2016-2017
Annual Assessment Report Template

For instructions and guidelines visit our **website**
or **contact us** for more help.

Please begin by selecting your program name in the drop down. If the program name is not listed, please enter it below:

MS Computer Science

OR

Question 1: Program Learning Outcomes

Q1.1.
Which of the following Program Learning Outcomes (PLOs), Sac State Baccalaureate Learning Goals (BLGs), and emboldened Graduate Learning Goals (GLGs) **did you assess?** [**Check all that apply**]

- ☐ 1. **Critical Thinking**
- ☐ 2. **Information Literacy**
- ☑ 3. **Written Communication**
- ☑ 4. **Oral Communication**
- ☐ 5. Quantitative Literacy
- ☐ 6. **Inquiry and Analysis**
- ☐ 7. Creative Thinking
- ☐ 8. Reading
- ☐ 9. Team Work
- ☐ 10. Problem Solving
- ☐ 11. Civic Knowledge and Engagement
- ☐ 12. **Intercultural Knowledge, Competency, and Perspectives**
- ☐ 13. Ethical Reasoning
- ☐ 14. Foundations and Skills for Lifelong Learning
- ☐ 15. **Global Learning and Perspectives**
- ☐ 16. Integrative and Applied Learning
- ☐ 17. Overall Competencies for GE Knowledge
- ☑ 18. **Overall Disciplinary Knowledge**
- ☐ 19. **Professionalism**
- ☐ 20. Other, specify any assessed PLOs not included above:

a.
b.
c.

Q1.2.
Please provide more detailed background information about **EACH PLO** you checked above and other information including how your specific PLOs are **explicitly** linked to the Sac State **BLGs**/**GLGs**:

(1) PLO 18 is to master, integrate, and apply advanced knowledge and skills to solve complex computer science problems. It is linked to the following program learning outcomes.

- Apply advanced knowledge of mathematics, algorithmic principles, computing theory, and principles of computing systems in the modeling and design of computer-based systems.
- Apply hardware design or software development process that includes requirements, design, development, verification and validation.
- Apply current technology and best practices in the development of computer-based systems of varying complexity.

(2) PLOs 3 and 4 are to produce quality technical and non-technical documents and presentations for a variety of audiences. It is linked to the following program learning outcomes.

- Use proper structure, syntax, and organization.
- Communicate effectively technical content.
- Deliver oral presentations effectively.

Q1.2.1.
Do you have rubrics for your PLOs?

- ○ 1. Yes, for all PLOs
- ○ 2. Yes, but for some PLOs
- ◉ 3. No rubrics for PLOs
- ○ 4. N/A
- ○ 5. Other, specify:

Q1.3.
Are your PLOs closely aligned with the mission of the university?

- ◉ 1. Yes
- ○ 2. No
- ○ 3. Don't know

Q1.4.
Is your program externally accredited (other than through WASC Senior College and University Commission (WSCUC))?

- ○ 1. Yes
- ◉ 2. No (skip to **Q1.5**)
- ○ 3. Don't know (skip to **Q1.5**)

Q1.4.1.
If the answer to Q1.4 is **yes**, are your PLOs closely aligned with the mission/goals/outcomes of the accreditation agency?

- ○ 1. Yes
- ○ 2. No
- ○ 3. Don't know

Q1.5.
Did your program use the *Degree Qualification Profile* ("DQP", see http://degreeprofile.org) to develop your PLO(s)?

- ○ 1. Yes
- ◉ 2. No, but I know what the DQP is
- ○ 3. No, I don't know what the DQP is
- ○ 4. Don't know

Q1.6.
Did you use action verbs to make each PLO measurable?

- (●) 1. Yes
- ( ) 2. No
- ( ) 3. Don't know

(Remember: Save your progress)

Question 2: Standard of Performance for the Selected PLO

Q2.1.
Select **OR** type in **ONE(1)** PLO here as an example to illustrate how you conducted assessment (be sure you *checked the correct box* for this PLO in Q1.1):

Overall Disciplinary Knowledge

If your PLO is **not listed, please enter it here**:

Q2.1.1.
Please provide more background information about the **specific PLO** you've chosen in Q2.1.

Computer Science chose to assess PLO18: overall disciplinary knowledge and used CSc 295 as the direct measure to assess this PLO.

(1) CSc 295 is the course through which CSc graduate students do their interships, which is a critical component of our program where students gain valuable real-world experience by solving real-world problems.

(2) CSc 295 is offered in spring, summer, and fall semesters each year.

(3) CSc 295 supervisor evaluations were assessed from Fall 2016 to Spring 2017.

Q2.2.
Has the program developed or adopted **explicit** standards of performance for this PLO?

- (●) 1. Yes
- ( ) 2. No
- ( ) 3. Don't know
- ( ) 4. N/A

Q2.3.
Please **provide the rubric(s)** and **standards of performance** that you have developed for this PLO here or in the appendix.

