Instructor's Name:

Office Location:

Office Hours:

Office Phone:

E-mail:

Course Description
Emphasis is placed on structure, meaning, relationships, and types of thinking in elementary mathematics. Informal geometry, transformational geometry, tessellations, measurement, probability, and statistics are among the topics considered.

Illinois Articulation Initiative (IAI) number: M1 903

Credit and Contact Hours:
Lecture 3
Lab 0
Credit Hours 3

Prerequisites: Grade of "C" or better in MATH 123 or equivalent; enrollment in pre-elementary education curriculum or written consent from the Mathematics department.

Books, Supplies, and Supplementary Materials
A. Textbooks
   Required: Mathematical Reasoning for Elementary Teachers w/ MyMathLab set, 7th Ed., 2014; Long
   Publisher: Pearson Education
   ISBN: 9780133955064

B. Other Required Materials
   Compass and protractor

Methods of Instruction:
   Lecture, Online
Student Learning Outcomes: General Education Student Learning Outcomes:

Students will demonstrate the ability to accurately apply correct mathematical methods and techniques in various applications such as applied sciences, theoretical mathematics, physics, natural sciences and other applied sciences.

Objectives

1. Geometric Figures & Shapes
   - Determine if a polygonal curve is simple and/or closed
   - Determine if a polygon is convex or concave
   - Determine the numbers of faces, edges, and vertices of polyhedra
   - Differentiate regular polyhedra from non-regular polyhedra.
   - Give examples of real-life models of common 3-dimensional figures
   - Give examples of models of points, lines, and planes
   - Determine the intersections of lines and planes
   - Classify triangles according to lengths of sides and sizes of angles
   - Classify quadrilaterals according to lengths of sides, sizes of angles, and relationships among sides
   - Recognize properties of triangles and quadrilaterals
   - Classify angles
   - Determine the number of degrees in each angle of a regular polygon
   - Construct a regular polygon
   - Understand & use theorems involving angles i.e. supplements, complements, vertical angles corresponding angles, alternate interior and alternate exterior angles

2. Measurement
   - List sources of error in measurements
   - Find the perimeter (circumference) of a polygon (circle)
   - Find the area of a polygon, circle, or sector of a circle
   - Use the Pythagorean Theorem to determine whether a triangle is a right triangle or to determine the unknown side of a right triangle
   - Find the surface area and volume of polyhedra and cylinders and cones
   - Determine the effect of changing the length of sides on the area and volume of polyhedra and cylinders
   - Determine the appropriate units of length, area, volume, capacity, mass, and temperature in the English system and metric system
   - Convert from one unit to another within the English system and metric system

3. Transformations, Symmetries, and Tilings
   - Determine whether a figure is an image of another figure under a given slide, flip, or turn
   - Determine whether a figure has rotational, line, point, or plane symmetry.
   - Illustrate regular and semi-regular tessellation
   - Determine size transformation
   - Perform the following transformations: translations, rotations, reflections, and glide reflections

4. Congruence, Construction, and Similarity
   - Show that polygons are similar
   - Know the properties for congruence of two triangles
   - Understand the triangle inequality
   - Draw arcs and chords of circles
   - Know the relationships between parallel lines and segments
   - Demonstrate the following constructions:
     - Copy a line segment
     - Copy a circle
     - Copy an angle
Bisect a segment
Bisect an angle
Construct a perpendicular from a point to a line
Construct a perpendicular bisector of a segment
Construct a perpendicular to a line through a point on the line
Construct a parallel to a line through a point not on the line
Divide a segment into congruent parts
Inscribe some regular polygon in a circle
Circumscribe a circle about a triangle
Inscribe a circle in a triangle
Determine the number of permutations and/or combinations of an event

5. Statistics
Select appropriate graphs to represent information
Select the appropriate measure of central tendency for a set of data and a given situation
Find the variance and standard deviation of a set of data
Analyze data using the normal curve and z scores
Find scores when given probabilities
Study the uses and abuses of statistics
Draw and analyze box plots including medians, quartiles, and extremes
Draw and examine scatter plots
Draw line plots and stem and leaf plots

6. Probability
Determine probabilities of simple and compound events
Determine odds and mathematical expectation of a given event
Use a table of random digits to simulate an experiment
Use the fundamental counting principle

7. Geometry Drawing Utility
To understand the Toolbox and Menu Bar for a graphing utility
To draw sketches with the geometry utility

