

Marshall University

College of Science

School of Mathematics and Informatics

MTH 127 Syllabus

# Course

MTH 127 College Algebra Expanded – Section 124 CRN 3000

## Course Description

A brief but careful review of the main techniques of algebra. Polynomial, rational, exponential, and logarithmic functions. Graphs, equations and inequalities, sequences.

## Credits

 5 credit hours.

## Prerequisites

ACT Math 17 or SAT Math 440 or above.

# Courses that have MTH 127/130 as a prerequisite:

* Graduation Requirement for College of Business
* MTH 122 - Trigonometry, MTH 132 - Precalculus, MTH 140 - Applied calculus
* CHM 111, CS 110, CI 248, ENGR 221, IST 420/421, PS 109, PHY 101, PHY 201

## Term/Year

 Fall 2018

## Class Meeting Days/Times

 This is an online course. There are not specified meeting days/times.

## Location

 This is an online course. All course materials are located on MUOnline/Blackboard.

## Academic Calendar

 For beginning, ending, and add/drop dates, see the Marshall University Academic

 Calendar (URL: <http://www.marshall.edu/calendar/academic> ).

# Instructor

 Dr. Karen Mitchell

## Contact Information

 Office: CB 132

 Office Hours: MW 3:00pm – 5:00pm; TR 12:30 – 1:30pm, 3:30-4:30 pm and by appointment.

 Office Phone: (304)696-3042

 Marshall Email: mitchelk@marshall.edu

## Required Texts, Additional Reading, and Other Materials

1. Access to Knewton Alta homework management system.
2. Free student account for Desmos website.
3. TI-84 or equivalent graphing utility is required. Cell phone, smart device, or internet calculators are not permitted during exams.
4. Computer with internet access to MUOnline, Knewton Alta, and Desmos.

# Course Student Learning Outcomes

The table below shows the following relationships: How each student learning outcome will be practiced and assessed in the course.

| Course student learning outcomes | How students will practice each outcome in this course | How student achievement of each outcome will be assessed in this course |
| --- | --- | --- |
| Students will identify and implement appropriate solution methods for single-variable equations | Knewton Alta lessons, Desmos activities, Project Drafts | Knewton Alta Assignments, Desmos Submissions, Module Tests, Final Exam, and Project Submissions |
| Students will identify and graph standard algebraic functions | Knewton Alta lessons, Desmos activities, Project Drafts | Knewton Alta Assignments, Desmos Submissions, Module Tests, Final Exam, and Project Submissions |
| Students will interpret graphs of functions | Knewton Alta lessons, Desmos activities, Project Drafts | Knewton Alta Assignments, Desmos Submissions, Module Tests, Final Exam, and Project Submissions |
| Students will construct functions to model applications | Knewton Alta lessons, Desmos activities, Project Drafts | Knewton Alta Assignments, Desmos Submissions, Module Tests, Final Exam, and Project Submissions |
| Students will communicate written mathematics using appropriate notation and explanation in English | Knewton Alta lessons, Desmos activities, Project Drafts | Knewton Alta Assignments, Desmos Submissions, Module Tests, Final Exam, and Project Submissions |

# Course Requirements

Students will utilize an MUOnline/Blackboard course ([www.muonline.marshall.edu)](http://www.muonline.marshall.edu)) to participate in **Discussion Forums** and access the course learning materials including **Knewton Alta Assignments** and **Desmos Activities**. Students will be assessed in MUOnline/Blackboard by taking **Tests** and the **Final Exam.** (see Due Dates in Course Schedule on this syllabus). [

The course learning materials, **Knewton Alta Assignments and Desmos Activities**, will be rolled out one week at a time as the semester progresses and are open book/open note assignments. A course schedule, including hard and soft due dates, is provided in the **Summary Due Dates** document and embedded in the **MUOnline Course** to provide a steady pacing through the material. **Tests** and the **Final Exam** are closed book/closed notes assessments, and to help preserve the integrity of the course, will be taken in one of two ways 1) using Respondus Lockdown Monitor with webcam or 2) setting up a proctoring session at your school or on campus. (see Proctoring Information link in MUOnline).

# Grading Policy

**Desmos Activities** and **Knewton Assignments** (all worth 10 points each) make-up 15% of the semester grade and are learning assignments. Students should resubmit 3 times or until they earn full credit. These assignments are open book, open notes assignments and may be completed collaboratively until mastery is achieved. Each **Module** **Test** (five tests) will be worth 10% each (total of 50%) and the **Comprehensive Final Exam** (one exam) will be worth 15% of the semester grade. Students have one attempt on Unit Tests and one attempt for the Final Exam. The **Facilitator Points** and **Instructors Points** both make up 10% of the course grade and shall be used to support, extend, and deepen student learning.

