SUNY Fredonia
College of Arts & Sciences
Computer and Information Sciences Assessment Report
2015-2016

Department Information	
Department	Computer and Information Sciences
Academic Programs	Computer Science; Computer Information Systems
Degrees	BS
Contact Person (*This should be the person coordinating/reporting on the department's assessment efforts)*	
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SUNY Fredonia Mission Statement: Fredonia educates, challenges, and inspires students to become skilled, connected, creative, and responsible global citizens and professionals.

The university enriches the world through scholarship, artistic expression, community engagement, and entrepreneurship.

CIS Department Mission Statement: To provide state-of-the-art education to our students to excel in key fields of computer and information sciences and engage them in activities that enhance the welfare of Western New York and our society at large. Through student-centered education in an environment that fosters creative thinking and innovative problem-solving, we prepare our graduates for an assortment of career goals, including graduate studies. We view scholarly investigations and software development as an integral part of instruction, providing opportunities to students for active learning through practicum, research,

and internship. Through active involvement in general education and interaction with cross-discipline course work, our programs embody students with life skills that help them become productive citizens and professionals.

It is to be stated that CS department has adopted 11 learning outcomes (LO's) from ABET website. This selection depends upon which CS/IS track is to be considered suitable for ABET accreditation. Please keep in mind that for Information Systems (IS) track, LO 'K' is invalid. We have mapped these LO's to the corresponding Campus Baccalaureate Goals. A list of the CIS department LO's is displayed initially and then our Program Educational Objectives (PEO) are presented. It is further to be stated that the same list of LO's from A through I is applicable to both CS and IS tracks. That is why LO 'J' is occurring two times in the list of LO's: the upper LO is for CS track and the lower one is for IS track of the CIS Department.

The following are the three Program Educational Objectives (PEO's) for our department:

- Be prepared for successful career in computer and information science or pursue graduate studies
- Utilize strong problem solving and communication skills

PEO 3. Acquire life-long learning skills and engage in professional development

- An ability to apply knowledge of computing and mathematics appropriate to the discipline.
- An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
- An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- An ability to function effectively on teams to accomplish a common goal.
- An understanding of professional, ethical, legal, security and social issues and responsibilities.
- An ability to communicate effectively with a range of audiences.
- An ability to analyze the local and global impact of computing on individuals, organizations, and society.
- Recognition of the need for and an ability to engage in continuing professional development.
- An ability to use current techniques, skills, and tools necessary for computing practice.
- An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices. [CS]

An understanding of and ability to support the use, delivery and management of information systems within a specific application environment. [IS]

- An ability to apply design and development principles in the construction of software systems of varying complexity. [CS]

The LO's A through J/K are assessed on the basis of courses being taught in CIS department during each semester and they correlate strongly with our PEO's. Following is a depiction of the relationship between the PEO's and LO's and LO's to the campus baccalaureate goals as prepared by Dr. Zubairi. Table I shows mapping of PEO's to the corresponding LO's.

Table I: Mapping of PEO's with the corresponding LO's

		A	B	C	D	E	F	G	H	I	J	K
PEO1				X						X	X [IS]	X[CS]
PEO2		X	X		X		X				X [CS]	
PEO3						X		X	X		X [IS]	

In Table II, we present mapping of the LO's that correspond to the SUNY Fredonia campus baccalaureate goals.

Table II: Mapping of LO's with corresponding SUNY Fredonia baccalaureate goals

Program LO's:	**Skilled**	**Connected**	**Creative**	**Responsible**
A: An ability to apply knowledge of computing and mathematics appropriate to the discipline	**Students learn programming through a sequence of progressively difficult courses**		**Learn to be creative in developing algorithms and in modeling data**	
B: An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution	**challenging the students in several courses to solve real-life problems on the computer by developing programs**		**Learn to be creative in developing algorithms for solving problems and in modeling data**	
C: An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs	**Learning and using skills to design and implement a computer based solution.**			**Make sure the program or solution meets the needs**
D: An ability to function effectively on teams to accomplish a common goal		**Students work in teams to complete a project and share their part of solution with others**		**Students meet deadlines for various reports**
E: An understanding of professional, ethical, legal, security and social issues				**Students get the knowledge of ethical**

and responsibilities				**and security issues in IT and computer industry.**
F: An ability to communicate effectively with a range of audiences		**In oral communication courses, students give presentations, handle Q & A and evaluate each other**		
G: An ability to analyze the local and global impact of computing on individuals, organizations, and society				**Students study examples of the impact of computing on global society.**
H: Recognition of the need for and an ability to engage in continuing professional development		**Through Internships, the students connect to each other and engage in continuous professional development**		**Students show a sense of responsibility by taking the professional internships seriously**
I: An ability to use current techniques, skills, and tools necessary for computing practice.	**In programming and web design courses, students need to use modern tools and be on top of the technology.**		**Students find creative ways of using current technique and skills.**	
J: An understanding of processes that support the delivery and management of information systems within a specific application environment. [IS]	**Students acquire appropriate skills on several topics in concerning information systems processes**		**Students create models that support delivery/management of information systems**	
J: An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices. [CS]			**Students do model and design computing systems in a variety of ways using creative options.**	
K: An ability to apply design and development principles in the construction of software systems of varying complexity. [CS}	**Students enhance their skills by designing software systems in a variety of languages and platforms.**			

Dr. Singh, Dr. Barneva and Dr. Zubairi have created the curriculum map and assessment plan 2014 for both Computer Science (CS) and Information Systems (IS) tracks. The curriculum map shows a mapping of the courses to one or more corresponding LO's. In the assessment plan, a number of performance criteria has been developed for each outcome. The specific courses are identified that satisfy these performance criteria, and consequently are picked for assessment. For each LO, a rubric sheet is designed that depicts specific milestones to be achieved by the students to meet or exceed the standard. The rubric sheet also identifies the shortcomings, which are demonstrated by those students who fail to meet the standard.

In the beginning of each semester, the assessment coordinator identifies the courses to be used for assessment work and informs the Instructors teaching those courses for which LO's data collection is to be done. Instructors refer to the rubric sheets as a guideline to figure out the specific milestones for students to be achieved. This prior information helps the Instructors to prepare and include specific questions in their course quizzes, exams and projects. Consequently, instructors create exams and projects that include the relevant kind of work to be performed by the students. In the subsequent progress of each semester, the Instructors are reminded periodically about the collection of assessment data. Finally, at the end of the semester, the Instructors turn in the collected assessment data to the Assessment Chair. Based on the data collected, the LO's are assessed. In spring 2016 semester, a list of courses depicted in Table III is assessed, which is based on the curriculum map and the response gotten from the Instructors.

