

Generic Writing Experiences

All students in the cognitive science major will be required to write with some regularity as part of their course work, and will receive feedback on their writing, with at least occasional some opportunity for submitting incrementally refined drafts. Students will sometimes be provided with examples of the kind of writing expected and will be provided with clear instructions about the writing component of all assignments.

Abstract Structure for the Writing Experiences

Each cognitive science major must take five courses, each with a significant writing component, from three categories which are being identified as "introductory," "writing to learn," and "advanced." Specifically, students are required to take:

- one designated "introductory" writing course,
- three designated "writing to learn" courses, and
- one designated "advanced" course.

Courses Designated for the Writing Experiences

The specific courses designated for the writing experiences are presented here, along with short texts relating the content of the courses to the learning outcomes.

- **Gateway Course**

  - **Cog166: Introduction to Cognitive Science**

    Students need to be able to communicate effectively, in writing, ideas pertaining to the fundamental assumptions, methodologies, ideas, questions, and findings of cognitive science. To this end they need to learn the basic vocabulary of cognitive science, and they need to learn to wield this vocabulary effectively. The "gateway" course for the cognitive science major, Cog166, helps to improve student writing skills in these respects. Typically, the course includes a number of relevant writing assignments. For example, one semester it included all of the following assignments. It included a glossary generation assignment in which students synthesize definitions from multiple sources [Goal 1]. It included an essay writing assignment which used a selection of glossary terms to illuminate the standard characterization of the field in terms of its defining assumptions and methodologies [Goal 2]. It included a biography project in which students reported on a cognitive science pioneer and his or her main contributions to the field [Goal 3]. It included a series of short essays which critically examined various ideas and issues which relate to cognitive science [Goal 3]. It featured technical writing assignments which described computer programs or knowledge representations or models of cognitive processes such as memory, attention, or planning [Goal 4].

- **Courses with a "Writing to Learn" Emphasis**

  - **Psy280: Analysis of Psychological Data**

    Students of cognitive science need to be able to perform "write-ups" for scientific experiments. In Psy280, students learn statistical techniques which are central to behavioral experimentation and produce written narratives based on experimentation which explain the rationale for the use of particular techniques, which report on results of analyses, and which offer interpretations of these results [Goals 5 and 12]. This is done in APA format, and constitutes elements of the "Methods," "Results," and "Discussion" sections of a journal manuscript.

  - **Cultural Selection** (students must take at least one of these two courses)

    * **Ant344: Language and Culture**

      Students of cognitive science also should to be able topresent in-depth reviews of books and other materials in a mature and measured manner. In Ant344 students are required to prepare an extended book review with revisions and editing after a first reading by the instructor for final submission for a grade [Goal 6].

    * **Cog444: Semiotics**

      Students in this course write a topical term paper from a semiotic perspective with revisions and editing after review by the instructor [Goal 6].

  - **Computational Selection** (students must take at least one of these two courses)

    * **Cog356: Generative Systems and Abstract Machines**

      Students of cognitive science need to be able to summarize key ideas found in source papers, clarify issues of controversy which fuel debate within the field, explain emergent sciences and technologies which impact on the field, and convey work that they are engaged in which endeavors to illuminate aspects of cognition through computational investigation. In this practical cornerstone course for the cognitive science major, students write at least one paper which summarizes a key source paper within the field [Goal 7], they write at least one paper which addresses an intellectual issue of controversy or emergence within the field [Goal 8], and they produce a rather lengthy companion document to a program which computationally models some cognitive process [Goal 9].

    * **Cog366/Csc366: Computational Modeling of Cognitive Processes**

      Students of cognitive science need to be able to summarize key ideas found in source papers, clarify

issues of controversy which fuel debate within the field, explain theories which drive the field, and describe formal systems in meaningful terms of abstraction. In this theoretical cornerstone course for the cognitive science major, students write at least one paper which summarizes a key source paper within the field [Goal 7], they write at least one paper which addresses an intellectual issue of controversy or emergence within the field [Goal 8], and they produce a rather lengthy companion document to a generative process or a formal system. [Goal 9].

- **Capstone Course**

  - **Cog468: Cognitive Science Capstone Seminar**

    Students of cognitive science need to know what it means to do research in the field and they should be reasonably comfortable with and competent in presenting their research in both informal and formal settings. To this end, the capstone course for cogntive science majors, Cog468 "Cognitive Science Capstone Seminar," calls upon students to perform three significant activities involving writing. Students are required to maintain a "scientists notebook," or "work journal" in support of an individual research project that the students designs and pursues under the guidance of the course instructor or another professor associated with the cognitive science program at Oswego [Goal 10]. Students are required to present their work in the form of "slide show" at an appropriate forum (perhaps Quest or the very modest Oswego Cognitive Science Day Conference which will be organized and administered within the confines of the Capstone course) [Goal 11]. Finally, students are required to write a paper that is more or less consistent with submission specifications for the annual conference of the Cognitive Science Society, the premier venue for sharing original research in the cognitive science community [Goal 12].

2.3   Summary of the Plan

The requirements for Cognitive Science majors with respect to the Writing Across the Curriculum requirement of General Education are presented here in concise terms. It is important that instructors of Cog166, Psy280, Ant344, Cog444, Cog356, Cog366/Csc366 and Cog468 be mindful of at least this part of the plan, along with the learning outcomes.

Required Courses

- **Gateway Course**

  - Cog166: Introduction to Cognitive Science

- **Courses with a "Writing to Learn" Emphasis**

  - Psy280: Analysis of Psychological Data
  - Cultural Selection (students must take at least one of these two courses)
    * Ant344: Language and Culture
    * Cog444: Semiotics
  - Computational Selection (students must take at least one of these two courses)
    * Cog356: Generative Systems
    * Cog366/Csc366: Computational Modeling

- **Capstone Course**

  - Cog468: Cognitive Science Capstone Seminar

Course Descriptions

- **Cog166: Introduction to Cognitive Science**

  This course will introduce the fundamental questions, findings and methods of cognitive science. The computational approach to cognition and the notion of abstract mental representation are introduced within the interdisciplinary framework of the field. Basic knowledge of cognition, computation, and evolution is surveyed. Symbol systems are described and their role in standard representations is discussed. Artificial neural networks are proposed as a model of both the brain and the mind. Linguistic models are introduced and philosophical challenges are discussed.

- **Psy280 - Analysis of Psychological Data**

  Basic techniques of descriptive and inferential statistics and their applications to research in psychology.

- **Ant344 - Language and Culture**

  Linguistic diversity and change; cultural emphasis in language and relation to world view.

