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SUNY Fredonia
Department of Computer and Information Sciences
Assessment Plan of the Program Outcomes Aligned to ABET Criteria for Computer Information Systems

A. An ability to apply knowledge of computing and mathematics appropriate to the discipline:

Performance Criteria	**Curriculum Map (Where Developed)**	**Where Assessed**	**Assessment Method**
A1. Demonstrates an understanding of basic data structures and their representation	CSIT 121, 221, 341, CSIT 205	CSIT 221, 205	Selected questions extracted from course examinations and assignments; selected components of course projects
A2. Demonstrates an understanding of a high-level programming language and software design	CSIT 121, 105, 221, CSIT 205	CSIT 205, 221	Selected questions extracted from course examinations and assignments; selected components of course projects
A3. Demonstrates an understanding of number systems and digital logic	CSIT 241, 312	CSIT 312	Selected questions extracted from course examinations and assignments
A4. Demonstrates an understanding of computer organization and architecture	CSIT 242, 312	CSIT 312	Selected questions extracted from course examinations and assignments
A5. Demonstrates an understanding of analysis of algorithms	CSIT 205, 221, 341	CSIT 221, 205	Selected questions extracted from course examinations and assignments; selected components of course projects

Prepared by Drs. Gurmukh Singh and Reneta Barneva in November 2014 in conforming to ABET Information Systems (IS), based on the CS Assessment Plan. Approved on December 19, 2014 by paper ballot.

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME A.

An ability to apply knowledge of computing and mathematics appropriate to the discipline

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
A1. Demonstrates an understanding of basic data structures and their representation.	Does not demonstrate knowledge about ADT such as an array, file, stack, etc.).	Demonstrates knowledge about ADT such as an array, file, stack, etc.).	Select an ADT appropriate for a given task and appropriately use it.	Extend a given ADT with additional features or use it for an application.
A2. Demonstrates an understanding of a high-level programming language and software design	Does not demonstrate ability to use objects.	Demonstrates the ability to use simple operations on predefined classes and declare simple classes.	Demonstrates the ability to recognize the need for simple design patterns and declare/extend appropriate data structures to meet the design needs.	Demonstrates the ability to extend a given data structure with additional features or use it in an application in a way that integrates multiple design concepts.
A3. Demonstrates an understanding of number systems and digital logic	Does not demonstrate knowledge of number systems and digital logic.	Able to convert numbers from one digital system to another. Basic understanding of digital logic.	Conversion from decimal to binary. Operations on binary and hexadecimal numbers. Able to perform basic Boolean operations.	Conversion from one number system to another. Operations in it. Able to apply in practice Boolean functions and a composition of them.
A4. Demonstrates an understanding of computer organization and architecture.	No understanding about the computer organization.	Basic understanding about the computer organization.	Ability to describe the functions of the memory, CPU, and peripherals.	Complete understanding of the computer organization. Ability to use the knowledge in solving practical problems.
A5. Demonstrates an understanding of analysis of algorithms	The algorithm does not work correctly.	The algorithm works correctly in some cases.	The algorithm works correctly in the general case and in the special cases.	The algorithm is efficient and works correctly in the general case and in the special cases.

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B. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
B1. Demonstrates abilities to develop and design a model for the problem	CSIT 351, 425	CSIT 351	Selected components of course projects and assignments
B2. Demonstrates competency in analyzing models using appropriate paradigms and following standard practices	CSIT 351, 425, 471, 473	CSIT 351	Selected questions extracted from course examinations and assignments
B3. Demonstrates competency in determining physical resources and the time required to come to a the solution	CSIT 351, 425 471, 473	CSIT351	Selected questions extracted from course examinations and assignments; selected components of course projects

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME B.

An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
B1. Demonstrates abilities to develop and design a model for the problem	Fails to develop and design a model	Is able to develop and design partially a model	Is able to able to develop and design completely a model	Is able to develop and design completely and extend the model to similar problems
B2. Demonstrates competency in analyzing models using appropriate paradigms and following standard practices	Does not demonstrate competency in analyzing models and following standard practices	Is able to analyze models using appropriate paradigms but does not follow standard practices	Ability to analyze models using appropriate paradigms and follow standard practices.	Is able to analyze variety of models consistently and following standard practices
B3. Demonstrates competency in determining physical resources and the time required to come to a solution	Has no idea of determining resources and time for a solution	Is able to calculate the memory size of the solution but fails to compute time complexity of proposed solution	Ability to calculate memory size and time complexity of the proposed solution.	Ability to calculate the time complexity and memory size of the proposed solution and work backwards to optimize the solution

