Math 5BI - Course Outline, 2009 Spring Quarter.

LECTURES: MWF, 11:00 AM - 12:15 PM, 940 1010.

INSTRUCTOR: Pawel Gladki.

OFFICE: 6721 South Hall.

PHONE: 893-38-33.

E-MAIL: gladki@math.ucsb.edu WEBSITE: http://math.ucsb.edu/~gladki

OFFICE HOURS: **M 9:00 AM - 10:00 AM, T 1:00 PM - 2:00 PM** If you want to see your instructor in his office, you are encouraged to make an appointment: see him before or after class, call his office or send him an e-mail.

LECTURES AND DISCUSSIONS: This is an honors version of Mathematics 5B where most of the course is developed through problem solving and discovery. We will cover all of the crucial material from Math 5B although we will cover it in a different order and in a different way. This class is supported by a grant from Educational Advancement Foundation. This foundation was set up by mathematicians and scientists who believe that the best way to prepare future mathematicians and scientists is have them learn the big ideas through inquiry instead of listening to lectures in a hall with hundreds of other students. Too often, in mathematics classes the instruction is reduced to providing recipes for solving a long list of possible problems, and students begin to view the subject that way. Because of this most students don' learn about the big picture or grapple with the important ideas. This course will accomplish exactly the opposite. You will be expected to grapple with the big ideas and you will develop a deeper understanding of the subject. As a result you will be able to solve all the important problems and much more, you will be working like mathematicians and scientists.

The way the course operates is fairly simple. We do not use a textbook. The instructor will pose questions and you will work on them. You have to agree not to consult textbooks or the Internet for solutions, because that destroys the inquiry. You may talk about the questions with your classmates, the instructor, or the teaching assistant whenever you like, but not other people. If you have seen how to solve a problem before, work with you classmates without telling them how to do it. If you start to present how to do something quickly, then you classmates don't learn in the way we want them too. You will find that by carefully rethinking something you have seen before you may even learn the most.

It is important to make sure you use ideas developed, or agreed to, in this class–not results from other sources. This will be discussed further as we go along because we want to build a solid foundation. There will also be times where the instructors give a short lecture or we give you a book to work from. Although as students you will develop the big ideas with their guidance, we will make sure that you also acquire all the skills you need for success in subsequent classes. We will expect you to be very careful about notation. Don't write something down if you don't know what it means. We will also work carefully to make sure the mathematical reasoning you use is complete and precise. This takes hard work an practice, so be prepared to re-write and reconsider your ideas repeatedly.

You are expected to devote a spiral notebook to the class. This way you can keep all your work bound in sequence. We ask you to record all your ideas and calculations in this notebook, IN INK, and indicate the date when you start work for the day. Don't be shy about errors, when you realize something is wrong, just write OOPS beside it and go on. If you don't have false starts, then you are not engaging in inquiry and the instructor will be concerned. Your notebook will contain everything, scribbles and false starts, good ideas, great ideas, re-writes of something you have fixed up, as well as notes taken in class. If you write up something on a computer or print out data from a computer, don't recopy it into the notebook–just stable it in. At the end of the course, you notebook will be collected as evidence of your class work and it may be collected for brief intervals during the term as well.

EVALUATION: Your grade will be based on class participation (20%), homework and notebook (30%), one midterm (20% each) and a final (30%). During class we will discuss how the exams will be structured, they will be a combination of take-home and in-class exams. You will have homework after each class, but it won't be provided to you as a list of problems to work on. Sometimes the homework will consist of exercises for practice, one or two problems to be studied in depth. Most often it will simply consist of an assignment to think about where we are in class, work on it more, and what ideas you might try next. Your homework should be written down in your notebook as well, and if we go over it in class, you can write corrections down next to it. If you miss a class, phone a classmate to find out what happened or email one of the instructors.