60% of the graduate students assessed should score "Average Average" or better in each assessed area. 95% of the graduate students assessed should score "Average" or better in each assessed area.

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Q2.4. PLO	Q2.5. Stdrd	Q2.6. Rubric	Please indicate where you have published the **PLO**, the **standard** of performance, and the **rubric** that was used to measure the PLO:

☐	☐	☐	1. In **SOME** course syllabi/assignments in the program that address the PLO
☐	☐	☐	2. In **ALL** course syllabi/assignments in the program that address the PLO
☐	☐	☐	3. In the student handbook/advising handbook
☐	☐	☐	4. In the university catalogue
☑	☐	☐	5. On the academic unit website or in newsletters
☑	☑	☑	6. In the assessment or program review reports, plans, resources, or activities
☐	☐	☐	7. In new course proposal forms in the department/college/university
☐	☐	☐	8. In the department/college/university's strategic plans and other planning documents
☐	☐	☐	9. In the department/college/university's budget plans and other resource allocation documents
☐	☐	☐	10. Other, specify:

Question 3: Data Collection Methods and Evaluation of Data Quality for the Selected PLO

Q3.1.
Was assessment data/evidence **collected** for the selected PLO?

- ◉ 1. Yes
- ○ 2. No (skip to **Q6**)
- ○ 3. Don't know (skip to **Q6**)
- ○ 4. N/A (skip to **Q6**)

Q3.1.1.
How many assessment tools/methods/measures **in total** did you use to assess this PLO?

1

Q3.2.
Was the data **scored/evaluated** for this PLO?

- ◉ 1. Yes
- ○ 2. No (skip to **Q6**)
- ○ 3. Don't know (skip to **Q6**)
- ○ 4. N/A (skip to **Q6**)

Q3.2.1.
Please describe how you collected the assessment data for the selected PLO. For example, in what course(s) or by what means were data collected:

(1) CSc 295 is the course through which CSc graduate students do their interships, which is a critical component of our program where students gain valuable real-world experience by solving real-world problems.

(2) CSc 295 is offered in spring, summer, and fall semesters each year.

(3) CSc 295 supervisor valuations from Fall 2016 to Spring 2017 were collected.

(Remember: Save your progress)

Question 3A: Direct Measures (key assignments, projects, portfolios, etc.)

Q3.3.
Were direct measures (key assignments, projects, portfolios, course work, student tests, etc.) used to assess this PLO?

- (●) 1. Yes
- ( ) 2. No (skip to **Q3.7**)
- ( ) 3. Don't know (skip to **Q3.7**)

Q3.3.1.
Which of the following direct measures (key assignments, projects, portfolios, course work, student tests, etc.) were used? [**Check all that apply**]

- [ ] 1. Capstone project (e.g. theses, senior theses), courses, or experiences
- [ ] 2. Key assignments from required classes in the program
- [ ] 3. Key assignments from elective classes
- [ ] 4. Classroom based performance assessment such as simulations, comprehensive exams, or critiques
- [ ] 5. External performance assessments such as internships or other community-based projects
- [ ] 6. E-Portfolios
- [ ] 7. Other Portfolios
- [x] 8. Other, specify: Supervisor evaluation

Q3.3.2.
Please **provide** the direct measure (key assignments, projects, portfolios, course work, student tests, etc.) you used to collect data, THEN **explain** how it assesses the PLO:

(1) All raw data and direct measure were collected and documented in the department office, and can be provided upon request.

(2) Please see the assessment data attached herein.

Summary of Supervisor Evaluations of Student Internship 2017.docx
13.29 KB

Assessment of Supervisor Evaluations of Student Internship 2017.docx
13.26 KB

Q3.4.
What tool was used to evaluate the data?

- (●) 1. **No** rubric is used to interpret the evidence (skip to **Q3.4.4.**)
- ( ) 2. Used rubric developed/modified by the faculty who teaches the class (skip to **Q3.4.2.**)
- ( ) 3. Used rubric developed/modified by a group of faculty (skip to **Q3.4.2.**)
- ( ) 4. Used rubric pilot-tested and refined by a group of faculty (skip to **Q3.4.2.**)
- ( ) 5. The VALUE rubric(s) (skip to **Q3.4.2.**)
- ( ) 6. Modified VALUE rubric(s) (skip to **Q3.4.2.**)
- ( ) 7. Used other means (Answer **Q3.4.1.**)

Q3.4.1.
If you used other means, which of the following measures was used? [**Check all that apply**]

☐ 1. National disciplinary exams or state/professional licensure exams (skip to **Q3.4.4.**)
☐ 2. General knowledge and skills measures (e.g. CLA, ETS PP, etc.) (skip to **Q3.4.4.**)
☐ 3. Other standardized knowledge and skill exams (e.g. ETC, GRE, etc.) (skip to **Q3.4.4.**)
☐ 4. Other, specify: (skip to **Q3.4.4.**)

