

MAT 1060

Elements of Geometry and Logic

Days: Monday and Wednesday
Section Number: LE01, 06143
Time: 5:00 – 7:15 p.m.
Instructor: Andy D. Jones
Classroom: Marlboro Hall 3126

Spring 2009, 4 credit hours
Prince George's Community College
Department of Mathematics

Course Description: Designed for students in elementary education. Review and analysis of geometric principles and logic and the application of computer methods to these topics.

Important Note: Although this course satisfies the General Education requirement for graduation at Prince George's Community College and transfers to UMCP as MATH 211, it is primarily for those who will teach in the preschool or elementary school. It is not meant to teach the **how** of the topics typically taught in preschool and elementary school; its purpose is to teach the **why** of those topics. This class meets five hours per week and includes lab time.

Prerequisite: C or better in MAT 1050 *Elements of Mathematics*. Students are responsible for meeting the prerequisites of this course and will accept all consequences for staying in the course without having met the prerequisites.

Instructor Contact Information:

Name: Andy D. Jones, Associate Professor

Office: Marlboro Hall 3042 (Mathematics Chair's Office)

Mailing Address: Department of Mathematics
Prince George's Community College
301 Largo Road
Largo, Maryland 20774

E-mail Address: JonesAD@pgcc.edu - To facilitate email communication with me, include the code **CCGP07** in the subject line or first line of emails to me during the semester. (The code allows legitimate email messages but stops SPAM and viruses from entering the PGCC network.)

Personal Webpage: <http://academic.pgcc.edu/~ajones>

Office Phone: (301) 322-0450. Please leave a message on my voicemail, and I will return your call as soon as possible. Speak clearly and slowly when you leave your message. Remember to state your name and phone number, preferably twice.

Office Hours:

Tuesday 11:00 a.m. – 12:00 noon	Wednesday 3:00 p.m. – 5:00 p.m.	other times by appointment
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Textbook: Sowder, Judith, Sowder, L. and Nickerson, S. *Reconceptualizing Mathematics: Part 3: Reasoning about Shapes and Measurement*. Preliminary edition. New York: W. H. Freeman, 2008. **Bring your textbook to every class.**

Required Materials:

- Your own calculator **required at every class**. While a Texas Instruments 83/83 Plus or 84 is preferred, any scientific calculator will suffice for daily use.
- Three-ring binder for handouts (1.5 inch suggested)
- Three-tab folder for portfolio
- Access to the Internet
- Lose-leaf paper for homework
- Pencils: All graded work including exams must be submitted in pencil.
- Compass, protractor and straightedge

Technology: A significant portion of coursework (both assignments and exams) will require the use of a calculator with scientific functions. Buy or borrow a calculator as soon as possible and learn to feel comfortable with it. In-class instruction on the basic use of the calculator will be minimal. We will also be using a geometry software program called *Geometer's Sketchpad*. You may use it in the Mathematics Learning Center when needed.

Blackboard: All students should obtain an *Owl Link* account and *Blackboard* log-in as soon as possible. Besides being able to check your grades, you will also find assignments, handouts, resources, and course documents on *Blackboard*.

Course Format: Although addressing the mathematics you will teach as elementary and middle school teachers, this course is not a course of pedagogy (how to teach). However, best practices of teaching mathematics will be used in the course so that you may learn mathematics in a way that will help you to teach it better. The course will include a significant portion of laboratory and activity-based learning in groups. Students are expected to participate in all in-class activities within a collaborative environment. Some part of your grade will be based on group activities. **If you are not comfortable working in groups and helping your fellow group members learn, my class may not be for you.** The course will be designed to include lecture format, small group work, explorations, writing, manipulative use, and applications of technology. In addition, because you as a teacher must have a greater understanding of the material than the students you are teaching, the problems and activities we use will not always be geared at the elementary level. **You are expected to read and work through the textbook materials according to the tentative schedule as part of your out-of-class preparation. In-class lectures and activities will assume your familiarity and will extend these basic concepts further.**

Organization: One important skill for a teacher is learning how to organize your own learning and progress for others to evaluate as you may do in a professional teaching portfolio. While this collection is not a portfolio in the strictest sense, you should collect all work from this course in an organized way. Include all homework assignments, returned exams, activities, quizzes, etc. This binder should be the file cabinet of your work in MAT 1060. You may want to keep this binder for subsequent coursework, as a resource for your own classroom teaching, or for inclusion as part of your A.A.T. portfolio.

