Calculus II: MATH 171B
PPHAC 112, MWF 11:45 AM - 12:55 PM
Spring 2014

Instructor: Dr. Shannon Talbott
Office: 217 PPHAC
Phone Number: 610.861.1573
Email: talbotts@moravian.edu

Office Hours:
Monday 2:30 - 3:30 PM; Tuesday 1:00 - 3:00 PM; Wednesday 10:15 - 11:15 AM; and by appointment

Course Goals:
Upon completion of this course, a student will be able to use the basic techniques of integration, will have a deeper insight into the power of Calculus as a tool for modeling real world situations, be able to work algebraically and analytically with infinite sequences, and will have a basic expertise in the use of the computer program *Maple*.

Text: *Calculus: Single Variable, Second Edition,* by Jon Rogawski. We will use the software package Maple for most labs in this course. The computer labs on campus have Maple available, however as an optional item you might consider purchasing a student license to work on activities on your personal computer.

Where to get help:

- Come to my office

- Peer Tutoring

- Smarthinking tutoring

- Work with each other

Grading System:

Homework/Quizzes
There will be homework assigned at the end of each section. It is vital that you do all of the homework problems assigned; you should keep all of your work in a notebook or binder for reference. For every hour in class, you should expect to spend 2 hours doing work outside of class. You cannot learn math without lots of practice! Approximately once a week, we will have an in class quiz that will be based on the homework. Therefore, the best way to do well on the quizzes is to do all of the assigned homework. There will be no make up quizzes given. Due to this, the lowest quiz score will be dropped at the end of the semester. Extenuating circumstances will be taken into consideration.

<u>Exams</u>
We will have three in class exams and a final exam. If you will miss an exam (with an approved excuse), you must notify me PRIOR TO the exam. You will then be given a suitable (corresponding to the time beyond the exam date) but more difficult exam. Extenuating circumstances will be taken into account.
Your final exam will be on Tuesday, April 29 at 1:30 PM.

<u>Attendance</u>
Regular class attendance is expected of all students. You are responsible for all material assigned or covered in class. If you do miss a class for any reason, it is your responsibility to keep up with the class. You should see a classmate for notes, homework assignments, and any announcements from class.

Your final grade is based on the following distribution:

Homework/Quizzes:	15%
Culture Points:	5%
Labs:	8%
Exam I:	18%
Exam II:	18%
Exam III:	18%
Final Exam:	18%

Course grades will be determined by the following scale:

93-100 : A	80-82 : B-	67-69 : D+
90-92 : A-	77-79 : C+	63-66 : D
87-89 : B+	73-76 : C	60-62 : D-
83-86 : B	70-72 : C-	<60 : F

The exam schedule will be as follows, although slight changes may be made:
Exam I: Wednesday, February 5
Exam II: Wednesday, February 26
Exam III: Wednesday, March 26
Final Exam: Tuesday, April 29 at 1:30 PM

Course Policies:

Final Exam: Your final exam is on Tuesday, April 29 at 1:30 PM. A make-up final exam will not be administered to accommodate any travel plans.

Participation in class discussions: Class participation enhances your learning experience. Students who attend class regularly, participate in discussions, and are in between grades at the end of the semester may receive the higher of the two grades.

Other Expectations of Student Performance/Behavior:
Please turn off your cell phone at the beginning of class. Be considerate of

your classmates and keep private discussions during class to a minimum. Please check your email for any announcements regarding this class. If you wish to email me, please use your Moravian email accounts only as I frequently delete spam.

This syllabus is subject to change. Any changes will be announced in class.

Mathematics Department Academic Honesty Policy: The Mathematics Department supports and is governed by the Academic Honesty Policy of Moravian College as stated in the Moravian College Student Handbook. The following statements will help clarify the policies of the Mathematics Department faculty.

Learning Disability Accommodations: Students who wish to request accommodations in this class for a disability should contact the assistant director of Academic and Disability Support in the Academic Support Center, Monocacy Hall, lower level (extension 7625). Accommodations cannot be provided until authorization is received from the Academic Support Center.
The Writing Center is located in a building that is not accessible to persons with mobility impairments. If you need the services of the Writing Center please call 610-861-1392.

Culture Points

> The mathematician's patterns, like the painter's or the poet's must be beautiful; the ideas, like the colours or the words must fit together in a harmonious way. Beauty is the first test: there is no permanent place in this world for ugly mathematics.
>
> *G. H. Hardy*

> To those who do not know mathematics it is difficult to get across a real feeling as to the beauty, the deepest beauty, of nature ... If you want to learn about nature, to appreciate nature, it is necessary to understand the language that she speaks in.
>
> *Richard Feynman*

One goal for this class is to provide some perspective of mathematics, and the role it plays in our modern world. Whether you plan to be a mathematician, a scientist, or simply a well-rounded liberal arts graduate, it is important to be aware of the role and nature of mathematics today. To help meet this goal, I am asking you to participate in "mathematical cultural awareness." There are no specific assignments for this portion of the course. Rather, there are many opportunities for you to explore mathematics in our culture. Activities that foster cultural awareness include (but are not limited to): attending talks, discussing a mathematical topic with a fellow student or professor, giving a talk, reading a paper, or solving a problem.

Basic overview of culture points

Culture points activities will account for 5% of your final course grade. **To get full credit for this activity, you must accrue 15 points by the end of the semester**. You gain points by attending seminars, colloquia or other talks; discussing mathematics outside class; reading articles; giving presentations; solving problems.

To get credit for an event, you will need to submit a short write-up for the event. This write-up will have two portions: (1) a short description of the event and (2) a reflection on the impact of that event on your own understanding of mathematics.