- **Cog444 - Semiotics**

  Semiotics is the study of signs and sign systems in the world of meaning we share through communication. This course is an introduction to the methods and theories of semiotics and its concern with the "life of signs" - signs as individual entities, as they operate within larger groups of signs called codes, and as codes, in turn, operate within cultures. The importance of this topic for human life makes the subject appropriate for students from all disciplines, undergraduate and graduate.

- **Cog356 - Generative Processes and Abstract Machines**

  This course will survey Post Production Systems, Context Free Grammars, L-Systems (fractals), Finite State Machines, Turing Machines, Cellular Automata, Hidden Markov Models, Genetic Algorithms, Horn Clause Problem Solving (Resolution Inference) and Lambda Calculus. In short, it will expose the student to formalisms that are commonly used in the computational modeling of cognitive processes.

- **Cog366/Csc366 - Computational Models of Cognitive Processes**

  Introduction to the computational study of human and machine intelligence. Discussion of computational models, algorithms, and research in neural processing, vision, memory, learning, reasoning, and information processing.

- **Cog468 - Cognitive Science Capstone Seminar**

  The course will feature interdisciplinary individual research projects of a relatively modest scale. Students will have wide latitude in negotiating a realm of study, as well as the approach to study of the selected topic, so long as the project stands in a justifiable relationship to the computational/representational assumption which unifies the field.

3 Writing Across the Curriclum Assessment Plan

This portion of the document describes the current version of the Writing Across the Curriculum **assessment** plan for the Cognitive Science program at the State University of New York at Oswego.

3.1 Introductory Remarks

These few contextual remarks preceed the assessment process description section of this plan, which is the heart of the plan, and a number of sections which pertain to resources essential to executing the plan.

Historical Perspective

The Cognitive Science program at Oswego was approved by the SUNY Provost on June 3, 1999. The program offers a BA degree, a BS degree, and a minor. The Cognitive Science program's Writing Across the Curriculum learning outcomes were crafted by the Director of the program in consultation with members of the Cognitive Science Program Advisory Board shortly after the college started to take the notion of "writing across the curriculum" seriously, roughly 5 years after the inception of the program. Modest changes have been made to the Writing Across the Curriculum learning outcomes for the program, as well as to the corresponding plan for assessment, over the years.

BA vs BS Assessment

The WAC Plan is the same for all cognitive science majors, as students are expected to exhibit writing skills whether they are seeking the BA degree or the BS degree in cognitive science. Assessment of the Writing Across the Curriculum learning outcomes is conducted in the Capstone course, which is required of both BA degree and BS degree students.

Assessment Venue

WAC learning outcome assessment is performed in the Cognitive Science Capstone Seminar, Cog468.

Evaluators

In light of the fact that the assessment takes place in the Capstone course, and the fact that the tools of assessment are inherently part of the course, the professor of the Capstone courses will inevitably be the chief evaluator of the student writing that informs the assessment. That said, the professor is encouraged to engage appropriate members of the Cognitive Science Program Advisory Board the process of evalation.

3.2 Learning Outcomes for Writing Across the Curriculum

Upon completion of the degree requirements in either of the Baccalaureate of Arts or Baccalaureate of Sciences degree programs in Cognitive Science, it is expected that a student will be functional with respect to the following learning outcomes:

1. **Vocabulary**: Demonstrate understanding of vocabulary relating to basic concepts in cognitive science by using it effectively in expository compositions.

2. **Foundational Assumptions**: Concisely state, explain and debate, from diverse perspectives, the two driving forces which lend definitional credance to the field of cognitive science, the "computational/representational assumption" which unifies the field, and the "interdisciplinary assumption" serves to enrich the field by affording multiple perspectives on the study of cognitive phenomena.

3. **Big Ideas**: Discuss cultural origins and cognitive consequences of the "big ideas" in cognitive science, either by summarizing from one source or by synthesizing from a number of sources.

4. **Technical Writing**: Present technical descriptions of software systems, linguistic models, and psychological experiments by means of texts which appeal to multiple levels of abstraction.

5. **Statistics and Big Data**: Compare/constrast statistical investigations with big data applications.

6. **Incremental Development**: Demonstrate skills of conceptual and analytical expression through incremental revision and editing techniques.

7. **Classic Papers**: Summarize various classical papers relating to cognitive science.

8. **Controversial/Emerging Topics**: Write an essay on some controversial topic or emerging discipline associated with the field of cognitive science which identifies and explores relevant ideas and issues from a variety of perspectives.

9. **Narrative Description of a Computational Investigation**: Contextualize, by means of narrative description from an interdisciplinary perspective, a program or system of the students own creation which serves to investigate some cognitive phenomenon in computational terms.

10. **Hypertext Journal**: Maintain a working journal in the form of a hypertext notebook corresponding to an original research project.

11. **Slide Show Presentation**: Present the results of an original research project in the form of a slide show which at once highlights points of interest for the "casual" observer and lines of reasoned exposition for the "invested" observer.

12. **Research Paper**: Present a narrative description of an original research project in a reasonably professional written format.

3.3 Writing Across the Curriculum Assessment Tools

The "tools of assessment" for Writing Across the Curriculum assessment take the form of assignments presented to students in the Cognitive Science Capstone Seminar. These tools are considered at greater length in a later section of this report.

$\implies$ **Capstone Research Paper**

Scholarly paper written by students which serves as a formal report of their individual Capstone Research Project.

$\Longrightarrow$ **Capstone Cognitive Science Blog**

Students write and post a number of blog entries relating to their study of Cognitive Science at Oswego.

$\Longrightarrow$ **Capstone Web Work Site**

Web work site maintained by students in support of their individual Capstone Research Project.

$\Longrightarrow$ **Capstone Slide Show Presentation**

Slide show presentation prepared by the students in order to share highlights of their research project.

$\Longrightarrow$ **Capstone Classic Paper Mining Activity**

Modest activity devoted to reviewing selected papers from a Cognitive Science learning outcomes perspective. Includes a short hook written by the student intended to entice readers to take a look at the paper.

$\Longrightarrow$ **Capstone Prefinale Essays Essays: #1, #2**

Students write short essays response to specific questions pertaining to the WAC learning outcomes. These are written "at home" during the weeks preceding the Capstone Finale and brought to the Finale.

$\Longrightarrow$ **Capstone Finale Essays Essays: ONE, TWO, THREE, FOUR, FIVE**

Students write short essays in response to specific questions pertaining to the WAC learning outcomes. These are written in real time at the Finale.

