MATH M027 – Precalculus Mathematics
Spring Semester, 2017

Instructor: Office:
E-mail: Office hours:

Class and departmental M027 policies can be found online at http://www.math.indiana.edu/undergraduate/courses_m027.phtml

Prerequisite:

Two years of high school algebra as evidenced by the math placement test or by completion of Math M014, and one year of high school geometry. Students should not enroll concurrently in M014 and M027.

A math placement test will be given on the first day of class. Students answering fewer than 10 of the 15 problems correctly are advised to consider first taking M014 as preparation for M027.

Course Description:

Designed to prepare students for M211: Calculus 1. Students planning to take M119: Brief Survey of Calculus 1 should consider taking M025 instead. The general content of both M025 and M026 is included, with emphasis placed on exponential, logarithmic, and trigonometric functions at a more sophisticated level and pace. Students who would like a less intense pace may take the two semester M25-M26 sequence to prepare for M211.

Credit may not be applied toward a degree in the College of Arts and Sciences; and a minimum grade of C- is needed to satisfy the College of Arts and Sciences mathematics fundamental skills requirement. Does not carry IUB GenEd MM or N&M credit.

Learning Objectives:

Learning objectives for the Precalculus portion of Mathematics M27 include but are not limited to the following:

1. Students should be proficient at solving equations to find all solutions, real and complex, using the quadratic formula and a variety of factoring techniques including grouping, common patterns such as the sum of cubes, as well as synthetic and long division.

2. Students should be proficient at graphing and working with a variety of functions, without the assistance of a calculator, including polynomial, piecewise, rational, logarithmic, and exponential functions to solve practical examples as well as story problems.

3. Students should fully understand definitions and properties for essential concepts including: relations, functions, and one-to-one functions; the relationship between a function and its inverse; the domain and range of a function; even and odd functions; increasing and decreasing functions; symmetries of functions; and basic operations and composition of functions.
Learning objectives for Trigonometry portion of Mathematics M27 include but are not limited to the following:

1. Students should be proficient at applying the 6 basic trigonometric functions using both a rectangular and unit circle approach to find quantities such as angles, the length of a side, the circumference of a circle, and area, in solving both computational exercises as well as word problems.

2. Students should become proficient at graphing and interpreting graphs of trigonometric functions. This includes performing vertical and horizontal shifts, reflections across axes, and stretching/compressing the graph. Graphs of the standard six trigonometric functions and their inverse trigonometric functions are covered.

3. Students should be proficient at deriving and applying standard trigonometric formulas including the cofunction, addition/subtraction, half and double angle, as well as the Law of Sines and Law of Cosines.

4. Students should become proficient at providing a mathematical argument with the expected format, details, and rigor. This includes verifications of trigonometric identities and mathematical induction.

**Textbook:**

*Algebra and Trigonometry with Analytic Geometry*, by Earl Swokowski and Jeffery Cole, either the custom or the Classic 12th edition. (Thomson Brooks/Cole, 2010). The textbook is available through TIS and the IU Bookstores, and may also be purchased or rented directly from the publisher online at

[http://www.cengagebrain.com/shop/search/9780495559719](http://www.cengagebrain.com/shop/search/9780495559719)

In addition to the textbook you will also need to purchase an access code for the Enhanced WebAssign package. You will need the access code to access the online homework, tutorials, and the class gradebook. The code may be purchased either with the textbook or separately. Be careful to purchase the Enhanced WebAssign access code as there are many options from this and other textbook companies and online homework services. In addition to the options above, the access code may be purchased directly from the online homework website at [https://www.webassign.net/login.html](https://www.webassign.net/login.html)

Prices between the IU bookstore, TIS, and the publisher vary considerably. I strongly encourage you to check the prices at all three before buying. Doing so could save you a significant amount of money. If you are buying the book from another vendor, be careful to purchase the correct edition and access code.

**Calculator Policy:**

For the first half of the course you will NOT be allowed to use a calculator of any type on quizzes or exams. For the second half of this course you will need a scientific, non-graphing calculator, with the trigonometric functions: sin, cos, tan. The Texas Instrument TI-30XIIS is recommended.