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C. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
C1. Demonstrates competency in system design	CSIT 425, 351	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects
C2. Demonstrates ability in eliciting requirements	CSIT 425, 351	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects
C3. Demonstrates competency in developing project metrics	CSIT 425, 351	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects
C4. Demonstrates competency in testing a completed application for compliance with all required test conditions.	CSIT 425, 351	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects
C5. Demonstrates competency in comparing alternative solutions and selecting the optimal one	CSIT 425, 351	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME C

An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
C1. Demonstrates competency in system design	Is unable to match the problem to the desired solution parameters	Is able to design a system in its initial form to meet desired needs	Is able to design and implement a system to meet desired needs	Is able to design and implement and evaluate a system to meet desired needs
C2. Demonstrates ability in eliciting requirements	Inability to arrive at requirements of the system	Is able to specify some of the requirements of the system	Is able to specify all of the requirements of the system	Is able to specify all the requirements of the system and modify the requirements based on elicitation process
C3. Demonstrates competency in developing project metrics	Inability to develop project metrics	Is able to define part of the project metrics	Ability to develop all of the project metrics	Is able to evolve and modify project metrics during the development process
C4. Demonstrates competency in testing a completed application for compliance with all required test conditions.	Inability in testing any aspect of an application for compliance with all required test conditions.	Is able to test some aspects of an application for compliance with all required test conditions.	Ability in testing a completed application for compliance with all required test conditions.	Ability in testing and modifying a completed application for compliance with all required test conditions.
C5. Demonstrates competency in comparing alternative solutions and selecting the optimal one	Inability to develop a single solution	Is able to analyze at least one solution	Is able to specify alternative solutions and select optimal one	Is able to estimate time and size requirements for all the solutions and justify the optimal solution

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D. An ability to function effectively on teams to accomplish a common goal

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
D1. Demonstrates ability to document well the work	CSIT 351, 425, 435, 455, 456, 461, 462, 463, 475	CSIT 351	Project portfolio
D2. Demonstrates ability to communicate with team members, listen actively, provide feedback and share information	CSIT 351, 425, 435, 455, 456, 461, 462, 463, 475	CSIT 351	Peer evaluation report
D3. Demonstrates the ability to validate research on an assigned relational database systems topic using empirical evidence to support claims.	CSIT 351, 351, 455	CSIT 351	Peer evaluation report, project portfolio
D4. Demonstrates ability to meet deadlines	CSIT 425, 435, 455, 456, 461, 462, 463, 475,	CSIT 351	Peer evaluation report, project portfolio

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME D
An ability to function effectively on teams to accomplish a common goal

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
D1. Demonstrates ability to document well the work	Unable to produce documentation of work done	Ability to produce some documentation covering only some part of the work done	Is able to describe the work done in well formatted report	Ability to prepare consistent, regular and coherent description of work in standard format
D2. Demonstrates ability to communicate with team members, listen actively, provide feedback and share information	Does not communicate with team members effectively	Is able to communicate with team members but does not provide information or feedback	Ability to communicate with team members and share information with them	Ability to coordinate well with team members and motivate them to work
D3. Demonstrates ability to validate research on an assigned relational database systems topic using empirical evidence to support claims.	Does not demonstrate the ability to validate research on an assigned relational database systems topic using empirical evidence to support claims.	Is able to partially demonstrate the ability to validate research on an assigned relational database systems topic using empirical evidence to support claims.	Is able to demonstrate full ability to validate research on an assigned relational database systems topic using empirical evidence to support claims.	Ability to demonstrate full ability to validate research and extend it on an assigned relational database systems topic using empirical evidence to support claims.
D4. Demonstrates ability to meet deadlines	Usually demands an extension in the deadline	Is able to meet some but not all requirements by the deadline	Is generally able to submit the project on time	Is able to finish the project ahead of the time

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

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
E1.Understands the ethical issues related to technology	CSIT 201, 251, 435	CSIT 251	Selected questions extracted from course examinations and assignments
E2. Understands the security issues and problems of identity theft	CSIT 201, 251	CSIT 251	Selected questions extracted from course examinations and assignments
E3. Demonstrates knowledge about the characteristics of different malware types and the differences between them.	CSIT 201, 251	CSIT 251	Selected questions extracted from course examinations and assignments

