

# MATHEMATICS FOR THE LIBERAL ARTS

The University of Toledo  
Mathematics Department, College of Natural Sciences and Mathematics  
MATH1180-0XX, CRN XXXXX

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Instructor:	(Insert Name]	Class Location:	(Insert Building/Room)
Email:	(Insert E-mail Address)	Class Day/Time:	(Insert Days/Time)
Office Hours:	(Insert Days/Time)	Credit Hours:	3
Office Location:	(Insert Building/Office Number)		
Office Phone:	(Insert Phone Number)		
Term:	(Insert Semester and Year)		

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## COURSE DESCRIPTION

A general liberal arts course for non-science students designed to acquaint students with the nature of mathematics and applications such as probability, statistics, functions and graphs. Course is not applicable toward the undergraduate mathematics major requirements.

## STUDENT LEARNING OUTCOMES

- **Graph Theory:** Explain whether a graph has an Euler Path, Euler Circuit or is not traceable by using Euler's Theorem. If there is an Euler Path or Circuit, then list the vertices that create the path or circuit.
- **Graph Theory:** Determine the difference between an Euler Path/Circuit versus a Hamilton Path/Circuit.
- **Set Theory:** Perform set operations and illustrate that relationships through Venn Diagrams
- **Set Theory:** Use set notations and operations (element, equal, equivalent, subset, proper subset, complement, intersection, union, and difference) correctly.
- **Number Theory:** Use prime factorization to help find the GCD (Greatest Common Divisor) and LCD (Least Common Multiple). Solve problems involving the relationships among angles, arcs, and circles.
- **Geometry:** Solve problems involving the relationships among angles, arcs, and circles.
- **Geometry:** Calculate perimeter and area of geometric objects such as rectangles, triangles, parallelograms, and trapezoid and/or calculate the circumference and area of circles.
- **Geometry:** Use Pythagorean Theorem to solve problems involving right triangles.
- **Voting Methods:** Determine the winner of an election and identify when a fairness criterion is either satisfied or violated.
- **Voting Methods:** Identify the basic numerical representation of a weighted voting system such as the number of voters and each voter's weight and the quota and calculate the Banzhaf Power Index of a voter.
- **Counting Methods:** Apply one or all of the following to solve counting problems: tree diagrams, Fundamental Counting Principle and/or the theory of permutations and combinations to solve counting problems.
- **Probability:** Calculate basic and/or compound probability and represent the probabilities in a Venn Diagram.
- **Probability:** Determine the difference between events that are disjoint and/or whether the events are dependent.
- **Basic Statistics:** Write a brief summary on the results of a graph for quantitative data.
- **Basic Statistics:** Calculate the measures of center and spread and use them to interpret a data set.
- **Basic Statistics:** Identify the properties of a normal distribution and use the standard normal distribution to find probabilities or percentiles.

## TEACHING STRATEGIES

This class is a face-to-face class that has the following format: A section of material is covered on each day for a week then the following week will be groups quizzes based off of that material. On the lecture days, material will be covered through the use of power point slides. Each power point presentation will encourage participation and engagement by prompting students to answer questions using clickers. For the group quiz days, students will be working in small groups of 2 or at most 3 students. Students will have almost the entire class period to finish the "Group Quiz." The syllabus at the end of the syllabus details what is to be done for each day of the semester.

**Please Note:** This is a 3-credit hour course which means students are expected to devote at least 6 hours of studying outside of class.

## **PREREQUISITES**

No prerequisites or co-requisite study skills course based on ACT math score and high school GPA.

## **REQUIRED MATERIALS & TEACHING REQUIREMENTS**

- A clicker from the bookstore: Turning Technologies' ResponseCard RF.
- A basic calculator (must have a square root function; factorial button "x!")
- My Labs Plus Access code for *Mathematics All Around* UT Custom Edition, Pirnot, Pearson/Addison Wesley. The access code may be purchased directly through Pearson (you need a credit card) or through The University of Toledo's bookstore. The textbook is highly recommended. The ISBN for the bundle (textbook + access code) at the bookstore is: 9781323232767.

The My Labs Plus access code and the clicker are an absolute requirement for this class. You are expected to have them by the beginning of the second week of class. If you do not have them, you will begin to lose points which cannot be made up.

## **UNIVERSITY POLICIES:**

### **POLICY STATEMENT ON NON-DISCRIMINATION ON THE BASIS OF DISABILITY (ADA)**

The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.

