

Rationale Demonstrating Need for Funds/Significance of the Grant Request

How will the requested funds be used to enhance teaching and learning in this AP® course?

Graphing calculators are a required component of the AP Calculus BC course. Without the aid of graphing calculators, the course requirements cannot be met. They are an integral part of the course and allow the students to study the concepts in a multi-representational format. The use of the software and document camera will allow students to investigate the concepts in additional venues, thus enhancing their understanding. The added ability to empower the students further in their learning with computer animations of concepts and the ability to display and discuss their work in depth makes the use of funds neither frivolous nor trivial. The equipment and materials will be integrated throughout the course. Students will be allowed to check out the calculators to use the entire year. The software and document camera will be continually utilized in class to enhance the presentation and discussion of concepts.

Why are these funds needed?

The use of graphing calculators by students both inside and outside the classroom is a required component of the AP Calculus BC course, making their appropriateness obvious. The cost of these calculators can prohibit some students from enrolling in the course. Initial school bond funds allowed for the purchase of calculators for the inaugural year which had a limited senior enrollment. However, with limited funding and the growth in enrollment, additional funds from this grant would provide for the purchase of additional calculators, allowing them to be checked out to an increasing number of students for use during the entire course. This will eliminate economic barriers and allow all students the opportunity to enroll. With the recent reforms and shifts in focus of the AP Calculus BC course, students are now required to explore, investigate, discuss, and apply concepts in numerous settings. Without the appropriate technology, students cannot work at the level necessary to ensure their success in the course and on the AP exam. The equipment and materials will help provide an environment that allows more students to complete the course and perform well on the AP Exam which will also help increase enrollment in future years.

Quality of Program

This section is all about the AP® program in the school, not about the specific AP course for which the grant is written.

To what degree has the AP program been implemented in your high school?

The Advanced Placement Program at Southmoore High School was implemented when the school opened in August 2008. During the inaugural 2008-2009 school year, 174 students were enrolled in Advanced Placement courses with numerous students taking multiple AP courses. This year has seen significant growth with 455 students currently enrolled. Advanced Placement courses in the four core curriculum areas, the foreign languages, and the fine arts are currently being offered. In addition, Pre-AP courses in the core curriculum areas are offered at every grade level to help prepare and ensure the success of all students when they enroll in the subsequent AP courses.

What are the district goals for the AP program in the future?

Moore Public Schools and Southmoore High School have an aligned vision for the future implementation of the Advanced Placement Program which includes several goals:

- Increasing the number of courses offered;
- Increasing the number and diversity of students enrolled in AP courses;
- Increasing the number of students taking AP Exams;
- Increasing the number of recommended scores on AP Exams;
- Providing training and support for AP teachers and Pre-AP teachers.

Why is the high school implementing this AP course?

The AP Calculus BC course is being implemented at Southmoore High School as part of a commitment to lifelong learning which includes:

- Connecting students to college success;
- Motivating students to achieve at a higher level;
- Giving students an opportunity to take college-level courses in areas of special interest;
- Allowing faculty members to teach demanding courses to motivated students;
- Demonstrating to the community the school's commitment to strong academic standards;
- Enhancing the quality of education.

The AP Calculus BC course allows students wishing to excel in mathematics the opportunity to complete one year of college-level calculus while still in high school. This allows students, upon successful scores on the AP Calculus BC Exam, to avoid the large freshman level classes at college and enroll directly into the upper level classes in mathematics that are required for their major.

How will the school sustain this class once the grant funds are expended?

Once the grant funds are expended, meeting the ongoing expenses of the course should be a sustainable situation. Ongoing expenses and future enhancements will be paid for using the AP Incentive money received from the state for scores of 3, 4, or 5 on the AP Calculus BC exams. Furthermore, because of the commitment of both Southmoore High School and the Moore Public Schools system to this course and the Advanced Placement program in general, additional funding will be sought from department funds and bond issues when needed.

Quality of Evaluation

How will the effectiveness of this grant be evaluated? What is the procedure, timeline, and who is responsible for each item in the timeline?

The materials purchased with grant funds will enable the teacher to create an optimum learning environment allowing more students the opportunity to succeed at the AP level. As a global evaluation, the effectiveness of the grant will be studied yearly by the teacher, administrator, and district mathematics coordinator using data related to the number and diversity of students enrolling in the course, completing the course, taking the AP exam, and the scores on the exam (including the percentages of students scoring 1, 2, 3, 4, or 5). To improve the quality of the program, expectations will be to see an increase in all areas each year. The data will provide realistic evidence regarding success in meeting these expectations.

In addition to a global evaluation, specific items purchased with grant funds will be evaluated by the teacher for effectiveness throughout the year in numerous ways. Because graphing calculators and technology will be integrated throughout the course, assessments will include both calculator allowable and non-calculator problems. This format will enable a valid reflection about the effectiveness of the technology. The software purchase will provide students with an opportunity to explore visually the calculus concepts being taught and can easily be evaluated through the responses in class discussions and demonstration of mastery on assessments. The document camera will allow students to display their work before the class on a daily basis for analysis and discussion. Improvement in the quality of student work will demonstrate evidence of effectiveness of the document camera as an instructional tool.

At the completion of the course, the teacher, administrator, and district mathematics coordinator will use information from the AP Exam and the ETS Student Report to gather further information regarding the effectiveness of the materials with the comparison of the Southmoore student performance to the global population of students taking the exam.

What is the district's plan for increasing the number of students taking and successfully completing the course and examination?

Enrollment numbers from Pre-AP mathematics classes will be studied by the teacher, administrator, and district coordinator to target areas of needed growth. Additional use of AP Potential and AP Parent Nights will help increase interest in the program and serve to identify students who should be encouraged to enter the program. All students will be monitored by their current mathematics teacher and provided strategies for success. All motivated students will be encouraged to accept the challenge of the Pre-AP and AP courses through counseling and conferences with the students and/or parents. Because of the sequential nature of the mathematics curriculum, avenues are in place for students who will need to take two mathematics courses during any given year. This will allow any student who wishes to take AP Calculus BC an opportunity to do so.

Once enrolled in the AP Calculus BC course, tutoring for students will be available and communication with parents will be maintained when difficulties arise. Commitment from the teacher, counselor and administrator to ensure the success of every student will provide encouragement and support for all students to complete the course and exam successfully.