Comprehensive Program Review Self-Study
Ed.S. Secondary Mathematics

Columbus State University
September 2005

Executive Summary for the Ed.S. Secondary Mathematics

Major Findings of the Program's Quality and Productivity

Program Quality: Very Strong
In February 2005, a continuing approval review of the College of Education was conducted by a Board of Examiners (BOE) consisting of representatives from the National Council for Accreditation of Teacher Education (NCATE) and the Georgia Professional Standards Commission (PSC). The 2000 NCATE Standards and the Georgia 2000 Standards were used to assess the unit and its programs. The BOE judged all standards to be met for the unit and for all initial and advanced programs. Overall, the Ed.S. Secondary Mathematics program is strong and prepares highly qualified mathematics teachers who are able to assume leadership roles in their schools, districts, and state.

Program Productivity: Satisfactory
Enrollment in the Ed.S. Secondary Mathematics program has been fairly consistent over the past four years (an average enrollment of 7 students per year). Among the six Ed.S. programs offered in the Department of Teacher Education, the secondary mathematics program ranks second in average student enrollment. Required courses are offered on a regular basis, and enrollment in those courses is adequate. This helps to contribute to the cost-effectiveness of the department. The majority of students in the program are female and minorities are well represented (on average, 32% are minorities).

The number of Ed.S. Secondary Mathematics degrees conferred by CSU is small (an average of 2.75 per year) but has been fairly consistent over the past four years and exceeds the number of degrees conferred by other USG state universities. As the only USG institution within a 90 mile radius of Columbus that offers a specialist degree in secondary mathematics, CSU provides math teachers in its service region an opportunity that they might not have otherwise, to gain further expertise in mathematics education and to develop their leadership skills.

List of Recommendations for Improving Program Quality
Though the program quality is very strong, we continue to look for ways to make improvements. Current initiatives include:

- providing professional development and networking opportunities for teachers and graduate students through the Support, Mentoring and Resources for Teachers Project (Project SMART) funded by the Calculus Consortium for Higher Education,
- aligning coursework with the new Georgia Performance Standards for Mathematics in an effort to help prepare teachers to teach with the new standards,
- connecting content in graduate mathematics courses to the secondary curriculum so that teachers see the relevance of the mathematics they are learning.

List of Recommendations for Improving Program Productivity
The Mathematics Program Advisory Committee (PAC) oversees the Ed.S. program in Secondary Mathematics and works to improve the curriculum, courses, and resources offered to teachers. Recommendations to improve program productivity are as follows.

- Align coursework with the new Georgia Performance Standards for Mathematics in an effort to help prepare teachers to teach with the new standards. By responding to current initiatives and mandates, we hope to recruit more teachers into the Ed.S. program.
- Provide additional support for students in graduate mathematics courses through advising and/or offering prerequisite courses or professional development opportunities that better prepare students for the graduate mathematics courses.
- Connect the content of the graduate mathematics courses to the secondary curriculum. By making the coursework more relevant to teachers, we hope to attract more teachers into the Ed.S. program.
- Work with Enrollment Services to develop a recruitment and retention plan that will attract more students into the undergraduate mathematics or mathematics education programs.

Conclusion about the Program's Viability at CSU

The Ed.S. Secondary Mathematics program at CSU is a viable one. As indicated by the evaluation of the NCATE/PSC Board of Examiners in February 2005, the quality of the program is very strong. All NCATE/PSC standards were judged to be met for all initial and advanced programs. In addition, program quality is enhanced by special opportunities available at CSU. Mathematics education majors have access to resources and professional development opportunities offered through the Columbus Regional Mathematics Collaborative (CRMC), Project SMART (Support, Mentoring, and Resources for Teachers), and the Georgia Partnership for Reform in Science and Mathematics (PRISM).

The viability of the program is also ensured by the sharing of resources among all secondary mathematics programs at CSU. Graduate mathematics courses at the 5000-level also enroll undergraduates on a cross-listed basis. Furthermore, the College of Education, Mathematics Department, CRMC, and P-12 teachers work collaboratively on the design and implementation of the secondary mathematics programs at all levels (B.A, M.Ed., and Ed.S.). Representatives from each of these groups work together to make improvements to the mathematics education programs at CSU and to impact mathematics education in our region.

The Ed.S. program in secondary mathematics is a valuable resource for teachers in our region who want to grow professionally, gain additional expertise, and pursue leadership opportunities in the field of mathematics education. Students in the Ed.S. program take what they learn and apply it in their own classrooms to help their students learn mathematics. They also share their expertise with other teachers in their schools, districts, and state.

