

**2007 – 2008 Program Review  
Mathematics and Statistics  
Yuba College**

**The Mathematics Department**

**December 31, 2007**

**Date of next program review: 2011 – 2012**

# Program Review Cover Sheet

College: Yuba

Program: Mathematics and Statistics

Year: 2007-2008

Program Review Committee Members and Signatures:

Roger Davidson

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Catherine Heaton

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Sarah Kovacs

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Michael Papin

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John Steverson

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Lauren Syda

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John Thoo

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Kirk Wardlaw

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Dean of Program Area

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College's Chief Instructional Officer

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Presented to Curriculum Committee on: **February 11, 2008**

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Faculty Chair Curriculum Committee

\_\_\_\_\_  
Date

\_\_\_\_\_  
Vice Chancellor Educational Planning and Services Signature

\_\_\_\_\_  
Date

## Program Description and Current Status

### 1. Current status of the program

- Marysville campus
  - Lecture rooms: 11.
  - Faculty offices: 7 for faculty assigned full-time to teaching math and stats.
  - Room 847 computer lab is used for stats with 30 computers and licenses for statistics software.
  - Room 700 Hard Math Cafe is used for drop-in math tutoring; 5 computers are available for student use in the adjoining Room 701 (MESA).
- Clear Lake campus
  - Lecture classrooms: 2.
  - Faculty offices: One for faculty assigned full-time to teaching math and stats; 1 for full-time faculty with partial load assignments in math and stats.
  - Room 400 business lab has a bank of 30 computers and licenses for stats software.
- Beale AFB center
  - Lecture classrooms: 2.
  - Faculty offices: None; no full-time faculty assigned to the center.

### 2. Significant changes in the program since the last program review or annual update

- Marysville campus
  - One full-time faculty, with partial load in math (S. Klein), has retired.
  - Two full-time faculty (R. Davidson and S. Kovacs) were hired for 2007 – 2008.
- All campuses
  - As a result of the 2006 change in the YC associate's degree math competency requirement to a mathematics or statistics course at the level of intermediate algebra, a new course, Math 58 (Quantitative Reasoning), was developed, approved and will be offered in Spring 2008.
  - A new course series, Math 50A and Math 50B (Elementary Algebra – First Half and Second Half), was introduced as an alternate, slower-paced path through the material covered to meet the learning objectives of Math 50. Math 50A was first offered in Fall 2007, and the goal of the series is to increase success rates for students who need Math 50 as part of their education.
  - The number of units for Math 9 (Business Calculus) was increased from three (3) to four (2<sup>2</sup>).

- Math 52 (Intermediate Algebra) has been offered as an online course since Fall 2006.
- An additional lecture and laboratory section of Stat 1 (Statistics) was added.
- Additional lecture sections of Math 50 and 52 were scheduled.
- Mathematics courses [including Math 110 (College Arithmetic), Math 111 (Prealgebra), Math 50 (Elementary Algebra), Math 52 (Intermediate Algebra), Math 15A and 15B (Concepts of Mathematics I and II) and Math 51 (Geometry)] are now being offered at River Valley High School in order to build a Sutter County student base.

## **Goals of the Program and SLOs**

1. The mathematics faculty eagerly awaits development of the SLOs guidelines being drafted by the SLO Project Team in order to appropriately complete the departmental SLOs.
2. Investigate and establish a current baseline for student retention in mathematics so that an appropriate goal and plan can be made to increase this metric.
3. Investigate and establish a current baseline for student success rates in mathematics, including adequately preparing students for transfer-level mathematics courses, so that an appropriate goal and plan can be made to increase this metric.
4. Continue to provide rigorous preparation in mathematics so that our transferring students excel in their chosen disciplines.
5. Regularly review new technologies and methods of teaching mathematics.
6. Increase departmental interaction with adjunct faculty.