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME E
An understanding of professional, ethical, legal, security and social issues and responsibilities

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
E1.Understands the ethical issues related to technology	Unable to relate ethics to use of technology	Able to understand only partially the ethical issues with technology	Ability to understand ethical issues in using technology	Ability to understand ethical issues in technology and determine relevant issues in new situations
E2. Understands the security issues and problems of identity theft	Does not realize the importance of security and risks of ID theft	Is able to understand security concerns however not the ID theft risks	Ability to understand the risks and concerns with respect to security issues including ID theft	Ability to suggest correct course of action in a scenario where ID could be compromised
E3. Demonstrates knowledge about the various types of malware	Does not possess knowledge of various malware types	Can define viruses but does not know the difference between a virus and a worm	Ability to define all types of malware and differentiate between viruses and worms	In addition to meeting the standard, understands how viruses are structured and how they attack the host system

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F. An ability to communicate effectively with a range of audiences

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
F1. Demonstrates an ability of good verbal skills	Oral communication courses incl. CSIT425, CSIT455, CSIT462	Any oral comm. course	Instructor's report; Peer evaluation report
F2. Demonstrates good knowledge of presentation software	Oral communication courses incl. CSIT425, CSIT455, CSIT462	Any oral comm. course	Instructor's report; Peer evaluation report
F3. Demonstrates an ability of good organization of the talk	Oral communication courses incl. CSIT425, CSIT455, CSIT462	Any oral comm. course	Instructor's report; Peer evaluation report
F4. Demonstrates knowledge of the topic	Oral communication courses incl. CSIT425, CSIT455, CSIT462	Any oral comm. course	Instructor's report; Peer evaluation report

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME F
An ability to communicate effectively with a range of audiences

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
F1. Demonstrates an ability of good verbal skills	Reads from script; does not face audience; gaps in material, breaks down during presentation	Ability to complete the presentation although without showing confidence	Confidently presents the topic and faces the audience	Excellent presentation and interaction with the audience throughout the talk
F2. Demonstrates good knowledge of presentation software	Does not know how to start or resume presentation; spends long time adjusting the presentation software	Able to use standard features of presentation software with some help from audience	Uses standard features of presentation software with confidence and without help from audience	Able to control the presentation fully and the presentation uses advanced features of the host software
F3. Demonstrates an ability of good organization of the talk	The talk is haphazard with no real organization	Able to define an outline in the beginning but does not follow it in the presentation	Follows outline and presents a coherent talk with distinct sections	Presents an unusually brilliant talk with clear objectives and coherent structure
F4. Demonstrates knowledge of the topic	It is obvious that the speaker is unfamiliar with the topic	Shows some knowledge of the topic but does not answer related questions	Demonstrates full knowledge of the topic and handles questions well	Ability to command the topic and respond with various options to show thorough knowledge of the topic

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G. An ability to analyze the local and global impact of computing on individuals, organizations, and society.

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
G1. Demonstrates an ability to analyze the local and global impact of computing on individuals	CSIT 201, 251, 456	CSIT 251	Selected questions extracted from course examinations and assignments; selected components of course projects
G2. Demonstrates an ability to analyze the local and global impact of computing organizations and society	CSIT 201, 251, 456	CSIT 251	Selected questions extracted from course examinations and assignments; selected components of course projects

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME G
An ability to analyze the local and global impact of computing on individuals, organizations, and society

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
G1. Demonstrates an ability to analyze the local and global impact of computing on individuals	Does not realize the scope and impact of computing on individuals	Ability to relate to at least one aspect of impact of computing on individuals	Ability to understand the scope and impact of computing on individuals and relate to it	Ability to determine best computing practices to enhance the positive impact on individuals
G2. Demonstrates an ability to analyze the local and global impact of computing organizations and society	Does not realize the scope and impact of computing on organizations and society	Ability to relate to at least one aspect of impact of computing on organizations and society	Ability to understand the scope and impact of computing on organizations and society and relate to it	Ability to determine best computing practices to enhance the positive impact on organizations and society

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

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
H1. Participates in independent studies, theses, projects, internships	CSIT 300, CSIT 400, CSIT 499, CSIT 497	CSIT 300, 490, 499, 497	Graduating Senior Exit Survey
H2. Demonstrates ability to learn skills related to new technology and research.	Advisement	Outside class	Graduating Senior Exit Survey
H3. Understands the need to maintain currency in the discipline	Advisement	Outside class	Graduating Senior Exit Survey

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

   a. Computer Science _____Advanced Computing Track /_____Software Development Track/ _____General Track

   b. Computer Information Systems _____ Systems Development/ _____ Systems Management

   c. 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)? _____

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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?

a. Yes b. No

5. Did take any of the courses (circle what is appropriate):

a. CSIT 499 Project,
b. CSIT 497 Thesis,
c. HONR 400 Thesis,
d. CSIT 400 Independent Study,
e. CSIT 300 Internship.