Q3.4.2.
Was the **rubric** aligned directly and explicitly **with the PLO**?
○ 1. Yes
○ 2. No
○ 3. Don't know
○ 4. N/A

Q3.4.3.
Was the **direct measure** (e.g. assignment, thesis, etc.) aligned directly and explicitly **with the rubric**?
○ 1. Yes
○ 2. No
○ 3. Don't know
○ 4. N/A

Q3.4.4.
Was the **direct measure** (e.g. assignment, thesis, etc.) aligned directly and explicitly **with the PLO**?
◉ 1. Yes
○ 2. No
○ 3. Don't know
○ 4. N/A

Q3.5.
How many faculty members participated in planning the assessment data **collection** of the selected PLO?
2

Q3.5.1.
How many faculty members participated in the **evaluation** of the assessment data for the selected PLO?
2

Q3.5.2.
If the data was evaluated by multiple scorers, was there a norming process (a procedure to make sure everyone was scoring similarly)?
○ 1. Yes
◉ 2. No
○ 3. Don't know
○ 4. N/A

Q3.6.
How did you **select** the sample of student work (papers, projects, portfolios, etc.)?

Each student enrolled in CSc 295, when finished, was evaluated by his/her supervisor who filled out and signed a supervisor evaluation form.

Q3.6.1.
How did you **decide** how many samples of student work to review?

Each supervisor evaluation form was assessed.

Q3.6.2.
How many students were in the class or program?

27

Q3.6.3.
How many samples of student work did you evaluated?

27 out of 27

Q3.6.4.
Was the sample size of student work for the direct measure adequate?

- (●) 1. Yes
- ( ) 2. No
- ( ) 3. Don't know

(Remember: Save your progress)

Question 3B: Indirect Measures (surveys, focus groups, interviews, etc.)

Q3.7.
Were indirect measures used to assess the PLO?

- ( ) 1. Yes
- (●) 2. No (skip to **Q3.8**)
- ( ) 3. Don't Know (skip to **Q3.8**)

Q3.7.1.
Which of the following indirect measures were used? [**Check all that apply**]

- [ ] 1. National student surveys (e.g. NSSE)
- [ ] 2. University conducted student surveys (e.g. OIR)

- [ ] 3. College/department/program student surveys or focus groups
- [ ] 4. Alumni surveys, focus groups, or interviews
- [ ] 5. Employer surveys, focus groups, or interviews
- [ ] 6. Advisory board surveys, focus groups, or interviews
- [ ] 7. Other, specify:

Q3.7.1.1.
Please explain and attach the indirect measure you used to collect data:

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Q3.7.2.
If surveys were used, how was the sample size **decided**?

Q3.7.3.
If surveys were used, how did you **select** your sample:

Q3.7.4.
If surveys were used, what was the response rate?

Question 3C: Other Measures (external benchmarking, licensing exams, standardized tests, etc.)

Q3.8.
Were external benchmarking data, such as licensing exams or standardized tests, used to assess the PLO?

- ○ 1. Yes
- ◉ 2. No (skip to **Q3.8.2**)
- ○ 3. Don't Know (skip to **Q3.8.2**)

Q3.8.1.
Which of the following measures was used? [**Check all that apply**]

- ☐ 1. National disciplinary exams or state/professional licensure exams
- ☐ 2. General knowledge and skills measures (e.g. CLA, ETS PP, etc.)
- ☐ 3. Other standardized knowledge and skill exams (e.g. ETC, GRE, etc.)
- ☐ 4. Other, specify:

Q3.8.2.
Were other measures used to assess the PLO?

- ○ 1. Yes
- ◉ 2. No (skip to **Q4.1**)
- ○ 3. Don't know (skip to **Q4.1**)

Q3.8.3.
If other measures were used, please specify:

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(Remember: Save your progress)

Question 4: Data, Findings, and Conclusions

Q4.1.
Please provide simple tables and/or graphs to summarize the assessment data, findings, and conclusions for the selected PLO in **Q2.1**:

(1) PLOs 4 and 18 (CSc 295) was assessed in Fall 2016 and Spring 2017. The results show that more than 70% of the evaluated students met or exceeded the program standard. Please see the attachment for the assessment data.

(2) PLO 3 (CSc 295) was assessed in Fall 2016 and Spring 2017. The results show that 64% of the evaluated students met or exceeded the program standard. Please see the attachment for the assessment data.

Assessment of Supervisor Evaluations of Student Internship 2017.docx
13.26 KB

No file attached

Q4.2.
Are students doing well and meeting the program standard? If not, how will the program work to improve student performance of the selected PLO?

Yes, the assessment shows that students are doing well. More of 70% of the student meet or exceed the program standard in PLOs 4 and 18, while 64% of the student meet or exceed the program standard in PLO 3. For PLO 3, the department is planning to provide more help and a higher standard to further improve the quality of students' writing.