Points will be given based both on the quality of the event and the quality of the submission. The following sections provide details on this activity.

Culture point activities

This list below is not comprehensive – it is meant to illustrate some possible activities and to provide a calibration for how many culture points different activities might provide. Note that the actual number of culture points you get will vary depending on the quality of your particular write-up.

- Attend an ϵ-talk (3 points). These short (10 to 15 minute) talks are given weekly as part of the Math Society's regular meetings.

- Attend a Math/CS colloquium (4 points).

- Attend a colloquium or conference off-campus (5 to 10 points). There are many opportunities to attend conferences throughout the valley, such as at Lafayette or Lehigh.

- Review an article on mathematics (3 to 5 points). I have attached a listing of places to look for articles, as well how many points you might get for different articles. Also look to sources such as the *New York Times*, the *Washington Post*, or PBS for mathematics in the news.

- Discuss a mathematical topic with someone outside the class (2 to 4 points) – this could be with roommates, teammates, family members, other professors. You can discuss a mathematical topic from the course or some other mathematical topic.

- Find mathematics in popular culture (2 to 4 points) – movies such as `A Beautiful Mind`, or references in *The Simpsons*. One source is *mathgoespop.com*. Also look for mathematics in the creation of movies by Pixar, LucasFilms or Dreamworks.

- Work on a problem outside the scope of the classroom (4 to 10 points). You might solve an interesting exercise or simply work on an interesting problem without quite reaching a solution.

Rules for submission

Your culture point write-up must be neat and well-written (complete sentences, paragraph structure, etc.). I prefer your submissions to be typed, but I will accept hand-written submissions – particularly if there is a great deal of mathematical notation. For each submission, keep in mind that there are two portions:

1. **Summary of the event:** This section of the write-up should constitute no more than 50% of your submission. Summarize the talk, conversation, article, or event. If you were working on a problem, discuss *how* you approached the problem and whether you were able to arrive at a satisfactory answer (provide the actual solution or work on the problem on an attached page).

2. **Reflection on the event:** How does the event affect your understanding of mathematics and mathematicians? Do you have a greater appreciation of the role of mathematics in society or the nature of mathematical research? Does the event connect with the mathematics you've learned in this course (or any of your other mathematics courses)? If you worked on a problem, explain how your work on that problem has influenced the way you solve problems or your understanding of the mathematics involved.

Be sure to clearly state what the involved event was. If you watched an episode of a series, be sure to include the name of the episode as well as the name of the series. If you read an article, include a full citation of the article (do NOT include a copy of the article itself). If you attended a talk or seminar, include the name of the talk and of the speaker.

Miscellaneous rules

- You may make at most one culture point submission per week.

- At least one culture point submission needs to based on a talk, colloquium or seminar. At least one culture point submission needs to be based on an article or reading.

- Culture point submissions that do not follow the above rules (particularly regarding neatness and making full citations) will be penalized or rejected.

- Culture points above the required number will be used as "extra credit" – how extra culture points translate to bonus points on the final grade will be determined at the end of the semester.

Places to go for articles and other writings

Books and Journals

- (3 to 5 points) – mathematical articles from popular journals such as *Popular Science*, *Scientific American*, or *National Geographic*

- (3 to 5 points) – teaching-oriented journals such as *Mathematics Teacher* or *Mathematics Teaching*

- (4 to 5 points) – articles from journals such as *American Mathematical Monthly*, *The College Mathematics Journal*, *Mathematics Magazine*, or *PME Monthly*. Many of these journals can be found in JSTOR and are available both in Reeves and the Mathematics library.

- (3 to 5 points) – many books provide terrific insight to the nature of mathematics. Pick a chapter of almost any of the general mathematics books by Martin Gardner, Ian Stewart, Sherman Stein, or Keith Devlin.

There are many other interesting articles out there – look through some of the search engines available through Reeves to discover articles on your own. You can also search `http://scholar.google.com` or `http://www.scholarpedia.org` for articles.

Math in the news

Look through the newspapers, especially the *New York Times*, the *Chicago Tribune* and other major newspapers for articles on mathematics in modern culture.

You can also find mathematics on the History Channel, the Discovery Channel, or PBS.

Consider almost any topic: the war in Iraq, football, jazz music, security at the airports, global warming, sinkholes, overpopulation, Windows Vista, poker. If you search through the web facilities available in Reeves, you can find an article connecting your favorite activity to mathematics.

Web Resources

Below are just a few links to mathematical articles (and a rough indication of their point value)

- `http://www.maa.org` (2 to 6 points)

  There is a host of columns here – all quite readable. Be sure to look through the archives to find articles of particular interest.

- `http://www.americanscientist.org` (2 to 4 points)

  While most articles are more for the sciences, there are a few mathematics articles that get thrown in. Two of the more recent articles are *Unwed Numbers: The Mathematics of Sudoku, a puzzle that boasts "No math required!"* and *Group Theory in the Bedroom: An insomniac's guide to the curious mathematics of mattress flipping.*

- `http://www.cut-the-knot.org` (4 points)

  Lots of interesting mathematical tid-bits, most of which include an interactive applet for you to experiment with.

- `http://plus.maths.org/` (4 to 5 points)

  An on-line magazine devoted almost exclusively to questions in the mathematical sciences.

Below are a few links to blogs hosted by professional mathematicians where interesting mathematical musings can be found (2 to 4 points)

- *What's New* by Terence Tao, `http://terrytao.wordpress.com/`

- *Not Even Wrong* by Peter Woit, `http://www.math.columbia.edu/ woit/wordpress/`