# Overview of Program Analysis Sections

## Curriculum and Program Direction

### 1. Strengths

- What progress has been made on recommendations from the last program review and/or annual update?
  - Math 58 (Quantitative Reasoning), was developed, approved and will be offered in Spring 2008.
  - A new course series, Math 50A and Math 50B (Elementary Algebra – First Half and Second Half), was introduced as an alternate, slower-paced path through the material covered to meet the learning objectives of Math 50.
  - Math 52 (Intermediate Algebra) has been offered as an online course since Fall 2006.
  - A host of mathematics courses are now being offered at River Valley High School.
  - Tutoring is offered in the Hard Math Café and was expanded to Saturday hours on a trial basis in Fall 2007. Evening and on-line tutoring are offered in the College Success Center.
  - A very small pool of funds has been allocated for student grading support for full-time faculty. The funds are apportioned based on teaching load.
- The faculty members are highly motivated by student learning and devote most of their office hours at the Hard Math Café to support mathematics tutoring.
- In cooperation with the MESA program, the mathematics faculty regularly offer Academic Excellence Workshops (AEWs) to the students.
- Students are provided the opportunity to compete in the national AMATYC Student Math League exam competition.
- Historically, a great deal of time and energy has been devoted to ensuring that the course schedules tie in appropriately with courses offered in other departments (specifically: Engineering, Physics, Chemistry, Biology, and others).
- There is a strong and supportive relationship among the mathematics faculty across all the campuses in the district, and there is a joint intention to continue this after Woodland Community College is accredited.

### 2. Areas for Improvement

- Develop appropriate class sizes that support a positive learning environment.
- Expand the number of offered sections of required mathematics and statistics courses.

- Support more student activities in mathematical societies and competitions.
- Develop a strong line of communication between the mathematics and counseling departments.

### 3. Future Directions

- Increase course units for Math 50 and Math 52 from 4 units to 5 units.
- Set reasonable class cap sizes on math and stats courses.
- Provide more paid office hours for adjunct faculty in math.
- Fund student grading help for full-time faculty at an appropriate level, at least to reflect changes in the minimum wage. Funding for grading has remained flat as wages increased which has resulted in fewer grading hours with each increase in the minimum wage.
- Continue to expand tutoring for students in the evenings and on weekends at all campuses.
- Expand the use of web-enhanced course materials and technology-enhanced lectures in our mathematics courses.
- Offer a history of mathematics course that will satisfy the AA mathematics competency, Area C, and multicultural graduation requirements.
- Offer the Stats 1 (Statistics) course in a new format in Spring 2008, one that will conform to one lecture-one lab structure, to facilitate easier expansion of the number sections and also flexibility of student scheduling.
- Restructure Math 7 (Pre-Calculus) to a college algebra course.

## Staffing

### 1. Strengths

- What progress has been made on recommendations from the last program review and/or annual update?
  - Marysville campus
    - \* Two full-time faculty members were hired (R. Davidson, S. Kovacs).
  - All campuses
    - \* A small pool of funds has been allocated to pay some adjunct faculty in math for office hours. Payment is capped per faculty member, and the additional money is granted based on the available funds and order of application for paid office hours each semester.
- Our faculty has a diverse collection of mathematical backgrounds and training which creates a richer educational environment for our students.

- Our faculty is actively involved in the college community as well as in professional mathematics societies and activities.
- The mathematics department at Marysville was honored by the graduating 2007 students with a “Way To Go” award. Also, in each year since inception, at least one mathematics professor has been individually honored by this award.

## 2. Areas for Improvement

- Marysville campus
  - \* Another full-time faculty member is needed for mathematics based on current statistics with regard to student demand for mathematics courses and increasing enrollment for the college overall.
  - \* Student tutoring appears to have room for improvement, at least in the area of consistency among tutors.
  - \* A larger pool of adjunct mathematics faculty would provide greater flexibility in scheduling of courses.

## 3. Future Directions

- Marysville campus
  - \* There is a need to hire at least one new full-time faculty for mathematics in the near future.
  - \* Investigate, in cooperation with the CSC and MESA, a means to provide feedback and incentives to improve the quality of student mathematics tutoring.
- Clear Lake campus
  - \* There is a need to hire one full-time or at least two adjunct faculty for math so that course offerings may be expanded to match student needs for course availability.
  - \* There is a need to hire more math tutors to offer additional, needed hours of assistance to students.
- All campuses
  - \* There is a need to provide at least 20% release time or a commensurate stipend for each of two math coordinators.
  - \* There is a need to provide release time for the department chair to perform the duties of a chair.



