El Camino College
Mathematical Sciences Division
Computer Science Department
Program Review – Fall 2008
Conducted by: El Camino's CS Department
Massoud Ghyamkhah

Table of Contents

I. Overview

A. Description of Program

Program

The Computer Science (CS) program attempts to meet the educational requirements of our students by offering wide-ranging courses which can lead to a degree and/or transfer of lower level courses to four-year universities. A range of courses enable students to learn different programming languages for different types of applications, such as web-based, scientific and generally problem analyze, solution design and develop computer programs. Completion of requirements for the major can provide students with an associate in science degree in Computer Science from El Camino College, which can lead to career opportunities as software specialists, computer programmers, and other software related areas in computer field.

Our Students

The following observations are based on the information provided by Institutional Research from students who completed our program review student questionnaires in 2006. The results are intended to provide an understanding of the majority of our Computer Science student population. Only the highest percentages are shown, and are based on the number of respondents to each question.

Highest age group:	**17-22** (70%)
Educational attainment:	**High school diploma (33%)**
Educational status:	**Continuing student (27%) First term at ECC (26%)**
Major:	**Computer Science/Engineering (43%)**
Purpose in taking CS classes:	**Transfer (71%)**

B. Status of Previous Recommendations

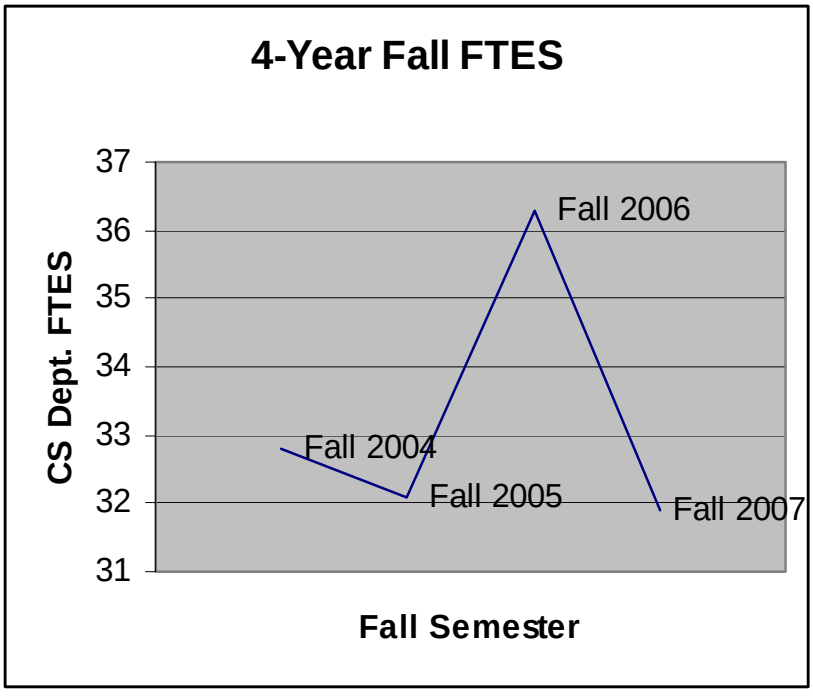
There has never been a program review previously conducted for the Computer Science program.

II. Program Statistics
A. Demand: FTES by Course/Program

Instructions: Analyze the **FTES by Course/Program** using 1st census data and answer the following questions. At a minimum, your analysis must include a 3-year cycle comparing like semesters.

Course	Year 1 (Fall semester 2004)	Year 2 (Fall semester 2005)	Year 3 (Fall semester 2006)	Year 4 (Fall semester 2007)
CSCI 1: Problem Solving and Program Design using C++	16.6	16.1	17.0	17.2
CSCI 2: Introduction to Data Structures	7.7	7.9	6.2	4.2
CSCI 3: Computer Programming in Java	Not offered	Not offered	9.9	5.1
CSCI 4: Computer Programming in C#	Not offered	Not offered	Not offered	Not offered
CSCI 10: Computer Programming with FORTRAN	3.2	4.5	3.2	5.3
CSCI 15P: Assembly Language Programming for the IBM PC and Compatibles	Not offered	Not offered	Not offered	Not offered
CSCI 23: Advanced Computer Programming in Java	1.5	Not offered	Not offered	Not offered
CSCI 25: Programming in C	Not offered	Not offered	Not offered	Not offered
CSCI 30: Advanced Programming in C++	Not offered	Not offered	Not offered	Not offered
CSCI 36: .NET's Windows Forms for Graphical User Interface Computer Science Programming	Not offered	Not offered	Not offered	Not offered
CSCI 40: Introduction to UNIX Operating Systems	3.8	3.6	Not offered	Not offered
CSCI 55: Three Dimensional Computer Graphics Programming	Not offered	Not offered	Not offered	Not offered
CSCI 60: Programming with ASP.NET and C# in Web Based Computer Science Applications	Not offered	Not offered	Not offered	Not offered
Totals	**32.8**	**32.1**	**36.3**	**31.9**

