Maths 497: The Student-Faculty Colloquium

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The Student-Faculty Colloquium is one of the most unique and exciting courses offered in the Department of Mathematical Sciences at BSU. Perhaps you have read about it in the Student Handbook, or your advisor has suggested that you enroll in the Colloquium, but you would like more information. Below, we answer some common questions about the Colloquium. Professors in the Department also would be happy to talk to you about participating.
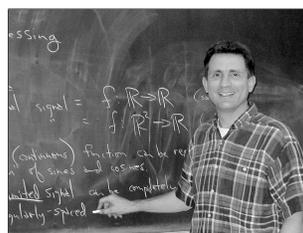
What is the Student-Faculty Colloquium?

The Colloquium is a one-hour course, MATHS 497. A single mathematical topic—different every year—is explored in-depth for the academic year, usually using a textbook. However, the format is completely different from most math classes. Instead of a single professor lecturing for the semester, the participants take turns giving presentations. Typically, ten or fewer students enroll each semester, and about ten professors from the Department attend the weekly meetings and mentor students.

How does it work?

The class meets one day per week, Tuesdays from 1:00 to 1:50 PM. During the first meeting of the semester, a faculty mentor is chosen for each student, and each student-faculty pair is assigned a section of the text. It is the student's responsibility to read this material and prepare a presentation for the Colloquium, with help from his or her mentor. Usually the pair meets several times in advance of the actual presentation to discuss the material, and for the faculty member to check over the student's plan for the presentation and offer suggestions. The student is free to pick the method of presentation. Some students use the blackboard; others use overhead transparencies, PowerPoint, or a directed activity in the computer lab. Generally, the team distributes some photocopied materials to everyone in the class. Each team is usually responsible for one or two class meetings during the semester.

Sometimes professors also make presentations, to give an overview of the semester, to provide background, or to discuss more advanced aspects of the Colloquium topic.

During the weekly meetings, the Colloquium participants listen to the presentations, ask questions, and share insights into the material. Spontaneous discussions are common. The atmosphere is informal and friendly.

Why take Maths 497?

The format of the Colloquium will give you opportunities that you will not find in most other courses. By working on a presentation, you will develop a skill that is important whether you will become a teacher, an actuary, a professor, or virtually any other professional. Through working with a faculty mentor, you will experience a sort of interaction that may be repeated later in your life with a supervising teacher in student teaching, with a mentor at work, or with a thesis advisor in graduate school.

Of course, the material itself is a reason to take Maths 497. You will study a topic that is specially chosen for its importance, timeliness, and accessibility. By studying a contemporary topic, you will see that mathematics is a living subject that is always advancing, and you will see the "rough edges" that are a part of any new subject. You will also see how your other math courses are a foundation for cutting-edge reseach and applications of mathematics.

What will I study?

In 2003-04, the topic will be *Wavelets*. A different topic is chosen every year. Faculty meet in advance to select the topic and textbook. Their goal is to find a topic that will be understandable to students and interesting to everybody. Often the topic is an area of mathematics that is "in the news" because it is developing rapidly or because new applications are being made to real-world problems. Past topics have been:

$1996 - 1997$	Smooth Manifolds and Hamiltonian Dynamics
$1997 - 1998$	Differential Geometry and Minimal Surfaces
$1998 - 1999$	Number Theory and Cryptography
$1999 - 2000$	Fermat's Last Theorem
$2000 - 2001$	Inverse Problems
$2001 - 2002$	Applications of Knot Theory to Chemistry
$2002 - 2003$	Quantum Computing

Does the Student-Faculty Colloquium duplicate material from other courses?

No—faculty choose the topic so that students will see new material that is not discussed in other courses.

On the other hand, you will need to rely on math that you have learned at BSU. The necessary background material varies from year to year, depending upon the topic chosen for the semester. Sometimes one needs linear algebra, sometimes calculus or discrete mathematics. The official preprequisite is Maths 267 (Calculus III) or permission of the department chairperson, but you can check in advance with professors in the Department about what is important to know or review for the year's topic. Most students in the Colloquium are juniors or seniors, but sophomores also occasionally participate.

You should not expect your experience in the Student-Faculty Colloquium to resemble your experience in Senior Seminar (Maths 498). Senior Seminar usually gives a broad overview of contemporary topics in mathematics, with readings from many diverse sources. In contrast, the Student-Faculty Colloquium tries to explore a single topic in great depth, using a single textbook.

Which semester should I enroll?

If your schedule allows, you will learn the most by participating for an entire academic year. If you can only participate for one semester, you should enroll for the fall, since material in the spring will be a continuation of material already covered in the fall.

Since a new topic is chosen each academic year, you may enroll for several years and earn credit each semester.

For more information about the Student-Faculty Colloquium, read the article *Joining Students and Faculty: A Seminar for Both* by Ralph Bremigan and John Lorch, PRIMUS, Vol. XI, No. 4 (December 2001).