Computer Engineering Technology
2013-14 Assessment Report

I. Introduction

In 1965, OIT was invited to join a Technical Education consortium sponsored by a number of major computer manufacturers. In response, OIT developed an Electro-Mechanical Engineering Technology program. This program was based on a mix of existing EET, MET, Math and other support courses. The name of the program was changed to Computer Systems Engineering Technology in 1973 in order to better represent the course material and capabilities of graduates. Course offerings were expanded, refined and renumbered using CST prefixes to reflect their computer systems content. Since that time, the program has continued to evolve in order to track new developments in the field and keep graduates current. As of this time, the program is only offered on the Klamath Falls campus. Enrollment in the department continued to be flat or up slightly relative to previous years, but, the number of students selecting to pursue a degree in CET was up a little from the previous year. Five students graduated with BS degrees and 6 students were awarded AE degrees in the June 2014 commencement. The results of the 2013 graduate survey showed a starting salary range of $58,500 to $90,000, with the average at $70,000. During the academic year, we obtained an additional 6 Mixed signal Oscilloscopes for the Microprocessor's lab – completing an oscilloscope upgrade for the 10 stations in that lab. We were also able to obtain 40 new computers for two labs -- the ASIC design lab and the Programmable logic lab.

II. Summary of program mission, educational objectives and student learning outcomes

The program mission, educational objectives and student learning outcomes are reviewed annually (each fall) by the program faculty and by our IAB.

Mission

The mission of the Computer Engineering Technology (CET) Degree program in the Computer Systems Engineering Technology (CSET) Department at Oregon Institute of Technology is to provide an excellent education incorporating industry-relevant, applied laboratory based design and analysis to our students. The program is to serve a constituency consisting of its Alumni, employers in the high-technology industry, and the members of our IAB. Major components of the CET program's mission in the CSET Department are to:

I. educate computer engineering technology students to meet current and future industrial challenges,

II. promote a sense of scholarship, leadership, and professional service among our graduates,

III. enable our students to create, develop, and disseminate knowledge for the applied engineering environment,

IV. expose our students to cross-disciplinary educational programs, and provide high tech industry employers with graduates in the computer engineering technology profession, a profession which is increasingly being driven by advances in technology.

CET Program Educational Objectives

Program Educational Objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

Alumni of the Computer Engineering Technology (CET) Bachelor Degree program may be employed in a wide range of high tech industries from industrial manufacturing to consumer electronics where they will be involved in solving problems through the development of hardware, software and embedded applications. Alumni may be involved in product design, testing and qualification, application engineering, customer support, sales, or public relations.

A) Alumni will demonstrate technical competency through success in computer engineering technology positions and/or pursuit of engineering or engineering technology graduate studies if desired.

B) Alumni will demonstrate competencies in communication and teamwork skills by assuming increasing levels of responsibility and/or leadership or managerial roles.

C) Alumni will develop professionally, pursue continued learning and practice responsibly and ethically.

Alumni of the Computer Engineering Technology (CET) Associate Degree program may be employed as technicians or in support roles in a wide range of high tech industries from industrial manufacturing to consumer electronics. Alumni may be involved in product testing and qualification, customer support, sales, or public relations.

A) Alumni will demonstrate technical competence through success in computer engineering technician positions.

B) Alumni will demonstrate competencies in communication and teamwork skills through positive contributions to team based engineering projects.

C) Alumni will develop professionally, pursue continued learning and practice responsibly and ethically.

According to current statistics, one third of students who obtain the CET Associate degree also obtain a Bachelor degree in a related discipline, most often a Bachelor degree in Software. In this case, the Associate degree adds breadth to their education. Alumni in this category would be expected to perform at a level consistent with the Bachelor degree program educational objectives.