Throughout the semester, for the online homework, you should try to do the problems as much as possible without the aid of a calculator. However, there will be some homework problems throughout the course that are a bit computational to do without a calculator. It would be best if you obtain the appropriate calculator early in the semester.

Graphing calculators such as the TI-83, TI-84, TI-86, and TI-89 are NOT allowed in this course.
Attendance Policy:

Most students find the material in M027 to be significantly more difficult than their high school math classes. Attending and participating in every class is crucial to your success in this course. A student absent from class bears full responsibility for all material covered and announcements made in class. Missed quizzes and homework assignments, regardless of the circumstances, will not be accepted late and cannot be made up. Instead, a few of the lowest scores from each type of assignment, quiz and homework, will be dropped at the end of the semester. See quiz and homework sections for more detail.

No Class:

Martin Luther King, Jr. Day - Monday, January 16

Spring Break – Sunday, March 12 through Sunday, March 19

Withdraw Deadlines:


Last day to petition for deans to approve a course drop – Monday, February 20, 4:00 pm for M25, and Thursday, April 20, 4:00 pm for M26.

Further information regarding schedule adjustment fees, refunds and deadlines can be found on the website of the Office of the Registrar: http://enrollmentbulletin.indiana.edu/pages/offcal.php?Term=2

Academic Integrity:

The IU Department of Mathematics takes academic integrity very seriously. The usual penalty for a student caught cheating includes an F in the course. Further penalties may include probation, suspension, or expulsion from the university.

Student Misconduct:

The IU Department of Mathematics expects all students to adhere to the regulations put forth in the “IU Code of Student Rights, Responsibilities, and Conduct” concerning academic misconduct or personal misconduct. Procedures for imposing academic and disciplinary sanctions are outlined in the Code, which can be found at http://www.iu.edu/~code/code/index.shtml

Cell Phones & Pagers:

Please turn these off or set them on silent mode. The material is difficult enough without unnecessary interruptions.
Webpages:

The IU Department of Mathematics web page offers quick access to information about their courses and programs at http://www.math.indiana.edu

Information about M027 can be found at http://www.math.indiana.edu/undergraduate/courses_m027.phtml

Oncourse is at https://oncourse.iu.edu/portal

Communication:

Preferred means of communication will vary by instructor. Email, office phone, office hours, in class, and oncourse mail are all common. Be sure you know the most effective way and time to speak with your instructor.

Whatever online means of communication your instructor uses, you are expected to check it regularly, preferably daily. You are responsible for the information sent to you individually and to the class.

To protect confidentiality, students are strongly encouraged to use oncourse or the IU email system, rather than another server mail system. Furthermore, given the prevalence of spam and viruses, your instructor may not always open email messages with unrecognizable addresses and/or subject headings.

Help Outsides of Class:

There will not be enough time to answer all questions from the homework assignments, tests, and M025 material. Several options for help outside of class are available:

- Come to class a few minutes early. Your instructor may be available for a few questions.
- Visit your instructor during office hours or make an appointment to meet with them.
- Math help is available in the Math Learning Center (MLC). The MLC is located in Swain East 340 and starting Tuesday, January 17, will be open 9 am – 4 pm, Monday through Friday. To find out more about the MLC tutoring schedule and other general information, please visit the MLC web page at http://www.math.indiana.edu/undergraduate/mlc.phtml
- Math help is available in the Academic Support Centers located in Briscoe, Teter, and Forest dormitories. The ASC is open Sunday through Thursday 7-11 pm. For more information about the ASC please visit http://www.indiana.edu/~acadsupp/regular_services.shtml
- Private tutors are available and usually charge $30-80/hour for individual tutoring. To view a list of recommended tutors please visit http://www.math.indiana.edu/undergraduate/tutors.phtml

Quizzes:

The exact quiz policy will depend on the instructor. In general, you should expect to average 1-2 quizzes a week. Some may be announced but many will not. You will only be allowed about 5 minutes to complete the quiz. Over the semester you can expect to take about 20 quizzes. A few of the lowest scores will be dropped. The precise number will depend on the total number and difficulty of the quizzes. If you miss a quiz for any reason you will receive a zero. There will be no make-up quizzes.
Homework:

In class, there will only be time to go over a few problems from each section; the answers to the odd problems are in the back of your textbook. You may want to form a study group and get help outside of class. See the comments on the previous page for more information. You should expect to spend several hours each day working problems and reading the sections as they are discussed in class.