Graduates of the Ed.S. Secondary Mathematics program are also a valuable resource for our undergraduate program in secondary mathematics. A substantial number of program graduates teach in systems served by CSU, especially Muscogee County. Our graduate programs in secondary mathematics have helped to create a cadre of leaders within our Partner School Network. Graduates often serve CSU as pre-student teaching cooperating teachers and cooperating teachers for student teaching. They are an invaluable asset in assisting with the development of our undergraduates.

Though small, the number of Ed.S. Secondary Mathematics degrees conferred by CSU has been fairly consistent over the past four years and exceeds the number of degrees conferred by other USG state universities. As the only USG institution within a 90 mile radius of Columbus that offers a specialist degree in secondary mathematics, CSU provides math teachers in its service region an opportunity to gain expertise and pursue leadership opportunities in mathematics education. These are opportunities that they might not have if CSU did not offer this degree program. With the critical shortage of highly-qualified mathematics teachers, we need to provide every possible opportunity for teachers to grow professionally and enhance their knowledge and skills in teaching mathematics.

Program Improvement Plan

In response to the findings of the Comprehensive Program Review, the faculty members and administrators of the Ed.S. in Secondary Mathematics Education propose the strategies outlined below to improve the quality, productivity and viability of the program. These strategies will be facilitated by the Secondary Mathematics Program Advisory Committee (PAC).

Departmental Plans and Priorities	***CPR Indicator***	***Projected Timeline***
1. Refine the College of Education Recruitment Plan to focus on specific methods for recruiting graduate students from diverse backgrounds	Productivity Viability	2006-2007
2. Explore various funding sources to provide scholarships for students seeking advanced degrees in secondary mathematics	Productivity Viability	2006-Ongoing
3. Align appropriate graduate courses with the Georgia Performance Standards (GPS) to make the individual courses as well as the program highly attractive to prospective graduate students who will be implementing the GPS.	Quality Productivity Viability	2006-Ongoing
4. Continue to connect the content of the graduate mathematics courses to the Secondary Mathematics (Grades 6-12) curriculum	Quality Productivity Viability	2006-Ongoing
5. Combine the Ed.S. programs in secondary education under a common degree title that allows students to concentrate in a specific content area	Productivity Viability	2006-2008

The resources needed to accomplish these priorities should be minimal. Departmental resources will be allocated as necessary to accomplish these plans. Priority 2 will require the assistance of individuals in the Office of University Advancement to develop endowments which provide scholarships for graduate students. The Secondary Mathematics Program Coordinator will be provided one course release time each academic year to provide leadership to these activities. The Program Coordinator will communicate additional resource requests as needed to the appropriate administrator within the College of Education at Columbus State University.

Summary Recommendation and Supporting Rationale

Recommendation: *Maintain the Program at the Current Level*

The program quality is very strong, but the number of degrees conferred each year is small. Because of decreasing interest in mathematics as students progress through high school and

college, few students take the higher level mathematics courses needed to prepare one for a career in mathematics or mathematics education. Until we are able to recruit more students into undergraduate programs in mathematics or mathematics education, opportunities for expansion of the Ed.S. program in secondary mathematics will be limited. There are also factors beyond our control that have an impact on the Ed.S. program. Since teachers can get a specialist degree in any field and receive an increase in pay, some of the math teachers in our service region have chosen to pursue a specialist degree in an area other than secondary mathematics.

As previously mentioned, CSU will continue to work to improve the current Ed.S. program in secondary mathematics by responding to new initiatives (e.g., Georgia Performance Standards), improving the curriculum, providing better support and resources for students, and intensifying recruitment efforts. By enhancing the quality of the program, we hope to attract more potential students.

I. Program Overview

The Ed.S. program in Secondary Mathematics Education prepares highly qualified mathematics teachers who possess the knowledge, skills, and dispositions necessary to promote high levels of learning for all students in grades 6-12. In mathematics content courses, mathematics education courses, professional courses, and field experiences, candidates have multiple opportunities to demonstrate excellence in teaching, scholarship, and professionalism. Creating opportunities for candidates to demonstrate excellence in these three areas is consistent with the College of Education (COE) Conceptual Framework and is reflected in the broad goals of the secondary mathematics education program. These goals are briefly summarized as:

1. understanding and using mathematics (scholarship);
2. planning effective instruction (teaching);
3. implementing effective instruction (teaching);
4. evaluating instruction, both the effect on individuals and on programs (teaching);
5. using research in making decisions about teaching and programs (scholarship);
6. becoming a professional (professionalism).

Candidates who have developed *proficiency* in each of these areas through initial certification programs and *expertise* through the M.Ed. program should develop and demonstrate leadership as they progress through the Ed.S. program in Secondary Mathematics Education. Graduates of the program are prepared to be teacher leaders in the field of mathematics education as they continue to apply their expert knowledge and skills to help all students learn.