CET Bachelor of Science Program Student Learning Outcomes

Graduates of the CET Bachelor's degree program are expected to be able to demonstrate:

(1) an ability to identify, formulate, and solve computer engineering technology problems, including the specification, design, implementation, and operation of systems and components, that meet performance, and quality requirements in a timely manner (Objective A & C) ;

(2) an ability to design, conduct, and interpret experiments including applying the results to verify the system (Objective A);

(3) an ability to function effectively on teams (Objective B);

(4) an understanding of professional, ethical and social responsibility (Objective C);

(5) a recognition of the need for, and an ability to engage in, life-long learning (Objective C).

(6) the ability to apply mathematics including differential and integral calculus, probability, and discrete mathematics to hardware and software problems (Objective A);

(7) mastery of the techniques, skills, and knowledge appropriate to the degree program, with depth in at least two sub disciplines (microprocessors, ASICs, software, computer architecture) of the computer engineering technology program (Objective A);

(8) an ability to use applied engineering tools, techniques, and skills including computer-based tools for design, analysis and simulation (Objective A);

(9) an ability to design, fabricate and test systems containing hardware and software components; as well as to analyze and interpret test results in order to improve the system (Objective A);

(10) an ability to convey technical material through oral presentation and interaction with an audience (Objective B);

(11) an ability to convey technical material through written reports which satisfy accepted standards for writing style (Objective B);

(12) an ability to improve system design with regard to quality and project management (Objective A).

CET Associate Degree Student Learning Outcomes

Graduates of the CET Associate degree program are expected to be able to demonstrate:

(1) an ability to identify, formulate, and solve computer engineering technology problems, including the test, implementation, and operation of systems and components, that meet performance and quality requirements in a timely manner (Objective A & C) ;

(2) an ability to design, conduct, and interpret experiments including applying the results to verify a system (Objective A);

(3) an ability to function effectively on teams (Objective B);

(4) an understanding of professional, ethical and social responsibility (Objective C);

(5) a recognition of the need for, and an ability to engage in, life-long learning (Objective C).

(6) the ability to apply mathematics including differential and integral calculus and discrete mathematics to hardware and software problems (Objective A);

(7) an ability to use applied engineering tools, techniques, and skills including computer-based tools for analysis, simulation, and testing (Objective A);

(8) an ability to fabricate and test engineering systems containing hardware and software components (Objective A);

(9) an ability to convey technical material through oral presentation and interaction with an audience (Objective B);

(10) an ability to convey technical material through written reports which satisfy accepted standards for writing style (Objective B);

III. Assessment Cycle

The current assessment cycle appears below. For the BS program, four of the 12 student learning outcomes are assessed each year of a three year cycle. For the AE program, the outcomes that correspond to the BS program outcomes are assessed.

CET BS Program Assessment Plan – 2011-12

Learning Outcome	2013-14	2014-15	2015-16
(1) an ability to identify, formulate, and solve computer engineering technology problems, including the specification, design, implementation, and operation of systems and components, that meet performance, and quality requirements in a timely manner;	•		
(2) an ability to design, conduct, and interpret experiments including applying the results to verify the system;		•	
(3) an ability to function effectively on teams;			•
(4) an understanding of professional, ethical and social responsibility;			•
(5) a recognition of the need for, and an ability to engage in, life-long learning.	•		
(6) the ability to apply mathematics including differential and integral calculus, probability, and discrete mathematics to hardware and software problems;		•	
(7) mastery of the techniques skills, and knowledge appropriate to the degree program, with depth in at least two sub disciplines (microprocessors, ASICs, software, computer architecture) of the computer engineering technology program;			•
(8) an ability to use applied engineering tools, techniques, and skills including computer-based tools for design, analysis and simulation;		•	
(9) an ability to design, fabricate and test systems containing hardware and software components; as well as to analyze and interpret test results in order to improve the system;		•	
(10) an ability to convey technical material through oral presentation and interaction with an audience;	•		
(11) an ability to convey technical material through written reports which satisfy accepted standards for writing style;	•		
(12) an ability to improve system design with regard to quality and project management			•

