MATH 5336 (Geometry II)  
TENTATIVE SYLLABUS-SPRING 2006 as of Jan 4, 2006

CLASS TIMES: 1:25pm-3:20pm TTh (with 15-minute break)
CLASS LOCATION: VinH 301

TEACHER: Fristedt (pronounced Freested)
OFFICE: VinH 252
OFFICE PHONE: (612)-625-5081
OFFICE PERIODS:

COURSE MATERIALS: A booklet, which will be available from Alpha Print at 1407 Fourth St SE—estimated date=Jan 13, 2006; when the date is known exactly, an e-mail message will be sent to all who are registered. An inexpensive calculator is also required—it need not be a graphing calculator.

Three relevant books are on reserve in the Mathematics Library in VinH 310:

- “Introduction to Geometry, Second Edition” by H. S. M. Coxeter
- “College Geometry” by Howard Eves
- “How to Read and Do Proofs, an Introduction to Mathematical Thought Processes, Fourth Edition” by Daniel Solow

It is prudent to open each of the reserve books to get a sense of the focus of each, and to then to return to them as your interest or need dictates.

PREREQUISITE KNOWLEDGE: The semester course Math 5335. Certain 5xxx-level geometry courses taken at other schools might be appropriate prerequisites; in such a situation a detailed conversation with the teacher of Math 5336 should occur no later than the first week of classes, but preferably before classes begin, in order to assess whether the prerequisite knowledge is sufficient for a positive experience in Math 5336.

EXAMINATION SCHEDULE:

1:25pm-2:25pm T February 7 (class after break)
1:25pm-2:25pm Th March 2 (class after break)
1:25pm-3:20pm (no break) T March 28
1:25pm-2:25pm Th April 20 (class after break)
8:00am-10:00am Sa May 13 (Final Examination)

Notify me by January 20 about any examination time conflict. See the Spring Semester Class Schedule to identify exactly what constitutes a final examination time conflict. If you are making travel reservations to follow Spring Semester, it is imperative that you do so promptly so as to be able to leave sometime after the scheduled completion time of the Math 5336 final examination (which occurs within a few hours of the end of the University final examination period).
APPROXIMATE OUTLINE: The first three-fifths (approximately) of the course will treat \( n \)-dimensional Euclidean geometry with special attention to 3-dimensional geometry and spherical geometry. The test on March 28 will be comprehensive on this material with some emphasis on the portion of that material treated subsequent to the March 2 test. The last two-fifths of the course will treat projective geometry. The final examination will be comprehensive on this material with some emphasis on the portion of that material treated subsequent to the April 20 test. The tests and the final examination are closed book examinations for which calculators will be permitted.

HOMEWORK SCHEDULE: Due at beginning of class on:

- T Jan 24
- T Jan 31
- Th Feb 16
- Th Feb 23
- T Mar 21
- Th Apr 6
- Th Apr 13
- T May 2

HOMEWORK RULES: You are permitted and even encouraged to discuss problems with classmates, even those problems whose solutions you are asked to submit as homework. However, you are not permitted to look at what a classmate will actually submit, and it is required that the final writing of what you will submit be done without reference to notes taken in such discussions. This rule does not preclude reading those notes with care before beginning your final write-up.

Homework for submission should be clearly written on 8.5 by 11 sheets of paper. Clarity, neatness, correct reasoning, correct answers, and good judgment about how much detail to include are all important, but neatness does not preclude the clear crossing out of some writing. The pages of homework should be fastened together, preferably with a staple but a paper clip is ok, and should be numbered—for instance, "Page 1 of 3", "Page 2 of 3", "Page 3 of 3". Also, the name of the student should appear on every page.

The maximum possible gross score on each homework assignment is 25 points. The best 6 of 8 homework assignments will contribute to the gross homework score—maximum possible equals 150. Division by 5 gives the net homework score, which will be used in the evaluation for the quarter.

Homework, late by up to one class period will be accepted, but I keep track of the lateness and it could affect your grade negatively.

CORRECTING THE CORRECTING: For either exams or homework, I am willing to check the scoring of them within a week after they are returned. You can attach a note if you think I might have overlooked something or not taken account of a different approach. However, any actual re-scoring will be done without a student being besides me telling me what they meant.
EVALUATION: There are 240 possible points in the quarter: 30 on each of three 60-minute tests, 30 on homework, and 60 on each of the two longer tests. The grade will be based on a total possible score of 210 points arrived at by whichever of the following three methods gives the highest grade: (1) omit the lowest of the three 60-minute tests (which could be an examination that will not have been taken); or (2) multiply the score on one of the two longer examinations by the factor $\frac{1}{2}$, having the effect of making the maximum possible score on that examination equal to 30; or (3) omit the homework. There is no set proportion of the various grades which will be earned; it is possible that all will get better than a C+ (and there are also extreme possibilities in the other direction).