The Ed.S. program in Secondary Mathematics helps CSU to accomplish its mission of serving the educational needs of a diverse region. By preparing highly-qualified teachers in a critical needs area and developing teacher leaders, the program helps to improve the quality of education and the quality of life in the institution’s service area.

II. **Summary Findings of the Program's Overall Quality**

In February 2005, a continuing approval review of the College of Education was conducted by a Board of Examiners (BOE) consisting of representatives from the National Council for Accreditation of Teacher Education (NCATE) and the Georgia Professional Standards Commission (PSC). The 2000 NCATE Standards and the Georgia 2000 Standards were used to assess the unit and its programs. The BOE judged all standards to be met for the unit and for all initial and advanced programs. Following is a summary of the findings taken from the BOE final report.

Standard 1: Candidate Knowledge, Skills, and Dispositions

Assessment data from Praxis I, Praxis II, GPA's, MAP evaluations, exit examinations, and national licensing exams indicate that teacher candidates know their subject matter and candidates for other school roles know their fields, both of which are aligned with professional, state, and institutional standards. MAP evaluations and the Disposition Evaluation Form give evidence that candidates and other school personnel know how to teach their subject matter and can deliver information in a clear and meaningful way so that all students learn.

Areas for Improvement: Candidates in Art Education, Biology, Chemistry, and French do not demonstrate content mastery.

Rationale: While overall more than 80 percent of the candidates in the unit have passed their respective content licensure exams, fewer than 80 percent of candidates in Art Education, Biology, Chemistry, and French passed their respective content licensure exams. Note: Chemistry and French had only one program completer each over the past three years.

Standard 2: Assessment System and Unit Evaluation

The unit maintains a comprehensive assessment system for the initial and advanced levels to ensure the systematic collection of data, providing opportunities for the unit to analyze, evaluate, and improve the quality of programs, unit operations, and candidate performance. The assessment systems reflect the conceptual framework and are aligned with INTASC and NBPTS standards as well as specialty professional associations. The unit utilizes information technologies to effectively collect and aggregate data for candidate, program, and unit improvement.

Standard 3: Field Experiences and Clinical Practice

All of the unit's programs which prepare candidates to become teachers or fill other roles as members of the education profession include field work/clinical practice as an integral part. Use of the MAP Evaluation Instrument and the Dispositions Evaluations which connects with the Conceptual Framework supports the work of the unit and provides scaffolding so that candidates acquire the knowledge, skills, and dispositions needed by those who are in professional education roles. Candidates are also surrounded by experienced, caring, competent professionals representing both the University and P-12 partners. Innovations such as the use of information technology for scheduling and tracking candidate progress in a very flexible and comprehensive database, the STEADY new teacher mentoring program, and the

refinement of the Partner School Network enhance to quality of the program and its graduates.

Standard 4: Diversity

The unit has clearly defined its candidate dispositions related to diversity, and these dispositions are assessed throughout required coursework in the initial and advanced programs. Three of the 32 unit faculty represent diversity. The diversity of candidates in unit programs roughly mirrors that of the university and service area as a whole. Because of the racial and ethnic diversity in the university's service area, initial and advanced candidates also work with a broadly diverse population of P-12 students.

Areas for Improvement: The college has not been successful in recruiting and retaining a diverse faculty.

Rationale: Even though efforts have been made to recruit additional minority faculty, currently there are three minority faculty in the unit. While this constitutes a slight improvement from 1998, a significant impact has not been made to ensure that candidates have the opportunity to work with diverse faculty.

Standard 5: Faculty Qualifications, Performance, and Development

Unit faculty have extensive academic backgrounds. Eighty-four percent (84%) of the full-time faculty, and seventeen percent (17%) of the part-time faculty hold terminal degrees while the remaining faculty either are working to complete doctoral studies or have master's degrees. Unit faculty are effective teachers who model best teaching practices in their areas of specialty. Most faculty have been engaged in scholarly activities and service activities to the local, state, regional, national, and international communities. All full-time tenured and non-tenured faculty are systematically and annually evaluated by their department chair, personnel committee, unit dean, and throughout the university input system. The faculty serve on committees and boards at the university and in the local community. They are also involved in local, state, and national professional associations. The unit has an expectation of professional growth/development of both full-time and part-time faculty, and faculty concur with the expectation by attending workshops and conferences, reading journals, and conducting research.

Areas for Improvement: Part-time faculty are not systematically evaluated.

Rationale: There is no systematic process for evaluating part-time faculty across the unit.