6. Did you attend any conferences, workshops, seminars to broaden knowledge and skills?

a. Yes b. No

7. Do you already have a job offer?

b. Yes b. No

If yes, is it related to your major?

a. Yes b. No

8. Do you plan to attend graduate school?

a. Yes, already accepted into graduate school; Field: _____
b. Yes, applying now; Field: _____
c. Yes, in the future
d. No

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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?

a. _____

b. _____

c. _____

d. _____

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?

_____

_____

_____

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

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
I1. Demonstrates competency in programming or work with systems	CSIT 121, 221, 203, 208, 306	CSIT 221, 205	Selected questions extracted from course examinations and assignments; selected components of course projects
I2. Demonstrates competency in web programming (HTML, HTML5, CSS, PHP, SQL, Ruby on Rails, Android)	CSIT 107, 207, 307, 333	CSIT 107	Selected questions extracted from course examinations and assignments; selected components of course projects

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME I

An ability to use current techniques, skills, and tools necessary for computing practice

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
I1. Demonstrates competency in programming or work with systems	Cannot write a single program without syntax and semantic mistakes	Is able to write a program with correct syntax but it does not achieve the target	Ability to write program that achieves the target and it is free from syntax errors	Ability to write program that achieves target and extends functionality further
I2. Demonstrates competency in HTML & CSS programming	Cannot write a single HTML & CSS program without syntax and semantic mistakes	Is able to write a HTML & CSS program with correct syntax but it does not achieve the target	Ability to write HTML & CSS program that achieves the target and it is free from syntax errors	Ability to write HTML & CSS program that achieves target and extends functionality further

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J. An understanding of processes that support the delivery and management of information systems within a specific application environment.

Performance Criteria	Curriculum Map (Where Developed)	Where Assessed	Assessment Method
J1. Demonstrates an understanding of processes that support the delivery of business information systems	CSIT 151, 251, 351	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects
J2. Demonstrates an understanding of processes that support the management of business information systems	CSIT 251, 351, 471	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects
J3. Demonstrates an understanding of fundamentals of a modern programming language and data management for business information systems	CSIT 251, 351, 471	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects
J4. Demonstrates an understanding of systems analysis, design and role of business information systems	CSIT 251, 351, 471	CSIT 351	Selected questions extracted from course examinations and assignments; selected components of course projects

RUBRIC SHEET FOR ASSESSMENT OF PROGRAM OUTCOME J

J. An understanding of processes that support the delivery and management of information systems within a specific application environment.

Performance Criteria	Inadequate	Approaches Standard	Meets Standard	Exceeds Standard
J1. Demonstrates an understanding of processes that support the delivery of business information systems	Cannot demonstrate an understanding of processes that support the delivery of business information systems	Can demonstrate an understanding of processes that support the delivery of business information systems	Can demonstrate and apply an understanding of processes that support the delivery of business information systems	Ability to use an understanding of processes that support the delivery of business information systems
J2. . Demonstrates an understanding of processes that support the management of business information systems	Cannot demonstrate an understanding of processes that support the management of business information systems	Can demonstrate an understanding of processes that support the management of business information systems	Can demonstrate and apply an understanding of processes that support the management of business information systems	Ability to use an understanding of processes that support the management of business information systems
J3. Demonstrates an understanding of fundamentals of a modern programming language and data management used for information systems	Cannot demonstrates an understanding of fundamentals of a modern programming language and data management used for information systems	Is able to demonstrates an understanding of fundamentals of a modern programming language and data management used for information systems	Can apply an understanding of fundamentals of a modern programming language and data management used for information systems	Ability to use nicely an understanding of fundamentals of a modern programming language and data management used for information systems
J4. Demonstrates an understanding of systems analysis, design and role of business information systems	Cannot demonstrates an understanding of systems analysis, design and role of business information systems	Can demonstrates an understanding of systems analysis, design and role of business information systems	Can independently apply an understanding of systems analysis, design and its role to business information systems	Has ability to apply an understanding of systems analysis, design and extend its role to business information systems

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