

# **Part I: Assessment Plan**

College of Liberal Arts & Sciences

Department of Computer Science

Baccalaureate Degree

B.S. in Computer Science

February 10, 2022

Submitted to the University Assessment Panel by:

Nicholas Karonis, Chair

## 1. Introduction

Begin the assessment plan with a brief introduction describing the relevant history/evolution of the program and the program goals as they are now. Describe significant factors that help in placing the assessment plan in context (e.g., a new minor, shifting demand, market forces, the need for revised student learning outcomes, the need for more appropriate/valid information, new accreditation standards, department organizational changes, retention issues, and the like). Readers of the assessment plan will benefit from knowing how the degree program is evolving and how the new assessment plan will strategically provide the program with actionable data.

The baccalaureate program in Computer Science prepares students to begin their careers in the computer field. Their journeys often begin with paid student internships in the field before graduation and culminate as they begin their careers with their first full-time employment immediately after graduation. Graduates of the program enter the labor market well-prepared to begin their careers.

Our ethos is that students become outstanding computer programmers by designing and writing many computer programs. Consequently, the program has a heavy applied emphasis with a curriculum that carries extensive laboratory requirements across most of its courses. Supportive to that end, the department continuously monitors our students' programming prowess and strives to improve our instruction to enhance the same.

## 2. Student Learning Outcomes (SLOs)

85% of the graduates with the NIU Bachelor of Science in Computer Science will be able to perform the following at a satisfactory or higher level:

1. Demonstrate the ability to evaluate and analyze a straightforward business problem and decide whether or not it is amenable to a computer solution.
2. Demonstrate the ability to apply a practical computer software solution to solve a straightforward business problem.
3. Demonstrate the ability to design and implement individual computer programs that are correct, substantial, easy-to-use, efficient, and easily understood by other programmers.
4. Demonstrate the ability to test a computer program for correct output.

### 3. Program-by-Baccalaureate Student Learning Outcomes Matrix

Program Student Learning Outcome	Baccalaureate Student Learning Outcomes							
	A. Global inter-connections and inter-dependencies	B. Intercultural competencies	C. Analyze human life and natural world inter-connections	D. Critical, creative, and independent thought	E. Communicate clearly and effectively	F. Collaborate with others	G. Quantitative and qualitative reasoning	H. Apply knowledge/skills creatively
Demonstrate the ability to evaluate and analyze a straightforward business problem and decide whether or not it is amenable to a computer solution.				S	M	M	S	S
Demonstrate the ability to apply a practical computer software solution to solve a straightforward business problem.				S	S	S	S	S
Demonstrate the ability to design and implement individual computer programs that are correct, substantial, easy-to-use, efficient, and easily understood by other programmers.				S		M	S	S
Demonstrate the ability to test a computer program for correct output.					M		M	M
Overall				S	S	S	S	S
<i>Note.</i> Gauge whether each program outcome strongly supports (S), moderately supports (M), or doesn't support (leave blank) each baccalaureate learning outcome								

#### 4. Curriculum Map

Course	Program Student Learning Outcomes			
	Demonstrate the ability to evaluate and analyze a straightforward business problem and decide whether or not it is amenable to a computer solution.	Demonstrate the ability to apply a practical computer software solution to solve a straightforward business problem.	Demonstrate the ability to design and implement individual computer programs that are correct, substantial, easy-to-use, efficient, and easily understood by other programmers.	Demonstrate the ability to test a computer program for correct output.
CSCI 180	B	B		
CSCI 205	B	B	B	B
CSCI 210		B	B	B
CSCI 215		B	B	B
CSCI 230		B	B	B
CSCI 240		B	B	B
CSCI 241	B	B	B	B
CSCI 250	B	B	B	B
CSCI 275		B	B	B
CSCI 290	D	D	D	D
CSCI 297			D	D
CSCI 321	D	D	D	D
CSCI 322	D	D	D	D
CSCI 323	D	D	D	D
CSCI 330	B	B	B	B
CSCI 340	D	D	D	D
CSCI 350	D	D		
CSCI 360		D	D	D
CSCI 390	P	P	P	P
CSCI 401				
CSCI 427	P	P	P	P
CSCI 428	P	P	P	P
CSCI 446	P	P	P	P
CSCI 461			P	P
CSCI 463			P	P

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Course	Program Student Learning Outcomes			
	Demonstrate the ability to evaluate and analyze a straightforward business problem and decide whether or not it is amenable to a computer solution.	Demonstrate the ability to apply a practical computer software solution to solve a straightforward business problem.	Demonstrate the ability to design and implement individual computer programs that are correct, substantial, easy-to-use, efficient, and easily understood by other programmers.	Demonstrate the ability to test a computer program for correct output.
CSCI 464	P	P	P	P
CSCI 465		P	P	P
CSCI 466	D	D	D	D
CSCI 467	P	P		
CSCI 468			P	P
CSCI 470	P	P	P	P
CSCI 473	P	P	P	P
CSCI 475	P	P	P	P
CSCI 476	P	P	P	P
CSCI 480			P	P
CSCI 490	P	P	P	P
CSCI 496	P	P	P	P
CSCI 497	P	P	P	P
CSCI 499	P	P	P	P

*Note.* Course supports the outcome at the B=beginning, D=developing, or P=proficient level.