**Facilitator Points** will be given on unit test days for the completeness of notebook entries. Notebooks should contain notes from completed Desmos and Knewton assignments and 20 example questions that represent the 20 topics to be included in a specific unit test.

**Instructor Points** come from Instructor Assignments. There will be 6 instructor assignments. The objective for the 6 assignments is stated below:

You will investigate a problem that involves change over time, by analyzing data in order to make conjectures, construct arguments, and draw inferences that show an understanding of functions, their operations, and the characteristics of specific families of functions. You will present the problem results in writing using multiple representations including technology.

Instructor Assignment 6 will summarize the work done in Instructor Assignments 1-5. Instructor Assignment 6 is described below:

**Instructor Assignment 6:**

Congress is about to consider a Climate Security Act.. You have been hired by the office of Senator Manchin to write a brief. The brief needs to explain the mathematical models that scientists have used to make predictions about the amount of carbon dioxide emissions in million metric tons from the processing of municipal solid waste in the United States. In order to reach a decision on whether to vote yes or no on the bill, Senator Manchin will use your brief to help evaluate the reliability of the scientist’s predictions

**Carbon Dioxide Emissions**

The following table appeared in a report released in Washington, DC during October, 1996. The table contains the estimated amount of carbon dioxide emissions in million metric tons from the processing of municipal solid waste in the United States.

|  |  |
| --- | --- |
| **Year** | **Carbon Dioxide****Emissions** |
| 1987 | 7.47 |
| 1988 | 7.95 |
| 1989 | 8.43 |
| 1990 | 9.88 |
| 1991 | 10.46 |
| 1992 | 11.20 |
| 1993 | 11.33 |
| 1994 | 11.66 |

**Outline of the Brief**

Your brief does not have to look exactly like this outline but must contain all the same information.

Senator Manchin:

I have completed my analysis of the data. I examined a linear, quadratic, rational, and exponential function. Below is the information I gained from that work and why I decided one model was better than the others. **[Use your work from Instructor Assignments 2, 3, 4, and 5 here]**

In conclusion, I recommend that a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ function be used to model the data.

Using this model I predict that the carbon dioxide emissions from solid waste will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in 2020.

Sincerely,

Your Name

**Expectations for the Written Brief**

**Name of Author: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Name of Reviewer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Expectations** | **4** | **3** | **2** | **1** | **0** | **Factor** | **Score** |
| 1. | The brief is neat, well-organized, without spelling and grammar mistakes, and easy to read. |  |  |  |  |  |  |  |
| 2. | Function vocabulary is present and used correctly. |  |  |  |  |  |  |  |
| 3. | Functions are identified by function families. |  |  |  |  |  |  |  |
| 4. | All mathematics is without error.  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 5. | Graphical displays, tables, and equations are accurate, well constructed, and contribute to the brief. |  |  |  |  |  |  |  |
| 6. | A clear picture of the connections among function representations are provided. |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 7. | Explanations are provided for the reliability of a function model and its value for making predictions. |  |  |  |  |  |  |  |
| 8. | Appropriate conclusions are drawn from the analysis and generalization of the data.  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| 9 | A bibliography of references is provided. If references are used. |  |  |  |  |  |  |  |

**Comments:**

**Grade Categories Grade Scale**

A = 90 – 100%

B = 80 – 89%

C = 70 – 79%

D = 60 – 69%

F = Below 60%

|  |  |
| --- | --- |
| Facilitator Points | 10% |
| Instructor Points | 10% |
| Desmos Activities and Knewton Assignments | 15% |
| Module Tests (5 total) | 50% |
| Comprehensive Final Exam | 15% |
| **Total** | **100%** |

# Attendance Policy

 There is no attendance policy for this online course. However, all assignments, activities, and tests have strict due dates that must be met.

# University Policies

By enrolling in this course, you agree to the University Policies. Please read the full text of each policy (listed below) by going to [Academic Affairs: Marshall University Policies](http://www.marshall.edu/academic-affairs/policies/). (URL: http://www.marshall.edu/academic-affairs/policies/ )

* Academic Dishonesty Policy
* Academic Dismissal Policy
* Academic Forgiveness Policy
* Academic Probation and Suspension Policy
* Affirmative Action Policy
* Dead Week Policy
* D/F Repeat Rule
* Excused Absence Policy for Undergraduates
* Inclement Weather Policy
* Sexual Harassment Policy
* Students with Disabilities (Policies and Procedures)
* University Computing Services Acceptable Use Policy