Source: Mathematical Sciences Division FTES reports
Note: "Not offered" per ECC schedule of classes for the indicated fall semester



1. Given the data, can you recognize any trends in course demand in any of the Program's courses?

   Although many sources, like the U.S. Department of Labor, indicate that IT (information technology) jobs are again experiencing growth, student's perceptions are slow to change and they still see the IT job market as uncertain due to events like the "dot-com" bust and recent off-shoring trends. This, along with other factors like tuition increases has unfortunately led to a decrease in FTES over the last four years, with the exception of 2006.

2. What are you doing to respond to trends?

   - Informing the student of transferability of courses offered by Computer Science to Four-Year universities.
   - Participated in a campus wide open-house for local high school students, counselors and computer technology teachers informing them of the continued upswing in the IT job market the accompanying demand for employees with computer skills.

3. Should a recommendation be written addressing the data? ✓ Yes ____ No

   The Computer Science department should:
   - Continue to inform the local high school students and counselors of the courses available and the potential for jobs in the near future.
   - Inform local businesses of the course offerings and their availability.
   - Inviting industry people to visit our classes and inform the students of carrier opportunities in IT fields.
   - Work with the ECC counselors to inform students who intend to transfer to a four-year university of the available courses and the transferability of the courses.
   - Work with articulation office to articulate more courses to local four-year universities.
   - Continue to communicate with the local community to market our El Camino College programs, and to seek guidance in the evolution of the Computer Science program so that it directly meets the current and future needs of the student and business community of the South Bay.

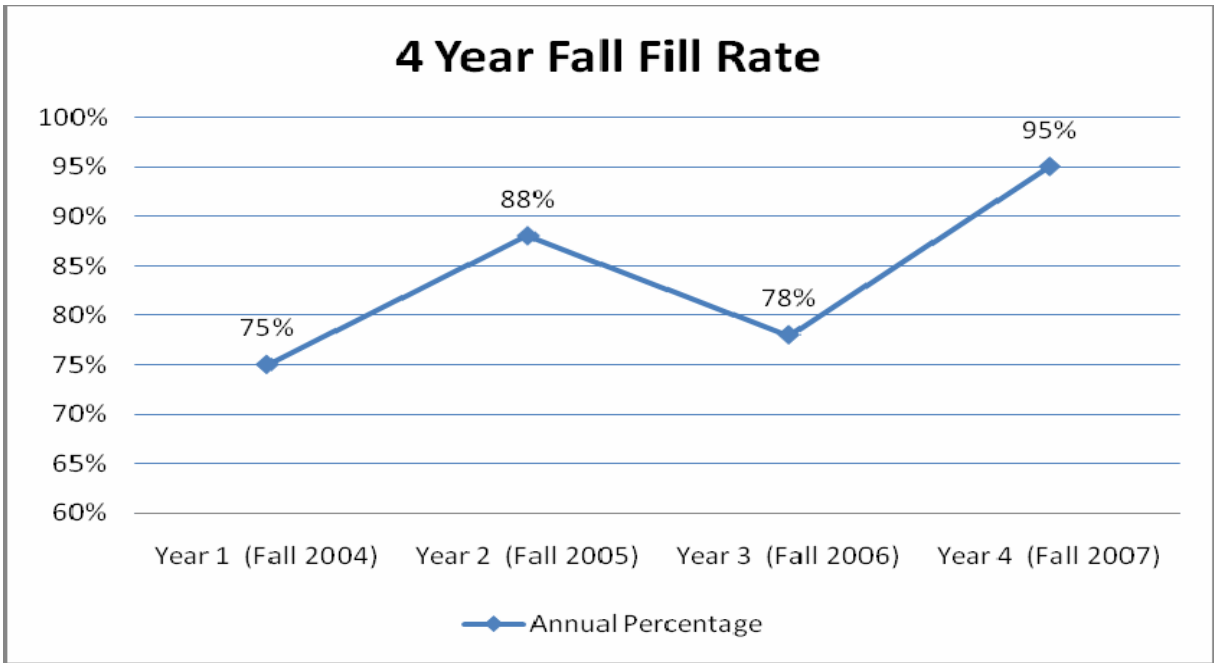
B. Offerings: Fill Rate

Instructions: Review and analyze the **fill rate data** (including the fill rate per course for both day and evening), provided by Institutional Research for this program for a three year cycle and answer the following questions:

Average fill rate of courses in program: (Percent of fill of each class at census.)

