Slippery Rock University
Department of Computer Science
Assessment Process:
Student Outcomes, Performance Indicators and Associate Courses:

Table 1 Computing Student Outcomes with their Performance Indicators and the courses from which assessment data is collected and evaluated for each concentration.

Student Outcome (SO)	Performance Indicator (PI)	Concentration	Course
SO#1 Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	PI#1. Analyze a complex computing problem	CS and CA IT	CPSC 374 CPSC 315
	PI#2. Apply principles of computing and other relevant disciplines to identify solutions	CS and CA IT	CPSC 374 CPSC 317
SO#2 Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	PI#1. Design a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	CS, CA and IT	CPSC 146 CPSC 323
	PI#2. Implement a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	CS, CA and IT	CPSC 146 CPSC 323
	PI#3. Evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	CS, CA and IT	CPSC 146 CPSC 323
SO#3 Communicate effectively in a variety of professional contexts.	PI#1. Write reports for final projects.	CS CA IT	CPSC 488 CPSC 405 CPSC 427
	PI#2. Give oral presentations for final projects.	CS CA IT	CPSC 488 CPSC 405 CPSC 427
SO#4 SO#4: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.	PI#1. Recognize professional responsibilities	CS, CA and IT	CPSC 300
	PI#2. Make informed judgments in computing practice based on legal and ethical principles	CS, CA and IT	CPSC 300
SO#5 SO#5: Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline	PI#1. Attend team meetings PI#2. Make contributions in group meetings PI#3. Cooperate with the group effort PI#4. Listen to his/her teammates' ideas and opinions respectfully and give them careful consideration PI#5. Make a serious effort to fulfill his/her team role responsibilities on assignments	CS CA IT	CPSC 488 CPSC 405 CPSC 427

Indirect assessment:

Indirect assessment is administered through surveys at sophomore, junior, and senior levels. The senior level survey is used to assess attainment of the SOs. The sophomore and junior level surveys are used as a baseline for the senior level survey. Table 2 shows the frequency of the Computing surveys. The surveys are administered by the assessment committee and conducted in D2L. The assessment committee works with the faculty teaching the courses that are used in the survey to get the students enrolled into the D2L survey shells. Faculty keep reminding their students to take the survey, normally the survey is open for four weeks.

Table 2 below shows the frequency of the Computing surveys

Level	Frequency	Courses
Sophomore	Once a year	CPSC 207, beginning of Fall semester
Junior	Once a year	CPSC 376 and CPSC 317, beginning of Fall semester
Senior/Graduate	Twice a year	End of Fall semester taken by graduation applicants. End of Spring semester taken by CPSC 427, CPSC 485 and CPSC 488 students

The survey questions are the exact SOs. SO#1 assessed with Q1 and Q2. SO#2 is assessed with Q3, Q4 and Q5. SO#3 is assessed with Q6. SO#4 is assessed with Q7 and Q8. SO#5 is assessed with SO#5. As with direct assessment, the SO metric goal from the survey is at least 75% of the students will agree or strongly agree (i.e., will have a favorable response of at least 75%)

Please answer the following questions:

#	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I am able to analyze complex computing problem	○	○	○	○	○
2	I am able to apply principles of computing and other relevant disciplines to identify solutions to computing problems	○	○	○	○	○
3	I am able to design a computing-based solution to meet a given set of computing requirements	○	○	○	○	○
4	I am able to implement a computing-based solution to meet a given set of computing requirements	○	○	○	○	○
5	I am able to evaluate a computing-based solution to meet a given set of computing requirements	○	○	○	○	○
6	I am able to communicate effectively in a variety of professional contexts	○	○	○	○	○
7	I am able to recognize the professional responsibilities in computing practice based on legal and ethical principles	○	○	○	○	○
8	I am able to make informed judgments in computing practice based on legal and ethical principles	○	○	○	○	○
9	I am able to function effectively as a member or leader of a team engaged in computing related activities	○	○	○	○	○

Figure 1 shows the SO evaluation data from the survey in Fall 2022:

	Sophomore Fall 2022	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Agree + Strongly Agree	Ratio
	Q1	1	0	10	12	5	17	0.607143
SO#1	Q2	1	1	6	13	6	19	0.703704
	Q3	1	0	8	13	6	19	0.678571
	Q4	1	1	4	15	7	22	0.785714
SO#2	Q5	1	0	5	15	7	22	0.785714
SO#3	Q6	0	2	9	10	7	17	0.607143
	Q7	0	1	4	14	9	23	0.821429
SO#4	Q8	0	2	3	14	9	23	0.821429
SO#5	Q9	1	0	4	14	9	23	0.821429