## Equipment

### 1. Strengths

- What progress has been made on recommendations from the last program review and/or annual update?
  - Marysville campus
    - \* A Minitab software upgrade to the latest release has been purchased and installed to match textbook assignments.
    - \* The 800 Building has had many upgrades to the classrooms since the last program review.

### 2. Areas for Improvement

- Marysville campus
  - \* Room 1902 from where the ITV courses are broadcast needs better equipment for math lectures. For example, the writing tablet currently provided is inadequate for presenting examples that require many steps because of the tablet's small dimensions. What is needed is a large white board mounted on the wall as one would find in a regular classroom. As another example, handwriting on the tablet often appears to be washed out in the videos that are streamed over the Internet. What may be needed is the proper camera or lighting equipment to ensure that all handwriting is legible if we are truly offering these courses as Internet streaming videos. As a third example, students communicating with an instructor (asking or answering questions, for instance) often cannot be heard during the live broadcast or on the VHS or Internet-streamed videos. What is needed is better audio equipment so that all students, whether in class or out of class, may participate fully in a course.

The Distance Education Program should provide any required equipment.

- \* Investigate the use of podcasting of mathematics Distributive Education lectures.
- \* Investigate ways to make classroom and online courses more dynamic and even more effective through the use of new technologies.
- \* Because of the chalk dust in Building 700, the overhead projectors need covers to preserve their usefulness.

### 3. Future Directions

- Marysville campus
  - \* An additional 10 licenses of Minitab are needed to accommodate the restructuring of the Stats 1 (Statistics) courses.
- Clear Lake campus
  - \* There is a need to upgrade the version (v12) of Minitab being used to the latest version.

- \* There is currently no WiFi network available at this campus, and this improvement would assist student computing and campus life.
- All campuses
  - \* Purchase math software. (Matlab, Maple, Mathematica, and Geometer's Sketchpad are examples.)
  - \* Obtain “open source” math software. (Octave, Maxima, and GeoGebra are examples.)
  - \* Upgrade faculty computers to handle better the latest math and stats software.
  - \* Investigate the use of new technologies for mathematics classroom and online lectures. (Interwrite Pad, Camtasia Studio, and Turning Point are examples.)
  - \* Investigate the use of online resources (MyMathLab, ILRN and Math Zone are examples.)

## Facilities

### 1. Strengths

- What progress has been made on recommendations from the last program review and/or annual update?
  - Marysville campus
    - \* Another office in Bldg 700 had its HVAC replaced.
    - \* White boards in Bldg 800 will be replaced as part of the remodeling of the building.

### 2. Areas for Improvement

- Marysville campus
  - \* Most recently in Spring 2008, one mathematics course was canceled and another was placed in a small classroom that forced enrolled students to relocate. This illustrates the need for more classrooms for mathematics classes at this campus to prevent the loss of FTEs. This also shows that there is little opportunity to increase our course offerings at times that will accommodate student needs.
  - \* The Hard Math Café tutoring resource has become so popular that frequently each day there are no places for students to sit or even come inside the room. The Hard Math Café needs to be expanded to increase student contact hours and assist in student success rates and basic mathematics skills. In particular, the current facilities for the Hard Math Cafe (Room 700) and the MESA Center (Room 701) are woefully small [See Figures 1&2 on the next page], and this continues to result in hundreds of students who would have generated FTES to turn away.