	Year 1 (Fall 2004)	Year 2 (Fall 2005)	Year 3 (Fall 2006)	Year 4 (Fall 2007)
CSCI 1: Problem Solving and Program Design using C++	89%	88%	91%	92%
CSCI 2: Introduction to Data Structures	70%	91%	57%	77%
CSCI 3: Computer Programming in Java			77%	109%
CSCI 4: Computer Programming in C#				
CSCI 10: Computer Programming with FORTRAN	68%	95%	68%	114%
CSCI 15P: Assembly Language Programming for the IBM PC				
CSCI 23: Advanced Computer Programming in Java	32%			
CSCI 25: Programming in C				
CSCI 30: Advanced Programming in C++				
CSCI 36: .NET's Windows Forms for Graphical User				
CSCI 40: Introduction to UNIX Operating Systems	82%	77%		
CSCI 55: Three Dimensional Computer Graphics				
CSCI 60: Programming with ASP.NET and C# in Web Based				
Totals (day and evening)	75%	88%	78%	95%

Source: Mathematical Sciences Division FTES reports



1. Given the data, is the program in a growth mode? ✓ Yes ___ No
   After rebounding from a noticeable decrease in 2004 and 2006, the fill rate has increased from 75% in 2004 to 95% in 2007.

2. What adjustments are indicated?

   The Computer Science department has reduced the number of sections that are offered and needs to offer new classes that cover current technologies.

3. Should a recommendation be written that addresses the data? ✓ Yes _____ No

   The Computer Science department should:
   - Create an advisory board to find the types of new IT skills that are needed by the local industry to learn what they require of Computer Science job applicants.
   - Continue to check Computer Science offerings of local community colleges.
   - Make online classes available to provide a flexible schedule for a segment of our non-traditional students who cannot attend classes on campus.

C. Scheduling: Student Satisfaction with Scheduling

Fall 2006 and summer 2006 (for summer column only)

Course	During the early morning	During the late am early pm	During the late afternoon	During evening	During the weekend	During the summer	Via Telecourse	Via Online
CSCI 1: Problem Solving and Program Design using C++	**1**	**1**	**1**	**1**		**2 sections (AM)**		
CSCI 2: Introduction to Data Structures	**1**			**1**				
CSCI 3: Computer Programming in Java				**1**				
CSCI 4: Computer Programming in C#								
CSCI 10: Computer Programming with FORTRAN				**1**				
CSCI 15P: Assembly Language Programming for the IBM PC and Compatibles				**1**				
CSCI 23: Advanced Computer Programming in Java								
CSCI 25: Programming in C								
CSCI 30: Advanced Programming in C++								
CSCI 36: .NET's Windows Forms for Graphical User Interface Computer Science Programming								
CSCI 40: Introduction to UNIX Operating Systems				**2**				
CSCI 55: Three Dimensional Computer Graphics Programming								
CSCI 60: Programming with ASP.NET and C# in Web Based Computer Science Applications								

1. What (if anything) is indicated by the student satisfaction with scheduling?

   There has not been any request from students to change the time for offering classes. We offer CSci 1 which is the most popular classes both in the morning and evening. CSci 2 used to be offered both in the morning and afternoon, but due to reduced enrolment it will be offered alternating between morning in the Spring and evening in the Fall. We have also started to offer a weekend class as well, and will continue offering it as long as enrolment would support it.

2. Are there time periods of high student demand which are not being addressed? __ Yes ✓ No
   How could such demand be addressed?