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Q4.3.
For the selected PLO, the student performance:

- ○ 1. **Exceeded** expectation/standard
- ◉ 2. **Met** expectation/standard
- ○ 3. **Partially** met expectation/standard
- ○ 4. Did not meet expectation/standard
- ○ 5. No expectation/standard has been specified
- ○ 6. Don't know

Question 4A: Alignment and Quality

Q4.4.
Did the data, including the direct measures, from all the different assessment tools/measures/methods directly align with the PLO?

- ◉ 1. Yes
- ○ 2. No
- ○ 3. Don't know

Q4.5.
Were **all** the assessment tools/measures/methods that were used good measures of the PLO?

- ○ 1. Yes
- ○ 2. No
- ○ 3. Don't know

Question 5: Use of Assessment Data (Closing the Loop)

Q5.1.
As a result of the assessment effort and based on prior feedback from OAPA, do you anticipate *making any changes* for your program (e.g. course structure, course content, or modification of PLOs)?

- ○ 1. Yes
- ◉ 2. No (skip to **Q5.2**)
- ○ 3. Don't know (skip to **Q5.2**)

Q5.1.1.

Please describe *what changes* you plan to make in your program as a result of your assessment of this PLO. Include a description of how you plan to assess the impact of these changes.

Q5.1.2.
Do you have a plan to assess the *impact of the changes* that you anticipate making?

- ○ 1. Yes
- ○ 2. No
- ○ 3. Don't know

Q5.2.

Since your last assessment report, **how have the assessment data from then been used** so far?	1. Very Much	2. Quite a Bit	3. Some	4. Not at All	5. N/A
1. Improving specific courses	○	◉	○	○	○
2. Modifying curriculum	○	○	○	◉	○
3. Improving advising and mentoring	○	○	◉	○	○
4. Revising learning outcomes/goals	○	○	○	◉	○
5. Revising rubrics and/or expectations	○	○	◉	○	○
6. Developing/updating assessment plan	○	○	○	◉	○
7. Annual assessment reports	○	◉	○	○	○
8. Program review	○	○	◉	○	○
9. Prospective student and family information	○	○	◉	○	○
10. Alumni communication	○	○	○	○	◉
11. WSCUC accreditation (regional accreditation)	○	◉	○	○	○
12. Program accreditation	○	○	○	○	◉
13. External accountability reporting requirement	○	○	○	○	◉
14. Trustee/Governing Board deliberations	○	○	○	○	◉
15. Strategic planning	○	○	◉	○	○
16. Institutional benchmarking	○	○	○	○	◉
17. Academic policy development or modifications	○	○	○	○	◉
18. Institutional improvement	○	○	○	○	◉
19. Resource allocation and budgeting	○	◉	○	○	○
20. New faculty hiring	○	○	◉	○	○
21. Professional development for faculty and staff	○	○	◉	○	○
22. Recruitment of new students					

	○	◉	○	○	○

23. Other, specify:

Q5.2.1.
Please provide a detailed example of how you used the assessment data above:

(1) The purpose of the assessments is to control the quality of MS program in Computer Science. The data show that students meet/exceed the program standard in oral communication, written communication, and overall disciplinary knowledge.

(2) It provides a guideline for faculty review to make sure that the department provides the curriculum that meets the requirements and standards by the industry and government agencies.

(3) The faculty discuss and review the data, and are encouraged to continue with the good practice.

(4) The data and results will be reported to the campus program review.

Q5.3.
To what extent did you apply **last year's feedback** from the Office of Academic Program Assessment in the following areas?

	1. Very Much	2. Quite a bit	3. Some	4. Not at All	5. N/A
1. Program Learning Outcomes	○	○	○	◉	○
2. Standards of Performance	○	○	◉	○	○
3. Measures	○	○	○	◉	○
4. Rubrics	○	○	○	◉	○
5. Alignment	○	○	○	◉	○
6. Data Collection	○	◉	○	○	○
7. Data Analysis and Presentation	◉	○	○	○	○
8. Use of Assessment Data	○	◉	○	○	○
9. Other, please specify:	○	○	○	○	○

Q5.3.1.
Please share with us an example of how you applied **last year's feedback** from the Office of Academic Program Assessment in any of the areas above:

According to the feedback, we revised the method of data analysis and presentation so that the assessment results are not only easier to understand, but also more useful for future assessment.