CET AS Program Assessment Plan – 2011-12

Learning Outcome	2013-14	2014-15	2015-16
(1) an ability to identify, formulate, and solve computer engineering technology problems, including the test, implementation, and operation of systems and components, that meet performance and quality requirements in a timely manner;	•		
(2) an ability to design, conduct, and interpret experiments including applying the results to verify a system;		•	
(3) an ability to function effectively on teams;			•
(4) an understanding of professional, ethical and social responsibility;			•
(5) a recognition of the need for, and an ability to engage in, life-long learning;	•		
(6) the ability to apply mathematics including differential and integral calculus and discrete mathematics to hardware and software problems;		•	
(7) an ability to use applied engineering tools, techniques, and skills including computer-based tools for analysis, simulation, and testing;		•	
(8) an ability to fabricate and test engineering systems containing hardware and software components;		•	
(9) an ability to convey technical material through oral presentation and interaction with an audience;	•		
(10) an ability to convey technical material through written reports which satisfy accepted standards for writing style	•		

IV. Summary of 2013-14 Assessment Results

During the 2013-14 academic year, the program faculty assessed four student learning outcomes as summarized below. These outcomes are mapped to the CET curriculum in Appendix A. Additional information can be found in department assessment records.

Student Learning Outcome #1 (B.S. degree): an ability to identify, formulate, and solve computer engineering technology problems, including the specification, design, implementation, and operation of systems and components, that meet performance, and quality requirements in a timely manner**.**
Student Learning Outcome #1 (A.E. degree): an ability to identify, formulate, and solve computer engineering technology problems, including the test, implementation, and operation of systems and components, that meet performance and quality requirements in a timely manner.

Direct Assessment #1
Data Collection Date: 11/14/13
Coordinator: Phong Nguyen

Students in CST 162 were given a set of specifications to a digital logic design problem. They are next required to follow a specific method to come up with a design which they are to implement using gates. At the end, the students are asked to check a truth table to partially check functionality of the design. Student work was assessed in each of the following performance criteria as defined in the problem solving rubric.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results
Understanding Specifications	Number Scoring Excellent or Good	70%	93.8% (45 / 48)
Plan to Solve	"	"	91.7% (44 / 48)
Carry out Plan	"	"	72.9% (35 / 48)
Evaluating	"	"	77.1% (37 / 48)
Solution	"	"	91.7% (44 / 48)

Evaluation 11/15/13: Students exceeded expectations in all criteria.

Actions 11/15/13: No actions are needed at this time.

Direct Assessment #2
Data Collection Date: Winter 2014
Coordinator: Ralph Carestia

Students in CST 231 were given were given a serial adder structure and were to write the Verilog code for the design. They were evaluated with a problem solving rubric in the following categories: understanding of the problem, information gathering, developing a plan to solve (hierarchical structure), an ability to implement, evaluation of results (through simulation), and correctness of answer.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results

Understanding Specifications	Number Scoring Excellent or Good	70%	100% (10 / 10)
Info Gathering	“	“	100% (10 / 10)
Plan to Solve	“	“	70.0% (7 / 10)
Carry out Plan	“	“	90.0% (9 / 10)
Evaluating	“	“	60.0% (6 / 10)
Solution	“	“	60.0% (6 / 10)

Evaluation Winter 2014: Students did quite well in their ability to understand the problem, gather information, develop the Verilog code and carry out a plan to solve the problem. They were asked to evaluate the results via simulation but many did not produce the proper set of vectors for testing their results.

Actions Winter 2014: Additional emphasis will be placed on setting up simulation vectors. Properly setting up test vectors will help expose design flaws and also lead to a correct solution.