3. Should a recommendation be written addressing this area? ___ Yes ✓__

D. Retention and Success

1. Retention

2. Success Rate

Instructions: Review and analyze the data on **success rate (students who earned a grade of A,B,C, or Credit)** over a three-year cycle comparing day to evening classes, term to term (e.g. fall to spring, spring to summer, etc.), and course levels and answer the following questions:

1. What trends are observed?

2. Should a recommendation be written addressing the data? ✓ Yes ____ No

III. Curriculum

A. Course and Content

1. Courses Not Offered (X)

Courses/Sections Offered Over the Past Three Years							
Course	2004 Spring	2004 Fall	2005 Spring	2005 Fall	2006 Spring	2006 Fall	Totals
CSCI 1:							
CSCI 2:							
CSCI 3:							
CSCI 4:							
CSCI 10:							
CSCI 15P:							
CSCI 23:	X	X	X	X	X	X	
CSCI 25:	X	X	X	X	X	X	
CSCI 30:							
CSCI 36:	X	X	X	X	X	X	
CSCI 40:							
CSCI 55:	X	X	X	X	X	X	
CSCI 60:	X	X	X	X	X	X	

1. Given the data, are there courses that should be inactivated? __X__ Yes ____ No
   CSci23, CSci25, CSci36, CSci55, CSci60

2. If there are courses not offered in the last three years that you do not wish to inactivate, what reasons are there to keep them active?

3. Should a recommendation be written addressing the data? ___ Yes __X__ No

2. Course Revisions and Additions

1. Are there course outlines that should be revised? ___ Yes __X__ No

The CCC recommends each course outline to be updated at least once every five years

Course	Prior	03-04	04-05	05-06	06-07
CSCI 1: Problem Solving and Program Design using C++	2/1997				3/2007
CSCI 2: Introduction to Data Structures	2/1997			3/2006	
CSCI 3: Computer Programming in Java		3/2003			
CSCI 4: Computer Programming in C#	9/2001				9/2007
CSCI 10: Computer Programming with FORTRAN	10/1999				9/2007
CSCI 15P: Assembly Language Programming for the IBM PC and Compatibles	10/1999				
CSCI 23: Advanced Computer Programming in Java	11/2001				

CSCI 25: Programming in C	9/1998				
CSCI 30: Advanced Programming in C++	10/2002				
CSCI 36: .NET's Windows Forms for Graphical User Interface Computer Science Programming	2/2002				
CSCI 40: Introduction to UNIX Operating Systems	10/1998				3/2007
CSCI 55: Three Dimensional Computer Graphics Programming	9/2000				
CSCI 60: Programming with ASP.NET and C# in Web Based Computer Science Applications	11/2001				

2. Are there courses inconsistent with current practice in the field? ___ Yes __X__ No

3. Should new courses to be added to the program? __X__ Yes _____ No
   CS faculty is working on adding 2 new courses and will be proposed in the Fall 2009.

4. Are adjustments necessary to the conditions of enrollment (Prerequisite, Corequisite, Recommended Preparation, and Enrollment Limitations) for a specific course to increase student success?
   ___ Yes __X__ No ____ Uncertain

5. If the program offers a degree and/or certificate, list them and indicate when the requirements were last reviewed?
   Our certificate requirements was reviewed and updated last year.

CS Certificate of Completion

Certificate of Completion

A Certificate of Completion will be awarded to the student who completes the following with a minimum grade of C:

Complete the Following:

Computer Science 1, 2;

And three courses from:

Computer Science 3, 4, 10*, 15P, 23, 25*, 30, 36, 40, 55, 60,
Mathematics 210.

Total Units: 21

(*Only one course from Computer Science 10 or 25 may be counted toward the certificate.)

At least 17 units for this certificate must be completed at El Camino College.

B. Articulation

Instructions: Articulation is the process by which courses taken at ECC can be used to satisfy subject matter requirements at another college or university. This is important in the transfer process for students. To help you in this area, you can review articulation agreements at www.assist.org, the California Articulation Number Guide or meet with the Articulation Officer, Lori Suekawa (ext. 3517).

1. Are there any courses in your curriculum which are part of a lower division preparation for the major that are not articulated with our major transfer institutions?

CS 1

Our CS 1 (Problem Solving and Program Design using C++) class would appear to be a close match to many California State University and University of California System schools and many private universities first semester freshman class computer science course, which is a lower division requirement for students seeking for the Bachelor of Science in computer science and other computer related degrees or seeking a minor in Computer Science. This course should be articulated with more 4-year universities.

CS 2

Our CS 2 (Introduction to Data Structures) class appears to be a close match to many California State University and University of California System schools and many private universities second semester freshman class computer science course, which is a lower division requirement for students seeking for the Bachelor of Science in computer science and other computer related degrees or seeking a minor in Computer Science. This course should be articulated with more 4-year universities.