Standard 6: Unit Governance and Resources

The unit has the responsibility for authority for the delivery of the preparation of all professional educators. Systems and processes are in place to ensure that all constituencies are represented in the design, delivery and assessment of unit programs. Facilities, personnel and budget are adequate to meet the needs of candidates, faculty and programs. The unit does not require part-time faculty who teach or supervise student teachers to attend an orientation/training session on the conceptual framework or the use of the disposition or MAP rubrics.

Areas for Improvement: Not all part-time faculty are adequately trained on assessments used to evaluate candidates.

Rationale: The unit cannot ensure that part-time faculty have the requisite knowledge and skills to effectively assess candidates.

III. Summary Findings of the Program's Overall Productivity

Enrollment in the Ed.S. Secondary Mathematics program has been fairly consistent over the past four years. Among the six Ed.S. programs offered in the Department of Teacher Education, the secondary mathematics program ranks second in average student enrollment. Required courses are offered on a regular basis, and enrollment in those courses is adequate. This helps to contribute to the cost-effectiveness of the department. The majority of students in the program are female and minorities are well represented (on average, 32% are minorities).

The number of Ed.S. Secondary Mathematics degrees conferred by CSU is small but has been fairly consistent over the past four years and exceeds the number of degrees conferred by other USG state universities. As the only USG institution within a 90 mile radius of Columbus that offers a specialist degree in secondary mathematics, CSU provides math teachers in its service region an opportunity that they might not have otherwise, to gain further expertise in mathematics education and to develop their leadership skills.

III A. Enrollment of Students in the Program

The enrollment pattern for the Ed.S. program in Secondary Mathematics is shown in Table 3.1.

Table 3.1 Number of Declared Majors in Ed.S. Secondary Mathematics – Fall Semester

	2001-2002	2002-2003	2003-2004	2004-2005
Full-Time	1	1	1	0
Part-Time	7	6	7	5
Total	*8*	*7*	*8*	*5*

The majority of students in the Ed.S. program are part-time students who teach during the day and take evening classes. Enrollment over the past four years has been fairly consistent with an average yearly enrollment of seven students. The following initiatives have helped to maintain a consistent student enrollment in the program:

- a conference hosted by CSU in May 2002 that brought together mathematicians and mathematics educators from across the state to discuss the mathematical preparation of secondary teachers;
- initiation of the Support, Mentoring, and Resources for Teachers of Secondary Mathematics Project (Project SMART), providing professional development, support, and mentoring for secondary mathematics teachers in the CSU service area through professional meetings and a list serv;
- restructuring of graduate mathematics education programs (e.g., offering a greater selection of courses during the summer; development of a four-semester Ed.S. program).

Table 3.2 shows the total enrollment in all Ed.S. programs housed in the Department of Teacher Education at CSU. Among the six Ed.S. programs listed in the table, the Ed.S. Secondary Mathematics program ranks second in average student enrollment.

Table 3.2 Number of Declared Majors in Ed.S. Programs – Fall Semester

Program	2001-2002	2002-2003	2003-2004	2004-2005	Avg. Over Four Years
Middle Grades Education	19	15	10	12	14
Secondary Mathematics	***8***	***7***	***8***	***5***	***7***
Early Childhood Education	13	5	1	1	5
Secondary English	1	5	3	8	4.25
Secondary Science	2	3	1	2	2
Secondary Social Science	2	2	2	1	1.75
Total	*45*	*37*	*25*	*29*	*34*

The Mathematics Program Advisory Committee (PAC) oversees the Ed.S. program in Secondary Mathematics and works to improve the curriculum, courses, and resources offered to teachers. Currently, we are aligning coursework with the new Georgia Performance Standards for Mathematics in an effort to help prepare teachers to teach with the new standards. By responding to current initiatives and mandates, we hope to continue recruiting teachers into the Ed.S. program.

III B. Annual Degree Productivity of the Program

As indicated in Table 3.3, the number of Ed.S. degrees conferred each year in Secondary Mathematics is small but has been consistent over the past four years. Among the six Ed.S. programs offered in the Department of Teacher Education, the Ed.S. Secondary Mathematics program ranks second in average number of degrees conferred.

Table 3.3 Number of Degrees Conferred – Fiscal Year

Program	2001-2002	2002-2003	2003-2004	2004-2005	Avg. Over Four Years
Middle Grades Education	7	5	10	4	6.5
Secondary Mathematics	***2***	***2***	***5***	***2***	***2.75***
Early Childhood Education	4	5	1	0	2.5
Secondary English	0	5	0	2	1.75
Secondary Science	2	1	1	0	1
Secondary Social Science	0	0	2	0	0.5
Total	*15*	*18*	*19*	*8*	*15*

The factors most likely contributing to the small number of degrees conferred each year are:

1. the small number of students enrolled in the program, and
2. students who take several years to complete the program because of teaching schedules and other obligations.