(Remember: Save your progress)

Additional Assessment Activities

Q6.
Many academic units have collected assessment data on aspect of their program *that are not related to the PLOs* (i.e. impacts of an advising center, etc.). **If** your program/academic unit has collected data on program *elements*, please briefly report your results here:

N/A

No file attached No file attached

Q7.
What PLO(s) do you plan to assess next year? [**Check all that apply**]

- [ ] 1. **Critical Thinking**
- [ ] 2. **Information Literacy**
- [x] 3. **Written Communication**
- [x] 4. **Oral Communication**
- [ ] 5. Quantitative Literacy
- [ ] 6. **Inquiry and Analysis**
- [ ] 7. Creative Thinking
- [ ] 8. Reading
- [ ] 9. Team Work
- [ ] 10. Problem Solving
- [ ] 11. Civic Knowledge and Engagement
- [ ] 12. **Intercultural Knowledge, Competency, and Perspectives**
- [ ] 13. Ethical Reasoning
- [ ] 14. Foundations and Skills for Lifelong Learning
- [ ] 15. **Global Learning and Perspectives**
- [ ] 16. Integrative and Applied Learning
- [ ] 17. Overall Competencies for GE Knowledge
- [x] 18. **Overall Disciplinary Knowledge**
- [ ] 19. **Professionalism**
- [ ] 20. Other, specify any PLOs not included above:

a.
b.
c.

Q8. Please attach any additional files here:

CSC Graduate Learning Goals Report 2017.pdf
212.43 KB

SE Graduate Learning Goals 2017 report.pdf
72.89 KB

No file attached

No file attached

Q8.1.
Have you attached any files to this form? If yes, please list every attached file here:

Program Information (**Required**)

Program:

(If you typed your program name at the beginning, please skip to Q10)

Q9.
Program/Concentration Name: [skip if program name appears above]
MS Computer Science

Q10.
Report Author(s):
Jinsong Ouyang

Q10.1.
Department Chair/Program Director:
Cui Zhang

Q10.2.
Assessment Coordinator:
Jinsong Ouyang

Q11.
Department/Division/Program of Academic Unit
Computer Science

Q12.
College:
College of Engineering and Computer Science

Q13.
Total enrollment for Academic Unit during assessment semester (see Departmental Fact Book):
103

Q14.
Program Type:

- ○ 1. Undergraduate baccalaureate major
- ○ 2. Credential
- ◉ 3. Master's Degree
- ○ 4. Doctorate (Ph.D./Ed.D./Ed.S./D.P.T./etc.)
- ○ 5. Other, specify:

Q15. Number of **undergraduate degree programs** the academic unit has?
2

Q15.1. List all the names:

BS in Computer Science

BS in Computer Engineering (joint program with Department of EEE)

Q15.2. How many concentrations appear on the diploma for this undergraduate program?

N/A

Q16. Number of **master's degree programs** the academic unit has?

3

Q16.1. List all the names:

MS in Computer Science

MS in Software Engineering

MS in Computer Engineering (joint program with Department of EEE)

Q16.2. How many concentrations appear on the diploma for this master's program?

N/A

Q17. Number of **credential programs** the academic unit has?

0

Q17.1. List all the names:

Q18. Number of **doctorate degree programs** the academic unit has?

Don't know

Q18.1. List all the names:

When was your **assessment plan**...	1. Before 2011-12	2. 2012-13	3. 2013-14	4. 2014-15	5. 2015-16	6. 2016-17	7. No Plan	8. Don't know
Q19. developed?	◉	○	○	○	○	○	○	○
Q19.1. last updated?	○	○	○	○	○	◉	○	○

Q19.2. (REQUIRED)
Please **obtain** and **attach** your latest **assessment plan**:

Assessment Plan 2017.docx
20.36 KB

Q20.
Has your program developed a **curriculum map?**

◉ 1. Yes
○ 2. No
○ 3. Don't know

Q20.1.
Please **obtain** and **attach** your latest **curriculum map**:

Curriculum Map.docx
21.03 KB

Q21.
Has your program indicated in the curriculum map where assessment **of student learning** occurs?

◉ 1. Yes
○ 2. No
○ 3. Don't know

Q22.
Does your program have a capstone class?

◉ 1. Yes, indicate: CSc 500/502
○ 2. No
○ 3. Don't know

Q22.1.
Does your program have **any** capstone project?

◉ 1. Yes
○ 2. No
○ 3. Don't know

(**Remember**: **Save your progress**)

ver. 5.15/17

Graduate Learning Goals Policy for Computer Science

Department of Computer Science has established Graduate Learning Goals, Program Learning Outcomes with an associated curriculum map, and an assessment plan.

Graduate Learning Goals and Program Learning Outcomes

Graduate Learning Goals and Program Learning Outcomes of the graduate program in Computer Science are provided in the following table.