Table III: Information of each course, its instructor and LO's to be assessed for spring 2016

S. No.	Course # & Instructor	Learning Outcomes (LOs) To Be Assessed
1.	CSIT201, (Not offered this semester)	All Es, G1, G2
2.	CSIT221, Olson & Smith	I1
3.	CSIT224 (Not offered this semester)	A2, B3
4.	CSIT231, Szocki	I4
5.	CSIT241, Maloney	A3
6.	CSIT311, (Not offered this semester)	A4, I2
7.	CSIT321, Barneva	I3
8.	CSIT341, Barneva	A1, A5, B2, All Js
9.	CSIT425, Scialdone	B1, B4, All Cs, Ds, Fs, Ks
10.	CSIT431, Zubairi	All Fs
11.	CSIT455, Tsetse	All Fs
12.	CSIT499, Arnavut, Olson, Singh, Tsetse & Zubairi	Graduating Senior Exit Survey

In the actual assessment analysis of a given course taught during spring 2016, each LO being assessed is presented and discussed. In a Table displayed on next

page, we present the statement of an LO to be assessed in first row, followed by its Assessment Method in second row, its Data Source in third row and Assessment Results in the last row. For example, for LO A, we first list its five Performance Criterion (PC) A1 through A5. For each PC, we represent an abbreviation that relates to its actual description. Then an inset table is inserted in which for each course, its corresponding PC is presented. This table contains the raw assessment data which is then combined and aggregated to produce the final result for the LO being assessed. Each table entry contains a triplet, (x, y, z), that indicates Exceeds, Meets, Insufficient or Approaching Standard. Arithmetic means are used to combine and aggregate the results. At the end of computation, an actual number of students is used for calculating percentile performances. Arithmetic means are used instead of geometric means because for each PC, the range of values is the same, i.e. the total number of students in a class. Adding the PC values across multiple courses by columns still results in similar patterns which preserve the actual results. For results in categories X (Exceeds), M (Meets) and I (Insufficient), the following mathematical formulas are used for aggregating the percentile performances. Here, 'L' is the number of courses in which a given LO is to be assessed and 'N' is the number of performance criteria for each LO. Each PC's performance data is listed as a fractional number, p/q, where 'q' is the total number of students in the course and 'p' is the number of students that falls in X, M or I category of performance. As an obvious example, X/(X+M+I) would be the fraction of the number of students that exceeds a specific performance criterion (PC) in a course. The following three mathematical equations are used to determine *X, M* and *I* percentile performance, respectively:

$$X = 100 \times \sum_{j=1}^{L} [(100 \times \sum_{i=1}^{n} \frac{PCX_i}{N}]/L \quad (1)$$

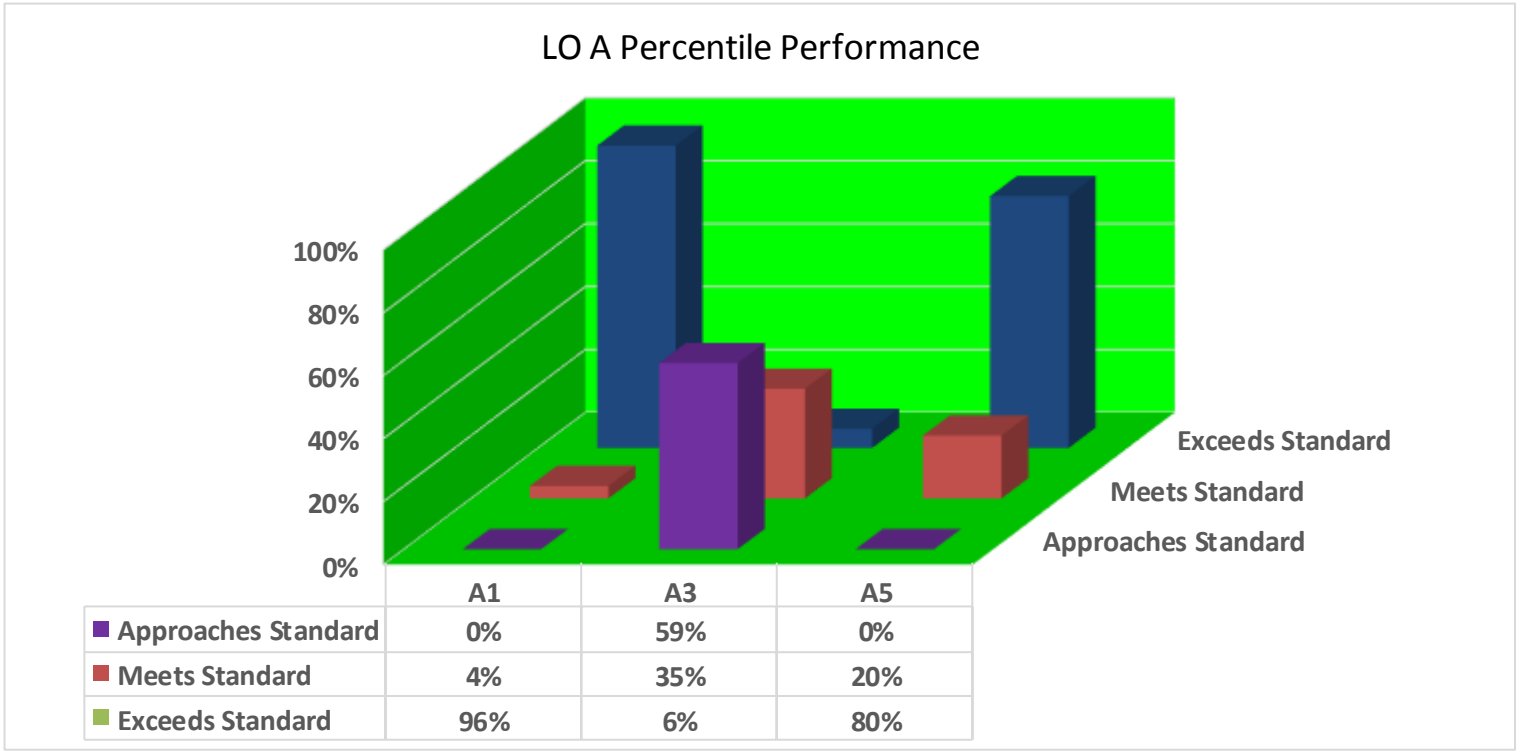
$$M = 100 \times \sum_{j=1}^{L} [(100 \times \sum_{i=1}^{n} \frac{PCM_i}{N}]/L \quad (2)$$

$$I = 100 \times \sum_{j=1}^{L} [(100 \times \sum_{i=1}^{n} \frac{PCI_i}{N}]/L \quad (3)$$

Assessment of Student Learning Outcomes	
Programs: Computer Science and Computer Information Systems	
Outcome A:	An ability to apply knowledge of computing and mathematics appropriate to the discipline.
Assessment Method(s)	Instructors assign programs based questions to be developed by CSIT241, and CSIT341 students. The programs are thoroughly reviewed and graded by the instructors. The instructors provide the Assessment Committee Chair with a graded portfolio of a number of assignments/Exam questions. The Instructors include specific exams questions in CSIT241, and CSIT341 as per the assessment plan
Data Source	Data source is the programs written by students and graded by instructors in CSIT241, and CSIT341 as well as some specific exam questions from these three courses to be assessed.

