PreCalculus – MA 115 – FALL 2015

MEETING DAYS: M W R F  
CLASS ID: MA 115 – 2  
MEETING TIMES: 1:00 – 1:50 p.m.  
CREDITS: 4  
CALL NUMBER: 80441  
ROOM: Jamrich 3102

PROFESSOR: Dr. Bao Q. Truong, 2216 Jamrich Hall, 906 – 227 – 1610  
e-mail: btruong@nmu.edu is my preferred method of communication and the most reliable way to reach me. Please add MA115-2 in the subject line.

OFFICE HOURS: 8:00 – 8:50 and 10:00 – 11:50 M W R F or by appointment. Please feel free to call or e-mail me for scheduling an appointment.

PREREQUISITES: MA 104 (B- or better), or MA 105/ MA 111(C- or better), or satisfactory score on the math placement exam.


COURSE DESCRIPTION: This course provides the necessary foundation for students who plan to study calculus. Topics include trigonometric functions and identities, basic laws in trigonometry, polar coordinates, complex numbers, transcendental functions, conics, parametric equations, vectors, three-dimensional analytical geometry and more.

This course satisfies the Foundation of Natural sciences/Mathematics requirement. Students who complete this course should be able to demonstrate a basic understanding of mathematical logic; use mathematics to solve scientific or mathematical problems in college classes; express relationships in the symbolic language of mathematics; and appreciate the role of mathematics in analyzing natural phenomena.

ASSESSMENT: The assessments will consist of 3 tests, 9 quizzes, homework assignments, and a final exam. By the end of the course students will be able to:

- Describe in students’ own words what is the substitution method and use it to solve trigonometric equations, prove identities, find exact values of sine and cosine at multiple of $\pi/12$ angles, and find terms of sequences.

- exhibit, in both written and oral mathematical work, a clear and complete solution.

- create and use the unit circle to find exact values of six trigonometric functions at angles described by a multiple of $\pi$, $\pi/2$, $\pi/3$, $\pi/4$, and $\pi/6$.

- graph, manipulate and work successfully with functions including trigonometric functions.

- convert a point and an equation in terms of rectangular coordinates into the corresponding with the polar coordinates and vice versa.

- employ the polar coordinates to algebra rules of complex numbers, to several aspects of vectors including length, directed angle, angle between vectors, and projection of one vector along another.
**HOMEWORK:** Homework is an extremely important part of any mathematics course. As practice in sports or music sharpens your skills, so does homework sharpen your mathematics skills.

There will be weekly online assignments administered through the WeBWork online homework system, which is free of charge. WeBWork problems are computational in nature and assess the techniques introduced in class. Many of these problems will resemble examples in the textbook or from class. You will get immediate feedback on your progress and will get several chances to ensure it. WeBwork is accessed directly through the course’s EduCat™ website [https://educat.nmu.edu/](https://educat.nmu.edu/) with user name (NMU username) and password (8 digits of NMU student ID).

**TESTS AND QUIZES:** There will be either a quiz or a test every Friday. You will be expected to take all 3 tests. Only in the event of an unavoidable emergency will a make-up test be considered. Make-up tests will be more difficult than the original exam. You may drop the lowest quiz grade. If you are absent for a quiz, the missed quiz becomes your dropped grade.

**FINAL EXAM:** A comprehensive final exam will be given on Thursday, Dec. 10, 12 noon –1:50 p.m. at Jamrich 3102.

**GRADES:** Your grade will be based upon written exams, quizzes, written assignments, homework, and class participation.

<table>
<thead>
<tr>
<th>Grading Scale (approximate)</th>
<th>Tests</th>
<th>40%</th>
<th>Quizzes</th>
<th>25%</th>
<th>Homework</th>
<th>10%</th>
<th>Final</th>
<th>25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – 90 – 92.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B – 80 – 82.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C – 70 – 72.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D – 60 – 66.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F below 60%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You must get at least 60% on Homework in order to get a passing grade.

**IMPORTANT DATES:**

- First official day of classes: August 24, Monday
- Labor Day observance—no classes: September 7, Monday
- Thanksgiving recess begins at 5 p.m.: November 21, Saturday
- Classes resume: November 30, Monday
- Last day of classes: December 5, Saturday
- Quiz 1 – September 4, Friday
- Quiz 2 – September 11, Friday
- Quiz 3 – September 18, Friday
- Quiz 4 – September 25, Friday
- Quiz 5 – October 9, Friday
- Quiz 6 – October 16, Friday
- Quiz 7 – October 23, Friday
- Quiz 8 – November 6, Friday
- Quiz 9 – November 13, Friday
- Quiz 10 – November 20, Friday
EXTRA HELP:
- **My office:** during regular office hours or by appointments.
- **Mathematics Tutor Lab:** West Science 3810. Mathematics Tutor Lab is open M – R 9:00 am – 4:00 pm and F 9:00 am – 3:00 pm.
- **All Campus Tutoring:** Learning Resource Center 111H. All Campus Tutoring is open S – W 2:00 pm – 10:00 pm.
- **Disability Service Office:** If you have a need for disability-related accommodations or service, please inform the Coordinator of Disability Service in the Disability Service Office by either coming into the office at 2001 C.S. Hedgcock, or calling 227 – 1700, e-mailing disserv@nmu.edu. Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state and university guidelines.