The Mathematics Department hired a mathematics educator two years ago and has been studying the curriculum in the graduate mathematics courses. Ongoing efforts to connect the curriculum in these courses to the topics that are taught in high school may attract more teachers into the program. This would hopefully result in a greater number of Ed.S. degrees conferred each year. In addition, adopting a cohort structure might encourage groups of practicing teachers from area

high schools to enter the program together, and thus increase the number of students enrolled and the number of degrees conferred each year. We are considering the possibility of going to a cohort structure for all Ed.S. programs.

III C. Program Completion Efficiency & Graduation Rate

Table 3.4 shows the graduation rates for all Ed.S. programs housed in the Department of Teacher Education at CSU.

Table 3.4 Graduation Rate

Program	2001-2002	2002-2003	2003-2004	2004-2005
Early Childhood Education	31%	100%	100%	0%
Middle Grades Education	37%	33%	100%	33%
Secondary English	0%	100%	0%	25%
Secondary Mathematics	***25%***	***29%***	***63%***	***40%***
Secondary Science	100%	33%	100%	0%
Secondary Social Science	0%	0%	100%	0%

Graduation rates tend to fluctuate as students complete their programs of study at different rates. In 2004-2005, the Ed.S. Secondary Mathematics program had the highest graduation rate among all Ed.S. programs offered in the Department of Teacher Education. Most Ed.S. students in secondary mathematics complete the program.

Providing a quality program in Secondary Mathematics is the primary concern of mathematics and mathematics education faculty. We will continue to make every effort to provide meaningful and relevant coursework that prepares teachers with the knowledge, skills, and dispositions to help all students learn mathematics.

III D. Efficiency & Clarity of the Program's Course Requirements

The Ed.S. Program in Secondary Mathematics Education requires a professional core (13 credits) and a concentration (17 credits). Course requirements are listed below.

Area 1: Professional Core (13 hrs.)
EDCI 7158 Leadership in the Curriculum Change Process (2)
EDCI 7359 Specialist Project (2)
EDSE 7125 Issues in Mathematics Education: Secondary (3)
EDUF 7115 Psychology of Teaching (3)
EDUF 7116 Applied Educational Research (3)

Area 2: Concentration (17 hrs.)
To be designed with advisor. Students must take a minimum of seven graduate mathematics courses in their masters and specialist degrees combined.

These requirements are communicated online and through the CSU Catalog. At the beginning of each semester, a Graduate Orientation is held for all new graduate students. At this orientation,

program requirements are clearly communicated, and the program coordinator works with each student to develop a tentative program of study. Subsequently, the program coordinator communicates with graduate students each semester by e-mail, phone, or face-to-face meetings to update degree progress sheets and advise on course selection.

III E. Frequency and Sequencing of Course Offerings Required for Program Completion

As shown in Table 3.5, courses required in the Ed.S. Secondary Mathematics program are offered on a regular basis. Students beginning their program in summer semester can complete their program of study in four semesters, if they so choose. Students are advised to take EDUF 7116 early in their program of study. EDUF 7116 is a prerequisite for EDCI 7158, and EDCI 7158 is a prerequisite for EDCI 7359. Students typically take EDCI 7359 during one of the last two semesters of their program. Other courses may be taken in any order.

Table 3.5 Frequency of Course Offerings

Number of Sections Per Semester													
	F 01	Sp 02	Su 02	F 02	Sp 03	Su 03	F 03	Sp 04	Su 04	F 04	Sp 05	Su 05	F 05
EDCI 7158	1			1		1		1	1			1	1
EDCI 7359	1	2		1	1	1	1	1	1	1	1		1
EDSE 7125		1			1			1			1		
EDUF 7115		1	1		1		1			1	1		1
EDUF 7116	6	5	3	6	2	2	4	2	2		1	2	1
EDMG 5000 level or above electives	3	2	1	1	2	1	1	2	1	2	2	1	1
EDSE 5000 level or above electives		2	2		1	2		1	2		1	2	1
MATH 5000 level or above electives	5	6	1	5	4	2	4	4	1	4	3	1	3

III F. Enrollment in the Program's Required Courses

Table 3.6 shows the average enrollment per section for required courses in the Ed.S. Secondary Mathematics program. All Ed.S. students must take EDUF 7115 and EDUF 7116 so average enrollments in these courses are higher. EDCI 7158 and EDCI 7359 are required in the Ed.S. programs for all middle grades and secondary education majors.

