Department of Computer Science

2019 Program Review

MJC Program Review 2019

Modesto Junior College's Program Review process is divided into 3 sections:

- Program Analysis (SWOT Analysis)

- Goal Setting and Activities

- Resource Request

Program Analysis

Internal Strengths

1. What strengths does the analysis of student data reveal?

We are seeing a definite increase of students completing the AS Degree in Computer Science. This corresponds with the dramatic increase in our programming courses during the time period presented in the data. As a corollary, students completing Computer Programming Specialist has doubled during the same period as well. Other Computer Science degrees and certificates are steady in the number of students completing. 70+% of students are working a year after completing our programs and have attained a living wage for our area.

2. Are there specific aspects of the program that are exemplary or could serve as a model?

Student needs for programming skills continues to increase. We see this occurring in our CSCI 270 course. In the past three years, we have increased from 4 sections of CSCI 270 in either Fall and Spring terms to now 8 sections of CSCI 270 being offered Fall 2018. Because of this increase, we are now offering additional classes in our advanced courses including CSCI 204, 271, 272, and 273.

3. What do others see as the program's strengths?

The comments that we get back from students who have completed and/or transferred is that our programs provided the appropriate and needed training for jobs in the field as well as prepared them for success at the 4-year institutions they are attending. Those outside the institution who see our Center for Advanced Technologies are impressed with

the facilities available to students. We have also received very positive comments with the recent implementation of our summer CyberPatriot Boot Camp for high school students.

4. How well are students meeting program learning outcomes, skills, or competencies; and how are they relevant to careers in your discipline or industries for which you help prepare students?

Students are meeting expectations of our programs including learning outcomes, skills, and competencies as they complete degrees and certificates. Students are prepared for whatever next step they pursue (job/transfer) and we do receive positive feedback from industry members and institutions regarding our students.

Internal Weaknesses

5. What gaps are observed by reviewing the student data?

We definitely see that female students need more representation in our courses which in turn would lead to more completion of our programs. What is good to see in the last two terms is a visible increase of female students participating in the advanced courses. As a Hispanic Serving Institution, though we see more participation in our courses by Hispanic students, their program completion rates could be higher.

6. What disproportionate gaps need to be addressed?

As indicated earlier, the representation of female students in our programs is low.

7. What are areas in which the program could improve? (curriculum, scheduling, modality, other?)

Computer science curriculum is challenging for students (as all math-based disciplines). Our curriculum and modalities change more often than other areas due to the dynamic that exists in the computing sciences. The Computer Science faculty are continuously looking at new materials and technologies that can help our students succeed. So we are continuously looking at our courses/programs and how they can be beneficial to our community. Also, we desperately need to have more full-time faculty and staff because of the changing atmosphere of the computing sciences. We are down half the faculty needed as well as staff. We hope in time this can be addressed.

8. Where are there gaps in the program on how students are meeting learning outcomes, skills, or competencies?

In meeting learning outcomes, skills, or competencies, for students who participate in our programs, students are meeting said metrics comparable to the campus. One thing we do notice with entering students is their lack of knowledge regarding basic computing skills i.e. storage skills (saving/naming files), less experience with desktop/notebook computers, etc. Such things are important to a Computer Science major and for someone looking at the industry as a career.

External Opportunities

9. Where are potential opportunities for expansion, improvement, or new program development?

Potential opportunities for expansion and new program development is in cybersecurity, video game design/development, cloud computing, virtual machines, data sciences, web/database development, and mobile computing.

10. What are some industry or disciplinary trends that could enhance the program?

Industry and disciplinary trends to enhance the program including cybersecurity, video game design/development, cloud computing, virtual machines, data sciences, web/database development, and mobile computing.

External Threats

11. How are changing resources, technology, employer, or transfer requirements affecting the program's ability to serve students?

Local industry is changing and more local jobs in computing and information technologies are increasing though not as fast as in Silicon Valley, the Bay Area, and other technology hubs in the United States. As state resources change from year to year, this impacts our programs ability to garner needed program faculty and staff. Also, the lack of a hardware replacement plan makes it difficult to update hardware (and software) necessary to meet various demands.

12. What are some current industry or disciplinary trends that could have a negative impact on the program?

Computer Science as a discipline is foundational in the academy. In industry, there is an ever-increasing need for those trained in the computing sciences. One negative aspect is that our programs (current and new) are not able to grow to meet the ongoing demand that exists due to lack of people power (faculty and staff) as well as the ability to update hardware and software as needed due to rapid changes in the industry and field of study.

13. What other obstacles does the program face?

n/a

Goal Setting and Activities

Goals

Program Goal	Mission Alignment	Area of Focus
Increase the number of female students completing our programs by at least 5% over the next 2 years.	Equity	Professional Development

Change pedagogical practices in the classroom that improve course success rates by 5% over the next two years.	Innovative Education	Pedagogy
Implement new courses and programs that address current workforce needs such as cybersecurity and video game design.	Workforce Needs	Curriculum

Activities

Activities	In Support of Goal #	Outcome or Deliverable
Identify pedagogical and mentoring approaches that increase female students to enter, stay, and complete a certificate or degree program in Computer Science.	Goal #1	In two years, measure the increase of female students completing a certificate or program in Computer Science that reflects at least a 5% increase.
Develop unified learning modalities across all sections of the introductory programming course that can address supportive learning environments in hybrid and online courses.	Goal #2	Create a look and feel to all Canvas shells for all sections of CSCI 270 through a collaborative approach with all faculty and to be completed in two years.
Implement courses in cybersecurity and video game design to support a certificate and/or degree in such a program.	Goal #3	In two years, we should see the first group of students completing a certificate in one of these areas at minimum.

Resource Requests

Category	Request	Activity #	Estimated Cost
Prof. Devel.	Training for 10 faculty (5 full-time/5 part-time) to attend conference or workshops to provide tools in reaching female students to pursue computing careers. Also additional training for faculty in new tools that assist in collaborative approaches for delivery of instruction in the introductory course. Attending the University of New Mexico Mentoring Conference could be one such resource. 10 faculty X $2000 each. (This is tied to Activities #1 and #2)	1	20000
Equipment	Complete networking infrastructure for the Center for Advanced Technologies including needed switches/routers for all ethernet ports to be connected.	3	50000

Technology	Update all computing equipment in classrooms and labs. Though there isnt a current replacement plan and it is unknown when computer hardware will be replaced, what is desperately needed are hard drive replacements for all computers replacing two mechanical drives in each machine with two SSD drives each. This will extend the life of our current desktop computers in the MAGIC lab, classroom labs, instructor classroom stations, and instructor office machines. SanDisk SSD PLUS 1TB Internal SSD at $100 each. 257 computers X 2 = 512 SSD Drives X $100 each. (Tied to Activity 1, 2, and 3)	3	51400
Personnel	Though we need 5 additional full-time faculty and at least 2 staff members, if we can get 2 faculty positions and 1 staff position, that will go a long way to improve program delivery and maintenance. (Tied to Activity 1, 2, and 3)	3	270000