3.4   Assessment Mapping: Learning Outcome $\longrightarrow$ Assessment Tool

The following mapping will clarify, primarily for those actually engaged in the assessment process, the matter of what tools are used for the assessment of which goals.

1. Vocabulary $\longrightarrow$ Blog, Essays (all of the Prefinale/Finale Essays), Research Paper
2. Foundational Assumptions $\longrightarrow$ Capstone Finale Essay ONE (C/R Assumption is explicit; Interdisciplinary Assumption is implicit)
3. Big Ideas $\longrightarrow$ Prefinale Essays #1 and #2, Finale Essays ONE, THREE, FOUR.
4. Technical Writing $\longrightarrow$ Finale Essay FIVE.
5. Statistics and Big Data $\longrightarrow$ Prefinale Essay #1, Finale Essay TWO.
6. Incremental Development $\longrightarrow$ Research Paper
7. Classic Papers $\longrightarrow$ Classic Paper Mining Activity, Finale Essay THREE.
8. Controversial/Emerging Topics $\longrightarrow$ Finale Essay FOUR.
9. Narrative Description of a Computational Investigation $\longrightarrow$ Finale Essay TWO.
10. Hypertext Journal $\longrightarrow$ Web Work Site
11. Slide Show $\longrightarrow$ Slide Show Presentation
12. Research Paper $\longrightarrow$ Research Paper

3.5　WAC Assessment Evaluation Form

The chief evaluator (instructor for the Capstone course) will fill out one of these forms for each student. The other evaluators will fill out parts of this form for each student whose work they consider. In the end, the evaluations for each student are combined by means of an appropriate averaging process. It should be noticed that the evaluators do not simply circle a category for each learning outcome. Rather, the category is circled in accordance with the "data" recorded for the learning outcome as described in the evaluation subprocess corresponding to the learning outcome, as will be subsequently detailed.

- "approaches" means the student largely lacks the skill being measured.
- "meets" means student appears to possess the skill being measured, but perhaps in a minimal, precarious, or otherwise troubling fashion.
- "exceeds" means the student appears to possess considerable skill in the outcome being measured.

Evaluation

Student:　　　　　　　　　　　　　　　　Evaluator:

Learning outcome	Evaluation		
Vocabulary	approaches	meets	exceeds
Foundational Assumptions	approaches	meets	exceeds
Big Ideas	approaches	meets	exceeds
Technical Writing	approaches	meets	exceeds
Work Narratives	approaches	meets	exceeds
Incremental Development	approaches	meets	exceeds
Classic Papers	approaches	meets	exceeds
Controversial/Emerging Topics	approaches	meets	exceeds
Narrative Descriptions of Investigations	approaches	meets	exceeds
Hypertext Journal	approaches	meets	exceeds
Slide Show Presentation	approaches	meets	exceeds
Research Paper	approaches	meets	exceeds

3.6 The WAC Learning Outcome Assessment Process

The assessment process amounts to collecting data with the "assessment tools" which coincidentally correspond to Capstone course activities, processing the data, interpreting the data, and eventually discussing the data with members of the faculty who contribute to delivery of the Cognitive Science Program at Oswego.

Processing the Data

Based on the student work for a WAC learning outcome, the reviewer(s) will indicate their degree of satisfaction with the students written expression by means of the tool(s) associated with the outcome, that is, by evaluating the related artifact(s) produced by the student. Degree of satisfaction is noted with a mark of: *approaches* expectations, *meets* expectations, or *exceeds* expectations.

How are these marks determined? The approach will vary with the outcome. A description of how the marks are estimated for each outcome will be presented in terms of an assessment subprocess for the outcome. The reviewer is generally the instructor of the Capstone course, but any member of the Cognitive Science Program Advisory Board might in theory perform this service.

Ideally, a number of reviewers would evaluate student work, and the "average" of their marks (computed within a corresponding numeric domain) would be taken as student scores. This ideal is only achieved to a limited extent, due to pragmatic considerations of academic operations.

Aggregate assessments are computed along two dimensions of the data, the **student dimension** and the **learning outcome dimension**. The latter values are of primary interest with respect to WAC assessment.

In order to perform the averaging of data among reviewers and desired aggregate assessments, the reviewers/reviewers scores are mapped onto numerical the numerical values: 0 for *approahces* expectations, 1 for *meets* expectations, and 2 for *exceeds* expectations. If an evaluator feels compelled to do so, they are allowed to make a mark between two of the choices, and that mark is coded appropriately (proportionally).

- **Student Dimension**

  For each student, the average value of their 12 numeric scores is computed, and then mapped onto a meaningful word.

- **Learning Outcome Dimension**

  For each learning outcome, the average of the scores on the outcome for all of the students is computed, and then mapped onto a meaningful world.

The mapping used to translate numbers to meaningful words is: $[0,0.5] \rightarrow$ approaches expectations; $(0.5,1.5) \rightarrow$ meets expectations; $[1.5,2.0] \rightarrow$ exceeds expectations.

Reflecting on the Results

This is the most interesting part of the report, in many respects. Some students write very well. Some very poorly. We will be happy if we find more of the former kind than the latter in our population of Cognitive Science majors. Beyond that, it will be interesting to see if we can find some notable things to say with respect to the particular WAC learning outcomes.

Suggestive Table

The numbers appearing in this table are purely ficticious.

-	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	O11	O12	Number	Symbol
Student1	2	1	1	2	2	2	2	1	1	2	1	1.5	1.54	E
Student2	1	1	1	1	1	1	1	1	1	1	1	1	1.00	M
Student3	1	2	1	2	0	1	2	0	1	2	0	1.5	1.13	M
Student4	1	2	0	2	0	2	2	0	1	0	0	1	0.92	M
Student5	2	2	2	2	2	2	2	2	2	2	2	2	2.00	E
Student6	2	2	2	2	2	2	2	2	2	2	2	2	2.00	E
Student7	0	0	1	1	1	1	0	0	0	0	0	1.5	0.46	A
Student8	2	2	2	2	2	2	1	1	2	2	2	2	1.83	M
Student9	1	0	0	0	0	0	0	0	0	1	1	1	0.33	A
Number	1.33	1.33	1.11	1.55	1.11	1.44	1.33	0.77	1.11	1.33	1.00	1.5	-	-
Symbol	M	M	M	E	M	M	M	M	M	M	M	E	-	-

3.7   The WAC Learning Outcome Assessment Subprocesses

For each WAC Learning Outcome, a brief description of how the outcome is assessed is presented.

1: Vocabulary

- **Outcome**: Demonstrate understanding of vocabulary relating to basic concepts in cognitive science by using it effectively in expository compositions.