CS 3

Our CS 3 (Computer Programming in Java) class would appear to be a close match to some California State University and University of California System schools and some private universities first semester freshman class computer science course, which is a lower division requirement for students seeking for the Bachelor of Science in computer science and other computer related degrees or seeking a minor in Computer Science. This course should be articulated with more 4-year universities.

2. What problems, if any, are there in articulating these courses?

There are no problems that we know of. As far as we know, a serious attempt to articulate our classes with other universities has just never been pursued. Only CS 1 is articulated with some universities.

3. Should a recommendation be written addressing above responses? ✓ Yes ____ No

We will research the exact nature of classes required for Computer Science programs in nearby university to see if they truly match the goals of our CS 1, 2, and 3 classes respectively. If the objectives and outcomes are the same then we will attempt to articulate with these universities.

C. Instruction and Assessment

1. Learning Methods

1. What learning methods are incorporated inside and outside the classroom in the program to promote student success?

   All of the courses offered through the CS department have separate lecture and lab components. As our course content varies greatly, the best learning methods depend on the subject matter and whether they occur during a lecture or lab.

   Some of the more commonly used methods are lecture, multimedia presentations, demonstrations, individual projects, and whole class or group discussion. Used, but not as frequently are oral presentations and the use of guest speakers.

2. Should a recommendation be written addressing above response? ____ Yes ___ No

2. Assessment

1. How do you evaluate the extent to which the learning objectives, skills, and competencies are being met?

   A) Courses
   The assessments during both lecture and lab portions of our classes are designed to evaluate how well students accomplish the learning objectives stated in each course's outline.

   The lecture portions of our classes are evaluated based upon the student's performance on quizzes, tests, and a comprehensive final exam on the concepts presented throughout the semester.

   The lab portions of our classes are evaluated on regular bases through assignments and hands-on exercises that demonstrate the achievement of software skills, problem solving, and critical thinking.

   B) Program
   The assessment of our program occurs informally throughout the year in department meetings. A more formal assessment takes place through the review of success and retention statistics.

2. How do you use the results of the above evaluation to improve student learning and the quality of the program?

3. The faculty analyzes the results of the evaluations, and as a department agrees on how to proceed.

4. Should a recommendation be written addressing this area? _x_ Yes ____ No

   The CS department should utilize departmental meetings to review course objectives, teaching methods and assessment practices for all of our courses.

3. Student Learning Outcomes (SLOs)

Note: The CS faculty have committed to completing student learning outcomes (SLO) for all of the CS classes by Fall 2008.

A. Title of Student Learning Outcome (SLO)	Interactive Reading of data for a structure from keyboard.			
B. SLO Type	X	Course-Level		Program-Level
C. Program-Level SLOs:	(*List the program-level SLOs which with this course-level SLO aligns)*			
D. Core-Competencies	(*List the core competencies which with this course- or program-level SLO aligns)*			

4

1A. Date Section 1 Completed	**Spring semester 2009.** **CSCI 1 sections 0100, 0102, 0106, 0108.**		
1B. Contact Personnel	Names:	Extensions:	Email Addresses:
	Massoud Ghyam	9200	mghyam@elcamino.edu
1C. Additional Personnel			
1D. Division and Department Information	Division:	Program or Department:	Course(s):
	Mathematical Sciences	Computer Science	CSCI 1
1E. Proposed SLO Statement	Given a specific implementation of the abstract data type List, the student will be able to write the code to find an element in the list with a given key and remove it from the list. (Note: The question in part I uses the linked-list implementation of a list, but some other implementation could be used.)		
1F. Proposed Assessment Instrument or Mechanism	Test or final exam.		
1G. Sections Targeted for Assessment	CSCI 1 Sections 0100, 0102, 0106, 0108		

1H. Timeline for Assessment	At the end of each semester that CSCI 1 is offered.

1I. Rubric or Standards for Success	Below is the definition of a structure:
	`struct Person {`
	`  string Name, Address`
	`  int Age;`
	`};`
	
	Question:
	Write the code for the function `void Read_data(Person &Temp).` This function will prompt user for the name (full name), address and age of a person and stores it in the structure Temp.
	
