

MAHD 081
[1 credit hour]

Instructor:

Email:

Office:

Office Hours:

Office phone: 859-572-

Dept. phone: 859-572-6347

Prerequisites: Mathematics ACT score of 19 and C- or better in MAT 140 OR
Mathematics ACT score of less than 19 *and* C- or better in MAHD 095 *and* C- or better in MAT 140.

Co-requisite: MAT 141

This course is open only to students majoring in elementary or middle grades education. If you have any doubt about your readiness for this course you should discuss it with me as soon as possible.

Note: The College of Education requires a grade of **C** or better in MAT 140 – not as a prerequisite for MAT 141, but for their MAT 140 requirement. The prerequisite for MAT 141 is a C- or better. In other words, if you get a C- in MAT 140, you can take MAT 141, but you would have to take MAT 140 again and get a C or better in order for it to count for the College of Education and Human Services.

Additional Information:

The General Math Department Syllabus can be found at

<http://artscience.nku.edu/content/dam/math/docs/DepartmentSyllabusRevised.pdf>.

Text: Mathematics for Elementary Teachers with Activities (4th edition). Sybilla Beckmann. Pearson Publishing, 2014.

The goal of MAHD 081 is to supplement MAT 141 for those students who do not meet the prerequisite for the 3-credit hour section of MAT 141. MAT141/MAHD081 will cover the content from MAHD 091 necessary for success in MAT 141 and the course content of MAT 141.

MAHD 081/MAT 141 Course Assessment Objectives

Objectives related to general course outcomes:

Students will be able to:

1. present clear and concise explanations of their work.
2. reason mathematically to interpret and solve problems.
3. transfer geometric visualization onto paper and into words.
4. communicate mathematics clearly and accurately, using correct terminology.

Objectives related to problem-solving:

Students will be able to:

1. reason mathematically to solve problems using
 - a. transformations
 - b. dimensional analysis
 - c. coordinate geometry
 - d. similar triangles and congruent triangles
2. choose appropriate problem-solving techniques to solve mathematical problems.

Objectives related to specific topics:

Students will be able to:

1. give analytical descriptions of geometric figures in the plane and in space.
2. demonstrate relationships in geometric figures such as symmetry, perpendicularity, parallelism.
3. use the corresponding angles property, alternate interior angles property.
4. determine the measures of central angles, vertex angles and exterior angles of a regular polygon.
5. perform conversions within the English system of measurement for length, area, volume and weight.
6. perform conversions within the metric system of measurement for length, area, volume and weight.
7. perform “rough” conversions between metric and English systems of measurements.
8. justify formulas for area and perimeter of plane figures such as triangles, parallelograms and trapezoids.
9. determine perimeters and areas of standard and non-standard plane figures.
10. determine the surface area of standard and non-standard space figures.
11. determine the volume of standard and non-standard space figures.

12. apply the Pythagorean theorem to find lengths and solve real world problems.
13. apply congruence and similarity properties for triangles to determine the congruence or similarity of triangles and to solve real world problems.
14. perform and justify compass and straightedge constructions.
15. describe the following and find them for any given triangle using a compass and straightedge or coordinate geometry: medians, altitudes, angle bisectors, perpendicular bisectors of the sides, circumcenter, centroid, incenter, orthocenter.
16. describe and perform isometries (translation, reflection, rotation) and size transformations in the plane.
17. describe and analyze tessellations with polygons, including regular and semiregular tessellations.

Goals of the Course: This course covers elements of algebra and geometry so that

- Students will be able to reason mathematically to interpret and solve problems, and communicate their problem-solving.
- Students will be able to choose appropriate problem-solving techniques to solve mathematical problems using transformations, dimensional analysis, concepts of algebra, and similar and congruent triangles.
- Students will be able to explain, justify and apply mathematical concepts that are important to the understanding of elementary mathematics; especially geometry, patterns and reasoning.

Class Attendance: Attendance will be taken. Attendance at all class meetings is very important. If you cannot attend class, it is *your* responsibility to notify me *immediately* and make arrangements to discuss the outcomes of the class discussion and assignments. **You will be expected to prepare for class by reading through the material and working the appropriate examples prior to each class meeting.** The grading in this course will be based on attendance and the grade you receive in MAT 141.

Graded Assignments: There will be 8 Graded Assignments (25 points each) that will be given throughout the eight week session. To receive full credit, assignments must be completed and handed-in on time. Assignments that are turned in late will result in a 10% reduction in the grade for the first 24-hour period. For more than one day, your grade will be reduced by 50%. After a week late, the Graded Assignment will receive a grade of 0%.

Quizzes: There will be 12 In-class Quizzes, worth 10 points each. However, only the top 10 will be averaged together. There are no make-up Quizzes.

2 exams and a Final Exam: There will be two 100 point Exams and a 150 point cumulative final exam. Questions on exams may come from class work, homework, and/or assignments. If you are going to miss an exam, you must contact the instructor **ON OR BEFORE** the scheduled test day and arrange to take a makeup before the next class. There must be a verifiable reason for missing. If you do not contact the instructor on or before the test day, no makeup will be given and you will receive a grade of zero for that exam.

Final Exam is scheduled on _____

Tools: All students should have a scientific calculator available, compass, straightedge.

Grading: Your grade in this course will be based on the following coursework. Your grade will be determined by an accumulation of points.

Coursework	Point values	Total points possible
Graded Assignments	8 @ 25 points each	200
Quizzes	10 @ 10 points each	100
Two Exams	2 @ 100 points	200
Cumulative Final Exam	1 @ 150 points	150
Total points		650

Your grade will be assigned as follows:

100 – 92%	A	89 – 88%	B+	81 – 80%	B-	77 – 72%	C	69 – 68%	D+	Below 62%	F
91 – 90%	A-	87 – 82%	B	79 – 78%	C+	71 – 70%	C-	67 – 62%	D		

PLUS Tutoring Center: the Math Center has been rolled together with Academic Tutoring to form the new **PLUS Tutoring**. At the **PLUS Tutoring Center** (UC 170), you can get help from trained peer tutors with concepts that you do not understand or with homework problems that you cannot solve. Appointments are available M-R 8am–7pm, F 8am–3pm, Sa 9am–12pm, and can be booked online at <https://tutortrac.nku.edu>.

Withdrawal: The last day to drop with a 50% tuition adjustment is _____. The last day to withdraw (with no reimbursement) is _____. If you withdraw from MAHD 081L, you must withdraw from MAT 141L. Withdrawals after that date are generally not permitted. Documentation is required for any late withdrawal.

The instructor reserves the right to alter this syllabus if circumstances dictate.