Assessment Results	Following are the assessment results as per performance criteria A1, A3 and A5 A1. (DATA) Demonstrates an understanding of basic data structures and their representation A3. (DIGITAL) Demonstrates an understanding of number systems and digital logic A5. (ALGM) Demonstrates an understanding of analysis of algorithms Each triplet (x, y, z) indicates (exceeds, meets, insufficient or approaching)

Course	A1 DATA	A3 DIGITAL	A5 ALGM
CSIT241		39, 1, 24	
CSIT341	0, 1, 24		0, 5, 25



	A1	A3	A5
Approaches Standard	0%	59%	0%
Meets Standard	4%	35%	20%
Exceeds Standard	96%	6%	80%

Outcome B:	An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
Assessment Method(s)	Students are given programming assignments in which they analyze and solve a problem using appropriate paradigms and resources to arrive at its solution

<table>
<tr><td>Data Source</td><td>The data was collected by the Instructors of CSIT341 and CSIT425. In CSIT425 course, data were collected on the basis of Final Project, Categories 2 & 3, Items 2, 3, 4 and 5, whereas in CSIT341 data were collected on competency in analyzing some problems and proposing different models for solution and were assigned during the spring 2016 semester.</td></tr>
<tr><td>Assessment Results</td><td>Following are the assessment results as per performance criteria B1, B2 and B4.
B1. (SPEC) Demonstrates abilities to develop and design a model for the problem
B2. (ANALYZE) Demonstrates competency in analyzing models using appropriate paradigms and following standard practices
B4. (RESOURCES) Demonstrates competency in determining physical resources and the time required to come to a solution
Each triplet x, y, z indicates (exceeds, meets, insufficient or approaching).
<table>
<tr><th>Course</th><th>B1
(SPEC)</th><th>B2
(ANALYZE)</th><th>B4
(RESPOURCES)</th></tr>
<tr><td>CSIT341</td><td>7, 8, 4</td><td></td><td>7, 8, 4</td></tr>
<tr><td>CSIT425</td><td></td><td>2, 14, 9</td><td></td></tr>
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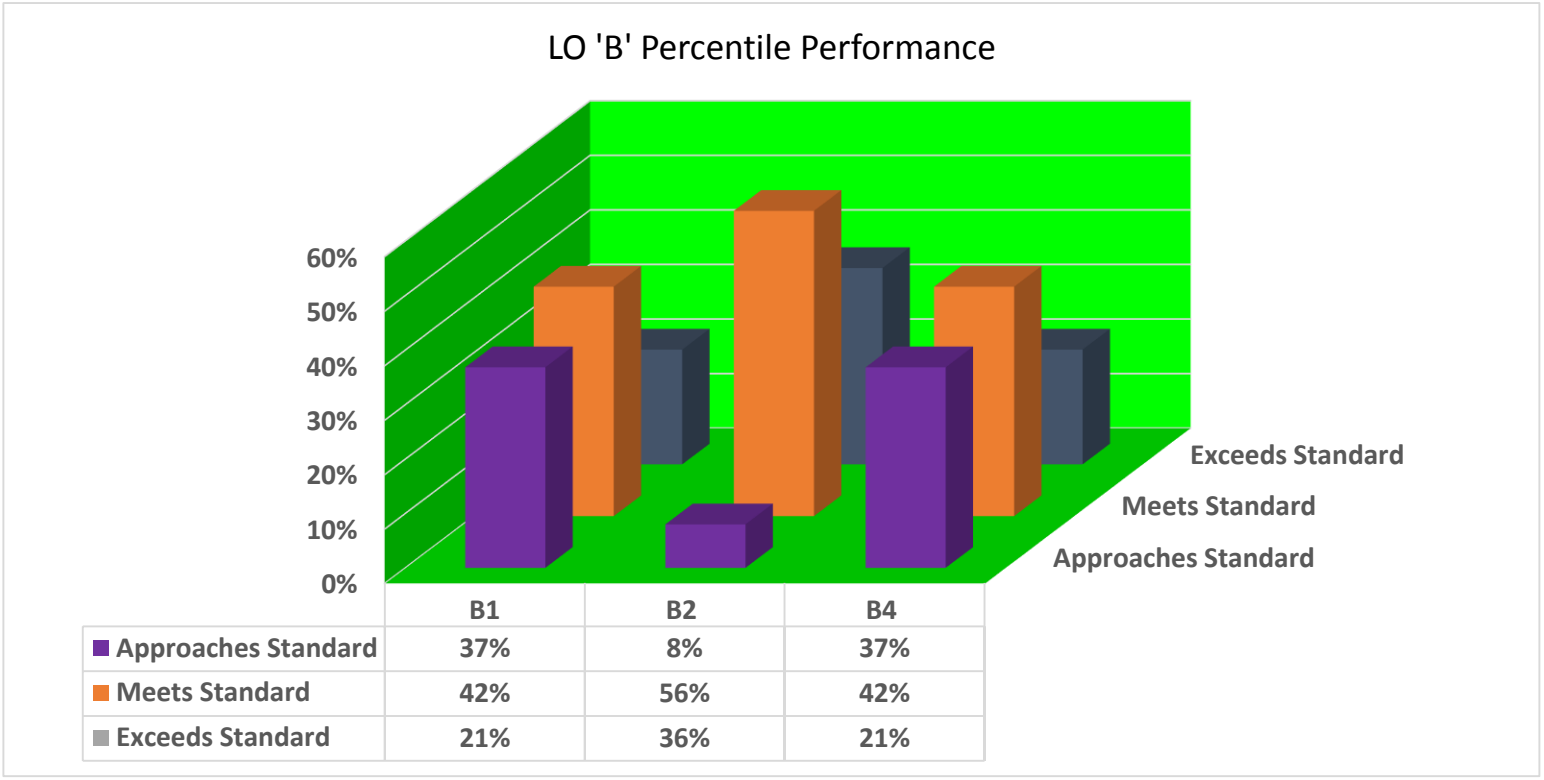

