

**Undergraduate Program Review
Mathematics
2002-2003**

I. Strengths:

1. Review document frankly states those areas which are of concern
2. High quality faculty with extensive teaching experience
3. Essential support in math courses to other colleges and departments

II. Weaknesses:

1. Document needs improvement in following areas: (a) state in full the objectives to be addressed under each topic (b) resolve inconsistencies between Table A and the bar chart (c) provide text/narrative to address various tables (d) highlight differences in the curriculum among the various majors (degrees) offered
2. more funding opportunities in teacher training should be sought
3. Limited resources for computing facility and accessibility
4. Insufficient communication and coordination between department and other colleges and departments
5. No concrete solutions to solve problems including student preparedness, passing standardized tests and others
6. Majors have not done well on standardized tests intended to evaluate the program quality

III. Recommendations:

1. Need more effective communication and coordination between department and other colleges and departments, especially University College and College of Engineering
2. If possible separate math classes should be offered for the math majors and nonmath majors
3. Great demand for math teachers should be better exploited in student recruitment and external fundraising
4. Additional suggestions were provided for improving the math program review report

1-Year Follow-up

- 1.2 Enrollment trends. Table A and the Bar Chart were inconsistent apparently due to a printer or software error with stacked bars. The chart is more in harmony with the data on the web site of Institutional Research.

Revised Table A.

	FY '97	FY '98	FY '99	FY '00	FY '01	FY '02	FY '03
Undergraduate Semester Credit Hours	10,581	10,245	10,434	10,146	10,560	10,689	10,227
Number of Mathematics Majors	58	48	60	76	74	62	53

The SCH data includes BIOL 1201 when it was taught by the math department. The number of SCH produced fluctuates but is relatively stable. The number of undergraduate mathematics majors fluctuates more but has a downward trend since a high in 2000. Nationally, according to an article in a mathematics journal, since about 1985, the number of engineering majors has been declining. Math enrollment, particularly the calculus sequence is tied to engineering enrollment. By contrast, biological sciences and psychology are two areas of major growth in the recent decades. As they have increased, statistics had experienced an enrollment increase.

The department needs to initiate contacts with students who change from a math major and learn why. A number of years ago, a similar project revealed that the majority of the students registering as a math major were just that until they had their GPA higher and could switch to engineering. There was a flow in and out every semester, although the overall numbers might appear to be stable.

3. Curriculum

3.1 The Department of Mathematics offers the following degrees:

- B.A. in Mathematics
- B.S. in Mathematics
- B.S. in Mathematics (emphasizing Computational Mathematics)
- B.A. in Mathematics with Teaching Certification, which is in the curriculum committee process of converting to a B.S.

The main degrees are the B.S. in mathematics, for the person with career plans other than teaching, and the B.S. in Mathematics with Teaching Certification. The B.S. in Mathematics (emphasizing Computational Mathematics) was developed before there was a Computer Science degree at TAMUK. It is in the curriculum committee process to update it. It will be kept if it serves students. The B.A. in Mathematics, requiring a foreign language, is also in the curriculum committee stage. Otherwise it is much like the B.S. and may not survive many more years. The lean program that gives the student the education without another 15 SCH is more desired.

- 7.4 Needed Faculty - The department search for a Ph.D. statistician in 2000 ended after waiting for more than six months for a candidate to obtain a visa. He got a better offer and reneged on the contract he had signed. The search in 2003 ended similarly. The 2004 searches were for tenure-track chair, already terminated, and visiting position, still in progress. The department focus changed to applied mathematics after requirements by the College of Engineering limited flexibility in assigning faculty to certain applied math courses. The salary is low and the position is visiting--two handicaps to hiring competitively.

The department has an urgent need for additional statisticians, to make the transition as some current faculty may retire and to meet increased needs for courses and consulting with doctoral programs on campus. Statistics faculty can be an important component of grant-writing and student involvement in research. Statisticians must collaborate and reach out to colleagues in other colleges and departments. They can increase the dialog between the math department and its service areas.

The department also needs a faculty member with a Ph.D. in mathematics education and an active interest in grant-writing.

- 8.3 Support from outside sources - This is tied with the need to recruit new faculty aggressively and support their efforts to write grants. Several of our current faculty are approaching retirement and have no interest in grant-writing.
- 9.4. External factors - Concrete solutions to problems of student preparedness are difficult. We accept the students who come to the campus. They come from high schools that produced inadequately prepared students. One partial solution is that the university raise its entrance standards, as it is planning to do. Another is more strength to advising and that is being implemented.

More effective communication between the department and the College of Engineering is in place, in part because three math faculty now have offices and some office hours in the Engineering building. There have been efforts to discuss common issues.

Discussions and frequent contacts have been established with University College.

Separate math classes for majors and non-majors is not practical at an institution of this size, with the number of mathematics majors to be served.

One problem with recruiting more majors to become teachers is that the students know how much more their talents can earn if cloaked in an engineering or professional degree instead of teacher ed. Hiring new faculty and re-invigorating the department; bringing new life to the floor would be a good start on recruiting students. It needs a youthful, energetic atmosphere to attract more students.

The Department recruited three outside people, experts in their fields, to serve as an advisory committee. They have been helpful. Probably that group will not transfer to the new chair. The department chair explored doing an external review of the department. The math chair at TAMU had suggestions and was recruiting 2-3 senior professionals to serve. The external review was rejected because the department had to be fixed quicker.