

# Math 3403: Geometric Structures for Early Childhood and Elementary Teachers

## Summer 2011

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**D2L Website:** [oc.okstate.edu](http://oc.okstate.edu)

Study it yourself. If I told you, you would not know; you simply would have been told. – Robert Heinlein

**University Catalog Description:** Prerequisite(s): 1483, 1493 or 1513. Foundations of geometry for prospective early childhood and elementary educators. Linear and angular measure, polygons and polyhedra, similarity and congruence, geometric constructions, motion and transformations. Class format [will] emphasize student investigation and discovery, discussion and presentation, and working with mathematical tools. This course, together with MATH 3603, prepares students for CIED 3153 and 4153 and/or HDFS 3223.

**Important Note to Students:** This course is no longer an A-designated General Education course; it will NOT satisfy the General Education Analytic and Quantitative Thought (A) upper division requirement.

**Some Initial Comments:** The content and instructional delivery of this course models the current professional thinking and standards endorsed by the National Council of Teachers of Mathematics (NCTM). Please be aware that:

1. MATH 3403 is specifically designed for prospective elementary/early childhood/middle level teachers; if you are pursuing a major different from one of these, your advisor will work with you to select a course more appropriate and valuable to your studies.
2. MATH 3403 is a content mathematics class much like other MATH-prefixed courses you have taken; the pedagogical issues related teaching this content in the school setting is addressed in detail in one of the methods courses that you will be taking as part of your program.
3. The value of this course will depend mostly on you, i.e., your involvement, effort, and creativity.

**Required Books and Materials:** The text will be *Geometric Structures: An Inquiry Based Approach for Prospective Elementary and Middle School Teachers* (ISBN: 9780131483927) by Doug Aichele and John Wolfe. Required manipulatives are a mira (or image reflector), scissors, straightedge, and compass.

**Course Websites:** Course documents will be placed regularly on the Online Classroom website, [oc.okstate.edu](http://oc.okstate.edu). Check this site regularly. Another helpful website is the GeoSET site, [www.math.okstate.edu/geoset/](http://www.math.okstate.edu/geoset/), designed specifically for this class. This site contains basic geometry ideas and definitions, providing insight developed by previous students. The site also contains a bank of old exams.

### Course Evaluation:

Course grades will be determined per the following point distribution:

Exam 1	125 points
Exam 2	125 points
Exam 3	125 points
Projects	100 points
Study Team	80 points
Daily	75 points
Attendance	20 points
<b>Total</b>	<b>650 points</b>

Letter grades will be assigned according to the following cumulative points:

581.5 to 650	<b>A</b>
516.5 up to 581.5	<b>B</b>
451.5 up to 516.5	<b>C</b>
386.5 up to 451.5	<b>D</b>
under 386.5	<b>F</b>

There will be no curving of the final course grade.

**Study Teams:** You will form semester-long Study Teams. The first couple of classes will be used for you to grow to know each other better. At the beginning of the third class, you will pick your own teams of approximately four based upon who you feel you can work and learn the best with.

- Study Teams must meet a minimum of twice each week for a minimum of 1 hour per meeting. These meetings may not occur from 8-9 am Monday through Thursday. (You may still have team meetings at these times. However, they cannot count toward the minimum meeting requirements.) All the members of the Study Team must be present for the meeting to count toward the minimum meeting requirements.
- Study Teams will record the “minutes” of their meetings in a Team Journal. The Team Journals will be collected at the end of the semester for a final grade. Each team member is expected to contribute to the Team Journal and identify his/her contributions. Your Team Journal is an evolving document over the course of the semester, reflecting your knowledge growth. Bring your Team Journal to each class meeting.
- Once formed, the Study Team should consider such issues as: (1) its goals and objectives (what each of you want from the Study Team); (2) the strengths each member brings to the Study Team and how they will be utilized (what role members will play – identify who does what); (3) how the Study Team will function (when do you meet outside of class, what you will do at Study Team meetings, and how you will help each other). As you contemplate these issues, others will arise; they are supposed to!
- Each Study Team must choose a team name. Be creative! You must report the team name to me by the end of the fourth class period.

Learning from your classmates is a proven ingredient for success. The course delivery is structured in order to facilitate this. Establishing and nurturing Study Team spirit is vital to your success!

**Exams Grade (375 points):** Three exams will be given, during approximately the third and sixth weeks and during the final class meeting. These exams will test not only your content knowledge but also your ability to explain your thought process. In the event a serious and unavoidable conflict prohibits you from taking an exam, you must notify me in advance of that particular exam in order to request taking a make-up exam.

**Projects Grade (100 points):** Throughout the semester, projects will be given. These projects are intended to be fun, so be creative! Some of the projects will be group projects with your Study Team, and some will be individual. A specific due date and number of points/grading rubric will be given for each project as it is assigned.

**Study Team Grade:** The Study Team grade will be based on three components, Facebook postings, Class Discussion, and Team Journal.