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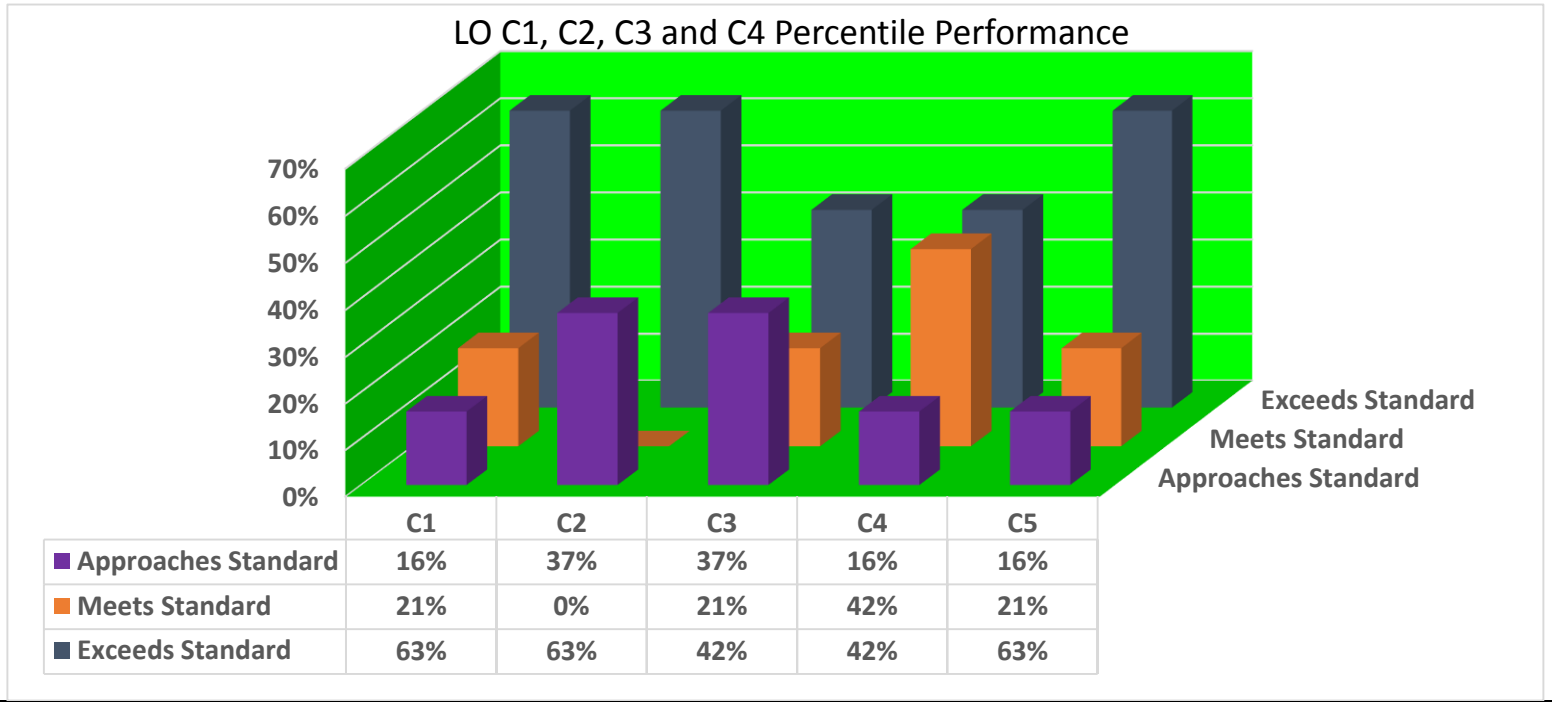
Outcome C:	An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
Assessment Method(s)	Students are assigned lab projects to develop a computer based system to meet the stated objectives.
Data Source	The data was collected by the Instructor of CSIT425 on the basis of Final Project, Categories 2, 3 & 4, Item 1-4 during the spring 2016 semester.
Assessment Results	Following are the assessment results as per performance criteria C1 through C5. C1. (DESIGN) Demonstrates competency in computer based system design C2. (REQ) Demonstrates ability in eliciting requirements C3. (METRIC) Demonstrates competency in developing project metrics C4. (TEST) Demonstrates competency in creating and executing test plans C5. (OPTIM) Demonstrates competency in comparing alternative solutions and selecting the optimal one. Each triplet x, y, z indicates (exceeds, meets, insufficient or approaching).

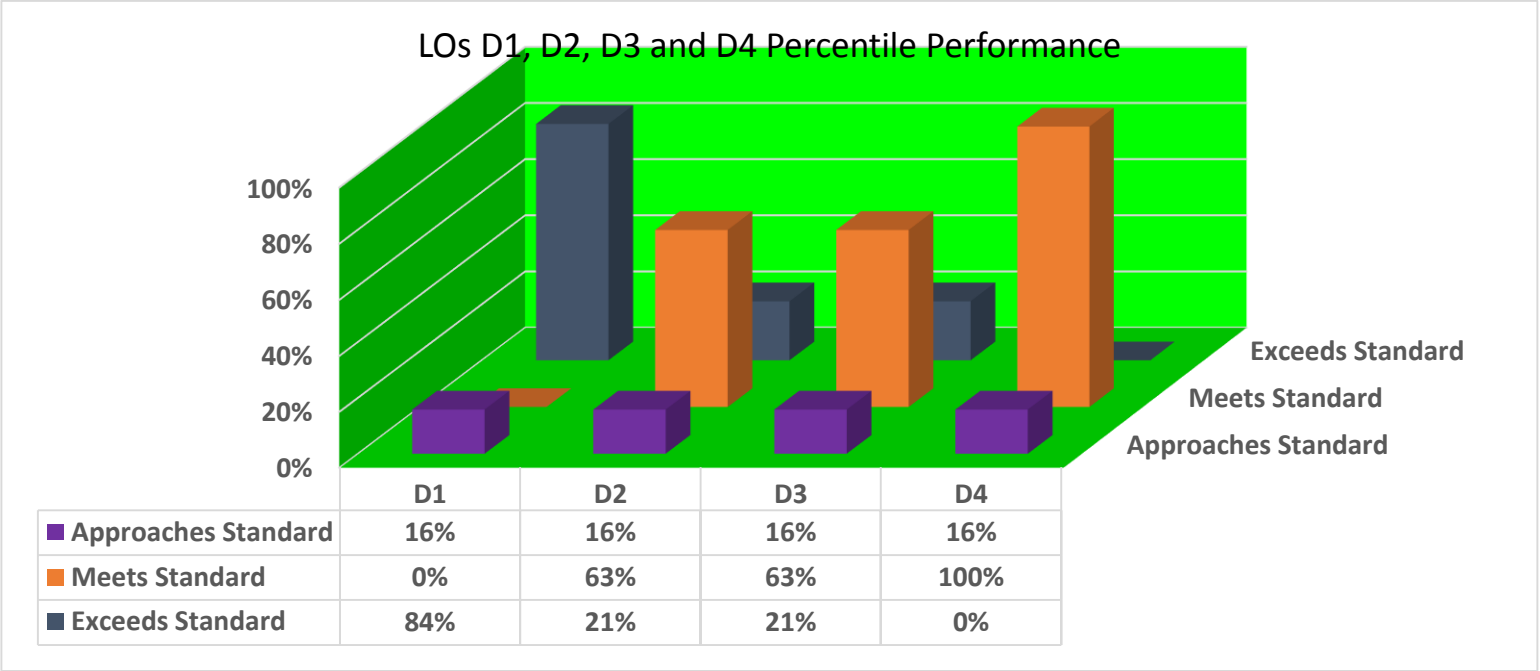
Course	C1 (DESIGN)	C2 (REQ)	C3 (METRIC)	C4 (TEST)	C5 (OPTIM)
CSIT425	3, 4, 12	7, 0, 12	7, 4, 8	3, 8, 8	3, 4, 12