Direct Assessment #3
Data Collection Date: Spring 2014
Coordinator: Phong Nguyen

Students in CST 407 - Cryptography were given a quiz. In this quiz, the students are required to recognize and apply methods of encryption/decryption to provide a digital signature in order to prevent a “man in the middle” attack using the RSA system. The quiz was scored using the OIT critical thinking rubric.
This assessment was done for the critical thinking ISLO. As critical thinking is related the problem solving, the results are included here. The data is from students in the hardware program only.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results
Identification	Number Scoring Excellent or Good	70%	80.0% (4/5)
Clarification	“	“	100% (5/5)
Evaluation	“	“	80.0% (4/5)

Evaluation Spring 2014: Students exceeded expectations in all criteria.

Actions Spring 2014: No actions are needed at this time.

Indirect Assessment #1
Data Collection Date: Spring 2014
Coordinator: Doug Lynn

3 of 3 CET seniors responding on the 2012-13 senior exit survey and 4 of 4 seniors responding on the 2013-14 senior exit survey question related to this learning outcome judged that they were

adequately prepared in the area of identifying and solving computer engineering technology problems.

Actions (6/20/2014): No changes need to be made as a result of this assessment

Student Learning Outcome #5 (B.S. and A.E. degrees): a recognition of the need for, and an ability to engage in, life-long learning.

Direct Assessment #1
Data Collection Date: Fall 2013
Coordinator: Troy Scevers

Students in CST 417 were given a standard assignment for writing an essay on the importance of lifelong learning in the field of embedded systems. The OIT Lifelong Learning rubric was used to assess these essays. The results are summarized below.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results
Lifelong learning	Number Scoring Proficient or Highly Proficient	70%	100% (4/4)
Professional societies and organizations	"	"	25% (1/4)
Credentials	"	"	0% (0/4)
Continuing education	"	"	75% (3/4)
Short- and long-term career plans	"	"	100% (4/4)

Evaluation 6/19/2014: Students did well in defining lifelong learning and their understanding of it. Student's self-analysis included both strengths and weaknesses. Only one student mentioned a professional society and no one mentioned credentials at all. These aspects were not covered in the assignment well and had low visibility to the students. Continuing education was on the thoughts of most of the students in the form of either classes or seminars that they would be able to attend once out of school. All students had a good grasp of their career plans and a path to get them there. They had very realistic expectations for their careers and goals.

Actions 6/19/2014: Since credentials are not essential to the careers our students pursue, we do not consider this a deficiency (it is included in the instrument as this assessment is usually used for an ISLO). We do, however, need to discuss professional societies more with the students. They need to be aware of the benefits that a professional society can bring to them, including support for their continuing education and lifelong learning.

Indirect Assessment #1
Data Collection Date: Spring 2014
Coordinator: Doug Lynn

3 of 3 CET seniors responding on the 2012-13 senior exit survey and 4 of 4 seniors responding on the 2013-14 senior exit survey question related to this learning outcome judged that they were adequately prepared in the area of identifying and solving computer engineering technology problems.

Actions (6/20/2014): No changes need to be made as a result of this assessment.

Student Learning Outcome #10 (B.S. degree), #9 (A.E. degree): an ability to convey technical material through oral presentation and interaction with an audience.

Direct Assessment #1
Data Collection Date: 12/5/2013
Coordinator: Phong Nguyen

Students in CST 371 Junior project were asked to deliver a preliminary design review presentation in front of the JP class. Teams and individuals were assessed based on the OIT Public Speaking rubric. The results are summarized below.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results
Content (appropriate and attributed sources)	Number Scoring Proficient or Highly Proficient	70%	100% (6/6)
Organization	"	"	100% (6/6)
Style	"	"	100% (6 /6)
Delivery	"	"	100% (6 /6)
Visuals	"	"	100% (6/6)

Evaluation 12/5/2013: Students exceeded expectations. This represents and improvement over the last time this assessment was done. The previous time, students did not meet expectations in the Style criteria due to not adhering to time limits. In the previous assessment we decided emphasize sticking to time constraints and that students should practice their presentations ahead of time. This was done, and an improvement in the Style criteria was obtained.

Actions 12/5/2013: No actions need to be taken as a result of this assessment.