Table 3.6 Average Enrollment in the Program's Required Courses

Average Enrollment Per Section													
	F 01	Sp 02	Su 02	F 02	Sp 03	Su 03	F 03	Sp 04	Su 04	F 04	Sp 05	Su 05	F 05
EDCI 7158	10			19		6		2	8			9	1
EDCI 7359	1	5		1	16	2	3	5	1	3	2		8
EDSE 7125		6			5			2			5		
EDUF 7115		9	9		17		8			16	3		11
EDUF 7116	7.3	6	10	6.2	13.5	11	6.25	3.5	12.5		13	18.5	3

By offering the required courses on a rotation cycle, enrollment is high enough that courses usually do not have to be cancelled. For EDCI 7359, students work independently with their academic advisors to complete their specialist projects. This course is offered whenever students need it. Enrollment in EDSE 7125 is the best indicator of the enrollment trend in the secondary mathematics program. Average enrollment for the four-year period was 4.5.

To improve enrollment in required courses, we must recruit more students into the Ed.S. program. In an effort to increase the pool of prospective candidates, the College of Science and College of Education are working with Enrollment Services to develop a recruitment and retention plan for mathematics and science education majors. As the number of undergraduate and graduate mathematics education majors increases, the number of prospective candidates for the Ed.S. program will also increase.

III G. Diversity of the Program's Majors and Graduates

Table 3.7 shows the gender and ethnic origin of students in the Ed.S. Secondary Mathematics program. The percentage of females in the program ranged from 63% to 80% over the four year period. On average, 68% of the program's majors since Fall 2001 were white, 29% black, and 3% Asian. The percentage of black students in the Ed.S. Secondary Mathematics program is larger than the overall percentage of black students in graduate programs at CSU.

Table 3.7 Ethnic and gender diversity among Ed.S. Secondary Mathematics majors

Gender	**2001-2002**	**2002-2003**	**2003-2004**	**2004-2005**
Female	5 (63%)	5 (71%)	6 (75%)	4 (80%)
Male	3 (37%)	2 (29%)	2 (25%)	1 (20%)
Ethnicity				
Asian	0	0	0	1 (20%)
Black	2 (25%)	3 (43%)	2 (25%)	1 (20%)
White	6 (75%)	4 (57%)	6 (75%)	3 (60%)

The gender and ethnic origin of program graduates since Fall 2001 is shown in Table 3.8. Overall, 82% of the program graduates have been female and 18% black.

Table 3.8 Ethnic and gender diversity among Ed.S. Secondary Mathematics graduates

Gender	**2001-2002**	**2002-2003**	**2003-2004**	**2004-2005**
Female	2	1	4	2
Male	0	1	1	0
Ethnicity				
Asian				
Black			2	
White	2	2	3	2

Students in the Ed.S. program in Secondary Mathematics are from diverse age groups. The majority of students are between 31 and 50 years of age. Table 3.9 shows the age composition of Ed.S. students in the Secondary Mathematics program since 2001.

Table 3.9: Age diversity among Ed.S. Secondary Math students

Age	2001-2002	2002-2003	2003-2004	2004-2005
21-25	0	0	0	0
26-30	1	0	1	0
31-40	3	5	5	4
41-50	4	1	2	1
51-60	0	1	0	0
Over 60	0	0	0	0
Total	8	7	8	5
Average	*34.0*	*39.4*	*36.9*	*36.8*

The larger number of students in the 31-50 age range is most likely due to the fact that a minimum of three years teaching experience and a master's degree is required for admission to the Ed.S. program.

III H. Cost-Effectiveness of Instructional Delivery in the Program's Home Department

As shown below in Tables 3.10 and 3.11, the budget for the Department of Teacher Education represented approximately 13% of the total instructional costs for Columbus State University (CSU) from 2001 to 2004. During this time period, over $1,000,000 of the department budget came from grant funds that, for the most part, supported the work of the Centers of Excellence (see note in Table 3.12). In 2004-2005, the department budget represented 8% of the total instructional costs at CSU. Considering that, in Fall 2004, 1340 (19%) of the 7224 students enrolled at CSU were majoring in a program offered through the Department of Teacher Education, instructional delivery in the department is very cost-effective.

For the graduate programs in secondary education, the cost per major has decreased by approximately 64% since 2001. In 2004-2005, the cost per credit was $284.00 compared to $162.15 for the institution. The higher cost per credit is due to the smaller number of students enrolled in graduate courses.

Table 3.10 Instructional Costs for Department of Teacher Education and Graduate Secondary Education Programs

	2001-2002	2002-2003	2003-2004	2004-2005
Department Budget*	$3,116,951	$3,176,287	$3,143,501	$2,032,092
Cost Per Major (M.Ed. & Ed.S. Secondary Education majors) *(Pro-Rated Expenditures/Number of Declared Majors)*	$10,390	$8,359	$6,573	$4,064
Credit Hours Taught Fall and Spring (M.Ed. & Ed.S. Secondary Education majors)	989	1,387	1,335	1,358
Cost per Credit (M.Ed. & Ed.S. Secondary Education majors)	$567	$573	$542	$284
* Note: Centers of Excellence units (ETTC, CRMC, Child Care R&R and Oxbow Meadows removed from academic departments in FY 2005).				