The grade of 'I' is extremely rare. In no case will an 'I' be given for a de facto withdrawal even if the student in question plans to take Math 5336 in the future. The appropriate symbol in such a case is 'W', a symbol granted and regulated by the various colleges. I have no power to give a 'W', so if, at the end of the quarter, I am presented a grade sheet with the name of a student who has stopped participating in the class, my only choice is to give an 'F' or 'N', depending on type of registration.

UNIVERSITY STATEMENT: The University supplies the following definitions of grades, not refined to account for pluses and minuses:

A: achievement that is outstanding relative to the level necessary to meet course requirements;

B: achievement that is significantly above the level necessary to meet course requirements;

C: achievement that meets the course requirements in every respect;

D: achievement that is worthy of credit even though it fails to meet fully the course requirements;

S: The minimal standard for S is to be no lower than C-. The instructor or department must inform the class of this minimal standard at the beginning of the course. [For registrations in Math 5336 in Spring 2006 on the ‘S to N’ basis, ‘S’ is the equivalent of ‘C-’ or higher and ‘N’ is the equivalent of ‘D+’ or lower. Whether ‘S to N’ grading is suitable for your program is determined by that program, not by the teacher of Math 5336.]

F (or N): Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.

I (Incomplete): Assigned at the discretion of the instructor when, due to extraordinary circumstances, e.g., hospitalization, a student is prevented from completing the work of the course on time. Requires a written agreement between instructor and student.

Here is another University policy that relates to grades: Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course. (Note: This is not the only University policy related to academic dishonesty.)
THE COMMENTS THAT FOLLOW ARE INTENDED TO HELP MAKE YOUR EXPERIENCE WITH THE COURSE A SATISFYING EXPERIENCE, AND TO AID YOUR LEARNING AND THEREFORE YOUR GRADE.

Except for 8xxx-level courses, one credit is defined as equivalent to an average of three hours of learning effort per week (over a full semester) necessary for an average student to achieve an average grade in the course. For Math 5336, a 4-credit course which meets 4 hours per week, a student should expect to spend an additional 8 hours per week on course work outside the classroom. Moreover, for this effort to have its maximum benefit, it should be spread somewhat evenly over the semester and within each week. Also, there will be some variation from student to student depending on mathematical background and mathematical aptitude. In particular, a student who is taking her or his first 5xxx-level mathematics course or who has not taken prerequisite mathematics in the recent past should probably spend more than the 8 hours per week mentioned above.

I strongly recommend that your first reading of any section in the textbook come before that material is discussed in class, and also that you also simultaneously try some of the non-assigned problems relevant to that material. When the subsequent class presentation follows along the lines of the reading, you may want to take notes sparingly if at all so you can give full attention to thinking and listening. And you may want to take somewhat more extensive notes when the class presentation has a character different from that in the book.

It is wise to make a good attempt at almost all of the problems, especially all those problems that are not similar to other problems in the same section. It is especially important to hone your skills on some of the easier problems before attacking the problems that you are required to submit. Often the total amount of time needed to do two easier problems and then one harder problem that you are to submit is less than what it would be to do the one harder problem only. I suggest the following: two or more classmates in Math 5336 create for themselves common assignments of problems, grade each others solutions, and then discuss them constructively.

Although attendance does not play a direct role in grading, my experience as a teacher indicates that there is high correlation between attendance and grades. It might happen during the semester that you will feel that a particular class session has turned out to be useless. It would be a mistake to let that experience lure you into intentional absenteeism. Late arrival to class can also adversely affect the learning experience. One can essentially lose all the benefit of what is said in the first 30 minutes of class by being 5 minutes late to class and then trying to catch up with what has already been written on the board.

I will spend time in class discussing a wide variety of things that are not easily communicated in writing. For instance, sometimes there is a natural tendency to want to prove something by starting with the thing to be proved and going through a sequence of steps to arrive at the given information. A student who misses class when discussions about the incorrectness of this method of proof are taking place might feel that my grading on tests is harsh for this kind of error, whereas I, knowing that I have given this matter significant attention in class, have high expectations for avoiding this type of error.