Direct Assessment #2
Data Collection Date: Winter term 2014
Coordinator: Ralph Carestia

In CST 451, students presented their oral senior project design review for the class. The presentations were evaluated by the professor based on a score sheet. The results are summarized below.

Performance Criteria	Measurement Scale	Minimum Acceptable Performance	Results
Presentation	Number Scoring Excellent (5) or Good (4)	70%	83.3% (5/6)
Communications	"	"	100% (6/6)
Closure	"	"	83.3% (5/6)
Planning & Organization	"	"	83.3% (5/6)
Delivery (articulation & loudness)	"	"	83.3% (5/6)

Evaluation Winter 2014: Students exceeded expectations in all performance criteria.

Actions Winter 2014: No actions need to be taken as a result of this assessment.

Indirect Assessment #1
Data Collection Date: Spring 2014
Coordinator: Doug Lynn

3 of 3 CET seniors responding on the 2012-13 senior exit survey and 4 of 4 seniors responding on the 2013-14 senior exit survey question related to this learning outcome judged that they were adequately prepared in the area of identifying and solving computer engineering technology problems.

Actions (6/20/2014): No changes need to be made as a result of this assessment.

Student Learning Outcome #11 (B.S. degree), #10 (A.E. degree): an ability to convey technical material through written reports which satisfy accepted standards for writing style.

Direct Assessment #1
Data Collection Date: Spring 2013
Coordinator: Ralph Carestia

Students in CST 451/461 are required to prepare a written final report for their senior projects. These reports were evaluated fall term 2013 (and over Winter and Spring terms as students finished incompletes and the reports came in) using CSET's Written Reports rubric. The results are shown below.

Performance Criteria	Measurement Scale	Minimum	Results

		Acceptable Performance	
Introduction	Number Scoring Proficient or Highly Proficient	70%	85.7% (6/7)
Research	"	"	85.7% (6/7)
Purpose/Problem	"	"	85.7% (6/7)
Procedure	"	"	85.7% (6/7)
Data and Results	"	"	71.4% (5/7)
Conclusion	"	"	57.1% (4/7)
Grammar and Spelling	"	"	100% (7/7)
Attractiveness	"	"	100% (7/7)
Timeliness	"	"	71.4% (5/7)

Evaluation Fall 2013: Students met expectations in all criteria except conclusion. This was due to students' inability to adequately explain their findings or to explain various inconsistencies in the results of their testing. This may have resulted from students not giving enough time to testing (which is typical of student projects in general). These results represent a small improvement over last time this assessment was conducted. Last time, students did not meet expectations in the Conclusion criteria or the Data and Results criteria (along with the timeliness criteria, though that is not directly related to writing). As a result of the last assessment, the final report requirements document was rewritten to draw more attention to results analysis and conclusions.

Actions Fall 2013: We will continue to emphasize timeliness, and allowing enough time for testing and analysis, and continue to search for ways to improve performance on the conclusion area.

Indirect Assessment #1

Data Collection Date: Spring 2014

Coordinator: Doug Lynn

3 of 3 CET seniors responding on the 2012-13 senior exit survey and 4 of 4 seniors responding on the 2013-14 senior exit survey question related to this learning outcome judged that they were adequately prepared in the area of identifying and solving computer engineering technology problems.

Actions (6/20/2014): No changes need to be made as a result of this assessment.

V. Summary of Student Learning

Student Learning Outcome #1 (B.S. degree): an ability to identify, formulate, and solve computer engineering technology problems, including the specification, design, implementation,

and operation of systems and components, that meet performance, and quality requirements in a timely manner**.**
Student Learning Outcome #1 (A.E. degree): an ability to identify, formulate, and solve computer engineering technology problems, including the test, implementation, and operation of systems and components, that meet performance and quality requirements in a timely manner.