Table 3.11 Total Instructional Costs at CSU

	2001-2002	2002-2003	2003-2004	2004-2005
Instructional Costs	$23,311,457.76	$23,963,598.65	$23,784,544.59	$25,240,030.43
Total Credit Hours	116,543	133,777	148,797	155,654
Cost per Credit	$200.02	$179.13	$159.85	$162.15

By offering the required mathematics education course in the Ed.S. Secondary Mathematics program on a one-year cycle, the number of students enrolled in this course is high enough to contribute to the cost-effectiveness of the department. In addition, the program requires some of the same courses (e.g., Psychology of Teaching, Applied Educational Research, and Leadership in the Curriculum Change Process) that are required in other Ed.S. programs. These courses have higher enrollments and thus help to contribute to the cost-effectiveness of the department.

The Mathematics Program Advisory Committee (PAC) oversees the Ed.S. program in Secondary Mathematics and works to improve the curriculum, courses, and resources offered to teachers. Currently, we are aligning coursework with the new Georgia Performance Standards for Mathematics in an effort to help prepare teachers to teach with the new standards. By responding to current initiatives and mandates, we hope to recruit more teachers into the Ed.S. program to make it more cost-effective.

III I. Program's Responsiveness to State Needs and Employer Demand for Program Graduates

Graduates of the Ed.S. Secondary Mathematics program are already teaching in a middle or high school classroom. The expertise and leadership skills gained through the specialist program contribute to these teachers' effectiveness in helping all students learn mathematics. These graduates are also a valuable resource for our undergraduate program in secondary mathematics. A substantial number of program graduates teach in systems served by CSU, especially Muscogee County. Our graduate programs in secondary mathematics have helped to create a cadre of leaders within our Partner School Network. Graduates often serve CSU as pre-student teaching cooperating teachers and cooperating teachers for student teaching. They are an invaluable asset in assisting with the development of our undergraduates.

The small number of mathematics and mathematics education majors at both the undergraduate and graduate levels limits this program's ability to be more productive and responsive to the needs of the state. The number of students who have the mathematics background to pursue a graduate degree in mathematics education is small. Some of our current efforts focus on trying to recruit more high school students into the secondary mathematics program by:

- visiting area high schools to talk with students who are interested in mathematics,
- bringing high school students in the Future Teachers Academy program on campus and providing them with information about degrees and career opportunities in mathematics education.

In addition, we are working to attract more mathematics teachers into the Ed.S. program by:

- aligning coursework with the new Georgia Performance Standards for Mathematics in an effort to help prepare teachers to teach with the new standards,
- providing additional support for students in graduate mathematics courses, and
- connecting the content of graduate mathematics courses to the secondary curriculum.

III J. Position of the Program's Annual Degree Productivity among Comparable USG Programs

As indicated in Table 3.12, among the three USG state universities that offer a specialist degree in secondary mathematics, CSU ranks first in average number of degrees conferred. CSU is the only USG institution within a 90 mile radius of Columbus that offers a specialist degree in secondary mathematics.

Table 3.12 Ed.S. Secondary Mathematics Degrees Conferred by Institution

Institution	FY 2001	FY 2002	FY 2003	FY 2004	Avg. of Four Years
State Universities					
Columbus State University	**0**	**2**	**2**	**5**	**2.25**
University of West Georgia	2	0	2	0	1
Augusta State University	0	0	1	0	0.25
Regional and Research Universities					
Valdosta State University (Effective Date Unknown)	0	0	0	0	0
University of Georgia	4	2	8	14	7
Georgia Southern University (program deactivated)	0	0	2	1	0.75
Georgia State University (program deactivated)	1	0	0	0	0.25

Plans for improving the position of CSU's program among comparable USG programs include enhanced recruitment and retention efforts, improved services and support for mathematics education majors (e.g., a math tutoring center), and continued support for students and classroom teachers through a variety of professional development activities.

III K. This Program's Contribution to Achieving CSU's Mission

The Ed.S. program in Secondary Mathematics helps CSU to accomplish its mission of serving the educational needs of a diverse region. By preparing highly-qualified teachers in a critical needs area, the program helps to improve the quality of education and the quality of life in the institution's service area.