- **Tool(s)**: Blog, Essays (all of the Prefinale/Finale Essays), Research Paper

- **Approach**: In lieu of a more rigorous (and time consuming) approach, the evaluators were simply asked to select which of the following statements best applies to a student after having read the student's work:

  1. The student used the vocabulary of cognitive science sparingly, or used it in only a marginally effective manner.

  2. The student used the vocabulary of cognitive science to a noticeable degree and with adequate effect.

  3. The student used the vocabulary of cognitive science quite liberally and with precision.

2: Foundational Assumptions

- **Outcome**: Concisely state, explain and debate, from diverse perspectives, the two driving forces which lend definitional credance to the field of cognitive science, the "computational/representational assumption" which unifies the field, and the "interdisciplinary assumption" serves to enrich the field by affording multiple perspectives on the study of cognitive phenomena.

- **Tool(s)**: Capstone Finale Essay ONE (C/R Assumption is explicit; Interdisciplinary Assumption is implicit)

- **Approach**: The essay is graded by allocating up to 20 points for each of the 5 required paragraphs. *The mapping: (0-69) → approaches expectations; (70-89) → meets expectations; (90-100) → exceeds expectations.*

3: Big Ideas

- **Outcome**: Discuss cultural origins and cognitive consequences of the "big ideas" in cognitive science, either by summarizing from one source or by synthesizing from a number of sources.
- **Tool(s)**: Prefinale Essays #1 and #2, Finale Essays ONE, THREE, FOUR.
- **Approach**: Each of these essays feature big ideas in cognitive science. Furthermore, grading them takes into serious consideration the expression of the ideas. This outcome is evaluated by allocating up to 20 points for each of the 5 essays. *The mapping: (0-69) → approaches expectations; (70-89) → meets expectations; (90-100) → exceeds expectations.*

4: Technical Writing

- **Outcome**: Present technical descriptions of software systems, linguistic models, and psychological experiments by means of texts which appeal to multiple levels of abstraction.
- **Tool(s)**: Finale Essay FIVE.
- **Approach**: The essay is graded by allocating up to 25 points for the introductory paragraph on *loops*, 25 points for the specification of the `for` statement, 25 points for the specification of the `while` statement, and 25 points for the *comparison* of the variants. *The mapping: (0-69) → approaches expectations; (70-89) → meets expectations; (90-100) → exceeds expectations.*

5: Statistics and Big Data

- **Outcome**: Compare/constrast statistical investigations with big data applications.
- **Tool(s)**: Prefinale Essay #1, Finale Essay TWO.
- **Approach**: This outcome is assessed by allocating up to 50 points for the score on Prefinale Essay #1, and up to 50 points for the methods/statistics paragraph of Finale Essay TWO. *The mapping: (0-69) → approaches expectations; (70-89) → meets expectations; (90-100) → exceeds expectations.*

6: Incremental Development

- **Outcome**: Demonstrate skills of conceptual and analytical expression through incremental revision and editing techniques.
- **Tool(s)**: Research Paper
- **Approach**: A student is awarded 1 point for each of the following tasks, provided they meet the specification of the task, and incorporate appropriate recommendations for change from one stage to the next: (1) problem statement, (2) lightning draft, (3) skeletal draft, (4) substantial draft, (5) final draft. *The mapping: (3 points) → approaches expectations; (4 points) → meets expectations; (5 points) → exceeds expectations.*

7: Classic Papers

- **Outcome**: Summarize various classical papers relating to cognitive science.
- **Tool(s)**: Classic Paper Mining Activity, Finale Essay THREE.
- **Approach**: Up to 15 points is awarded for each of the summaries in the four classic paper mining activities. Up to 40 points (10 for the introductory words, 15 for essential contribution, 15 for structure of the paper) is awarded for Essay THREE on Turing's classic paper. *The mapping: (0-69) → approaches expectations; (70-89) → meets expectations; (90-100) → exceeds expectations.*

8: Controversial/Emerging Topics

- **Outcome**: Write an essay on some controversial topic or emerging discipline associated with the field of cognitive science which identifies and explores relevant ideas and issues from a variety of perspectives.
- **Tool(s)**: Finale Essay FOUR.
- **Approach**: The essay is graded by allocating up to 20 points for issue identification, 40 points articulating the different stances on the issue, and 40 points for disciplinary perspectives which fuel the debate. *The mapping: (0-69) → approaches expectations; (70-89) → meets expectations; (90-100) → exceeds expectations.*

9: Narrative Description of a Computational Investigation

- **Outcome**: Contextualize, by means of narrative description from an interdisciplinary perspective, a program or system of the students own creation which serves to investigate some cognitive phenomenon in computational terms.
- **Tool(s)**: Finale Essay TWO.
- **Approach**: The essay is graded by allocating up to 100 points for a meaningful description of a computation investigation in Finale Essay TWO. *The mapping: (0-69) → approaches expectations; (70-89) → meets expectations; (90-100) → exceeds expectations.*

10: Hypertext Journal

- **Outcome**: Maintain a working journal in the form of a hypertext notebook corresponding to an original research project.
- **Tool(s)**: Web Work Site
- **Approach**: The following rubric is used to evaluate the site, by which I mean the hypertext notebook maintained in support of the research project:

  1. Referential integrity $(0 \rightarrow 10)$
  2. Readability $(0 \rightarrow 10)$
  3. "Craft of Research" entries $(0 \rightarrow 10)$
  4. Capstone Blog entries $(0 \rightarrow 10)$
  5. Sources artifacts $(0 \rightarrow 10)$
  6. Notes artifacts $(0 \rightarrow 10)$
  7. Candidate project statements $(0 \rightarrow 10)$

8. Sequence of drafts $(0 \rightarrow 20)$
9. Presentation $(0 \rightarrow 10)$

The mapping: (0-69) $\rightarrow$ approaches expectations; (70-89) $\rightarrow$ meets expectations; (90-100) $\rightarrow$ exceeds expectations.

11: Slide Show Presentation

- **Outcome**: Present the results of an original research project in the form of a slide show which at once highlights points of interest for the "casual" observer and lines of reasoned exposition for the "invested" observer.