Freshmen demonstrated good problem solving skills. Sophomores had a problem adequately testing their designs, leading to an incorrect solution. Seniors showed good critical thinking skills in an ISLO assessment that was conducted for the institution. Since critical thinking is a component of problem solving, the assessment data was included here. To address the deficiency at the sophomore level, additional emphasis will be placed on setting up simulation vectors in CST 231/2. A planned assessment at the junior level was not conducted.

Student Learning Outcome #5 (B.S. and A.E. degrees): a recognition of the need for, and an ability to engage in, life-long learning.

In the one direct assessment conducted on this outcome this year, seniors showed they have a good understanding of what lifelong-leaning is and the need for it. They had an inadequate understanding of professional societies and how they provide services for lifelong learning. We will find an appropriate class in which to address this deficiency.

Student Learning Outcome #10 (B.S. degree), #9 (A.E. degree): an ability to convey technical material through oral presentation and interaction with an audience.

Students at both the junior and senior levels exceeded expectations in all criteria related to this outcome.

Student Learning Outcome #11 (B.S. degree), #10 (A.E. degree): an ability to convey technical material through written reports which satisfy accepted standards for writing style.

Seniors met expectations in all criteria except drawing conclusions. This was deemed to be as a result of not allowing enough time to adequately test their projects, providing enough of a basis upon which to draw conclusions. Students not allowing adequate time for testing is a continuing problem (also noted in other assessments). We have found that this is a difficult problem to solve. We might be able to address it indirectly in a testing class where students are asked to test an existing flawed system. A writing assessments conducted in this class could then specifically address student's performance on the Conclusion criteria.

VI. Changes Resulting from Assessment

This year's assessment on oral presentations in Junior project represents an major improvement over the last time this assessment was done. The previous time, students did not meet expectations in the Style criteria due to not adhering to time limits. In the previous assessment we decided emphasize sticking to time constraints and that students should practice their presentations ahead of time. This was done, and an improvement in the Style criteria was obtained.

Appendix A: SLO Curriculum Maps

Outcome Assessment Points, BS Program H = Highly assessable M = Weakly assessable blank = Low to not assessable		(1) problem solving	(2) experiment	(3) teamwork	(4) ethical / social resp	(5) life-long learning	(6) calc, prob, discrete	(7) master skills + knowledge	(8) design, analysis, sim	(9) design, fab, test, improve	(10) oral presentation	(11) written presentation	(12) quality, proj. manage
Freshman Year	Eval. Cycle ⇨	Y1	Y2	Y3	Y3	Y2	Y1	Y3	Y2	Y1	Y3	Y2	Y3
CST 102	Intro to Comp Sys	M	M	M	M					M		M	
CST 162	Intro to Digital Logic	H	M				M						
Math 111	College Algebra												
WRI 121	English Comp												
PSY 201	Psychology												
CST 116	C++ Prog I												
CST 130	Computer Org						M						
Math 112	Trigonometry												
WRI 122	Argumentative Writing												
HUM	Hum Elective												
CST 105	Intro to Comp Sys III				M								
CST 126	C++ Prog II												
CST 131	Comp Arch						M						
MATH 251	Diff Calculus						M						
SPE 111	Public Speaking										M		
Sophomore Year													
CST 250	Assembly Lang												
MATH 252	Integral Calculus						M						
WRI 227	Tech Report											M	
CST 133	Dig Elec II – Seq w HDL						M			M			
CST 134	Instrumentation		M						M				
CST 204	Intro to µcontrollers						M		M	M			
EE 221	DC & 1st Ord Trans		M				M	M					
CST 231/2	Comp Des w/PLD	M	H			M	M		M	H			
Math 254N	Vector Calc						H						
CST 240	Unix	M	M				M	M	M	M			
EET 237/8	AC & 2nd Ord Trans		M				M	M					
SPE 321	Team Comm			M							H		
Math	Math Elective						H						