Expected Course Outcomes: Upon successful completion of this course, students will

- Outcome 1: Identify, name, and represent basic geometric shapes in one-, two-, and three-dimensions.
- Outcome 2: Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about their relationships.
- Outcome 3: Apply appropriate techniques, tools, and formulas to estimate and determine standard and non-standard measurements in one-, two-, and three dimensions.
- Outcome 4: Investigate geometric relationships through basic geometric constructions with and without technology.
- Outcome 5: Apply transformations and use symmetry to analyze mathematical situations.
- Outcome 6: Use visualization, spatial reasoning, and geometric modeling to solve problems.
- Outcome 7: Communicate effectively about geometry.
- Outcome 8: Use technology and manipulatives appropriately to enhance the learning of mathematics.

Grades and Assessment:

Your course grade will be determined according to a weighted average:

Portfolio 10%	You will be producing a semester-long portfolio for this course. The portfolio will demonstrate what you have learned and will be collected at the end of the semester. However, it is important that you are working on it throughout the entire semester. It will weigh significantly in your course grade. The portfolio will include an introduction letter and a list of required elements. More information will be given in a separate document.
Activity Points 10%	Throughout the semester there will be points assigned to class activities and short laboratory tasks. These points may be from group work, specially assigned homework, internet activities, presentations, simulations, or other items. Each assignment will be scored out of 10 points. Together, these assignments will contribute 10% of your final grade.
Quizzes 10%	There will be approximately eight to ten quizzes. Some may be given in class. Others may be taken at your convenience online via <i>Blackboard</i> . These quizzes are meant to be learning experiences from which you will receive feedback about how you are progressing and what you should study harder to do well on the exams. Together, the assigned quizzes will be worth 10% of your final grade.
Exams 50%	There will be three out-of-class exams given in the Testing Center. These exams will assess your knowledge of a limited number of topics covered in class. These three exams will count 50% of your grade. <ul style="list-style-type: none"> • Exam #1: Basic 2-D and 3-D Geometry • Exam #2: Size Changes, Constructions, and Transformations • Exam #3: Measurement
Final Exam 20%	The final exam will be comprehensive and will measure the expected learning outcomes for the whole course. The final exam will be given in class during the Final Exam period scheduled by the College under my supervision. It cannot be taken early so plan accordingly. The final exam will count 20% of your final grade. <ul style="list-style-type: none"> • Final Exam: Comprehensive with emphasis on the Pythagorean Theorem and supplementary topics

Your semester grade is determined using weighted scores in each of these categories. In short, the formula used to compute your weighted average is

Weighted average = (10% x percentage of Portfolio points obtained) + (10% x percentage of Activity Points obtained) + (10% x percentage of Quiz points obtained) + (50% x percentage of Exam points obtained) + (20% x percentage of Final Exam points obtained)

Grade Calculation: Your semester grade will be calculated and assigned as follows:

A	B	C	D	F
90% and above	80% to 89%	70% - 79%	60% - 69%	59%and below
<i>Superior work far above peers; sets the standard in understanding, insight, or skill.</i>	<i>High quality, solid work; clearly reflects a high level of understanding, insight, or skill.</i>	<i>Competent, adequate work and readiness to continue further mathematical study.</i>	<i>Low quality work showing minimal understanding; indicates un readiness to continue in the sequence.</i>	<i>Representative of work clearly inadequate and unworthy of credit.</i>

The instructor reserves the right to make corrections to incorrect grades and discrepancies in grade calculations displayed in Blackboard's grade book. Course grades will be assigned based on the procedure above. The instructor's grade book is the official grade book.

Important Dates:

Spring 2009 Semester	
Classes begin	Thursday, January 22
Last Day to Drop with Refund	Thursday, January 29
No Face-to-Face classes – College closed – Presidents' Day	Monday, February 16
Last day to apply for spring graduation	Tuesday, February 17
No Face-to-Face classes – College closed – Spring Break	Monday-Sunday, April 6-12
Last day to withdraw from full semester classes	Friday, April 17
Final Exam period/last week	Thursday-Wednesday, May 7-13
Commencement	Thursday, May 21

Summer and Fall 2009 Registration	
Advance registration for summer 2009	Tuesday-Friday, April 14-17
Begin open registration for summer 2009	Monday, April 20
Advance registration for fall 2009	Monday-Friday, April 27-May 1
Begin open registration for fall 2009	Monday, May 4

Policies:

Cancellation/Delayed Opening of Classes: In the event of inclement weather, the College will notify local area radio and TV stations to announce all College closures/late openings. In addition, the College's main number, 301-336-6000 or the College's website, should be accessed for continuous opening/closure information. Should class be cancelled on a day for which a test or other assessment is scheduled, we will resume the schedule on the next day the class meets. When the college announces a delayed opening, all classes with at least 45 minutes of class time remaining at the time of the opening will be held. For example, in the event of a 10 a.m. opening, a 9:30-10:45 a.m. class will be held. This procedure applies to all credit classes.