	C1	C2	C3	C4	C5
Approaches Standard	16%	37%	37%	16%	16%
Meets Standard	21%	0%	21%	42%	21%
Exceeds Standard	63%	63%	42%	42%	63%

Outcome D:	An ability to function effectively on teams to accomplish a common goal.
Assessment Method(s)	Done through project portfolio and peer evaluations.
Data Source	The data was collected by the Instructor of CSIT425 on the basis of Final Project, Category 6 and peer presentations given students in spring 2016.
Assessment Results	Following are the assessment results as per performance criteria D1 through D4. D1. (DOCU) Demonstrates ability to document well the work. D2. (INTER) Demonstrates ability to communicate with team members, listen actively, provide feedback and share information. D3. (VALID) Demonstrates the ability to validate research on an assigned relational database systems topic using empirical evidence to support claims. D4. (DEAD) Demonstrates ability to meet deadlines. Each triplet x, y, z indicates (exceeds, meets, insufficient or approaching).

Course	D1 (DOCU)	D2 (INTER)	D3 (VALID)	D4 (DEAD)
CSIT425	3, 0, 16	3, 12, 4	3, 12, 4	3, 19, 0



	D1	D2	D3	D4
Approaches Standard	16%	16%	16%	16%
Meets Standard	0%	63%	63%	100%
Exceeds Standard	84%	21%	21%	0%

Outcome E:	An understanding of professional, ethical, legal, security and social issues and responsibilities.

<table>
<tr><td>Assessment Method(s)</td><td>Specific questions are included in the assignments and tests for assessing this goal.</td></tr>
<tr><td>Data Source</td><td>The data was to be collected for CSIT201 course that was not offered in spring 2016, so that analysis could not be performed and is not reported in current assessment report. However, what is to be done and how data collected and to be presented is listed here. This will done during fall 2016 when this course is offered.</td></tr>
<tr><td>Assessment Results</td><td>Following are the assessment results as per performance criteria E1 through E3.
E1. (ETHIC) Understands the ethical issues related to technology.
E2. (SECUR) Understands the security issues and problems of identity theft.
E3. (MAL) Demonstrates knowledge about the characteristics of different malware types and the differences between them.

Each triplet x, y, z indicates (exceeds, meets, insufficient or approaching).
<table>
<tr><td>Course</td><td>E1 (ETHIC)</td><td>E2 (SECUR)</td><td>E3 (MAL)</td></tr>
<tr><td>CSIT201</td><td></td><td></td><td></td></tr>
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<tr><td colspan="2"></td></tr>
<tr><td>Outcome F:</td><td>An ability to communicate effectively with a range of audiences.</td></tr>
<tr><td>Assessment Method(s)</td><td>In oral communication courses, the students make a number of class presentations. Each presentation is evaluated as per the performance criteria pertaining to this goal. Instructor collects assessment data and forwards it to the assessment Committee Chair.</td></tr>
<tr><td>Data Source</td><td>The data collection was done by one Instructor offering CSIT425 in spring 2016. Data presented here is collected on Final Project, Categories 2, 4 & 5, Items 1-5 of student presentations.</td></tr>
<tr><td>Assessment Results</td><td>Following are the assessment results as per performance criteria (PC) F1 through F4.
F1. (VERBAL) Demonstrates an ability of good verbal skills
F2. (PRESENT) Demonstrates good knowledge of presentation software
F3. (ORGN) Demonstrates an ability of good organization of the talk
F4. (KNOW) Demonstrates knowledge of the topic

Each triplet (x, y, z) indicates (exceeds, meets, insufficient or approaching).
<table>
<tr><td>Course</td><td>F1 (VERBAL)</td><td>F2 (PRESENT)</td><td>F3 (ORGN)</td><td>F4 (KNOW)</td></tr>
<tr><td>CSIT425-01</td><td>10, 14, 6</td><td>10, 10, 10</td><td>20, 3, 7</td><td>19, 8, 3</td></tr>
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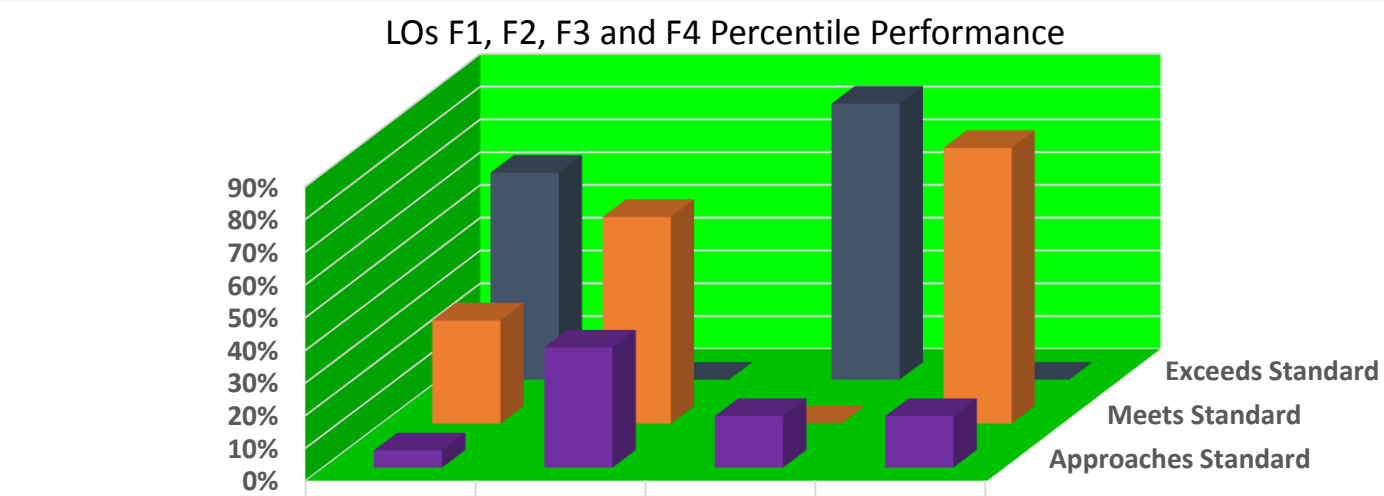


	F1	F2	F3	F4
Approaches Standard	5%	37%	16%	16%
Meets Standard	32%	63%	0%	84%
Exceeds Standard	63%	0%	84%	0%