Outcome Assessment Points, BS Program continued		(1) problem solving	(2) experiment	(3) teamwork	(4) ethical / social resp	(5) life-long learning	(6) calc, prob, discrete	(7) master skills + knowledge	(8) design, analysis, sim	(9) design, fab, test, improve	(10) oral presentation	(11) written presentation	(12) quality, proj. manage
Junior Year	Eval. Cycle ⇨	Y1	Y2	Y3	Y3	Y2	Y1	Y3	Y2	Y1	Y3	Y2	Y3
CST 337	Embedded Sys Arch	M	M				M	M	M	M		H	
CST 335	I/O Interfacing	M	M	M		M				M			
CST 371	Embedded Sys Dev I	H	M	H		M			H	M	H	H	M
PHY 221	Physics w/Calculus												
CST 331	Microproc Interface	M	M				M	M	M	M		M	
CST 372	Embedded Sys Dev II	H	M	H		M	M	M	H	H	M	M	M
PHY 222	Physics w/Calculus												
EET 308/9	MOS Microelectronics		M				M	M					
CST 351	Advanced PLDs	H	H		M	M		M	H	M			M
CST 373	Embedded Sys Dev III	H	H	H	M	H	M	M	M	H	H	H	H
PHY 223	Physics w/Calculus												
HUM	Hum Elective				M								
WRI 327	Adv Tech Writing											H	
Senior Year													
BUS 304	Engr Management				M								
CST 344	Intermediate Arch	M			M		M	M	M	M			
CST 441	Logic Synth w VHDL	H	H		M	M		H	H	M			
CST xxx	Tech Elective					M							
SSC	SS Elective				M								
CST 442	Advanced Arch.	M				M	H	H	M	M			
CST 451	ASIC Des using FPGAs	H	H		M	M		H	M	H	H	H	M
CST 418	Data Comm & Net	M				M	H						
SSC	SS Elective				M								
MGT 345	Engr Economy				M								M
CST 464	RISC-Based µproc	M	M	M		M		M	M	M			
CST 461	Adv Topics in VLSI	M	H				M	H	H			M	
Anth 452	Globalization				M								
HUM	Hum Elective				M								

Outcome Assessment Points, AE Progam H = Highly assessable M = Weakly assessable blank = Low to not assessable		(1) problem solving	(2) experiment	(3) teamwork	(4) ethical / social resp	(5) life-long learning	(6) calc, discrete	(7), analysis, sim, test	(8) fabricate, test	(9) oral presentation	(10) written presentation
Freshman Year	Eval. Cycle ⇨	Y1	Y2	Y3	Y3	Y2	Y1	Y2	Y1	Y3	Y2
CST 102	Intro to Comp Sys.	M	M	M					M		M
CST 162	Intro to Digital Logic	H	M				M				
MATH 111	College Algebra										
WRI 121	English Composition										
PSY 201	Psychology										
CST 116	C++ Programming I										
CST 130	Computer Organization						M				
MATH 112	Trigonometry										
WRI 122	Argumentative Writing										
HUM	Humanities Elective				M						
CST 105	Intro to Comp Sys. III				M						
CST 126	C++ Programming II										
CST 131	Computer Architecture						M				
MATH 251	Differential Calculus						M				
SPE 111	Fundamentals of Speech									M	M
Sophomore Year											
CST 250	Computer Assembly Language										
MATH 252	Integral Calculus						M				
WRI 227	Technical Report Writing										M
CST 133	Dig. Elec. II – Seq. Logic w HDL						M				
CST 134	Instrumentation		M					M	M		
CST 204	Introduction to µcontrollers						M				
EE 221	Circ. I – DC & 1st Order Trans.										
CST 231	Computer Design w/PLD	M	H			M	M	M	H		
CST 232	Comp. Design w/PLD Lab	H	H			M	M	M	H		
PHY 221	General Physics w/Calculus										
CST 240	Unix	M	M				M	M	M		
EET 237/8	Circ. II – AC & 2nd Order Trans.										
PHY 222	General Physics w/Calculus										
SSC	SS Elective				M						