## 5. Assessment Methods

This final section of the assessment plan describes the assessment methods the degree program will be using to measure how well students are meeting program student learning outcomes. See the [UAP Academic Program Assessment Plan and Status Report Rubric-Checklist](#) for a description of characteristics seen in well-functioning assessment methods.

### EXPLANATION OF ASSESSMENT METHODS TABLE

The first part of the assessment methods section is an explanation of each assessment method that will be used to measure student learning outcomes. The description needs to be in enough detail to communicate to others what each assessment is, when it will be given, who is responsible for carrying out the assessment, what the desired target level of individual student performance is (to say a single student met the student learning outcome(s)), and what the desired overall target level of performance is for all students (to say the program is meeting the outcome(s)). Individual student-level achievement targets are often preset scores on an exam, scores on a rubric, etc. Program-level targets are often expressed as the percent of students demonstrating they meet individual student-level achievement targets. See the [UAP Academic Program Assessment Plan and Status Report Rubric-Checklist](#) for a list of characteristics seen in well-functioning assessment methods. Below is the table you may use to clearly communicate each of the assessment methods to other stakeholders.

Assessment Method	Explanation					
	Description	Student-Level Achievement <sup>a</sup>	Program-Level Target <sup>b</sup>	When Data Will be Collected	Person Responsible	SLOs Covered
Internship Assessment Survey (sent to employers by Computer Science).	Evaluations from on-site supervisors of the Computer Science majors who register for academic credit for Computer Science internships. Some, but not all, of these students are included in Method B, below.	n/a	85% of the students within the B.S in Computer Science program will have assessment outcomes for 1, 2, 3, & 4 at a satisfactory or higher level.	During the last week of every semester	Undergraduate Advisor	1,2,3,4

Assessment Method	Explanation					
	Description	Student-Level Achievement <sup>a</sup>	Program-Level Target <sup>b</sup>	When Data Will be Collected	Person Responsible	SLOs Covered
Internship Assessment Survey (sent to employers by Career Services).	Evaluations from on-site supervisors of Computer Science majors who accept Computer Science internships obtained through the Office of Cooperative Education. Some, but not all, of these students are included in Method A, above.	n/a	85% of the students within the B.S in Computer Science program will have assessment outcomes for 1, 2, 3, & 4 at a satisfactory or higher level.	During the last week of every semester	Career Services and the Undergraduate Advisor	1,2,3,4
University alumni survey	University graduates are asked about their perceptions of how well the university and department prepared them for their careers.	n/a	85% of the responding graduated students from the B.S in Computer Science program will provide feedback related to outcomes 1, 2, 3, & 4 at a satisfactory or higher level.	One and five years after graduation	NIU Alumni Center	1,2,3,4

Assessment Method	Explanation					
	Description	Student-Level Achievement <sup>a</sup>	Program-Level Target <sup>b</sup>	When Data Will be Collected	Person Responsible	SLOs Covered
Graduating senior survey	Graduating computer science students are asked about their experiences in the Department of Computer Science and how well they think the program prepared them for their careers.	n/a	85% of the responding graduated students from the B.S in Computer Science program will provide feedback related to outcomes 1, 2, 3, & 4 at a satisfactory or higher level.	Just after the end of every semester	Undergraduate Advisor	1,2,3,4
Capstone project in CSCI 467, capstone course.	A non-trivial team project demonstrates that students can analyze and design a computer solution for a business problem and implement this solution on an appropriate computing platform.	Satisfactory or better	85% of students completing this capstone project will have an assessment at or above Satisfactory	Near the end of every semester	Faculty	1,2,3
<p><i>Note.</i> <sup>a</sup> Student-level target is the score or performance an individual student must demonstrate to say the student met the student learning outcome.  <sup>b</sup> Program-level target is the percent of all students that must demonstrate they meet the student learning outcome.</p>						



**ASSESSMENT METHODS-BY-OUTCOMES MATRIX**

Assessment Method	Program Student Learning Outcome			
	Demonstrate the ability to evaluate and analyze a straightforward business problem and decide whether or not it is amenable to a computer solution.	Demonstrate the ability to apply a practical computer software solution to solve a straightforward business problem.	Demonstrate the ability to design and implement individual computer programs that are correct, substantial, easy-to-use, efficient, and easily understood by other programmers.	Demonstrate the ability to test a computer program for correct output.
Internship Assessment Survey (by Computer Science)	S, I	S, I	S, I	S, I
Internship Assessment Survey (by Career Services)	S, I	S, I	S, I	S, I
University Alumni Survey	S, I	S, I	S, I	S, I
Graduating Senior Survey	S, I	S, I	S, I	S, I
Capstone project in CSCI 467 capstone course	S, D	S, D	S, D	
<p><i>Note.</i> F=formative assessment, S=summative assessment, D=direct assessment, and I=indirect assessment. See the paragraph above for an explanation of each type of assessment.</p>				