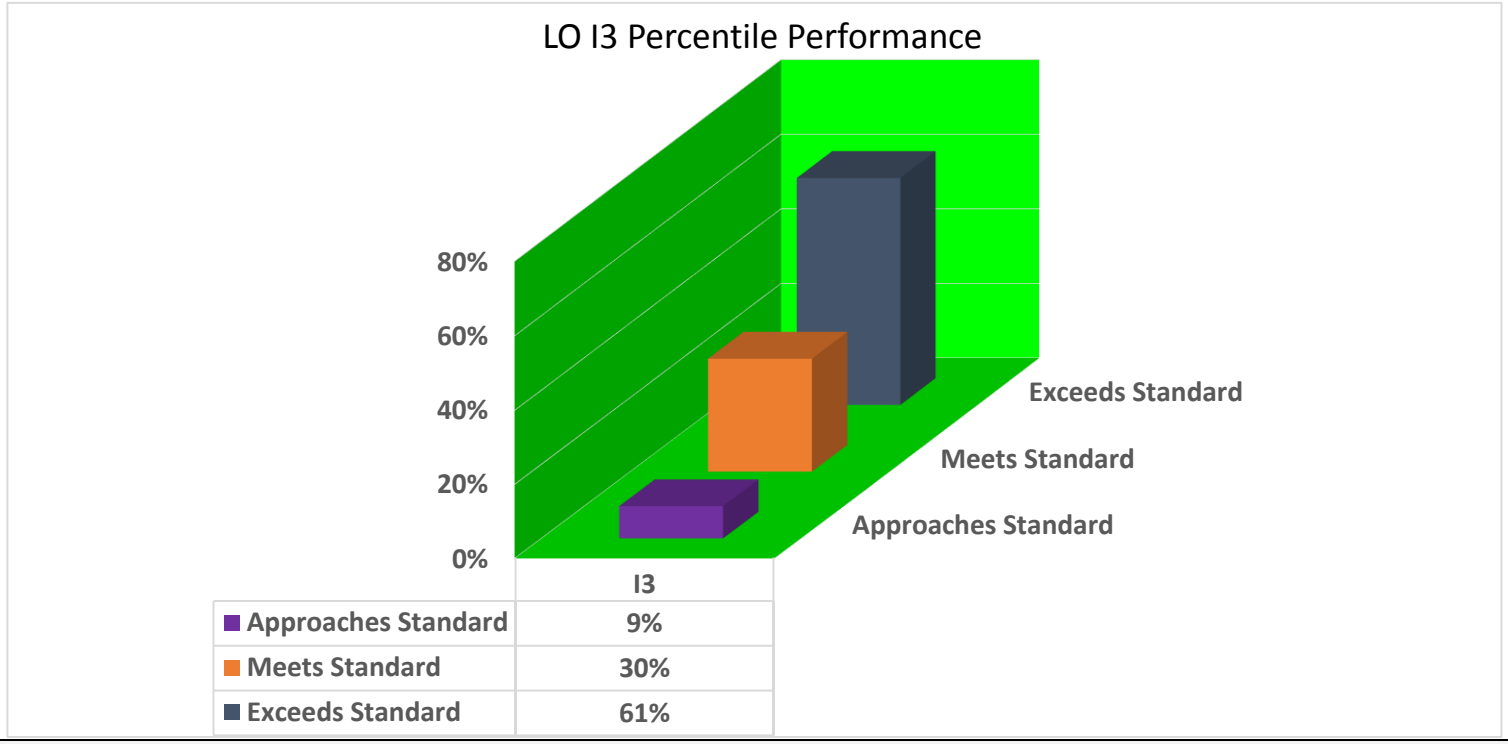
Outcome G:	An ability to analyze the local and global impact of computing on individuals, organizations, and society.
Assessment Method(s)	Selected questions extracted from course examinations and assignments; selected components of course projects.
Data Source	The data was to be collected for CSIT201 course that was not offered in spring 2016, so that analysis could not be performed and is not reported in current assessment report. However, what is to be done and how data collected and to be presented is listed here. This will done during fall 2016 when this course is offered.
Assessment Results	Following are the assessment results as per performance criteria G1 through G2. Performance Criteria G1. (IMPACT) Demonstrates an ability to analyze the local and global impact of computing on individuals. G2. (SOCIETY) Demonstrates an ability to analyze the local and global impact of computing organizations and society. Each triplet x, y, z indicates (exceeds, meets, insufficient or approaching) percentile performance of each LO.

Course	G1 (IMPACT)	G2 (SOCIETY)
CSIT201		

Outcome I:	An ability to use current techniques, skills, and tools necessary for computing practice.

Assessment Method(s)	Selected questions extracted from course examinations and assignments; selected components of course projects.
Data Source	The data was collected by the Instructor offering CSIT321 COURSE on only I3 during spring 2016.
Assessment Results	Following are the assessment results as per performance criteria I1 through I4. Performance Criteria I1. (C++) Demonstrates competency in C++ programming. I2. (ASSEMB) Demonstrates competency in assembly language programming I3. (OTHER) Demonstrates competency in programming in other languages I4. (UNIX) Demonstrates competency in the use of the UNIX operating system Each triplet (x, y, z) indicates (exceeds, meets, insufficient or approaching).

Course	I1 (C++)	I2 (ASSEMB)	I3 (OTH)
CSIT321			2, 7, 14



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<tr><td>Outcome J:</td><td>An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.</td></tr>
<tr><td>Assessment Method(s)</td><td>Selected questions extracted from course examinations and assignments; selected components of course projects.</td></tr>
<tr><td>Data Source</td><td>The data was collected by the Instructor offering CSIT341 as CSIIT311 was not offered during spring 2016.</td></tr>
<tr><td>Assessment Results</td><td>Following are the assessment results as per performance criteria J1 through J4.
Performance Criteria
J1. (MODEL) Demonstrates an ability to apply mathematical modeling to computing problems
J2. (ALGM) Demonstrates an ability to develop different algorithms for a computing problem
J3. (EFFIC) Demonstrates an ability to evaluate algorithm efficiency
J4. (MEMORY) Understands the tradeoff between memory and running time