### **ACADEMIC ACCOMMODATIONS**

The University of Toledo is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course please contact the Student Disability Services Office (Rocket Hall 1820; 419.530.4981; studentdisabilitysvs@utoledo.edu) as soon as possible for more information and/or to initiate the process for accessing academic accommodations. For the full policy see: <http://www.utoledo.edu/offices/student-disability-services/sam/index.html>

## **ACADEMIC POLICIES:**

### **STUDENT PRIVACY**

Federal law and university policy prohibits instructors from discussing a student's grades or class performance with anyone outside of university faculty/staff without the student's written and signed consent. This includes parents and spouses. For details, see the "Confidentiality of student records (FERPA)" section of the University Policy Page at <http://www.utoledo.edu/policies/academic/undergraduate/index.html>

### **MISSED CLASS POLICY**

If circumstances occur in accordance with "The University of Toledo Missed Class Policy" (found at <http://www.utoledo.edu/policies/academic/undergraduate/index.html>) result in a student missing a quiz, test, exam or other graded item, the student must contact the instructor in advance by phone, e-mail or in person, provide official documentation to back up his or her absence, and arrange to make up the missed item as soon as possible.

### **ACADEMIC DISHONESTY**

Any act of academic dishonesty as defined by the University of Toledo policy on academic dishonesty (found at <http://www.utoledo.edu/dl/students/dishonesty.html>) will result in an F in the course or an F on the item in question, subject to the determination of the instructor.

## COURSE EXPECTATIONS:

- Once class begins, no talking. It is rude and disrespectful to both the instructor and other students. If the talking does not stop after I address it, then that/those student(s) talking will be told to leave the room.
- Cell phones and earphones need to be turned off and out of sight.
- Do not take pictures inside the classroom.
- Laptops/Tablets need to be put away.
- Any calculator can be used on the exams. Cell phones, laptops or any devices capable of connecting to the outside world may not be used as calculators on exams.
- Use of another student's clicker to fake attendance when the student is not there is academic dishonesty (cheating) and will be treated as such.
- Do not leave the classroom until the class has ended. If one student gets up and leaves five minutes before the class is over, others will follow. If there is some unusual circumstance that requires you to leave early, please speak to me about it at the beginning of class and sit at the end of a row close to the door to minimize any disruption to the class.

## GRADING POLICY

The categories used for evaluation in this course and the percent weights associated with them:

Components of Class	Weight
Participation	5%
Online Homework	20%
Group Quizzes	15%
Midterm Exam	30%
Final Exam	30%

Grading Scale	
90-100%	A
80-89.9%	B
70-79.9%	C
60-69.9%	D
0-59.9%	F

\*\* Plus/minus grades are assigned within 2% of the grade boundary. \*\*

- **Participation Points [weight = 5%]:** This is a form of attendance and participation. As mentioned earlier in the syllabus, each power point will have several questions for students throughout it pertaining to the material and students must answer it using a clicker. You will get credit for attending the class and participating in these questions regardless of whether your answers are correct. Therefore, it is absolutely essential that you buy a clicker quickly. Participation points will start counting the 2<sup>nd</sup> week of classes. If you still do not have one then you will lose points.
- **Online Homework [weight = 20%]:** The online homework will have set due dates. Each section's homework is due the day the next section's material is covered. See the schedule at the end of the syllabus for exact dates. If you do not attempt or complete the HW by the due date it will be closed out and you will get a 0% if not attempted. No extensions. For all HW problems, you can re-do problems done incorrectly over and over again until you get 100%. Simply click the "Similar Exercise" button at the bottom of the problem you got wrong.

My Labs Plus is the online HW management system and can be accessed through blackboard:

<https://blackboard.utdl.edu/>. Once in Blackboard, click on our class under the Course List: "XXXXXX." Then, click on "My Labs Plus" in the navigation menu to the left.

- **Group Quizzes [weight = 15%]:** Group quizzes must be completed in class with groups of 2 or 3 students. These cannot be made up; however, the lowest two Group Quizzes will be dropped at the end of the semester. During group quizzes, students should not expect instructors to give them answers. These are quizzes so students really have to do the majority of it. If you need clarification or have a question, then please ask keeping in mind that there is only one instructor and probably 20 – 30 groups that may have questions. The questions on the group quiz will be similar to questions in the lecture and online HW. **Prepare for these Group Quizzes by making sure you complete the online HW.** You will be allowed to use your notes and the textbook.