- **Tool(s)**: Slide Show Presentation

- **Approach**: The following rubric is used to evaluate the slides:

  1. Is the talk directed at the proper audience? That is, is it appropriate for senior cognitive science majors from around the world? $(0 \rightarrow 10)$
  2. Is there some sort of an introduction which states the research problem, contextualizes the work, and suggests why viewers might be interested in what you have to say? $(0 \rightarrow 10)$
  3. Are there some nice slides which serve as talking points for the more salient elements of the research? $(0 \rightarrow 10)$
  4. Do the slides have a bit of narrative flow? $(0 \rightarrow 10)$
  5. Are the slides interesting? $(0 \rightarrow 10)$
  6. Are the slides informative? $(0 \rightarrow 10)$
  7. Is there some sort of a conclusion? $(0 \rightarrow 10)$
  8. Is there a slide with references to the most important resoures? $(0 \rightarrow 10)$
  9. Was this a presentation of substance? $(0 \rightarrow 10)$
  10. Was the presentation enjoyable? $(0 \rightarrow 10)$

The mapping: (0-69) $\rightarrow$ approaches expectations; (70-89) $\rightarrow$ meets expectations; (90-100) $\rightarrow$ exceeds expectations.

12: Research Paper

- **Outcome**: Present a narrative description of an original research project in a reasonably professional written format.

- **Tool(s)**: Research Paper

- **Approach**: The grade on the research paper will is to assess this outcome. *The mapping: (0-69) $\rightarrow$ approaches expectations; (70-89) $\rightarrow$ meets expectations; (90-100) $\rightarrow$ exceeds expectations.*

4   WAC Assessment Tools Inventory, Fall 2018

The particular WAC Assessment Tools used in the Fall 2018 instance of Assessment are presented in appendexes, one tool per appendix. Each tool correspsonds to an assignment in the Capstone course. Enhanced appreciate for the tools (the assignments) can be derived by examining the sample student work corresponding to the tool/assignment that is presented in the accompanying "Sample Student Writing" document.

4.1   Capstone Research Paper

Scholarly paper written by students which serves as a formal report of their individual Capstone Research Project.

$\Longrightarrow$ See Appendix A of this document for the assignment.

$\Longrightarrow$ See Section 2 of the Sample Student Writing document for an example of student writing corresponding to this assignment.

4.2   Capstone Blog

Students write and post a number of blog entries relating to their study of Cognitive Science at Oswego.

$\Longrightarrow$ See Appendix B of this document for the assignment.

$\Longrightarrow$ See Section 3 of the Sample Student Writing document for an example of student writing corresponding to this assignment.

4.3   Capstone Web Work Site

Web work site maintained by students in support of their individual Capstone Research Project.

$\Longrightarrow$ See Appendix C of this document for the assignment.

$\Longrightarrow$ See Section 4 of the Sample Student Writing document for an example of student writing corresponding to this assignment.

4.4   Capstone Slide Show Presentation

Slide show presentation prepared by the students in order to share highlights of their research project.

$\Longrightarrow$ See Appendix 5 of this document for the assignment.

$\implies$ See Section ? of the Sample Student Writing document for an example of student writing corresponding to this assignment.

4.5   Capstone Classic Paper Mining Activity

Modest activity devoted to reviewing selected papers from a Cognitive Science learning outcomes perspective. Includes a short hook written by the student intended to entice readers to take a look at the paper.

$\implies$ See Appendix E of this document for the assignment.

$\implies$ See Section 6 of the Sample Student Writing document for an example of student writing corresponding to this assignment.

4.6   Capstone Prefinale Essays Essays: #1, #2

Students write short essays response to specific questions pertaining to the WAC learning outcomes. These are written "at home" during the weeks preceding the Capstone Finale and brought to the Finale.

$\implies$ See Appendix F of this document for the assignment.

$\implies$ See Section 7 of the Sample Student Writing document for an example of student writing corresponding to this assignment.

4.7   Capstone Finale Essays Essays: ONE, TWO, THREE, FOUR, FIVE

Students write short essays in response to specific questions pertaining to the WAC learning outcomes. These are written in real time at the Finale.

$\implies$ See Appendix G of this document for the assignment.

$\implies$ See Section 8 of the Sample Student Writing document for an example of student writing corresponding to this assignment.

5 Writing Across the Curriclum Assessment Report, Fall 2018

The framework for this report is described in Section 3 on the Writing Across the Curriculum assessment process. Section 2 describes the curricular activities through which students are presumed to learn something about writing. Section 4 details the tools that are used in the assessment process, and references the accompanying "Sample Student Writing" document, which, I think, breaths a bit of life into this rather dry report.

For this round of Writing Across the Curriculum assessment, Craig Graci and David Vampola served as assessors. Craig Graci, since he served as instructor for the Cognitive Science Capstone Seminar, as he has done since its inception shortly after the program was launched. David Vampola, since he has been teaching pivital courses for the program since its inception.

In the subsections of this report we (1) say a few words about the operationalizatin of our assessment plan, (2) present the assessment data, (3) provide an interpretation of the data, and say a few things about our students and their writing, (4) reflect upon the writing plan and the extent to which its courses really are writing-intensive, and (5) reflect upon the possibility of making changes to the plan or its implementation.

5.1 Assessment Approach

5.2 Assessment Data

These are the data that resulted from the evaluations that professors Graci and Vampola performed on the students in the Capstone course with respect to the Writing Across the Curriculum learning outcomes.

-	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10	O11	O12	Number	Symbol
Student1	1	2	1.5	1	1	2	2	1.5	1.5	2	2	2	1.625	E
Student2	2	2	2	2	2	2	2	1.5	2	2	2	2	1.958	E
Student3	1.5	1	1	2	1	2	2	1.5	1	2	2	2	1.583	E
Student4	1	0.5	0	1	0.5	2	1	0	1	1	2	2	1.0	M
Student5	2	2	1.5	2	1.5	2	2	2	2	2	2	2	1.916	E
Student6	1	1.5	0.5	1.5	0.5	2	2	1.5	1.5	2	2	2	1.5	M
Student7	1.5	2	1.5	1	1.5	2	2	1.5	1.5	2	2	2	1.708	E
Student8	1.5	2	1.5	1	1.5	2	2	1.5	1	2	2	2	1.666	E
Student9	2	2	2	2	1.5	2	2	2	2	2	2	2	1.958	E
Number	1.38	1.66	1.38	1.5	1.22	2.0	1.88	0.44	1.5	1.88	2.0	2.0	-	-
Symbol	M	E	M	M	M	E	E	M	M	E	E	E	-	-

5.3 Interpretation

Why did I suggest that the data and findings might be viewed as being anticlimactic? Merely that one might guess that the students that were assessed, those in the Fall, 2018 Cognitive Science Capstone Seminar might be pretty good writers simply on the basis that their average GPA is above 3.4, that a number of them are in the Honors College, and that most of them plan to attend a graduate school of one sort or another.