	Solution and Grading Rubric:

Solution	**Points**	
{ **cout <<"Please enter age:"**	**1**	**1 point for prompting the user for age**
cin >> Temp.Age ;	**2**	**2 points for reading and storing age**
cin.ignore(10,'\n');	**1**	**1 point clearing the buffer.**
cout <<"Please enter full name:"	**.5**	**1 point for prompting the user for name**
getline(cin , Temp.Name);	**3**	**3 points for correctly reading full name which may include spaces**
cout <<"Please enter address: "	**.5**	**1 point for prompting the user for address.**
getline (cin, Temp.address);	**2**	**2 points for reading and storing the address correctly.**
Total:	**10**	

1J. Resources Needed for Assessment	none
1K. Additional Notes/Comments	

A. Title of Student Learning Outcome (SLO)	Removing an element from a list data structure.			
B. SLO Type	X	Course-Level		Program-Level
C. Program-Level SLOs:	(*List the program-level SLOs which with this course-level SLO aligns)*			
D. Core-Competencies	(*List the core competencies which with this course- or program-level SLO aligns)*			

1A. Date Section 1 Completed	**Spring semester 2009.** **CSCI 2 section 0112.**		
1B. Contact Personnel	Names:	Extensions:	Email Addresses:
	Joe Hyman	5212	jhyman@elcamino.edu
1C. Additional Personnel			
1D. Division and Department Information	Division:	Program or Department:	Course(s):
	Mathematical Sciences	Computer Science	CSCI 2
1E. Proposed SLO Statement	Given a specific implementation of the abstract data type List, the student will be able to write the code to find an element in the list with a given key and remove it from the list. (Note: The question in part I uses the linked-list implementation of a list, but some other implementation could be used.)		
1F. Proposed Assessment Instrument or Mechanism	Test or final exam.		
1G. Sections Targeted for Assessment	CSCI 2 Sections 0112		
1H. Timeline for Assessment	At the end of each semester that CSCI 2 is offered.		

1I. Rubric or Standards for Success	Below is part of the code for the linked-list implementation of a List.
	`struct Node {`
	`  string m_name;`
	`  int m_age;`
	`  Node* m_next;`
	`  Node(const string& name, int age, Node* next = NULL);`
	`};`		

```
class UnSortedLnkList {
   public:
      UnSortedLnkList();
   // WRITE the function below:
      bool Delete(const string& name);
   private:
  //points to head of the list - a "blank"
      node Node* m_head;
};
//-------------------------------------------------------
Node::Node(const string& name, int age, Node* next)
: m_name(name), m_age(age), m_next(next)
 {}
 UnSortedLnkList::UnSortedLnkList()
: m_head(new Node("",-99,NULL))
{}
```

Question:

Write the code for the function `bool Delete(const string& name)`. This function will search for the first node with the given name. If the node is found, it will be removed from the list and true will be returned. If the node is not found, false will be returned.

Solution and Grading Rubric:

Solution	Points	
`Node *tp = m_head;`	1	1 point for initializing the trail pointer
`Node *p = m_head->m_next;`	1	1 point for initializing the current pointer.
`while( p != 0 )` `{`	1	1 point for the correct loop condition
`if( p->m_name == name )`	1	1 point for the correct condition to find the desired list element.

`{`
`tp->m_next = p->m_next;`
`delete p;`
`return true;`
`}`
	3	3 points for correctly removing the list element from the list.

`tp = p;` `p = p->m_next;`	2	2 points for updating the two pointers.
`}` `return false;`	1	1 point for returning the correct value.
Total:	10	

1J. Resources Needed for Assessment	none
1K. Additional Notes/Comments	

Java Programming SLO (CS 3)

Declare and use graphical components for user interfaces.(SLO)

Context	Objective	traits
Given a description of a graphical component and its role in the graphical user interface of an Java application program.	student will identify the Java class for the component and the class and method for the component's event handler needed for its function in the graphical user interface.	By using the description of the component and its function in the GUI, code the declaration, instantiation of it and its event listener and the listener method appropriate for its use in the interface.

The following is the test question to imbed.

Write the code that will declare a JButton labeled "Ok", that when pressed, will have the method "saveStudentData()" invoked by its listener: Provide code for each of the following:

a) declare a JButton object named "okButton" with public static access(**1pt**)

b) construct the button with the label "Ok".(**1pt**)

c) create a Listener class that implements ActionListener interface and code the class method actionPerformed() that will call a method named saveStudentData() if the button is pushed.(**5pts**)

d) create an instance of the listener class object.(**1pt**)

e) add the listener to the button instance.(**1p**t)

The following is the rubric for grading the question.

Solution	Points	
Part a) `public static JButton okButton;`	1	1 point for correctly declaring the JButton object with correct access traits
Part b) `okButton =new JButton("Ok");`	1	1 point for correctly instantiating the button object with the proper label.