### **Rules for GQs:**

- You **MUST** work in a group. If you work alone you will be given a 0%.
  - Each person's name must be at the top. If a student forgets to write his/her name on the GQ then that student will receive no credit.
  - If someone writes an absent student's name on a GQ, then the entire group will receive 0% for that assignment. This falls under Academic Dishonesty.
  - Point discrepancies must be taken care of the same day the graded GQ is passed back.
  - Entire group must finish the entire GQ then turn it in and leave. In other words, part of the group cannot leave and have the remaining members of the group finish it. If this occurs, members that leave will get a 0% on that assignment.
- **Exams [weight = 60%]:** Each exam is worth 30% of the grade. For both exams you will be required to show a photo ID when you turn your exam in before you leave. Students will be given 50 minutes to complete the exam. The mid-term will cover sections 4.1, 4.2, 2.1, 2.2, 2.3, 6.1, 9.1, 9.2, and 9.3. The final exam will take place per the university exam schedule in our regular classroom and it will cover sections 11.1, 11.2, 11.3, 12.1, 12.2, 12.3, 13.1, 13.2, 13.3, 14.1, 14.2, 14.3, and 14.4.

### **INCOMPLETE GRADE & EXTRA CREDIT POLICY**

University and departmental policy stipulate that incompletes will be granted only in cases where a *substantial portion* (usually at least 3/4) of the class has been completed *successfully* and unavoidable circumstances prevent completing the course by the end of the semester. Incompletes are not intended to rescue students who have performed poorly, or those who have not participated in the class. Students often come to me at the end of the semester after realizing that they are not likely to pass wanting an incomplete or extra credit or some other way of avoiding disaster. Generally, the end of the semester is too late. I do not give extra credit, and particularly not for individual students.

### **FINAL GRADE POLICY**

Many students contact me at the end of the semester and tell me the problems (family, medical, etc.) they had during the semester in hopes that I will somehow take that into account for their grade. But, this is unfair; grades are based on your performance in the class only. Your final percentage score is your final score. I will not inflate grades.

### **COMMUNICATION GUIDELINES**

When sending an email to me, please state your full name and the course you are enrolled in, such as "Math 1180 at 9:00 am". Then proceed to write the rest of your email. I plan on checking my email every evening and during scheduled office hours. I do not use my office phone very often. Often times students leave a call back number on my office phone (which I can listen to through my email), but I do not call students back unless I am in my office using my office phone. This may cause a delay in getting back to you by phone. So, if you need a quick response, then please send an email instead.

Mostly email will be utilized so get in the habit of checking your UT email. In addition, any major announcements may also be posted in Blackboard so do check it frequently for reminders.

### **IMPORTANT DATES**

\*The instructor reserves the right to change the content of the course material if he perceives a need due to postponement of class caused by inclement weather, instructor illness, etc., or due to the pace of the course.

- MIDTERM EXAM:
- FINAL EXAM:
- The last day to drop this course is:
- The last day to withdraw with a grade of "W" from this course is:

### **STUDENT SUPPORT SERVICES**

- Free math tutoring on a walk-in basis is available in the Math Learning and Resources Center located in Rm B0200 in the lower level of Carlson Library (phone ext 2176). The Center operates on a walk-in basis. MLRC hours can be found at <http://www.math.utoledo.edu/mlrc/MLRC.pdf>
- The Course Compass website has an on-line copy of the textbook, and other learning materials available.

## MY LABS PLUS HELP INFO

If you have any technical issues with MyLabsPlus, there are two ways to contact Pearson for Help:

- Pearson help line at [1-888-883-1299](tel:1-888-883-1299) or
- Chat live: [http://247pearsoned.custhelp.com/app/chat/chat\\_launch](http://247pearsoned.custhelp.com/app/chat/chat_launch)

If you have log in issues, try one or more of the following:

- First thing you should do is restart your computer
- Configure your internet browser: [http://247pearsoned.custhelp.com/app/answers/detail/a\\_id/7557](http://247pearsoned.custhelp.com/app/answers/detail/a_id/7557)

Clear your browser history and cache: <http://kb.iu.edu/data/ahic.html>

## TENTATIVE CLASS SCHEDULE / LIST OF TOPICS

The material covered in the course corresponds to material in Chapters 2, 4, 6, 11-14 of *Mathematics all Around*, 5th edition, Pirnot. In general, students will be engaged in the various topics listed below through lectures, interactive computer activities, and group and individual problem solving projects. An emphasis will be placed on problem solving throughout the course. Topics include: Graphs, Sets and Set Operations, Number Theory, Polygons and Symmetry, Voting Problems, Counting Methods, Permutations and Combinations, Probability, and Statistics.