Graduate Learning Objectives	Program Learning Outcomes
Disciplinary knowledge: Master, integrate, and apply disciplinary knowledge and skills to current, practical, and important contexts and situations.	a. Apply advanced knowledge of mathematics, algorithmic principles, computing theory, and principles of computing systems in the modeling and design of computer-based systems. b. Apply hardware design or software development process that includes requirements, design, development, verification and validation. c. Apply current technology and best practices in the development of computer-based systems of varying complexity.
Communication: Communicate key knowledge with clarity and purpose both within the discipline and in broader contexts.	a. Use proper structure, syntax, and organization. b. Communicate effectively technical content. c. Deliver oral presentations effectively.
Critical thinking/analysis: Demonstrate the ability to be creative, analytical, and critical thinkers.	a. Create novel ideas, algorithms, and/or theoretical solutions; or develop new techniques and/or innovative implementations for a new or existing problem.
Information literacy: Demonstrate the ability to obtain, assess, and analyze information from a myriad of sources.	a. Perform a thorough study and evaluation of related work. b. Evaluate the current methodologies and state of the art technologies.
Professionalism: Demonstrate an understanding of professional integrity.	a. Understand, and abide by, ethical standards.
Intercultural/Global Perspectives: Demonstrate relevant knowledge and application of intercultural and/or global perspectives.	a. Understand the implication of his/her professional activities.

Curriculum Map

The curriculum map of the graduate program in Computer Science is provided in the following table.

Course Work	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CSc 201 (C)	X		X			
CSc 204 (C)	X		X			
CSc 205 (C)	X		X			
CSc 206 (C)	X		X			
CSc 209 (C)	X	X	X	X	X	X
CSc 212 (E)	X		X			
CSc 214 (E)	X		X			
CSc 215 (E)	X		X			
CSc 219 (E)	X		X			
CSc 230 (E)	X		X			
CSc 231 (E)	X		X			
CSc 232 (E)	X		X			
CSc 233 (E)	X		X			
CSc 234 (E)	X		X			
CSc 235 (E)	X		X			
CSc 236 (E)	X		X			
CSc 237 (E)	X		X			
CSc 238 (E)	X		X			
CSc 239 (E)	X		X			
CSc 242 (E)	X		X			
CSc 244 (E)	X		X			
CSc 245 (E)	X		X			
CSc 250 (E)	X		X			
CSc 251 (E)	X		X			
CSc 252 (E)	X		X			
CSc 253 (E)	X		X			
CSc 254 (E)	X		X			
CSc 255 (E)	X		X			
CSc 258 (E)	X		X			
CSc 273 (E)	X		X			
CSc 275 (E)	X		X			
CSc 280 (E)	X		X			

CSc 295 (E)	X	X	X		X	X
CSc 500/502 (Thesis/Project)	X	X	X	X	X	X

Assessment Plan

The graduate program in Computer Science developed a plan by which we have assessed student achievement of its Program Learning Outcomes since 2010.

	Outcome 1 Disciplinary Knowledge	**Outcome 2 Communication**	**Outcome 3 Critical Thinking/Analysis**	**Outcome 4 Information literacy**	**Outcome 5 Professionalism**	**Outcome 6 Intercultural/Global Perspectives**
2010 – 2011 (Program Review)	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project written communication b. Internship employer evaluation	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation
2011 – 2012	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2012 – 2013	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2013 – 2014	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project written communication b. Internship employer evaluation	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation
2014 – 2015	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2015 – 2016	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project oral presentations b. Evaluation of MS project written communication	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation

		c. Internship employer evaluation				
2016 – 2017 (Self Study)	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2017 – 2018	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation

Action Plan for Assessing Graduate Program Learning Outcomes			
Year	**PLO**	**Direct Lines of Evidence** (Example: Assignments in core courses; early writing assessment)	**Indirect Lines of Evidence** (Mid-course assessments; Alumni Survey)
2018 – 2019	**PLO 1 Disciplinary Knowledge**	a. Exams/assignments in core courses b. MS projects/theses c. Internship employer evaluation	a. Industrial Advisory Committee survey
2017 – 2018 **2019 – 2020**	**PLO 2 Communication**	a. MS projects/theses b. Internship employer evaluation	a. Industrial Advisory Committee survey
2017 – 2018 **2019 – 2020**	**PLO 3 Critical Thinking/Analysis**	a. Exams/assignments in core courses b. MS projects/theses	
2017 – 2018 **2019 – 2020**	**PLO 4 Information literacy**	a. MS projects/theses	
2018 – 2019	**PLO 5 Professionalism**	a. Internship employer evaluation	a. Industrial Advisory Committee survey
2018 – 2019	**PLO 6 Intercultural/Global Perspectives**	a. Internship employer evaluation	a. Industrial Advisory Committee survey

Graduate Learning Goals Policy for Software Engineering

Department of Computer Science has established Graduate Learning Goals, Program Learning Outcomes with an associated curriculum map, and an assessment plan.

Graduate Learning Goals and Program Learning Outcomes

Graduate Learning Goals and Program Learning Outcomes of the graduate program in Software Engineering are provided in the following table.