Topical Outline

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Topic or Class Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Probability</td>
</tr>
<tr>
<td>1.5</td>
<td>Statistics</td>
</tr>
<tr>
<td>2</td>
<td>Geometric Figures &amp; Shapes</td>
</tr>
<tr>
<td>2</td>
<td>Constructions and Similarity (Skip Lines and Linear Equations in a Cartesian Coordinate System, Section 12.5)</td>
</tr>
<tr>
<td>2</td>
<td>Measurement</td>
</tr>
<tr>
<td>2</td>
<td>Motion Geometry and Tessellations</td>
</tr>
<tr>
<td>1.5</td>
<td>Geometry Drawing Utility</td>
</tr>
<tr>
<td>3</td>
<td>Tests and Review</td>
</tr>
</tbody>
</table>

16 Total
Graded Assignments and Policies

Graded Assignments

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In class Quizzes</td>
<td>0 – 20%</td>
</tr>
<tr>
<td>Participation</td>
<td>0 - 5 %</td>
</tr>
<tr>
<td>Projects</td>
<td>0 – 20%</td>
</tr>
<tr>
<td>Homework</td>
<td>0 – 30%</td>
</tr>
<tr>
<td>Tests</td>
<td>50 - 85%</td>
</tr>
<tr>
<td>Final</td>
<td>15 – 30%</td>
</tr>
</tbody>
</table>

Grading Policy
The individual instructor will determine which items he or she considers essential for the student to memorize without error and test accordingly.

Each instructor will set minimum standards for performance on tests.

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
</tr>
<tr>
<td>B</td>
<td>80-89%</td>
</tr>
<tr>
<td>C</td>
<td>70-79%</td>
</tr>
<tr>
<td>D</td>
<td>60-69%</td>
</tr>
<tr>
<td>F</td>
<td>0-59%</td>
</tr>
</tbody>
</table>

Major Tests and Quizzes
The individual instructor will determine which items he or she considers essential for the student to memorize without error and test accordingly. Each instructor will set minimum standards for performance on tests. A comprehensive final examination will be given.

Classroom Policies and Procedures

General Information

Attendance Policy

Make-up Policy

Extra-credit Policy

Final Exam Information
A comprehensive final examination will be given.

Academic Honor Code
The objective of the academic honor code is to sustain a learning-centered environment in which all students are expected to demonstrate integrity, honor, and responsibility and recognize the importance of being accountable for one’s academic behavior.

College Statement about grades of “F” and Withdrawal from Class
Students may withdraw from a course by processing an add/drop form during regular office hours through the Registration and Records Office at Main Campus or Romeoville Campus, or by phone at 815-744-2200. Please note the withdrawal dates listed on your bill or student schedule. Every course has its own withdrawal date. Failure to withdraw properly may result in a failing grade of “F” in the course.

At any time prior to the deadline dates established, an instructor may withdraw a student from class because of poor attendance, poor academic performance or inappropriate academic behavior, such as, but not limited to, cheating or plagiarism.
**Intellectual Property**

Students own and hold the copyright to the original work they produce in class. It is a widely accepted practice to use student work as part of the college’s internal self-evaluation, assessment procedures, or other efforts to improve teaching and learning and in promoting programs and recruiting new students. If you do not wish your work to be used in this manner, please inform the instructor.

**Student Code of Conduct**

Each student is responsible for reading and adhering to the Student Code of Conduct as stated in the college catalog.

**Sexual Harassment** Joliet Junior College seeks to foster a community environment in which all members respect and trust each other. In a community in which persons respect and trust each other, there is no place for sexual harassment. JJC has a strong policy prohibiting the sexual harassment of one member of the college community by another. See the Catalog or Student Handbook.

**Student Support** [http://jjc.edu/services-for-students/pages/default.aspx](http://jjc.edu/services-for-students/pages/default.aspx)

a. Disability Services: [http://www.jjc.edu/disability-services/Pages/default.aspx](http://www.jjc.edu/disability-services/Pages/default.aspx)

b. Tutoring: [http://jjc.edu/tlc/Pages/default.aspx](http://jjc.edu/tlc/Pages/default.aspx)

c. Counseling and Advising: [http://www.jjc.edu/counselingadvising/Pages/default.aspx](http://www.jjc.edu/counselingadvising/Pages/default.aspx)

d. Academic Resources: [http://www.jjc.edu/academic-resources/Pages/default.aspx](http://www.jjc.edu/academic-resources/Pages/default.aspx)

e. Support Programs and Services: [http://www.jjc.edu/support-programs-services/Pages/default.aspx](http://www.jjc.edu/support-programs-services/Pages/default.aspx)

f. Technology Support: [http://jjc.edu/services-for-students/Pages/technology-support.aspx](http://jjc.edu/services-for-students/Pages/technology-support.aspx)

g. My Degree Progress: My Degree Progress is a computerized system to track a student’s progress toward graduation. The report indicates every course and places these courses into their appropriate category as a General Education, Major Course, or Elective, according to the degree requirements. This tool is useful for preparing before an advising appointment, for planning, for registering, and for checking that the student is on track for graduation. [https://eresources.jjc.edu](https://eresources.jjc.edu)