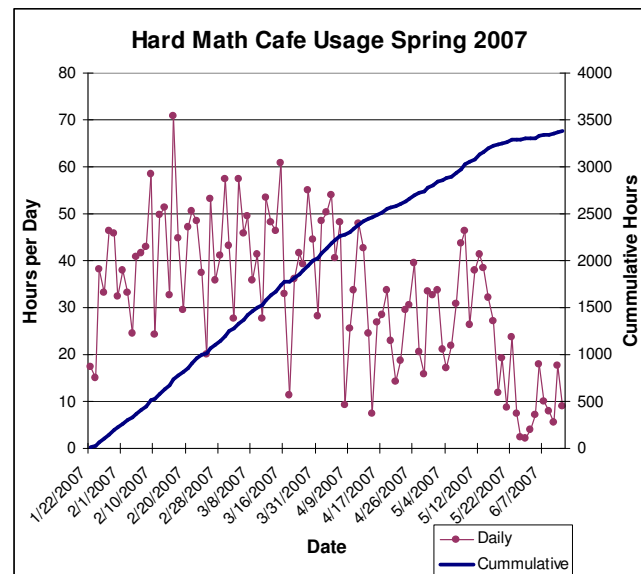


**Figure 1. Hard Math Café in use Dec. 2007**

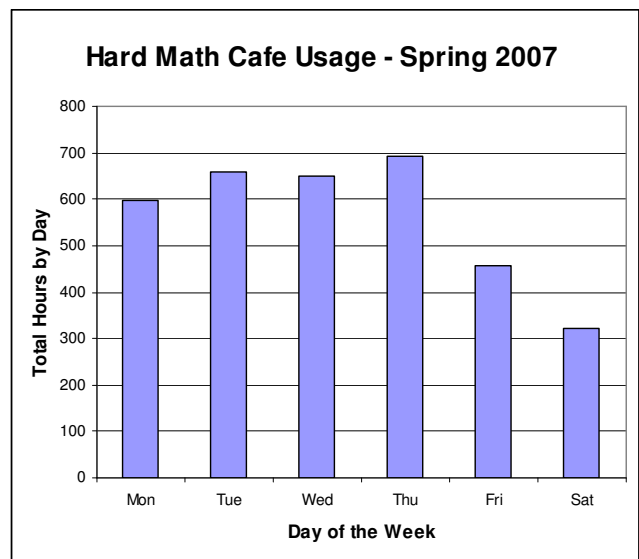


**Figure 2. MESA Center use – same time.**

A study of tutoring at the Hard Math Café was performed by the Director, Institutional Effectiveness (David Waite) in March 2007. Preliminary results showed that students who participated in tutoring at the Hard Math Café were **9.1% more successful** than their counterparts in all of their coursework. Charts 1&2 below show typical usage of the Hard Math Café based on data from Spring 2007.



**Chart 1. Hard Math Café use during the semester**



**Chart 2. Hard Math Café use by day of the week.**

- \* Extensive classroom upgrades are needed for the mathematics lecture rooms in Buildings 600 and 700. This includes projection, computer access, and other upgrades on par with those that now exist in Building 800.
- \* The passage of Bond Measure J by voters in November 2006 no longer appears to support either the construction of a new building for the math, engineering, drafting, computer science, MESA, and Hard Math Cafe programs, or alternatively a major renovation of Building 700 or other suitable facility or facilities for the mentioned programs. There is an acute need for modern classrooms, labs, a meeting/conference room, and larger faculty offices (full-time and adjunct), as well as larger facilities for the Hard Math Cafe and the MESA Center.
- \* A shared office is needed for the adjunct faculty to meet privately with students during their office hours.

### 3. Future Directions

- Marysville campus
  - \* Construct a new building to house modern classrooms, labs, the Hard Math Cafe, the MESA Center, conference/meeting room, and faculty offices (full-time and adjunct) for mathematics, engineering, drafting, and computer science. In particular, the current facilities for the Hard Math Cafe (Room 700) and the MESA Center (Room 701) are woefully small, resulting in hundreds of students who would generate FTES turning away.
  - \* Replace the remaining malfunctioning HVAC units in Bldg 700 faculty offices.
  - \* Replace white boards in classrooms and labs.
- Clear Lake campus
  - \* A room is needed for faculty to host drop-in math help (similar to the Hard Math Cafe on the Marysville campus).