Each triplet (x, y, z) indicates (exceeds, meets, insufficient or approaching).
<table>
<tr><td>Course</td><td>J1 (MODEL)</td><td>J2 (ALGM)</td><td>J3 (EFFIC)</td><td>J4 (MEMORY)</td></tr>
<tr><td>CSIT341</td><td>2, 2, 21</td><td>3, 3, 19</td><td>3, 2, 20</td><td>2, `4, 9</td></tr>
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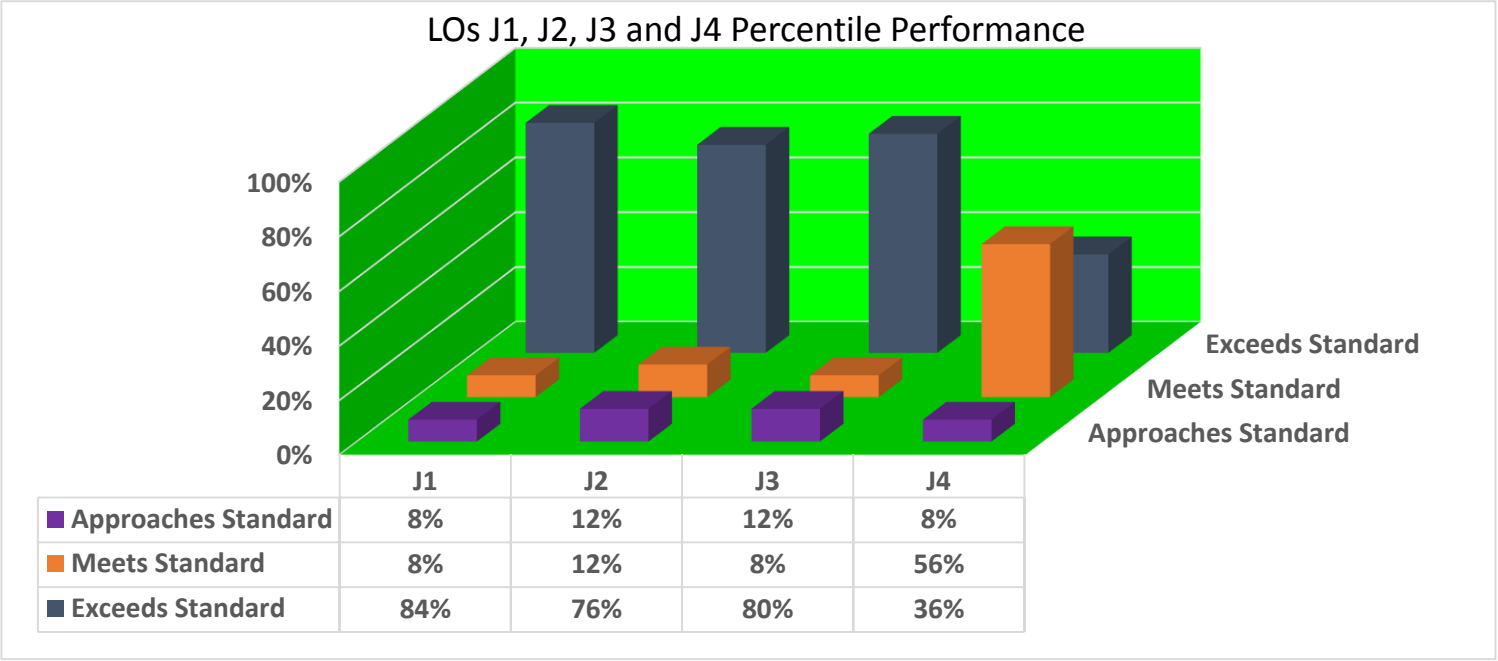

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<tr><td>Outcome K:</td><td>An ability to apply design and development principles in the construction of software systems of varying complexity.</td></tr>
<tr><td>Assessment Method(s)</td><td>Based on project portfolio.</td></tr>
<tr><td>Data Source</td><td>The data was collected by the Instructors offering CSIT425.</td></tr>
<tr><td>Assessment Results</td><td>Following are the assessment results as per performance criteria K1 through K4.
Performance Criteria
K1. (FORMAL) Demonstrates an ability of formally describing a software system
K2. (ESTIM) Ability to establish estimates
K3. (PLAN) Able to develop a project plan
K4. (DOCU) Able to provide adequate internal and external documentation

Each triplet (x, y, z) indicates (exceeds, meets, insufficient or approaching).
<table>
<tr><td>Course</td><td>K1 (FORMAL)</td><td>K2 (ESTIM)</td><td>(K3 PLAN)</td><td>K4 (DOCU)</td></tr>
<tr><td>CSIT425</td><td>4, 12, 0</td><td>5, 11, 0</td><td>5, 10, 1</td><td>1, 15, 0</td></tr>
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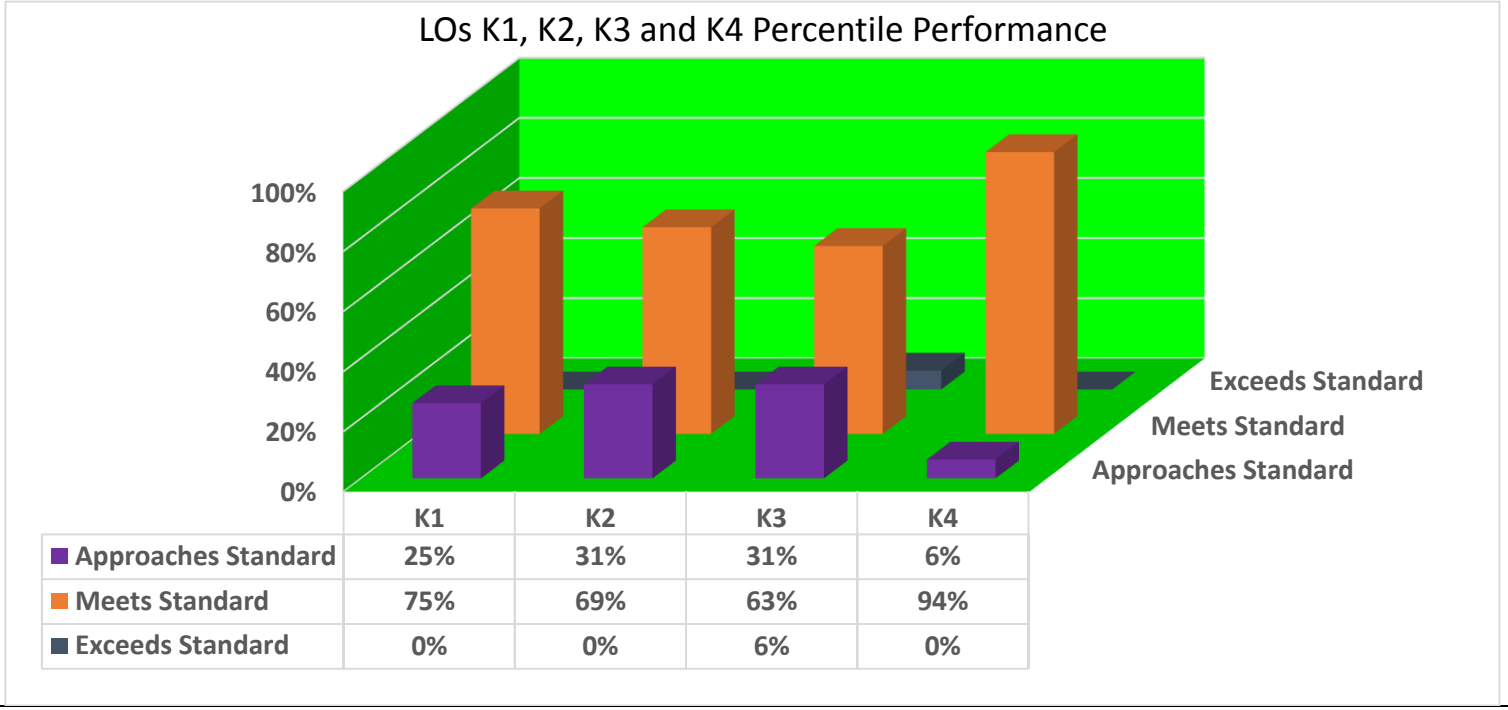