5.4 Reflections the Plan and its Courses

Still, performing the assessment was informative in a number of respects, and has caused us to want to suggest a number of modest courses of action with respect to the Cognitive Science approach to Writing Across the Curriculum, its delivery, and its assessment.

1. ...
2. ...
3. ...

5.5 Contempling change in the plan or its impementation.

A   Appendix: Capstone Research Paper

This "assignment" is really a number of assignments, maybe a dozen, but just the half dozen most salient of these are presented in this appendix.

A.1 Candidate Problem Statements (The "Ursatz" of the Research Project)

Using your book as a guide for how to go about choosing an appropriate research problem, and looking to your **candidate interests** assignment as well for good ideas, identify three **candidate research problems** that you feel confident could work with for your individual research project. Carefully adhering to the suggestions presented in the book, express each candidate research problem in the form of a "Problem ... Question ... Significance ..." construct.

That is, three times, you are to: find a research problem of interest, appropriately narrow it, question it, consider its significance, and express the result of your deliberations as a candidate research problem by filling in the blanks of the following template:

> **I am studying** *blank*
> **because I want to find out what/why/how** *blank*
> **in order to help my reader understand** *blank*.

The only constraint, in addition to strict adherence to this form of expression, is that your topic must fall "squarely" within the realm of cognitive science. By squarely it is meant that (1) it should have an interdisciplinary flavor, and (2) it should justifiably relate to the CTM (computational theory of mind) hypothesis in some way to some degree.

Post each of your three candidate research problems to your course work site. Please do so in such a way that each of the three candidates appears on a separate page, and that each has a short, meaningful title. Be prepared to present your candidate research problems by reading them to us, and elaborating on them should you be asked to do so.

A.2   Prerequisite Assignment #1

Prepare a written document containing answers to each of the five questions that are implicit in the first five bullets of the "Planning Again" section of the Prolog to Part IV of "The Craft of Research".

Here are the bullets, for convenient reference:

- You know who your readers are, and why they should care about your problem.
- You know what kind of ethos or character you want to project.
- You can sketch your question and its answer in two or three sentences.
- You can sketch the reasons and evidence supporting your claim.
- You know the questions, alternatives, and objections that your readers are likely to raise, and you can respond to them.

Please be sure to archive your Draft Prerequisite 1 document to your work site in a timely manner.

A.3 The Lightning Draft Assignment

Please be sure that you have completed both Draft Prerequisite Assignments prior to commencing this assignment.

- **Task**: Write a first draft of your paper, subject to the following constraints:

    1. A descriptive title, centered in large font.

    2. Ten (10) sections, the first an introduction titled Introduction, and the last a conclusion titled Conclusion. The other sections (other than the introduction and the conclusion) are to be meaningfully titled.

    3. A substantial introduction.

    4. A nonempty reference section (bibliography) containing only those sources that you cite in your introduction.

    5. Just a few lines of short, choppy sentences describing what you believe the content of the section will be, for each section beyond the introduction.

- **Notes:**

    1. This text is intended as a segue of sorts into a "skeletal" draft, but is itself more of an outline, albeit with a beefed up introduction, than a draft. Double space it - or, one-and-a-half space it, at the very least. (Let the lines breath.)

    2. You should think of this task as an exercise in the spirit of flash fiction - only grounded in sound scholarship.

    3. Note that your final paper need not be completely consistent with this lightning draft.

Please be sure to post your Lightning Draft assignment to your work site in a timely manner.

A.4 The Skeletal Draft Assignment

You need to have come to completion on your Lightning Draft prior to commencing work on your Skeletal Draft. Please do not change your Lightning Draft once you begin to work on your Skeletal Draft.

Refine a copy of your Lightning Draft into your Skeletal Draft, working according to the following constraints:

1. Leave the introduction alone, for the most part. Modest revisions are fine, but it should remain essentially the same as in the Lightning Draft.

2. Each of the other sections should take the form of a sequence of **single sentence paragraph stubs**. Each of these sentences (paragraph stubs) should serve to conjure up in your mind the essence of a coherent paragraph. In the next draft, the "substantial" draft, you will, generally speaking, replace each of these sentences/stubs with a paragraph that talks about what the sentence/stub suggests the paragraph will talk about.

3. Do your best assure that your main claim has a place to be voiced in this draft. You should be able to point to it in the introduction or to point to the stub in which it will appear.

4. Do your best to assure that at least two reasons in support of your main claim will have places to be voiced in this draft. You should be able to point to these in the introduction or to point to stubs in which these will appear.

5. Do your best to assure that at least five data items in support of the reasons for your main claim will have places to be voiced in this draft at least one data item for each reason. You should be able to point to these in the introduction or to point to stubs in which these will appear.

Please be sure to archive your Skeletal Draft on your work site in a timely manner.

A.5   The Substantial Draft Assignment

You need to have come to completion on your Skeletal Draft prior to commencing work on your Substantial Draft. Please do not change your Skeletal Draft once you begin to work on your Substantial Draft.

Refine a copy of your Skeletal Draft into your Substantial Draft, working according to the following constraints:

1. The introduction should remain essentially the same as in the Skeletal Draft. If you want to change it some, okay.

2. **Rewrite each single sentence paragraph stub as a paragraph in which the first sentence is placed in bold text.** Generally speaking, strive to write your paragraphs so that the plain text refines, in at least a loose sense, the bold text. The idea is to write paragraphs with coherence!

3. Highlight your main claim in blue.

4. Highlight exactly two reasons in support of your main claim in green.

5. Highlight exactly five data items in support of the reasons for your main claim at least one data item for each reason in red.

6. Be sure to add references to the bibliography as you site sources.

7. Establish an intuitive yet precise mechanism by which to reference the notes in your note bank. This mechanism should provide the casual reader of your paper with an opportunity to find their way to a particular note on your Third Notes web page. At least 25 times, add a reference to a note in your note bank, at a point in your paper where you draw directly upon knowledge contained in that note, using the syntax (((...))), where the three dots reference the note according to your established mechanism.

Note that this draft is intended to be your final paper, except for (1) the removal of the artificial scaffolding, and (2) the incorporation of reviewers' comments.

Please bring THREE hard copies of this draft to class on "Peer Review Distribution Day".

Please be sure to archive your Substantial Draft on your work site in a timely manner.

A.6   The Final Draft Assignment

You need to have come to completion on your Substantial Draft prior to commencing work on your Final Draft. Please do not change your Substantial Draft once you begin to work on your Final Draft.