## Recommendations

### 1. Curriculum and Program Direction

- (a) Recommendation # 1 – Investigate the use of Basic Skills Initiative (BSI) project monies to increase student retention rates
  - Plan of Action to Implement Recommendation:
    - i. Contact BSI Project Team for information
    - ii. Conduct a departmental meeting to brainstorm options
    - iii. Create proposal for BSI funds
  - Suggested Timeline for Implementation: Spring 2008
  - Person(s) Responsible: Math department
  - Budgetary Impact: None foreseen at this time.
- (b) Recommendation # 2 – Investigate the use of Basic Skills Initiative (BSI) project monies to increase student success rates
  - Plan of Action to Implement Recommendation:
    - i. Contact BSI Project Team for information
    - ii. Conduct a departmental meeting to brainstorm options
    - iii. Create proposal for BSI funds
  - Suggested Timeline for Implementation: Spring 2008
  - Person(s) Responsible: Math department
  - Budgetary Impact: None foreseen at this time.
- (c) Recommendation # 3 – Restructure Math 7 (Pre-Calculus) into a college algebra course
  - Plan of Action to Implement Recommendation:
    - i. Revisit this decision in the January 2008 District Mathematics Meeting
    - ii. Establish new course outline
  - Suggested Timeline for Implementation: 2008-2009
  - Person(s) Responsible: Lauren Syda
  - Budgetary Impact: None foreseen at this time.
- (d) Recommendation # 4 – Mutually select a counselor at the Marysville campus to work as an active liaison between the mathematics and counseling department to improve communication between the departments and to improve the service to our students
  - Plan of Action to Implement Recommendation:
    - i. Meet with counseling department chair
    - ii. Mutually select the liaison
  - Suggested Timeline for Implementation: 2008-2009
  - Person(s) Responsible: Lauren Syda
  - Budgetary Impact: None foreseen at this time.

## 2. Staffing

- (a) Recommendation # 1 – Hire another full-time faculty for the Marysville campus
  - Plan of Action to Implement Recommendation:
    - i. Receive approval from Staffing Committee
    - ii. Follow the hiring process
  - Suggested Timeline for Implementation: Fall 2008
  - Person(s) Responsible: Lauren Syda and John Thoo
  - Budgetary Impact: Planned.
- (a) Recommendation # 2 – Investigate a means to provide feedback to student tutoring to improve the quality of this resource
  - Plan of Action to Implement Recommendation:
    - i. Meet with CSC Staff to establish a method for tutor evaluations
    - ii. Brainstorm with CSC and MESA staff to provide feedback/incentives to improve the quality of tutoring.
  - Suggested Timeline for Implementation: 2008-2009
  - Person(s) Responsible: Roger Davidson
  - Budgetary Impact: Flex time.

## 3. Equipment

- (a) Recommendation # 1 – Investigate additional software needs and priorities for mathematics
  - Plan of Action to Implement Recommendation:
    - i. Investigate the use of WileyPlus for Math 3 (Linear Algebra)
    - ii. Investigate ILRN for Math 7 (Pre-Calculus)
    - iii. Investigate other software programs as they are presented to the department.
    - iv. Provide recommendation to the department and findings from pilot projects
  - Suggested Timeline for Implementation: 2008-2010
  - Person(s) Responsible: Math department
  - Budgetary Impact: Unknown
- (b) Recommendation # 2 – Investigate new classroom technologies for mathematics instruction
  - Plan of Action to Implement Recommendation:
    - i. Investigate Interwrite Pad and other similar technologies for Math 21 (Trigonometry) and Math 7 (Pre-Calculus)
    - ii. Investigate other technologies as they are presented to the department.
    - iii. Provide a recommendation to the department with findings from pilot projects
  - Suggested Timeline for Implementation: 2008-2010
  - Person(s) Responsible: Sarah Kovacs
  - Budgetary Impact: approximately \$1000