Attendance Policy: Because this class requires active participation in class discussion, "hands-on" experiences, and cooperative group learning, **on-time attendance is essential and mandatory!** Absenteeism and tardiness will affect your overall grade directly and indirectly. As stated in the PGCC Catalog, *the college in general expects that students will regularly attend the classes for which they are registered.* Attendance will be taken at every class. Do not miss this class unless absolutely necessary. Although I certainly encourage you to visit me during office hours, it is impossible to recreate the discussions, explorations, and laboratory activities missed during an absence. If you do miss a class, you are responsible for all material covered in your absence and you must complete all required assignments, quizzes, and exams on time. It is your responsibility to find out what was missed and what is due the next class period via *Blackboard*. Please note that any in-class activity points you miss during an absence cannot be made up (see Make-up Policy below.) With the exception of extenuating circumstances, students who miss more four classes during the semester may receive a failing grade. **Students who are habitually tardy may be denied entry into the classroom until a break in classroom discussions occurs.**

Make-up Policy: Because most quizzes and exams have a very generous window of time to be completed, **it is my general policy that no make-up exams or quizzes will be given.** Exceptions to this policy are extremely rare. Students who cannot take exams on time due to an extenuating circumstance **must contact me before the exam expires and provide a written request with documentation of circumstance.** In-class activity points, collected homework, and laboratory points cannot be made up for **any** reason as this is how participation is assessed.

Code of Conduct: The Prince George's Community College Code of Conduct defines the rights and responsibilities of students and establishes a system of procedures for dealing with students charged with violations of the code and other rules and regulations of the college. A student enrolling in the college assumes an obligation to conduct himself/herself in a manner compatible with the college's function as an educational institution. Refer to the 2008-2009 Student Handbook, beginning on page 49, for a complete explanation of the Code of Conduct, including the Code of Academic Integrity and the procedure for dealing with disruptive student behavior.

Academic Integrity: The college is an institution of higher learning that holds academic integrity as its highest principle. In the pursuit of knowledge, the college community expects that all students, faculty, and staff will share responsibility for adhering to the values of honesty and unquestionable integrity. To support a community committed to academic achievement and scholarship, the Code of Academic Integrity advances the principle of honest representation in the work that is produced by students seeking to engage fully in the learning process. The complete text of the Code of Academic Integrity is in the 2008-2009 *Student Handbook* (pages 50-53) and posted on the college's website. All charges of academic dishonesty will be taken seriously. This includes cheating or copying on exams and quizzes, submitting another's out-of-class work as your own, and plagiarizing from sources such as books, magazines, and the internet. Students who engage in academic dishonesty will receive a failing grade of zero for that particular assignment. Any repeated incident will result in a course grade of "F." **I take academic dishonesty seriously!**

Classroom Conduct: Every student is expected to behave in a way which promotes a learning atmosphere. Respect for others, both students and instructor, is crucial to the success of all, and anything less will not be tolerated. Students are expected to add positively to the learning environment.

- **Be in class on time. I do not tolerate tardiness.** It shows a lack of interest on your part and a lack of respect for the instructor and other classmates. Plan accordingly for traffic, parking, and other activities. Tardiness is defined as arriving after attendance has been taken. Students who are substantially and/or habitually late may be denied access to the classroom.
- **Actively participate** in all class lectures, activities, and discussions, asking questions when things are unclear. Your participation is valued.
- **Prepare for class** by having your homework and questions ready. Always bring your book, calculator, paper, and pencil. Read the sections in advance. You should expect to spend 2 hours of out-of-class time for every one hour of in class time. For this class, expect to spend at least 10 hours per week of study/reading/homework time. Some students may require more and some may require less.
- **Cell phones should be turned off completely. Do not use text-messaging in my class. You may be asked to leave if this becomes a problem.**
- **Visitors who are not registered for the course may not sit in the class. This includes children.** School liability prevents those who are not officially registered, including students' children, from being in the classroom.