Prepare a document which transforms your Substantial Draft document into a Final Draft document - being sure to judiciously incorporate reviewer comments. Change the first sentences that are in bold text to plain text. Get rid of the claim / reason / data colorings. Do your best to make sure that you have a good paper with respect to content and form and referential integrity.

Please don't forget to (1) hand in a hard copy of your paper, and (2) post it to your Web site in PDF format.

B   Appendix: Capstone Blog

For this assignment, I would like for each of you to create a blog, consistent with the description in the course syllabus, and write 4 pieces for your blog. Please strive to make each piece a short, compelling text – somewhere between 200 and 500 words will do nicely. I'll put a constraint on the first piece, beyond those specified in the syllabus. The constraint: Your first entry must address the issue of your decision to declare a cognitive science major, and should be rendered as a narrative surrounding what interests you, in particular, about the mind, the brain, and related phenomena. The other 3 entries are "open" with respect to content – again, subject to the constraints specified in the initial handout.

Please use whatever reasonable blogging platform you like. If you are not already familiar with blog space, you might like to Google something like "best blogging platforms" and see where that takes you. My point is, please do use a real blogging platform.

The idea is for you to write this blog like it matters, to make it authentic and meaningful and interesting to read. Not only will you benefit from engaging in the task like it matters, but I intend to do my best to arrange for others to benefit as well!

Here are the due dates for your blog entries:

- Entry 1: Thursday, September 6
- Entry 2: Thursday, September 20
- Entry 3: Thursday, October 4
- Entry 4: Thursday, October 18

On these days I will ask you to share your blog entry with the class. So please be sure to reference your blog from your course page. Also, please feel free to comment on one another's entries! I do want very much for this activity to ring of authenticity.

Please keep in mind that the quality of your writing is very important. It needn't be "scholarly", with references and things. In fact, it probably shouldn't be! Yet within the range of quality informal writing I would like for you to aim high.

For your convenience, the part of the syllabus that is relevant to this assignment is reproduced below:

Capstone Blog: Notes to New/Prospective Cognitive Science Students

You must author a blog directed towards students at Oswego who are just commencing, or are considering declaring, a cognitive science major. The blog should be up-tempo, interesting, informative, and laced with actual bits of knowledge associated with the field of cognitive science! You are to craft 5 one-page, titled entries in your blog. Each blog entry should somehow draw on your own personal experience as a Cognitive Science Major in order to say something that might be of interest/value to your followers. Try to make your blog authentic in an attempt to (1) help your followers maximally benefit from their study of cognitive science at Oswego, and (2) profile the program in a relatively positive light. Note that this blog shouldn't be considered an opportunity to critique the program or to suggest revisions. Rather, your blog should be oriented towards promoting learning as students (both declared majors and those exploring the possibility of declaring the major) progress in the curriculum. You want to try to write in such a manner that student engagement in learning about the mind and related phenomena will be enhanced as a result of reading each entry. You should strive to offer tips so that the student might better enjoy, and enrich, their experience.

C   Appendix: Capstone Web Work Site

Introduction

As articulated in the initial handout for this course, you are required to post work that you do for this course on a Web site which will serve as your course portfolio. This assignment details certain expectations for your site, and poses a sequence of tasks for you to complete in order to get a good start on the course portfolio requirement for the course.

Task 1: Establish your Web Work Site

Establish a Web site for your work in this course, using whatever tools you like, that is more or less consistent with the suggestive sample site which can be found on the course page:
http://www.cs.oswego.edu/∼blue/course_pages/2018/Fall/CogSciCapstone/

The most salient requirements for your site are these:

1. It should be simple in form and substantial in content.

2. Only content relevant to this course should appear on the page.

3. It should be relatively easy on the eyes.

4. Clear and appropriate identifying information about you and the content of the page should appear first on the page.

5. The remaining content of the page should consist of four distinct parts, a "short introduction" to the page, contextualized links to your specific "research project" work, contextualized links to your "peripheral tasks" work, and lastly contextualized links to "external resources".

6. The "short introduction" part of the page should identify you and introduce your site in a modest manner, taking up relatively little of the area of the page.

7. The links to work in the "research project" part of your page should be **chronologically** organized in the main part of the browser page, and the references should be clearly identified through the judicious use of text and hypertext (link names).

8. The links to work in the "peripheral tasks" part of your page should be **chronologically organized** within **type** of artifact in the main part of the browser page.

9. The "external resources" part of the page should provide some number of annotated links to materials that are at least marginally relevant to the course.

10. Clicking on the links that reference your work should immediately cause the desired content to appear in the browser.

For those of you who like to think ahead, the following two notes foreshadow the content of the featured parts of your site:

- Give or take a few, the "research project" part of your page will include references to:
    - candidate interests
    - candidate research problem specification
    - research problem statement
    - first sources

- first notes

- second sources

- second notes

- draft prerequisite 1, draft prerequistie 2

- lightning draft

- skeletal draft

- substantial draft

- final draft

- slide show

- third notes

- questions and answers

- bibliography

- The main types of artifact on the "peripheral tasks" part of your page will be will be:

  - Craft of Research top ten lists

  - classic paper briefs

  - blog entires

The sample site will be updated throughout the semester. You should probably check it out from time to time with an eye towards assessing the degree to which you are adhering to the given constraints.

Task 2: Add your work for the candidate interests assignment

More or less mimicking the relevant part of the sample page, add your work for the candidate interests assignment.

Add links to other sites and materials

Add at the links to "other sites and materials" part of your page that that I provided on the sample site. Add at least a half dozen additional links to this part of your page. The idea is for you to find links to a range of compelling materials relating to cognitive science.

Send along your name and address

Once you have complete Task 3, please send an email to craig.graci@oswego.edu that is consistent with the following specifications:

- Place COG468 WORK SITE – just like that, caps and all – in the subject header of the email.

- Type your name on the first line of the main text box.

- Type the URL to your Web site, which should be public for all the world to see, on the second line of the main text box.

Remaining Tasks

As the semester progresses, add the work that you do to the site, and perhaps additional links to other sites and materials.

D   Appendix: Capstone Slide Show

Prepare a slide show which highlights the more salient aspects of your research in a scholarly manner. The show should serve as the basis for a 15 minute presentation.

Here is a very brief checklist, to guide your work:

1. Are you directing your talk towards senior Cognitive Science majors from around the world? (You should be.)

2. Have you got some sort of an introduction which states your research problem, contextualizes your work, and suggests why your readers might be interested in what you have to say? (You should have one, consisting of a few slides at most.)