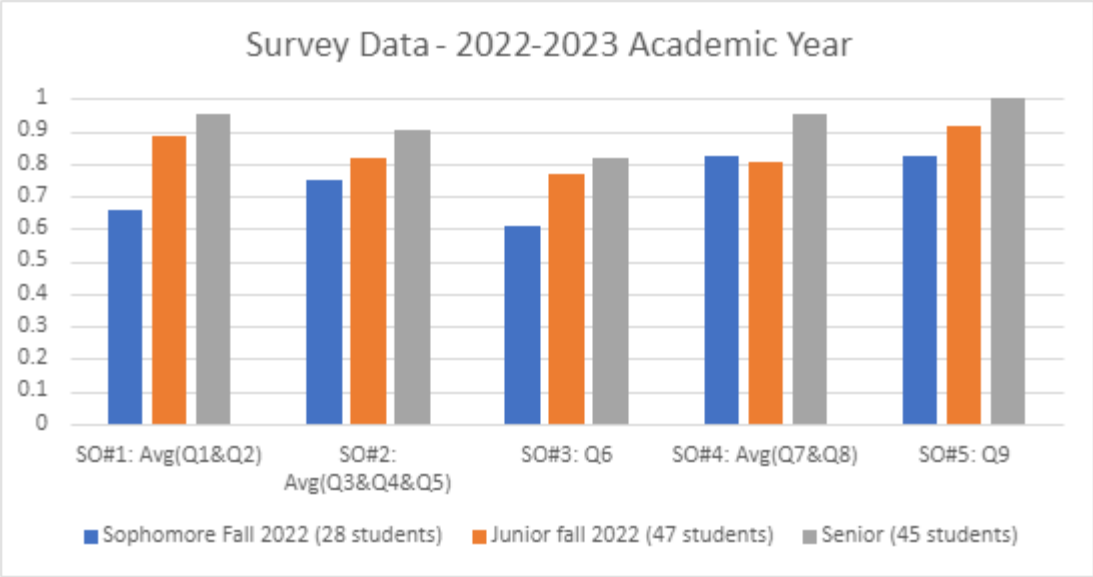
Figure 2: The SO evaluation data from the Sophomore survey (28 students)

	Junior fall 2022	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Agree + Strongly Agree	Ratio
	Q1	0	0	7	34	6	40	0.851064
SO#1	Q2	0	0	4	32	11	43	0.914894
	Q3	0	1	8	28	10	38	0.808511
	Q4	0	0	8	33	6	39	0.829787
SO#2	Q5	0	2	7	29	9	38	0.808511
SO#3	Q6	0	2	9	18	18	36	0.765957
	Q7	1	1	6	25	14	39	0.829787
SO#4	Q8	0	3	7	21	16	37	0.787234
SO#5	Q9	1	0	3	26	17	43	0.914894

Figure 3: The SO evaluation data from the Junior survey (47 students)

	Senior	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Agree + Strongly Agree	Ratio
SO#1	Q1	0	1	3	22	16	38	0.904762
	Q2	0	0	0	23	19	42	1
SO#2	Q3	0	0	0	24	14	38	1
	Q4	0	1	4	17	19	36	0.878049
	Q5	0	2	5	19	15	34	0.829268
SO#3	Q6	0	0	4	17	21	38	0.904762
	Q7	0	0	1	16	25	41	0.97619
SO#4	Q8	0	0	3	15	24	39	0.928571
SO#5	Q9	0	0	4	16	22	38	0.904762

Figure 4: The SO evaluation data from the Senior survey (45 students).



Direct assessment:

The figures below show the data for the Fall 2022 and Spring 2023 with the action plan for each SO was not met:

SO#1: Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.							
Performance Indicators	Concentration	Year/ Semester	Courses	Number of Students	Assignments / Tasks / Questions	Accomplished + Exemplary	Performance Target
PI#1. Analyze a complex computing problem	CS and CA	Fall 22	CPSC 374	13	Analyze a complex data structure with OOP	54%	75%
	IT	Spring 23	CPSC 315	27	Analyze the sequence and timing of processing in a digital electronic project	81.5%	75%
PI#2. Apply principles of computing and other	CS and CA	Fall 22	CPSC 374	13	Implement a complex data structure with OOP	62%	75%

relevant disciplines to identify solutions	IT	Fall 22	CPSC 317	11	Select among available scripting languages and utilities for the most appropriate language and integrate with markup languages	57%	75%