#### 4. Facilities

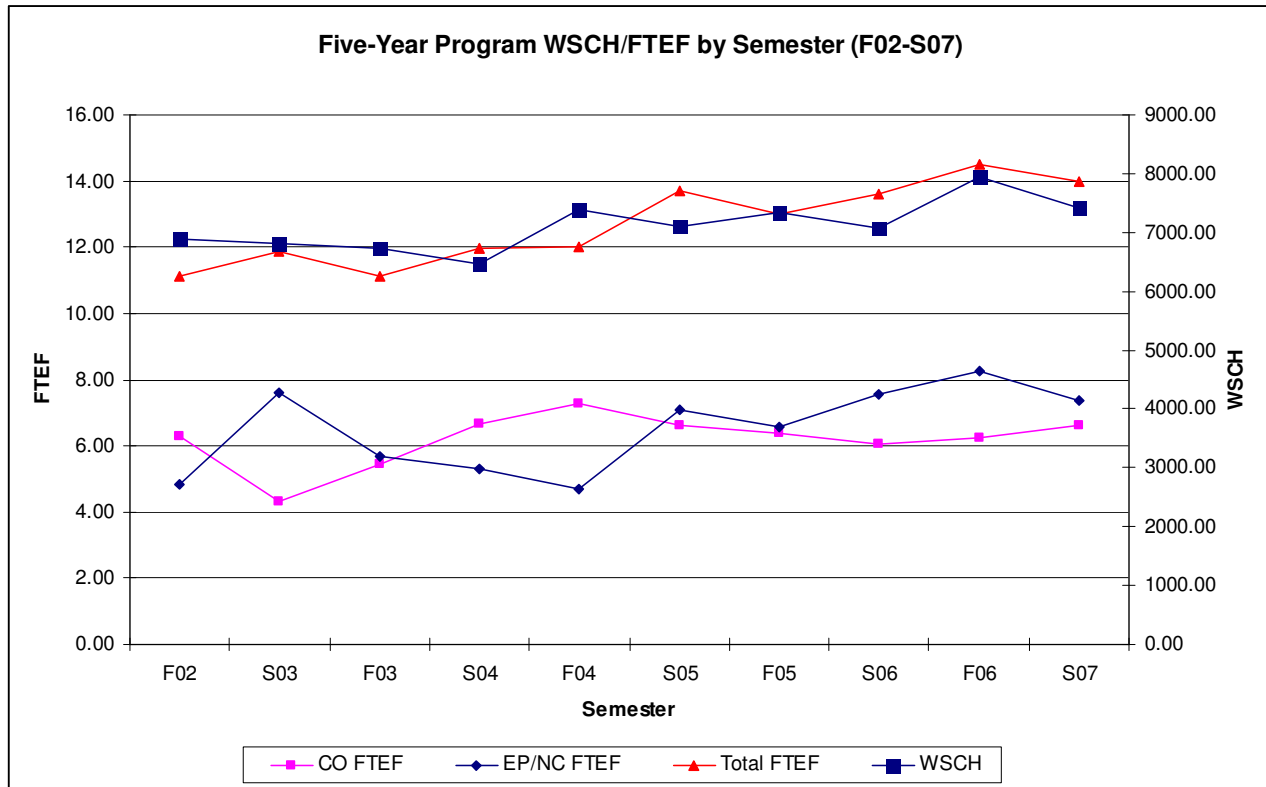
- (a) Recommendation # 1 – Request that a new building at the Marysville Campus for the math, engineering, drafting, computer science, MESA, and Hard Math Cafe programs be constructed, or alternatively request a major renovation of Building 700 or other suitable facility or facilities for the mentioned programs.
  - Plan of Action to Implement Recommendation:
    - i. Contact Measure J Planning Team to determine feasibility and statistics
    - ii. Receive confirmation of budget item established for this
  - Suggested Timeline for Implementation: 2010-2012
  - Person(s) Responsible: Earl Bloor
  - Budgetary Impact: Unknown.
  
- (b) Recommendation # 2 – Request that all office HVAC units in Building 700 be upgraded as part of the 2008 – 2009 maintenance plan for Yuba College
  - Plan of Action to Implement Recommendation:
    - i. Contact Facilities Department to determine feasibility and statistics
    - ii. Receive confirmation of budget item established for this
  - Suggested Timeline for Implementation: 2008-2009
  - Person(s) Responsible: Earl Bloor
  - Budgetary Impact: Unknown.
  
- (c) Recommendation # 3 – As an interim to Recommendation #1, repurpose one double-wide trailer used during campus renovations (or locate another larger suitable facility) in order to expand the Hard Math Café/MESA Center at least 100% on the Marysville campus
  - Plan of Action to Implement Recommendation:
    - i. Contact the Measure J Steering Committee to determine feasibility and specifics
    - ii. Establish project per feasibility findings
  - Suggested Timeline for Implementation: 2008-2009
  - Person(s) Responsible: Earl Bloor
  - Budgetary Impact: Unknown.