Hints to Perform Successfully in this Course

1. Come to class everyday on time. You can never really make up the learning you miss.
2. Do all homework, tests, and quizzes in pencil. Please do not use pen. Do all homework on separate paper from your notes.
3. Be prepared for class everyday. This includes completion (to the best of your ability) of any homework that was assigned in a previous class. Have questions or problems ready to ask the instructor. Preparedness also includes being ready to learn new material by reading and previewing upcoming material in the book **before** coming to class.
4. Be organized. I suggest you maintain and organize a binder with all class notes, corrected homework, returned quizzes, handouts, and tests. You will find that all these resources will be beneficial when studying for a test.
5. Go to the Tutoring Center on a regular basis. Get to know the facilities and the staff early. Do not wait until the day before the exam to get help. Reinforce your knowledge with the tutors even if you feel like you are achieving satisfactorily.
6. Ask questions when you need to. Do not get behind. As a class we can always slow down but can very rarely revisit entire concepts. If you are not comfortable asking questions in a group, visit the instructor during office hours.
7. Find a study partner or group from this class. Identify a resource to call or e-mail if you are absent or need some information.
8. Learn to use a graphing calculator effectively and efficiently. Don't let unfamiliarity with technology affect your performance. Use the same calculator on exams as you use during homework.

College Resources and Support Services:

Mathematics Learning Center: Various mathematical resources are available in Marlboro Hall 3104. These resources include a computer lab, professional teaching journals, and small rooms for group study. Faculty and teaching staff are available for homework questions on a first-come first-served basis. Students needing in-depth tutoring should make an appointment with the Tutoring Center in Bladen Hall (see below). The MLC may be contacted at (301) 583-5257. The anticipated Hours of Operation for the Fall semester are

Mondays 9 am – 8 pm	Wednesdays 9 am – 8 pm	Fridays 9 am – 5 pm
Tuesdays 9 am – 8 pm	Thursdays 9 am – 8 pm	Saturdays 9 am – 2 pm
		Sundays Closed

Tutoring Center: I encourage you to get free math help from tutors in the Tutoring Center in Room 107 of the Bladen Wing. Students should go to the Tutoring Center early and familiarize themselves with the facilities and staff who work there. Appointments are required so stop by or call (301) 322-0748. Do not wait until the day before an exam because slots fill up fast.

Disability Support Services: Students requesting academic accommodations are required to contact the Disability Support Services Office (B-124) or call (301) 322-0838 (voice) or (301) 322-0122 (TTY) to establish eligibility for services and accommodations. Students with documented disabilities should discuss the matter privately with their instructors at the beginning of the semester and provide a copy of their Student/Faculty Accommodation Form. Accommodations cannot be provided until this form is provided.

Open Computer Labs: Computer access is available in the open computer lab in the Bladen Wing and in the Mathematics Learning Center in Marlboro Hall 3104.

Student Assessment Services Center (Testing Center): Students will take the midterm examination and the practice Praxis exams in the testing Center located in Bladen Hall, Room 100. Call 301-322-0090 or consult the web site www.pgcc.edu/pgweb/pgdocs/student_services/student_assessment_services.htm for hours, policies, and procedures.

Tentative Schedule for MAT 1060 *Elements of Geometry & Logic*
Monday/Wednesday Format
subject to change

Week	Dates	Sections and Topics
1	January 26, 28	Course Introduction, Sections 16.1, 16.2, 16.3 Visualizing and Representing Polyhedra
2	February 2, 4	Sections 16.4, 16.5, 17.1 Special Polyhedra; Defining Polygons
3	February 9, 11	Sections 17.2 and 17.3 Classifying Polygons
4	February 16, 18 <i>No class on 2/16 – President's Day</i>	Sections 18.1, 18.2 2-D and 3-D Symmetry
5	February 23, 25	Sections 19.1, 19.2, and 20.1 2-D and 3-D Tessellations and Size Changes Exam 1
6	March 2, 4	Sections 20.2 and 20.3 Size Changes and Similar Figures
7	March 9, 11	Sections 21.1 and 21.2 Circles, Constructions, and Curved Surfaces
8	March 16, 18	Sections 22.1, 22.2, and 22.3 Introduction to Congruent Figures and Transformations
9	March 23, 25	Sections 22.4 and 22.5 More on Transformations
10	March 30, April 2	Sections 23.1 and 23.2 Measurement Basics Exam 2
11	April 6, 8 <i>No classes on 4/6 and 4/8</i>	Spring Break
12	April 13, 15	Sections 24.1 and 24.2 Concepts of Measuring in 2-D and 3-D
13	April 20, 22	Sections 25.1 and 25.2 Using Formulas to Measure in 2-D and 3-D
14	April 27, 29	Section 26.1 and 26.2 Pythagorean Theorem and Other Systems of Measurement Exam 3
15	May 4, 6	Catch-up, Supplementary Topics and Review for Final
16	May 11	Final Exam (at regular class time)