Graduate Learning Objectives	Program Learning Outcomes
Disciplinary knowledge: Master, integrate, and apply disciplinary knowledge and skills to current, practical, and important contexts and situations.	a. Apply advanced knowledge of mathematics, algorithmic principles, computing theory, and principles of computing systems in the modeling and design of software systems. b. Apply software development process that includes requirements, design, development, verification and validation. c. Apply current technology and best practices in the development of software systems of varying complexity.
Communication: Communicate key knowledge with clarity and purpose both within the discipline and in broader contexts.	a. Use proper structure, syntax, and organization. b. Communicate effectively technical content. c. Deliver oral presentations effectively.
Critical thinking/analysis: Demonstrate the ability to be creative, analytical, and critical thinkers.	a. Create novel ideas, algorithms, and/or theoretical solutions; or develop new techniques and/or innovative implementations for a new or existing problem.
Information literacy: Demonstrate the ability to obtain, assess, and analyze information from a myriad of sources.	a. Perform a thorough study and evaluation of related work. b. Evaluate the current methodologies and state of the art technologies.
Professionalism: Demonstrate an understanding of professional integrity.	a. Understand, and abide by, ethical standards.
Intercultural/Global Perspectives: Demonstrate relevant knowledge and application of intercultural and/or global perspectives.	a. Understand the implication of his/her professional activities.

Curriculum Map

The curriculum map of the graduate program in Computer Science is provided in the following table.

Course Work	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CSc 201 (E)	X		X			
CSc 204 (E)	X		X			
CSc 205 (E)	X		X			
CSc 206 (E)	X		X			
CSc 209 (C)	X	X	X	X	X	X
CSc 212 (E)	X		X			
CSc 214 (E)	X		X			
CSc 215 (E)	X		X			
CSc 219 (E)	X		X			
CSc 230 (C)	X		X			
CSc 231 (C)	X		X			
CSc 232 (C)	X		X			
CSc 233 (C)	X		X			
CSc 234 (C)	X		X			
CSc 235 (C)	X		X			
CSc 236 (C)	X		X			
CSc 237 (C)	X		X			
CSc 238 (C)	X		X			
CSc 239 (E)	X		X			
CSc 242 (E)	X		X			
CSc 244 (E)	X		X			
CSc 245 (E)	X		X			
CSc 250 (E)	X		X			
CSc 251 (E)	X		X			
CSc 252 (E)	X		X			
CSc 253 (E)	X		X			
CSc 254 (E)	X		X			
CSc 255 (E)	X		X			
CSc 258 (E)	X		X			
CSc 273 (E)	X		X			
CSc 275 (E)	X		X			
CSc 280 (E)	X		X			

CSc 295 (E)	X	X	X		X	X
CSc 500/502 (Thesis/Project)	X	X	X	X	X	X

Assessment Plan

The graduate program in Computer Science developed a plan by which we have assessed student achievement of its Program Learning Outcomes since 2010.

	Outcome 1 Disciplinary Knowledge	**Outcome 2 Communication**	**Outcome 3 Critical Thinking/Analysis**	**Outcome 4 Information literacy**	**Outcome 5 Professionalism**	**Outcome 6 Intercultural/Global Perspectives**
2010 – 2011 (Program Review)	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project written communication b. Internship employer evaluation	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation
2011 – 2012	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2012 – 2013	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2013 – 2014	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project written communication b. Internship employer evaluation	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation
2014 – 2015	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2015 – 2016	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project oral presentations b. Evaluation of MS project written communication	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation

		c. Internship employer evaluation				
2016 – 2017 (Self Study)	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2017 – 2018	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation

Lines of Evidence for Assessing Graduate Program Learning Outcomes			
Year	**PLO**	**Direct Lines of Evidence** (Example: Assignments in core courses; early writing assessment)	**Indirect Lines of Evidence** (Mid-course assessments; Alumni Survey)
2018 – 2019	**PLO 1 Disciplinary Knowledge**	a. Exams/assignments in core courses b. MS projects/theses c. Internship employer evaluation	a. Industrial Advisory Committee survey
2017 – 2018 **2019 – 2020**	**PLO 2 Communication**	a. MS projects/theses b. Internship employer evaluation	a. Industrial Advisory Committee survey
2017 – 2018 **2019 – 2020**	**PLO 3 Critical Thinking/Analysis**	a. Exams/assignments in core courses b. MS projects/theses	
2017 – 2018 **2019 – 2020**	**PLO 4 Information literacy**	a. MS projects/theses	
2018 – 2019	**PLO 5 Professionalism**	a. Internship employer evaluation	a. Industrial Advisory Committee survey
2018 – 2019	**PLO 6 Intercultural/Global Perspectives**	a. Internship employer evaluation	a. Industrial Advisory Committee survey

Curriculum Map

The curriculum map of the graduate program in Computer Science and Software Engineering is provided in the following table.

