

STUDENT OUTCOMES ASSESSMENT PLAN (SOAP)

I. Mission Statement

The mission of the Department of Computer Science is to provide programs giving students a broad range of knowledge and experience in computer science, as well as a depth of education that will be needed in the students' later careers, whether professional or academic. The Master of Science degree program in Computer Science offers advanced principles, applications, and current topics.

The general learning goals for students of the Department of Computer Science are *knowledge*, to understand the concept of computation in both its abstract form and its physical realizations; *skills*, to be able to implement and design computational models in software effectively; and *values*, to appreciate the roles and responsibilities of computer science professionals in the global world.

II. Goals and Student Learning Outcomes

Goal A. To apply knowledge of theoretical foundations, formalisms, and computer architecture.

Objectives: Upon completion of the program, students will be able to:

1. Analyze the effects of choice of algorithm and data structure on correctness and performance.
2. Apply formalisms to model software solutions.
3. Evaluate computer architectures, models, and organizations and their relationship to software.

Goal B. To analyze a problem, and then synthesize, implement, and evaluate a computer based system, process, component, or program to meet requirements.

Objectives: Upon completion of the program, students will be able to:

1. Analyze, design, implement, debug, verify, and validate software to meet specified requirements.
2. Work independently and collaboratively to research a problem, formulate and implement solutions.

Goal C. To communicate effectively with a range of audiences.

Objectives: Upon completion of the program, students will be able to:

1. Produce scientific and research reports.
2. Prepare and deliver a technical presentation.

III. Curriculum Map (Matrix of Courses X Learning Outcomes)

	A1	A2	A3	B1	B2	C1	C2
Csci 200			I		I	I	I
Csci 174/188*	E	E	I				
Csci 213/246*			E				
Csci 217*	E	E		E		E	E
Elective courses	R	R	R	E	E		E
Csci 298	R	R	R	R	R	R	R
Csci 299	R	R	R	R	R	R	R

I: Introduced, E: Emphasized, R: Reinforced

*The learning outcomes of these courses were "Introduced" in associated courses at the undergraduate level.

IV. Assessment Methods

A. Direct Measures (Assessment Forms in Appendix)

1. Embedded questions on exams in the following courses:

Core courses (C Sci 174/188, 213/246, 217). All courses bi-annually.

2. Evaluate software design and implementation ability in the following courses:

CSci 226, 250/252, 298/299 on a rotating basis one course bi-annually.

3. Evaluate oral communication in the following courses:

CSci 200, 298/299 on a rotating basis one course bi-annually.

4. Evaluate writing technique in the following courses:

CSci 200, 298/299 bi-annually.

B. Indirect Measures

1. Alumni survey
2. Input from advisory council
3. Exit interview

V. Student Learning Outcomes X Assessment Methods Matrix

	A1	A2	A3	B1	B2	C1	C2
Embedded Questions	x	x	x	x			
Evaluate software design and implementation				x	x		
Evaluate oral presentation						x	x
Evaluate writing						x	x
Alumni survey						x	x
Advisory council				x			x
Exit Interview	x	x	x	x	x	x	x

VI. Timeline for Implementation of Assessment Methods and Summary Evaluations

Annually CSCI 298/2 beginning Spring 2014
<ol style="list-style-type: none"> 1. Method IV.A.2 (evaluate software and design). 2. Method IV.A.3 (oral communication).
Annually beginning Fall 2014
<ol style="list-style-type: none"> 1. Method IV.A.1 (embedded questions). 2. Method IV.B.3 (exit interview) 3. Method IV.A.2 (evaluate software and design).
Every five years
<ol style="list-style-type: none"> 1. Method IV.B.1 (alumni survey)
Every two years
<ol style="list-style-type: none"> 2. Method IV.B.2 (advisory board)

I. Closing the Loop - Summary Evaluation, Curriculum Adjustment, and Reporting

Bi-annually, the entire full-time faculty meets every other spring to discuss assessment data and propose adjustments in curriculum and data collection. During the bi-annual faculty retreat the following fall, the assessment committee will discuss what curricular changes may be needed, prioritize work in these areas, and plan ways to implement those changes. Although our national professional organizations do not provide detailed curriculum recommendations, the faculty will review national and CSU trends in graduate Computer Science education. Outcomes of these discussions

will appear in the following year's bi-annual report along with progress made on implementing the changes.

APPENDIX (I)

Assessment Form for A2

Student: _____ Assessor: _____

Exemplary	Accomplished	Developing	Beginning	Not applicable	Programming
Completion of Programming Task					
					Demonstrates synthesis of solutions and creates alternatives by combining knowledge and information.
					Demonstrates a clear understanding of how various pieces of the problem relate to each other and the whole
					Uses software tools and computing resources correctly and effectively.
Correctness					
					Program executes without errors.
					Program contains error checking code and handles all special cases.
					Program meets its functional specifications and expectation of advisor.
					Program meets its non-functional specifications (if any)
Documentation					
					Clear and effective use of comments to indicate why the code was written.
					Explains the purpose of each function/module/class and how it is executed.
					Answers/Solutions are properly labeled/commented in great detail.
					Supports design procedure with more than sufficient documentation

					and references.
					Thorough and organized testing has been completed and output from test cases is included in documentation.
Presentation					
					Name, date, assignment specifications and description included.
					Excellent use of white space (indentation, blank lines).
					Creatively organized work.
Additional Comments:					

APPENDIX (II)

Assessment Form for A3

Student: _____ Assessor: _____

Exemplary	Accomplished	Developing	Beginning	Not applicable	Oral Presentation
Organization					
					Introduction/motivation, approach, related work, and conclusion are included.
					Contents are logically and sequentially organized.
					Contents are presented logically and clearly.
					References are introduced appropriately.
Delivery					
					Speaks clearly, distinctly, and with sufficient volume.
					Speaks to audience (e.g., does not just read the material and/or talk to the screen)
					Provides sufficient technical detail given the time constraint.
					Listens carefully and responds effectively to questions and comments. (e.g., good interaction with audience)
					Delivers with concise and precise technical terminologies
Technical Content					
					Describes goal, problem, or hypothesis.

					Demonstrates a good understanding of the problem area and related work.
					Applies methodologies/techniques appropriate for the presentation requirements.
					Explains and interprets results and/or questions correctly.
					Explains experimental results/case studies correctly and concisely.

Additional Comments:

APPENDIX (IV)

Assessment Form for A4

Student: _____ Assessor: _____

Exemplary	Accomplished	Developing	Beginning	Not applicable	Technical Writing
Organization					
					Report/Thesis has a clear purpose that is well suited to its discipline and audience.
					Organizes written materials in a logical sequence (paragraphs, subheading, etc.)
					Key ideas and contributions are easy to find and follow.
					Uses graphs, tables, and diagrams to explain, interpret, and assess information.
					Conclusions reflect the motivation, approach and contributions.
Presentation					
					Grammar and spelling are correct.
					Is clear, concise, unambiguous, and direct.
					Adheres to conventional rules of grammar and punctuation.
					Written work is presented neatly and professionally.
					Conforms to the prescribed style guide or format.
					References are formatted and cited appropriately.

					Experimental results/Case studies show the validity of the approach.
Additional Comment					