

Ohio Section
Mathematical Association of America
Report of the Committee on Curriculum (CONCUR)
February, 2000

Background

During the 1998-99 academic year, CONCUR, then chaired by Olaf Stackelberg, undertook the job of composing a survey on curricular changes that would be distributed to the various departments in the Section. In September, 1999, this survey was sent by e-mail to all of the MAA departmental liaisons in the Section for which e-mail addresses were known. As of the beginning of February, 2000, responses had been received from thirty-one schools.

The Responding Schools

The thirty-one responding departments account for approximately 74 percent of the bachelor's degree (and higher) departments in the Section. The breakdown of the thirty-one responses by size and type is as follows:

School Type by Support Type

Count		Support Type		Total
		State supported	Private	
School Type	Research university	3	1	4
	Comprehensive university	4	6	10
	Large college (> 1800)	2	4	6
	Medium sized college (900--1800)		7	7
	Small college (< 900)		3	3
Total		9	21	30

(One school is not classified, because it has a blend of state and private support.)

Academic Programs

As is not surprising, the smaller schools tend to cover a wider variety of areas of the mathematical sciences within a single department than do the larger schools. Evidently, larger schools often have separate departments for such areas as computer science and statistics. Eight departments reported adding one or more new programs within the past ten years. One department cited actuarial science as a new program; two departments each cited computer science, applied math, teacher licensure, and statistics as being new.

Advising

Only 5 out of the 31 departments utilize a formal application/acceptance process for students who wish to become mathematics majors. However, most departments have responsibility for the advising of junior/senior majors, and a good number also have charge of advising freshman/sophomore majors:

Jr/Sr majors advised internally?

	Frequency	Percent
Always	21	67.7
Nearly always	7	22.6
Not necessarily	3	9.7
Total	31	100.0

Fr/Soph majors advised internally?

	Frequency	Percent
Always	13	41.9
Nearly always	6	19.4
Not necessarily	12	38.7
Total	31	100.0

Extracurricular Activities

Nearly all departments reported at least some degree of extracurricular activity for departmental majors. The extent of participation appears to vary greatly. The most commonly cited activities were social functions (picnics are big!), speakers and colloquia, Putnam participation, award ceremonies, and career fairs. Several departments participate in a small intercollegiate mathematics competition. Some of the more unusual or innovative activities include regular faculty/student lunches and an annual senior banquet. More information can be found in the data summary that accompanies this report.

Distance Learning

Only six out of the thirty-one responding departments offer distance learning or web-based courses. Not surprisingly, these six departments are in some of the larger universities in the Section. Since the survey was directed at departments that grant bachelor's (and higher) degrees, we have probably missed a number of two-year schools that are active in distance learning. Perhaps this topic could be investigated more thoroughly by CONCUR in the future.

Special Courses

Nearly two-thirds of the responding departments report offering “bridge” courses. A number of these courses appear to serve a dual purpose, covering specific content and at the same time providing a transition to upper-level mathematics. The most commonly mentioned such course is discrete mathematics, usually taught at the sophomore level. Unfortunately, we do not have hard data on how many of the reported “bridge” courses are designed specifically to ease the transition to higher level mathematics, rather than to cover specific content.

About half of the responding departments report offering “computer-intensive” courses, although again the data is somewhat soft, and we do not always know exactly what kind of course is being reported as computer-intensive. Commonly cited were courses such as numerical analysis. Fewer than a third of the responding departments indicated that they offer writing-intensive courses. In the cases of those that do offer such courses, it is frequently in connection with a college-wide requirement for writing-intensive courses.

Frequency distributions of responses on these three types of courses are included below.

Bridge Courses

	Frequency	Percent
No	11	35.5
Yes	20	64.5
Total	31	100.0

Computer Intensive Courses

	Frequency	Percent
No	16	51.6
Yes	15	48.4
Total	31	100.0

Writing Intensive Courses

	Frequency	Percent
No	22	71.0
Yes	9	29.0
Total	31	100.0

Capstone Courses

Perhaps the most surprising and most interesting finding in the survey is the large number of departments offering some type of capstone experience for their majors. Over sixty percent of the responding departments include such a course in their program, typically as a requirement for seniors:

Capstone Experience

	Frequency	Percent
No	12	38.7
Yes	19	61.3
Total	31	100.0

CONCUR feels that the Section would benefit from a discussion of how these capstone courses are being implemented, and so we plan to sponsor a panel discussion on the capstone experience at the Spring, 2000, Section meeting.

Pressures and Trends

Question 19 on the survey was a free-response question: “Briefly describe the pressures and trends that affect the breadth of the curriculum offered to your math majors at your institution.” By far the most commonly cited concern was for the declining number of majors and, consequently, low enrollments in upper-level classes. Quite a few departments also cited external influences: state licensure requirements and recommendations of organizations such as NCATE and MAA. Several schools cited an overemphasis on use of adjunct faculty and a consequent low number of full-time faculty. Several of the smaller schools indicated that college-wide core requirements restrict the enrollments in upper-level mathematics courses, and consequently limit the breadth of the departments’ offerings. Several other departments cited a trend toward more applied mathematics and statistics courses.

Significant Changes in Major Requirements

Question 20 asked for description of any significant changes to the requirements for the mathematics major within the past five years. The survey results indicate that, for the most part, the changes that have been made to the mathematics major within the Section are more on the order of “tune-ups” rather than “major overhauls.” Changes reported include:

- a single course (six departments)
- two courses (two departments)
- a change from quarters to semesters, necessitating realignment of requirements (two departments)

- requirement of fewer theoretical courses (one department)
- creation of a B.S. degree program (one department, which had granted only B.A. degrees in the past)
- development of teacher licensure program (one department)
- development of three tracks within the major (one department)
- increased emphasis on writing and presentation (one department)

Some departments that are included above mentioned specific courses, including capstone courses, statistics and computer science as requirements in their majors. Overall, however, there does not appear to be a universal trend in the refinements that have been made to the mathematics major in recent years.

Conclusion

Overall, there were not a lot of surprises that surfaced from this survey. Perhaps the most surprising and interesting fact that was discovered is that a fairly large number of departments in the Section require a capstone experience of some sort for their majors. An area for possible future exploration by CONCUR lies with distance learning and web-based courses.

Members of the Section who are interested in seeing the coded survey responses will find both the original survey questionnaire and the data on the web. Comments may be directed to CONCUR by e-mail: spitz@jcu.edu.



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