Course Work	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CSc 201 (C)	X		X			
CSc 204 (C)	X		X			
CSc 205 (C)	X		X			
CSc 206 (C)	X		X			
CSc 209 (C)	X	X	X	X	X	X
CSc 212 (E)	X		X			
CSc 214 (E)	X		X			
CSc 215 (E)	X		X			
CSc 219 (E)	X		X			
CSc 230 (E)	X		X			
CSc 231 (E)	X		X			
CSc 232 (E)	X		X			
CSc 233 (E)	X		X			
CSc 234 (E)	X		X			
CSc 235 (E)	X		X			
CSc 236 (E)	X		X			
CSc 237 (E)	X		X			
CSc 238 (E)	X		X			
CSc 239 (E)	X		X			
CSc 242 (E)	X		X			
CSc 244 (E)	X		X			
CSc 245 (E)	X		X			
CSc 250 (E)	X		X			
CSc 251 (E)	X		X			
CSc 252 (E)	X		X			
CSc 253 (E)	X		X			
CSc 254 (E)	X		X			
CSc 255 (E)	X		X			
CSc 258 (E)	X		X			
CSc 273 (E)	X		X			
CSc 275 (E)	X		X			
CSc 280 (E)	X		X			

CSc 295 (E)	X	X	X		X	X
CSc 500/502 (Thesis/Project)	X	X	X	X	X	X

Summary of Supervisor Evaluations of Student Internship in CSc 295

Data from Fall 2016 to Spring 2017

Number of students: 27

Ability to develop a computerized solution to a real life problem using appropriate tools (**GLO 1 Disciplinary knowledge**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
42%	37%	18%			3%

Ability to function as a team member (**GLO 5 Professionalism**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
37%	42%	22%			

Effective oral communication (**PLO 2 Communication**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
22%	56%	19%	3%		

Effective written communication (**PLO 2 Communication**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
22%	42%	30%			6%

Appropriate use of presentation tools (**PLO 2 Communication**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
19%	22%	22%			37%

Awareness of ethical and societal concerns (**PLO 6 Intercultural/Global Perspectives**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
34%	37%	11%			18%

Summary of Supervisor Evaluations of Student Internship in CSc 295

Data from Fall 2016 to Spring 2017

Number of students: 27

Ability to develop a computerized solution to a real life problem using appropriate tools (**PLO 18**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
42%	37%	18%			3%

Ability to function as a team member:

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
37%	42%	22%			

Effective oral communication (**PLO 4**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
22%	56%	19%	3%		

Effective written communication (**PLO 3**):

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
22%	42%	30%			6%

Appropriate use of presentation tools:

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
19%	22%	22%			37%

Awareness of ethical and societal concerns:

Outstanding	Above Average	Average	Below Average	Weak	Did Not Observe
34%	37%	11%			18%

Assessment Plan

The graduate program in Computer Science and Software Engineering developed a plan by which we have assessed student achievement of its Program Learning Outcomes since 2010.

	Outcome 1 Disciplinary Knowledge	**Outcome 2 Communication**	**Outcome 3 Critical Thinking/Analysis**	**Outcome 4 Information literacy**	**Outcome 5 Professionalism**	**Outcome 6 Intercultural/Global Perspectives**
2010 – 2011 (Program Review)	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project written communication b. Internship employer evaluation	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation
2011 – 2012	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2012 – 2013	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2013 – 2014	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project written communication b. Internship employer evaluation	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation
2014 – 2015	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation
2015 – 2016	a. Evaluation of technical content of MS projects b. Internship employer evaluation	a. Evaluation of MS project oral presentations b. Evaluation of MS project written communication c. Internship employer evaluation	a. Evaluation of technical content of MS projects	a. Evaluation of technical content of MS projects	a. Internship employer evaluation	a. Internship employer evaluation
2016 – 2017 (Self Study)	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation

2017 – 2018	a. Internship employer evaluation	a. Internship employer evaluation			a. Internship employer evaluation	a. Internship employer evaluation

Action Plan for Assessing Graduate Program Learning Outcomes			
Year	**PLO**	**Direct Lines of Evidence** (Example: Assignments in core courses; early writing assessment)	**Indirect Lines of Evidence** (Mid-course assessments; Alumni Survey)
2018 – 2019	**PLO 1** **Disciplinary Knowledge**	a. Exams/assignments in core courses b. MS projects/theses c. Internship employer evaluation	a. Industrial Advisory Committee survey
2017 – 2018 **2019 – 2020**	**PLO 2** **Communication**	a. MS projects/theses b. Internship employer evaluation	a. Industrial Advisory Committee survey
2017 – 2018 **2019 – 2020**	**PLO 3** **Critical Thinking/Analysis**	a. Exams/assignments in core courses b. MS projects/theses	
2017 – 2018 **2019 – 2020**	**PLO 4** **Information literacy**	a. MS projects/theses	
2018 – 2019	**PLO 5** **Professionalism**	a. Internship employer evaluation	a. Industrial Advisory Committee survey
2018 – 2019	**PLO 6** **Intercultural/Global Perspectives**	a. Internship employer evaluation	a. Industrial Advisory Committee survey