ATTENDANCE: Regular attendance is expected from everyone. At the beginning of each class the attendance sheet will be passed around and it is your responsibility to sign it, otherwise you will be marked absent. For “Each day you miss, it takes one day longer to be good”. —Ben Hogan, Golfer

CALCULATOR: TI Interactive graphic software can be loaded to your ThinkPad for free at the Help Desk in LRC. Many of you have probably used graphing calculators in the past and you may already have your own calculator. If you have a graphing calculator, you should bring it to class since it is much more convenient than a laptop.

CODE OF CONDUCT: Since every student is entitled to full participation in class without interruption, all students are expected to be in class and prepared to begin on time. If for some emergency reason you are late, you must quietly enter the classroom and find a seat at the back row. All pagers, wireless phones or other devices that make noise must be turned off when you enter the classroom. Disruption of class, whether by talking, noisy devices, eating in class or other inconsiderate behavior, will not be tolerated. Students who violate these rules will be asked to leave the classroom and will not be allowed to return until they have spoken privately with the instructor.

OTHER NOTES:
- You don’t learn by watching; you learn by doing.
- Students should arrive for every class with necessary tools: text, notebook, pencil, and calculator.
- Students should take notes and write down examples.
- If the instructor asks questions, think about the answer and raise your hand if you know it.
- Students are expected to understand that verification is only done by algebraic means.
- Students are also asked to go to the board and explain solutions to their classmates.
- Cell phones and other electronic devices will be out of sight and on silent; speak to the professor if you anticipate receiving an emergency call during class.

“... there is nothing in the world of mathematics that corresponds to an audience in a concert hall, where the passive listen to the active. Happily, mathematicians are all doers, not spectators. Doing is much more fun than merely watching or listening…”
Ten Ways to Survive the Math Blues

1. **Figure out the Big Picture:** Find out why you are doing this math. How does it fit with your other courses (science, geography, English, engineering)? You could do some Internet searches on the math you are studying and include "application". Get a sense of where you are going and why you are doing this. Mathematics is compulsory in most of the world – there has to be a reason…

2. **Get on top of it before it gets on top of you.** Yep, mathematics is one of those things that builds on prior knowledge. Yet many students learn things only for an examination and then promptly forget it, setting themselves up for later difficulties. Learn for the future, not for tomorrow’s test.

3. **Read Ahead.** It is strongly advised that you read over next week’s math right now. You won’t understand it all, but you will have a better sense of what is coming up and how it fits with what you are doing this week. Then, when your class goes through it later, your doubts and uncertainties will reduce – and you will understand and remember it better.

4. **Use more than one resource.** It often happens that you can’t follow the teacher’s explanation and your textbook is very confusing. Borrow 2 or 3 textbooks similar to your own from your library and read what they have to say about the topic. Often they will have a diagram, a picture or an explanation that gives you the "Ahhh – I get it!" that you desire.

5. **Don’t join the Blame Game.** Teaching mathematics is tough. Teachers really have to work hard to make math fun, interesting and engaging. It is easy to blame a teacher for a bad grade, but who is really responsible for your future?

6. **Practice makes Perfect.** You don’t expect to be able to play guitar or drive a car without practice. Well, learning mathematics (unfortunately) involves some slogging away and doing exercises. Don’t get bogged down, though – use your other resources to help you through the homework.

7. **Time Management.** Start homework assignments as soon as you get them. There may be some things on there that you haven’t done in class yet (because maybe it is not due for a few weeks). That’s good – it helps to focus your thoughts so that when you are doing that section in class, you know that it is important and you’ll know what you don’t know. Nobody plans to fail – but many fail to plan…

8. **Don’t fall into the trap of copying from a friend to survive.** They probably have the wrong answer anyway. Besides, a lot of students resent being asked for their assignments for copying – they are too afraid of a ruined relationship to say no. Hey, you can do it – have the confidence in your own ability.

9. **Never, never give up.** Math uses a different part of the brain than most other things in school. It can be stressful when you can’t figure out something. Work on something else for a while and come back to it later.

10. **Keep a sense of humour!** Don’t lose the ability to laugh at yourself and your own mistakes. Mistakes are not the end of the world – they are the beginning of real learning!

Ten Ways to Survive the Math Blues