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Outcome H:	Recognition of the need for and an ability to engage in continuing professional development.
Assessment Method(s)	The department chair ad Dr. Singh invite and encourage the graduating students to fill out the attached survey (Appendix II). The chair also reminds the faculty to identify the graduating students and ask them to fill out anonymously the survey. This indirect method helps us to refine the assessment of the Learning Goals.
	The data is collected by the department chair is forwarded to me. Department chair may add the conclusions of data gotten by him in this report. Not many students participated in senior exit survey during spring of 2016. The students transferring to Fredonia from another school or transferring from another major have already earned 60-75 credits. Consequently, this category of students spend on the average two years for graduating at Fredonia.
Assessment Results	
Conclusions	
Have you had an opportunity to discuss these results within your department? If so, what form did this take? What conclusions were drawn about student learning as a result of their assessment efforts?	These results have been compiled after spending a lot of time and effort on the part of Dr. Singh in reminding the CIS faculty periodically throughout the spring 2016 semester and providing them with a tailor-made template for correctly recording the assessment data. I would suggest that as some faculty did not supply the data at all, this issue should be discussed in the first department meeting to be held during beginning of Fall 2016 semester so as to take care of proper steps to enhance the quality of collected data especially for the two courses CSIT221, CSIT231, CSIT431 and CSIT455 by all the instructors teaching these two courses in fall 2016. This report represents a systematic study of compiled results of assessment data collected for eight LOs: A, B, C, D, E, F, G, I, J and K during spring 2016 semester. Dr. Zubairi and Dr. Barneva developed the relevant equations to aggregate the assessment data in past. These equations have been rewritten elegantly in mathematical form by Dr. Singh. Dr. Singh, collected the assessment data from several Instructors and processed the raw data using MS Excel software version 2013 to arrive at the final conclusions. Only three Instructors have cooperated and provided assessment data in a timely manner so far. We believe that the assessment of eight ABET LOs just in one semester is itself an achievement, given the fact that most of full-time faculty in the department was busy in hiring two new positions during AY 2015-16. Additionally, Dr. Singh being full-time continent faculty in the CIS department has tremendous teaching and service load. The results of assessment data analysis are presented in tabular as well as in graphical form in this report at appropriate places. If we combine the percentile performance of two categories: Meets and Exceeds Standard, then the results are highly satisfactory for almost all the eight LO's investigated in the current study. For most of LOs, we obtain percentile performance in the range of 84-100%. However, there is one LO, e.g., A3 (CSIT241) that very low percentile performance (only 40%), which has to be improved in future data collection. Similarly LOs pairs, B1 (CSIT341), B4 (CSIT3411) and C2 (CSIT425), C3 (CSIT425), LO, F2 (CSIT425) and triplet K1, K2, K3 (CSIT425) course for which percentile performance falls is in range 63-75%. Consequently, these eight LOs also need some attention to improve them in future course offerings. We conclude that more data collection is definitely required to improve upon the percentile performance of all eight LOs as listed

	above to close the loop. This important issue has to be discussed in the first meeting of the department during fall 2016. At the end of this report, the results of senior exit survey are presented. When asked to rate their level of satisfaction with the CIS Department on a scale of 0 to 5, one senior who responded to Senior Exit Survey gave perfect score of 5/5. Seven students took independent study courses. Out of the courses listed, CSIT499 was the most listed course, which is a senior project. Other courses taken included CSIT400 and CSIT 300. Several students attended conferences, seminars and workshops to broaden their knowledge. Four students already have a job offer in a CS/CIS related field. Some positive comments by senior students are listed below: • Accessibility of the department • The knowledge of the faculty • The technical skills acquired • The helpfulness of the professors • The friendliness of the staff • The usefulness of the courses

Appendix-I

State University of New York at Fredonia
Department of Computer and Information Sciences
2154 Fenton Hall (716) 673-4820

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME H

Recognition of the need for and an ability to engage in continuing professional development

GRADUATING SENIORS EXIT SURVEY

Please check the appropriate entry, or choose the most suitable option, or fill the blanks for each of the question given below where possible.

Date:_____

1. You earned your B.S. degree in
    - Computer Science _____Advanced Computing Track /_____Software Development Track/ _____General Track
    - Computer Information Systems _____ Systems Development/ _____ System Management
    - Another major, but I got a minor in _____ Computer Science/ _____ Computer Information Systems

2. a. Year started at SUNY Fredonia_____ Year graduated_____
   b. Did you change your major? Yes _____ No_____
      If Yes:
         c. What was your previous major?_____
   d. Did you transfer from another college to SUNY Fredonia? Yes _____ No_____
      If Yes:
         e. How many credit hours did you transfer?
         Less than 30____ Between 30 and 60_____ Between 60 and 75____ Over 75____
         f. How many semesters overall you spent at college (at SUNY Fredonia and the college your transferred from)? _____

3. On a scale of 6 to 1 (with 6 being Excellent and 1 being very poor): How satisfied are you with your education at the Department of Computer and Information Sciences in SUNY Fredonia?

4. Did you participate in any independent study or group project?
    - Yes b. No

5. Did take any of the courses (circle what is appropriate):
    -
    - CSIT 499 Project,
    - CSIT 497 Thesis,
    - HONR 400 Thesis,
    - CSIT 400 Independent Study,
    - CSIT 300 Internship.

6. Did you attend any conferences, workshops, seminars to broaden knowledge and skills?
    - Yes b. No

7. Do you already have a job offer?

- Yes b. No

If yes, is it related to your major?

- Yes b. No

8. Do you plan to attend graduate school?

- Yes, already accepted into graduate school; Field: _____
- Yes, applying now; Field: _____
- Yes, in the future
- No

9. List five courses you liked the most at Fredonia

a. _____
b. _____
c. _____
d. _____
e. _____

10. If you have a job offer, list four courses that were most beneficial to you in securing the job.

a. _____
b. _____
c. _____
d. _____

11. If you had the option to take more elective choices in the discipline, what topic areas would you have liked to have taken at SUNY Fredonia?

- _____
- _____
- _____
- _____

12. How accessible do you feel faculty offices and classrooms were?

(inaccessible) 1 2 3 4 5 (very accessible)

13. Do you think the access you had to workspace and equipment were sufficient for your coursework

(disagree) 1 2 3 4 5 (agree)

14. What activities or courses helped you most to understand the need to maintain currency in the discipline

_____

_____
_____

15. List what technology-related skills, if any, you have learned outside classes at SUNY Fredonia

_____
_____
_____

16. Do you have a positive remark/comment(s) to share?

_____
_____
_____

17. Do you have a negative remark/comment(s) to share?

_____
_____
_____