# Appendix

## Program Review Data

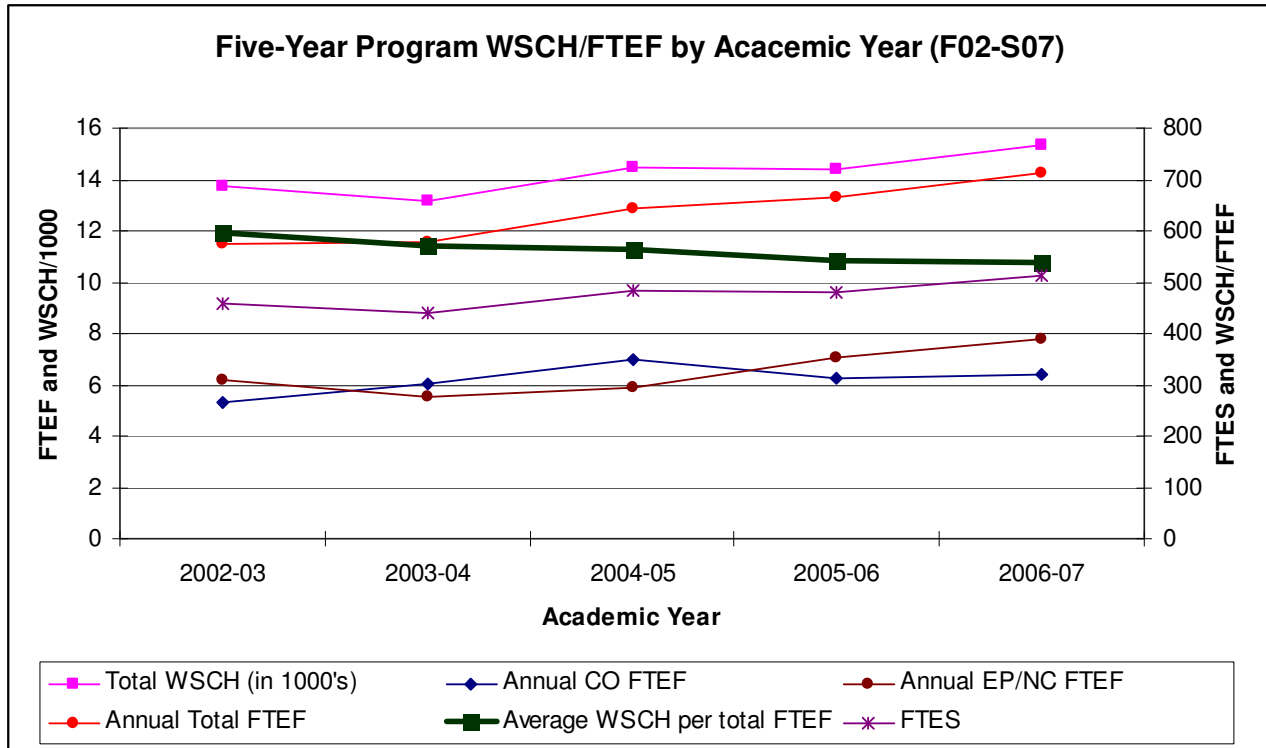
Program: Mathematics and Statistics

2002 – 2007



Annual Semester	2002-03		2003-04		2004-05		2005-06		2006-07		5-Year Total
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	
CO FTEF	6.31	4.31	5.45	6.65	7.29	6.62	6.40	6.07	6.25	6.60	61.94
EP/NC FTEF	4.82	7.58	5.69	5.31	4.71	7.07	6.58	7.56	8.27	7.36	64.94
Total FTEF	11.13	11.89	11.13	11.96	12.00	13.69	12.98	13.62	14.51	13.96	126.88
WSCH	6899.70	6811.80	6726.90	6459.60	7392.60	7094.40	7324.20	7071.00	7950.30	7419.30	





Annual	2002-03	2003-04	2004-05	2005-06	2006-07
Total WSCH	13711.5	13186.5	14487	14395.2	15369.6
Annual CO FTEF	5.31	6.05	6.96	6.23	6.42
Annual EP/NC FTEF	6.2	5.5	5.89	7.07	7.81
Annual Total FTEF	11.51	11.55	12.85	13.3	14.24
Average WSCH per total FTEF	595.5	571.04	563.87	541.09	539.84
FTES	457.05	439.55	482.9	479.84	512.32

Five-Year Program Total	
WSCH	71,149.80
Total Semester FTEF	126.88
Average Annual WSCH per total FTEF	560.75
Average Annual FTES	474.33

WSCH based on semester end 320 data (includes non-resident hours). All WSCH for Xlisted sections is credited to the dept. charged for the FTEF. WSCH for Distributive Education sections is credited to the college charged for the FTEF.