Part c)
`class BListener implements ActionListener`
`{`
`public void`
`actionPerformed(ActionEvent e)`
`{`
`if (e.getActionCommand().equals("Ok"))`
`{`
`saveStudentData();`
`}`
`}`
`}`
	6	1 point for each of the following:
		a) Class definition
		b) ActionListener interface
		c) actionPerformed method with argument
		d) if statement
		e) getActionCommand() or compare event object reference to oKButton.
		f) call method saveStudentData()

Part d) `BListener ears = new BListener();`	1	1 point for correctly instantiating a listener object.
Part e) `okButton.addActionListener(ears);`	1	1 point for correctly registering the listener object with the button.
Total:	10	

IV Program Requirements

A. Instructional Support

1. Identify key instructional support areas used by the program.

Libraries & Programs:

Computer Labs & Tutoring:

X	Open Lab
X	Scheduked lab time with instructor present

Faculty Support Services:

	Graphic Arts	X	Copy Center	Distance Education	Other (Please list.)
	Media Services AV Production	X	Tech Services Help Desk	Teleconferences	
	Media Services AV Equipment Distribution	X	Support Staff	Webconferences	
	ECC Vehicles	X	ECC hosted Websites	Staff Development	
X	ECC E-mail				

2. Do you have some instructional support needs that are not being met? _X_ Yes ____ No

This would be a more effective program if:

	Frequency
Teaching/tutorial assistants were available	10-15 Hrs/Wk

A substantial percentage of our students indicated that they felt the class would be more effective if teaching assistants and additional lab hours were available

3. Should a recommendation be written to address your needs? _✓_ Yes ____ No

Maintain budget allocations for:

- Additional open lab hours with tutors in computer labs

B. Facilities and Equipment

1. Does the program make effective use of its facilities and equipment? _✓_ Yes ____ No

2. Are adequate facilities, equipment and supplies available for the program? ____ Yes _✓_ No

Unlike many other disciplines, the nature of computer technology is such that it doesn't change slowly, but sometime during the course of a semester, and at a rate that make our books, hardware, and software obsolete at an alarming rate.

3. Are the facilities and equipment adequately maintained? ✓ Yes ____ No

The CS department feels that the facilities and equipment are adequately maintained.

4. Should a recommendation be written addressing the data? ✓ Yes ____ No

It is imperative that the college not exceed the three year time frame for upgrading equipment in our computer labs, as a failure to keep abreast of information technology will virtually render the department unable to stay current in instructional areas, and certainly inhibit any growth in enrollment both immediate and long term..

Indicated as students needs, and advocated by the CS faculty regular upgrades for the computer labs used by the CS department is a necessity. Currently, many of our computer labs are four to five years old, with some running equipment purchased in the year 2000.

The past practice of a three year cycle of upgrading has barely kept the CS labs current with the software and hardware needs of our classes. The CS department plans to migrate to new version of Microsoft's Visual Studios for instruction by the fall session of 2007. This change will require all of our current computer labs to be upgraded. All of our lab rooms are configured with twenty-two student computers and one faculty computer. Additionally, they each contain one high speed laser printer and one file server. The approximate cost for a complete upgrade would be $40,000 per lab.

C. Staffing

Instructions: Analyze the data on **FTEF, adjunct FTEF, and the FT/PT ratio** for the most recent fall semester and answer the following questions:

2007? 2008?

	Fall 2003	**Fall 2006**
FTEF (full-time equivalent faculty) Number of full-time FTEF Number of adjunct FTEF **FT/PT load ratio**		

The CS department experienced a strong rate of growth during the 1990s that has tapered off during the last four years. In the last decade, the department has not hired any full time faculty members. The department has 1 full time faculty and 5 half time faculty who have split assignment wit Mathematical Sciences department.

1. How do the program numbers compare to a like semester (Fall to Fall) three years ago or the previous program review? Will you complete the chart?

2. What do the program data indicate? Comment on any trends or unusual data.

3. How does the FT/PT ratio benefit or harm the program?

4. Do you have a faculty mentoring program? _____ Yes ___✓___ No

5. How do faculty members maintain currency in their field?

   - Attendance at professional conferences
   - Subscriptions to professional publications
   - Consulting work in private industry
   - Staff development workshops

6. Fill in the faculty status data below and answer the questions that follow.

Name	Reassigned time (how much in %)	Currently on leave (check)	Retired in last 2 years (check)	FT hired last 3 years (check)	Anticipated to retire in next 3 years (check)
Massoud Ghyam	**0**				
Joe Hyman	**50%**				
David Akins	**0**		X		
Greg Scott	**65%**				
Greg Fry	**50%**				
Ralph Taylor	**50%**				

6a. How does this data impact the program? It does not.