**Facebook postings (20 points):** After each team meeting, your team must post on the class Facebook page a summary of the meeting. I will respond to each post. I will provide more details about what should go into these posts. Everyone on the team will receive the same number of Facebook postings points. You will lose points for failing to adhere to the posting requirements.

**Class Discussion (30 points):** Expressing your understanding is paramount in this class. You must lead discussions, sharing your understanding of the content found in the activities. For example, this can be accomplished through sharing your ideas about a problem or sharing your insights and struggles with a problem. For each substantive discussion you lead, you will earn points. If all of the members of your team are present that day, you will earn 2 points. If someone from your team is missing that day, you will earn 1 point. Roughly, you should be leading a discussion about every other day, earning a maximum of 30 points.

**Team Journal (30 points):** Near the end of the semester, I will collect your Team Journals and evaluate them. I will provide more details about what the journal should look like. Everyone on the team will receive the same number of Team Journal points. During evaluation, I will look for improvements in the quality of journal entries and adherence to the journal guidelines.

**Daily Grade (75 points):** The daily grade includes quizzes, homework, and in-class work. Assignments will not be accepted late, and make-up quizzes will not be given. If unavoidable circumstances prohibit you from attending a class meeting, please speak with me in advance.

**Attendance Grade (20 points):** As prospective teachers, I expect the highest level of professionalism from you regarding your attendance and class engagement. You should arrive on time with your assignments completed and your materials for the class, ready to engage with your classmates. Your attendance grade begins at 20 points. For

each absence, I will deduct 1 point from your attendance grade. I will forgive one absence. No other absences will be excused, regardless of the reason. If you are late to class, you will be counted absent. Also, if you are not engaged in class, e.g., you are texting, you will be counted absent. In other words, please turn off your cell phones and stow them; no texting during class.

**Daily Routine:** During class we will discuss your understanding of the topics on the activities, present problems from the homework, and/or work in-class activities. You will lead the discussions; I will not. To be prepared for each class meeting, you should check the Online Classroom site for announcements, and you should bring your book, your completed homework, and the manipulatives that we are currently using to class. It is both imperative and important that you attempt and complete all of the activities.

**Academic Integrity:** Working with another person can be helpful in learning the material. In fact, this is a purpose for your Study Team. However, all written work submitted must be your own. Copying someone else's problem solution or project is prohibited. Such behaviors are regarded as violations of academic integrity and will be treated according to the University's policy. In order to be successful in learning the material, you must think about the problems and draw your own rational conclusions before discussing them with anyone else.

**Special Accommodations for Students:** "According to the Americans with Disabilities Act, each student with a disability is responsible for notifying the University of his/her disability and requesting accommodations. If you think you have a qualified disability and need classroom accommodations, contact the Office of Student Disability Services. Please advise the instructor of your disability as soon as possible to ensure timely implementation of appropriate accommodations. Faculty have an obligation to respond when they receive official notice of a disability but are under no obligation to provide retroactive accommodations. To receive services, you must submit appropriate documentation and complete an intake process during which the existence of a qualified disability is verified and reasonable accommodations are identified. Call 405-744-7116 or go to <http://sds.okstate.edu/>" (OSU Summer 2011 Syllabus Attachment).

**Drop and Withdrawal Policy:** It is your responsibility to know and comply with all deadlines. The last day to drop this course with an automatic grade of "W" is July 15<sup>th</sup>.

**Incomplete Grade:** The grade of "I" is given to a student who satisfactorily completed the majority of the course work and whose work averages "D" or better, but who has been unavoidably prevented from completing the remaining work of the course.

**Note:** Please consult the OSU Summer 2011 Syllabus Attachment for further guidance on important issues. A copy of the syllabus attachment can be found at: <http://osu.okstate.edu/acadaffr/aa/syllabusattachment-Su.htm>

**Final Notes:** Here are some fortune cookie-ish thoughts.

- This course is about geometry. But, it is much more than just a content course. In addition to content, I want you to experience creativity, I want you to learn to communicate your thoughts, and I want you to listen, not just to others, but to yourself. For too long you have relied on others while in school to tell you what to think. On your own, you can figure a lot of things out if you would just give yourself the chance.
- Don't depend on others to give you the answer. Watch infants and toddlers. How many of them listen to Mommy and Daddy when they tell them that something is hot? No, they always seem to burn their hands a couple of times before they learn to steer clear of hot things. You may believe that while in school, the teacher will show you how to do it. Break away from this notion and set yourself free. Don't be afraid to explore and burn yourself.
- The answer is not the ultimate prize. The path you take is valuable as well. And everyone's path is different.
- Changing habits is not easy. But worthwhile things are usually not easy to obtain.
- At times, you may feel lost, frustrated, stuck, etc. This is normal. Don't give up, and keep working. Your Study Team is there to help you. I am there to help you. We will work to get you unstuck.
- Again, don't be afraid to fail. If you are too afraid to begin, you'll miss the journey.