There will be two types of homework assignments: written homework and online homework.

Written assignments: These may be assigned as needed to supplement the online homework.

Online homework assignments: Done on the WebAssign homework system. There will be one assignment per section, containing about 25 problems. These assignments will generally be due 1-2 days following discussion of the material. For most problems (or part of a problem) you will be permitted multiple attempts. Once you have submitted your answers the work is automatically saved. However, saving the answers does not submit them.

To access the Webassign homework system go to https://www.webassign.net/login.html. You will be prompted to enter an access code, purchase the code online, or enter a code later. Before you purchase a code online, be sure that one did not come with your textbook. There is an initial grace period or “free trial” of two weeks after which you will need to have entered an access code.

It is up to you to register and access the WebAssign system and begin working on your first assignments right away. For your convenience, the Math Learning Center, in Swain East 340, has computers that may be used. If you have any difficulties accessing or using WebAssign, please call their technical support at 800.955.8275 or bring your questions to the MLC.

Late homework will not be accepted for any reason for either the written or WebAssign homework. Any assignment not turned in on time will receive a zero. To allow for unexpected conflicts a few of the lowest assignment scores will be dropped.

Exam Dates:

Diligence with homework is critical to finding success in any math class. To adequately prepare for the exams, you should also do many similar textbook problems and complete past exams.

M25 portion
Exam 1: Chapters 1-2 Thursday, January 26
Exam 2: Chapters 3-4 Monday, February 20
Final Exam: Chapters 1-5 Friday, March 3, 5-7 pm

M26 portion
Exam 1: Sections 6.1 through 7.2 Wednesday, March 29
Exam 2: Sections 7.2 through 8.4 Wednesday, April 19
Final Exam: Sections 6.1-8.4 and 10.1-10.3 Wednesday, May 3, 5-7 pm

Exams 1 and 2 will be given during your regular class time and in your normal classroom. The Final exam will be given outside of the regular class meeting times. The location of the Final exam will be announced at a later date.

Make-up exams are given only in extenuating circumstances such as medical emergencies. If you have a schedule conflict, please discuss it with your instructor as soon as possible.
Assessment:

Separate grades will be given for the M025 and M026 portions of the course.

Grades will be determined using the scores from the following assignments:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
</tr>
</tbody>
</table>

A grade of an A or B in both M025 and M026 is an indication that a student is adequately prepared for M211.

Students earning a C in M025 or M026 rarely earn an A or B in M211, sometimes manage a C, but most often fail or receive a D.

Students with less than a C in M025 or M026 rarely earn more than a D in M211. They should retake M027 before attempting M211.

Furthermore, to be adequately prepared, students planning to take M212 should receive an A or B in M211.

Grade Scale:

Grades are computed using the standard scale:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>97%, 93% and 90%</td>
<td>A+</td>
</tr>
<tr>
<td>87%, 83%, and 80%</td>
<td>B+</td>
</tr>
<tr>
<td>77%, 73%, and 70%</td>
<td>C+</td>
</tr>
<tr>
<td>67%, 63%, and 60%</td>
<td>D+</td>
</tr>
<tr>
<td>Below 60%</td>
<td>F</td>
</tr>
</tbody>
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Special Services:

Students needing accommodations because of a disability must first register with Disability Services for Students and provide their instructors with the appropriate forms issued by DSS before accommodations may be given. Information regarding DSS can be found at http://studentaffairs.iub.edu/dss/

Religious Holiday Policy:

Accommodations will be made for university recognized religious holidays provided the student notifies the instructor in writing using the “Request for Accommodation for Religious Observance Form” by the end of the second week of class. For more details on this policy and the downloadable form please visit http://enrollmentbulletin.indiana.edu/pages/relo.php?Term=2

Course Coordinator:

Questions and problems relating to this course should be first directed to your instructor and then, if necessary, to the course coordinator, Chris Parks, Director of the Math Learning Center, by email at cparks@indiana.edu.