3. Have you got some interesting slides which serve as talking points for the more salient elements of your research? Do these slides have a bit of narrative flow? (You should be able to answer yes to these question, and you should strive to make these slides interesting and informative.)

4. Have you got some sort of a conclusion? (You should have one, consisting of just a slide or two.)

5. Have you got a slide with your most important resources? (You should have.)

This list is not meant to be limiting. It is merely meant to remind you of some essentials.

Please be sure to post your slide show to your Web site prior to your presentation.

E   Appendix: Capstone Classic Paper Mining Activity

Introduction

The classic papers assignment is intended to afford you opportunities to consolidate and enrich your knowledge of cognitive science, particularly with respect ot the learning outcomes that have been identified by the Cognitive Science Program at Oswego. Why is this a good thing? Firstly, doing so is consistent with one of the goals of a capstone experience. Secondly, doing so will do a little something for you by way of preparing for the Capstone Exam.

Preliminary Task

Craft a template for yourself, in your favorite word processor, which mirrors the one that accompanies this assignment. When asked to read an article and process it, you are to instantiate the template, and save it in appropriate file format (PDF or HTML) to your work site.

Main Task

For each of the papers featured in this "classic paper" assignment:

1. Read the paper, by which I mean spend some time with it in a meaningful manner.

2. Write the "Summary/Hook" which is intended to be a one paragraph summary of the article that suggests to the reader why they might care to read it.

3. Mine the text. More precisely, five times:

   - Identify a few lines of text which fall within the scope of one of the Cognitive Science Program learning outcomes.
   - Simply (1) identify the learning outcome by name, and (2) copy down the few lines of text.

Please post your document on your course work site prior to the class during which the paper is to be presented.

The Papers

1. [TUE SEP 20] Computing Machinery and Intelligence (A. M. Turing)
   http://www.csee.umbc.edu/courses/471/papers/turing.pdf

2. [TUE SEP 29] Computing Science as Empirical Inquiry: Symbols and Search (Newell and Simon)
   https://www.cs.utexas.edu/∼kuipers/readings/Newell+Simon-cacm-76.pdf

3. [TUE OCT 11] The Appeal of Parallel Distributed Processing (McClellend, Rumelhart and Hinton)
   http://psych.stanford.edu/∼jlm/papers/PDP/Chapter1.pdf

4. [TUE OCT 20] Embodied Cognition: A field guide (Michael L. Anderson)
   http://www.agcognition.org/papers/AI_Review.pdf

You will find links to these papers on the course Web site:

http://www.cs.oswego.edu/∼blue/course_pages/2018/Fall/CogSciCapstone/

F   Appendix: Capstone Prefinale Essays

Take Home Essay #1: Big Data Science / Small Data Science

Providing Definitions and Making Connections

Write a 1 to 2 page double-spaced type-written essay devoted to (1) defining four terms, and (2) relating the terms to one another. The terms: causation - correlation - big data - scientific method. In doing so, please:

1. Title your essay.

2. Prepare to write by finding a few good on-line sources.

3. Prepare to write by drawing a semantic network containing four nodes (one for each term) and at least 6 arcs relating the nodes, being sure to arrange for the network to be connected.

4. Write so that the structure of your semantic network is represented in your essay.

5. Cite your sources appropriately.

Note: Be sure to turn in your semantic network along with your essay.

Take Home Essay #2: Wasons Selection Task

Developing a Well-reasoned Argument

Write a 1 to to 2 page double-spaced type-written essay devoted to developing an argument in support of the idea that **humans tend not to reason logically in abstract, formal situations, but that they do tend to reason logically in certain contextually rich situations.** In doing so, please:

1. Title your essay.

2. Base your argument on Wasons Selection Task and its variants. Be sure to introduce the original task and take care to carefully describe at least one variation proposed by another researcher.

3. Prepare to write by reading (1) the short text from UPenn titled "Leda Cosmides and the Wason Selection Task" (just Google the title and you will find it), and (2) any other reasonable accounts of the Wason Selection Test and related phenomena that you like.

4. Cite your sources appropriately.

G   Appendix: Capstone Finale Essays

The students were given a copy of the following essay questions two weeks in advance of the Capstone Finale, with the understanding that they prepare to write them by hand in real time at the Finale. The instructions for these essays at the Finale: Write by hand clear, concise, coherent, content rich essays in response to each of the following questions.

One: The Computational/Representational Assumption

Write a short five paragraph essay, one paragraph per item below, which emphasizes the significance of the computational/representation assumption to cognitive science.

1. What is the computational/representational assumption which unifies the field of cognitive science?
2. How do you see the assumption manifested in the computer science contribution to cognitive science?
3. How do you see the assumption manifested in the neuroscience contribution to cognitive science?
4. How do you see the assumption manifested in the linguistic contribution to cognitive science?
5. Wrap it up with some sort of compelling conclusion.

Furthermore, label your paragraphs, (1) through (5), to assure that you have attended properly to the task.

Two: Working Narratives

Make this a three paragraph essay (no need to label the paragraphs) consistent with the following outline:

1. A very short (two or three sentences should suffice) paragraph which foreshadows the next two paragraphs.
2. Think Psy280 or Psy290. In an effort to convince the reader that you have some grasp of statistics (techniques as well as significance), write a **one paragraph** description of some work that you engaged in which featured statistics.
3. Think computational modeling. In an effort to convince the reader that you have some grasp of computational modeling (techniques as well as significance), write a **one paragraph** summary of a computational modeling activity one that you may or may not have engaged in.

Three: Turing's 1950 Paper

Write a three paragraph essay as suggested by the following outline:

1. A very short paragraph which introduces Turing's Paper on computing machinery and intelligence.
2. A paragraph which describes the essential contribution of of the paper.
3. A paragraph which describes the structure of the paper.

Four: Contemporary Cognitive Science Debate

Identify an issue within the realm of cognitive science about which there is a "debate" between at least two factions. Furthermore, pick an issue such that insights from different fields of study inform one or more of the "camps."

Write a one page essay on the debate being sure to identify the issue, outline the opposing views, and indicate how different disciplines (at least two) have contributed to the perspectives that fuel the debate.

Five: Technical Writing

Imagine you are writing a tutorial on Java - just a section on `for` and `while` statements. You will need to describe some technical matters in a fairly natural way! In doing this, (1) provide a short overview of loops and a short summary of the need for a variety of loops in a programming language; (2) provide a specification for the java FOR statement, in terms of syntax and semantics; (3) provide a specification for the java WHILE statement; and (4) provide a few words of summary comparing and contrasting these two loops. Try to do all of this in just a page or so.