6b. Will this data affect the program in the future? NA

7. From this information, can you identify present and future staffing needs? ___ Yes __X__ No

8. What is the department doing to address any future staffing needs? NA

9. Should a recommendation be written addressing the data? __ Yes _X__ No

D. Planning

1. Do the program faculty and other personnel have a clear idea of what is happening in the program, where it is headed, what external changes are affecting it, and what changes need to be made in order to enable the program to adapt and continue to be successful?

   The faculty is aware that the enrollment has been down in the CS department (and across many campuses). Much of this can be attributed to economic factors, increase in enrollment fees, and a slump in the CS job market. However, information technology is a rapidly changing field. The faculty is mindful of this and is continuing to update their courses and lecture plans in order to keep up with rapidly changing hardware, software and workplace environments.

2. What data, not currently provided, would be needed in order to improve planning for the development of the program?

   - Although we already have data on the CS courses that are offered by neighboring community colleges, it would be helpful to analyze their success/retention rates to see if there are positive differences indicating something worthwhile looking into.
   - Data on "best practices" used successfully at other educational institutions.

3. What major external changes or trends do you expect to be of particular relevance to your discipline in the next five years?

   In the next five years we expect the demand in the local work force for employees with CS skills to increase substantially for a number of reasons.

   - The U.S. Bureau of Labor Statistics (among others) has published their list of the "top ten growth jobs by 2010", and information technology jobs comprise eight of them.
   - The Los Angeles and Irvine areas are predicted to experience increases in IT job openings by 25%
   - The projected percent change in the number of public high school graduates is expected to increase by 21.6% from 2002 through 2014 (source: U.S. Department of Education)

   Additionally we expect a continuation in the rapid introduction of new technologies as companies convert novel ideas into practicable hardware/software corporate solutions.

4. What will the implications of these changes or trends be for the program and how will the program need to respond?

   Ongoing advances in technology will necessitate either existing faculty to be trained in these new technologies, or using future part-time instructors with job related experience to cover new classes.

   The two to three year curriculum process from concept to delivery needs to be shortened for vocational courses to allow for topics that change rapidly to fit community and workplace needs.

Under current conditions it is very difficult for CS faculty to develop a course by going through the lengthy curriculum process only to find that the course is close to obsolete by the time it is offered.

5. Based upon the information above, how would you like the program to evolve within the next five years?

   This is hard to be exact as in our discipline future technology innovations and job market demand will dictate how we will evolve within the next five years.

6. Should a recommendation be written addressing the data? ___ Yes __X__ No

   We would like our program to evolve positively by offering relevant technology courses taught by instructors well-versed in those new technologies, rather then decline by lowering our standards or the quality of our curriculum.

V. Conclusion

1. Prioritized Recommendations

   - Develop new courses, or revitalize existing curriculum to cover newer technologies that are of interest to employers and our students. CS faculty has already started this process by proposing 2 new courses, and will continue on regular bases.
   - Obtain training for existing staff on newer hardware and software platforms that will form the basis of our newer courses.
   - Continue to adhere to the three year cycle of upgrading the resources within our computer labs.
   - Work to articulate El Camino Colleges Computer Science classes with California State University, UC system and other private universities. CS faculty has started to look at and compare the courses to help articulation of the courses by 2010.

2. Major Needs

   - As many of our computer labs are running equipment that are out of warranty it is critical that these labs receive long overdue upgrades. The budget for each lab consisting of 25 computers is about $25,000, this need to be done on a regular 2-3 year rotation.
   - Training for existing staff on recent technology innovations that will form the basis of our new curriculum.
   - A reduction in the time required for our new courses to go from idea and development, through the lengthy curriculum process to fruition.
   - Teaching assistants/Tutors for open labs. There is a need for 12-15 hours a week tutoring hours at the cost of $7,000-$10,000 annually.
     Providing funds for training and conference attendance for CS faculty. The proposed budget is $10,000,

3. Strategies

   - Make use of our advisory board to identify needed IT skills (and therefore the new classes that we should offer) required of CS job applicants.

- Continue to stay abreast of new CS offerings of neighboring institutions.
- Make available online classes to those students who prefer an online format.
- Form partnership with the high schools and local businesses that our potential students live in/work for.

VII. Appendix

See the next two pages for an example of the program review student questionnaire used to gather student responses used in this program review.