IV. Conclusion about the Program's Viability at CSU

The Ed.S. Secondary Mathematics program at CSU is a viable one. As indicated by the evaluation of the NCATE/PSC Board of Examiners in February 2005, the quality of the program

is very strong. All NCATE/PSC standards were judged to be met for all initial and advanced programs. In addition, program quality is enhanced by special opportunities available at CSU. Mathematics education majors have access to resources and professional development opportunities offered through the Columbus Regional Mathematics Collaborative (CRMC), Project SMART (Support, Mentoring, and Resources for Teachers), and the Georgia Partnership for Reform in Science and Mathematics.

The viability of the program is also ensured by the sharing of resources among all secondary mathematics programs at CSU. Graduate mathematics courses at the 5000-level also enroll undergraduates on a cross-listed basis. Furthermore, the College of Education, Mathematics Department, CRMC, and P-12 teachers work collaboratively in the design and implementation of the secondary mathematics programs at all levels (B.A, M.Ed., and Ed.S.). Representatives from each of these groups work together to make improvements to the mathematics education programs at CSU and to impact mathematics education in our region.

The Ed.S. program in secondary mathematics is a valuable resource for teachers in our region who want to grow professionally, gain additional expertise, and pursue leadership opportunities in the field of mathematics education. Students in the Ed.S. program take what they learn and apply it in their own classrooms to help their students learn mathematics. They also share their expertise with other teachers in their schools, districts, and state. Graduates of the program have conducted workshops for area teachers, presented at the annual state mathematics conference, and served as mentors to prospective or beginning teachers.

Graduates of the Ed.S. Secondary Mathematics program are also a valuable resource for our undergraduate program in secondary mathematics. A substantial number of program graduates teach in systems served by CSU, especially Muscogee County. Our graduate programs in secondary mathematics have helped to create a cadre of leaders within our Partner School Network. Graduates often serve CSU as pre-student teaching cooperating teachers and cooperating teachers for student teaching. They are an invaluable asset in assisting with the development of our undergraduates.

Though small, the number of Ed.S. Secondary Mathematics degrees conferred by CSU has been fairly consistent over the past four years and exceeds the number of degrees conferred by other USG state universities. As the only USG institution within a 90 mile radius of Columbus that offers a specialist degree in secondary mathematics, CSU provides math teachers in its service region an opportunity to gain expertise and pursue leadership opportunities in mathematics education. These are opportunities that they might not have if CSU did not offer this degree program. With the critical shortage of highly-qualified mathematics teachers, we need to provide every possible opportunity for teachers to grow professionally and enhance their knowledge and skills in teaching mathematics.

V. Program Improvement Plan

The Mathematics Program Advisory Committee (PAC) will oversee the following efforts to improve the curriculum, courses, and resources offered to teachers.

- Align coursework with the new Georgia Performance Standards for Mathematics (2005-2006). Work will be supported by a PRISM mini-grant.
- Explore ways to provide additional support for students in graduate mathematics courses (ongoing). A faculty member in the Mathematics Department has applied for a NSF grant to support this work.
- Consider ways to connect the content of the graduate mathematics courses to the secondary curriculum (ongoing). These efforts were initiated in May 2002 with a conference on the mathematical preparation of secondary teachers. A graduate course is now offered through the Department of Teacher Education that examines high school mathematics from an advanced standpoint. We are still looking at ways to make these connections in the mathematics content courses.
- Provide professional development and networking opportunities for teachers and graduate students through the Support, Mentoring and Resources for Teachers Project (Project SMART) funded by the Calculus Consortium for Higher Education (ongoing). Activities include a one-day conference, monthly meetings, and a list serv.
- Work to recruit high school students into mathematics or mathematics education (2005-2006 and beyond). Faculty members from the CSU Department of Teacher Education will visit area high schools to talk with students who are interested in mathematics or science. Also, high school students in the Future Teachers Academy program will be invited to CSU to learn more about degree programs and opportunities in mathematics and science. These efforts are supported by PRISM monies.

VI. Summary Recommendation

Recommendation: Maintain the Program at the Current Level

The program quality is very strong, but the number of degrees conferred each year is small. Because of decreasing interest in mathematics as students progress through high school and college, few students take the higher level mathematics courses needed to prepare one for a career in mathematics or mathematics education. Until we are able to recruit more students into undergraduate programs in mathematics or mathematics education, opportunities for expansion of the Ed.S. program in secondary mathematics will be limited. There are also factors beyond our control that have an impact on the Ed.S. program. Since teachers can get a specialist degree in any field and receive an increase in pay, some of the math teachers in our service region have chosen to pursue a specialist degree in an area other than secondary mathematics.

As previously mentioned, CSU will continue to work to improve the current Ed.S. program in secondary mathematics by responding to new initiatives (e.g., Georgia Performance Standards), improving the curriculum, providing better support and resources for students, and intensifying recruitment efforts. By enhancing the quality of the program, we hope to attract more potential students.