SO#2: Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.							
Performance Indicators	Concentration	Year/ Semester	Courses	Number of Students	Assignments / Tasks / Questions	Accomplished + Exemplary	Performance Target
PI#1. Design a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	CS, CA and IT	Spring 23	CPSC 146	14 11 13	Design an algorithmic solution to a problem using problem decomposition and step-wise refinement.	93% 91% 85%	75%
	CS, CA and IT	Fall 22 Spring 23	CPSC 323	18 42	Design a relational database to meet a given set of requirements	94% 98%	75%
PI#2. Implement a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	CS, CA and IT	Spring 23	CPSC 146	14 11 13	Implement program solution to an algorithm or design specification.	71% 91% 92%	75%
	CS, CA and IT	Fall 22 Spring 23	CPSC 323	18 40	Implement the database	89% 100%	75%

PI#3. Evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.	CS, CA and IT	Spring 23	CPSC 146	14 11 13	Examine the results of the program to ensure it meets program specifications and works for all experimental input data.	79% 82% 85%	75%
	CS, CA and IT	Fall 22 Spring 23	CPSC 323	18 42	Test the database	83% 88%	75%

SO#3: Communicate effectively in a variety of professional contexts.							
Performance Indicators	Concentration	Year/ Semester	Courses	Number of Students	Assignments / Tasks / Questions	Accomplished + Exemplary	Performance Target
PI#1. Write reports for final projects.	IT	Spring 23	CPSC 427	4	Develop a written report concerning capstone project	100%	75%
	CS	Fall 22 Spring 23	CPSC 488	16 19	Develop a written report concerning capstone project	81% 95%	75%
	CA	Fall 22	CPSC 405	20	Develop a written report concerning a semester long project	100%	75%
PI#2. Give oral presentations for final projects.	IT	Spring 23	CPSC 427	4	Develop an oral report concerning capstone project	100%	75%
	CS	Fall 22 Spring 23	CPSC 488	16 19	Develop an oral report concerning capstone project	100% 95%	75%

	CA	Fall 22	CPSC 405	20	Develop an oral report concerning a semester long project	100%	75%

SO#4: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.							
Performance Indicators	Concentration	Year/ Semester	Courses	Number of Students	Assignments / Tasks / Questions	Accomplished + Exemplary	Performance Target
PI#1. Recognize professional responsibilities	CS, CA and IT	Fall 22	CPSC 300	11 21	Discussion activity about recognizing professional responsibility	82% 81%	75%
		Spring 23	CPSC 300	16 16	Discussion activity about recognizing professional responsibility	94% 81%	75%
PI#2. Make informed judgments in computing practice based on legal and ethical principles	CS, CA and IT	Fall 22	CPSC 300	11 21	Essay writing questions about legal and ethical principles	82% 86%	75%
		Spring 23	CPSC 300	16 16	Essay writing questions about legal and ethical principles	88% 94%	75%

SO#5: Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline							
Performance Indicators	Concentration	Year/ Semester	Courses	Number of Students	Assignments / Tasks / Questions	Accomplished + Exemplary	Performance Target
PI#1. Attend team meetings	IT	Spring 23	CPSC 427	4	Attend team meetings	100%	75%

	CA	Fall 22	CPSC 405	20	Attend team meetings	95%	75%
	CS	Fall 22 Spring 23	CPSC 488	15 19	Attend team meetings	100% 100%	75%
PI#2. Make contributions in group meetings	IT	Spring 23	CPSC 427	4	Make contributions in group meetings	100%	75%
	CA	Fall 22	CPSC 405	20	Make contributions in group meetings	90%	75%
	CS	Fall 22 Spring 23	CPSC 488	15 19	Make contributions in group meetings	100% 95%	75%
PI#3. Cooperate with the group effort	IT	Spring 23	CPSC 427	4	Cooperate with the group effort	100%	75%
	CA	Fall 22	CPSC 405	20	Cooperate with the group effort	95%	75%
	CS	Fall 22 Spring 23	CPSC 488	15 19	Cooperate with the group effort	93% 89%	75%
PI#4. Listen to his/her teammates' ideas and opinions respectfully and give them careful consideration	IT	Spring 23	CPSC 427	4	Listen to his/her teammates' ideas and opinions respectfully and give them careful consideration	100%	75%
	CA	Fall 22	CPSC 405	20	Listen to his/her teammates' ideas and opinions respectfully and give them careful consideration	100%	75%

	CS	Fall 22 Spring 23	CPSC 488	15 19	Listen to his/her teammates' ideas and opinions respectfully and give them careful consideration	100% 95%	75%
PI#5. Make a serious effort to fulfill his/her team role responsibilities on assignments	IT	Spring 23	CPSC 427	4	Make a serious effort to fulfill his/her team role responsibilities on assignments	100%	75%
	CA	Fall 22	CPSC 405	20	Make a serious effort to fulfill his/her team role responsibilities on assignments	95%	75%
	CS	Fall 22 Spring 23	CPSC 488	15 19	Make a serious effort to fulfill his/her team role responsibilities on assignments	100% 95%	75%