	Monday	Wednesday	Friday
<b>Week 1:</b>	January 9	January 11	January 13
	Syllabus; 4.1 <i>Graph Theory</i>	4.1 <i>Graph Theory</i>	4.2 <i>Graph Theory</i>
<b>Week 2:</b>	<b>January 16</b>	January 18	January 20
	<b>MLK Holiday</b>	GQ 4.1 Section 4.1 HW due by 11:59 pm <i>Graph Theory</i>	GQ 4.2 Section 4.2 HW due by 11:59 pm <i>Graph Theory</i>
<b>Week 3:</b>	January 23	January 25	January 27
	2.1, 2.2 <i>Set Theory</i>	2.3 <i>Set Theory</i>	6.1 <i>Number Theory</i>
<b>Week 4:</b>	January 30	February 1	February 3
	GQ 2.1, 2.2 Section 2.1,2.2 HW due by 11:59 pm <i>Set Theory</i>	GQ 2.3 Section 2.3 HW due by 11:59 pm <i>Set Theory</i>	GQ 6.1 Section 6.1 HW due by 11:59 pm <i>Number Theory</i>
<b>Week 5:</b>	February 6	February 8	February 10
	9.1 <i>Geometry</i>	9.2 <i>Geometry</i>	9.3 <i>Geometry</i>
<b>Week 6:</b>	February 13	February 15	February 17
	GQ 9.1 Section 9.1 HW due by 11:59 pm <i>Geometry</i>	GQ 9.2 Section 9.2 HW due by 11:59 pm <i>Geometry</i>	GQ 9.3 Section 9.3 HW due by 11:59 pm <i>Geometry</i>
<b>Week 7:</b>	February 20	<b>February 22</b>	February 24
	REVIEW for Midterm Exam Chapters 2, 4, 6, 9	<b>MID-TERM EXAM: 2.1-2.3, 4.1,4.2,6.1,9.1-9.3</b>	11.1 <i>Voting Methods</i>
<b>Week 8:</b>	February 27	March 1	March 3
	11.2 <i>Voting Methods</i>	11.3 <i>Voting Methods</i>	Review of Chapter 11 <i>Voting Methods</i>
<b>Week 9:</b>	<b>March 6</b>	<b>March 8</b>	<b>March 10</b>
	<b>SPRING BREAK</b>	<b>SPRING BREAK</b>	<b>SPRING BREAK</b>
<b>Week 10:</b>	March 13	March 15	March 17
	GQ 11.1 Section 11.1 HW due by 11:59 pm <i>Voting Methods</i>	GQ 11.2 Section 11.2 HW due by 11:59 pm <i>Voting Methods</i>	GQ 11.3 Section 11.3 HW due by 11:59 pm <i>Voting Methods</i>

<b>Week 11:</b>	March 20	March 22	March 24
	12.1,12.2 <i>Counting Methods</i>	12.3 <i>Counting Methods</i>	13.1 <i>Probability</i>
<b>Week 12:</b>	March 27	March 29	March 31
	GQ 12.1,12.2 Section 12.1,12.2 HW due by 11:59 pm <i>Counting Methods</i>	GQ 12.3 Section 12.3 HW due by 11:59 pm <i>Counting Methods</i>	GQ 13.1 Section 13.1 HW due by 11:59 pm <i>Probability</i>
<b>Week 13:</b>	April 3	April 5	April 7
	13.2 <i>Probability</i>	13.3 <i>Probability</i>	14.1 <i>Basic Statistics</i>
<b>Week 14:</b>	April 10	April 12	April 14
	GQ 13.2 Section 13.2 HW due by 11:59 pm <i>Probability</i>	GQ 13.3 Section 13.3 HW due by 11:59 pm <i>Probability</i>	GQ 14.1 Section 14.1 HW due by 11:59 pm <i>Basic Statistics</i>
<b>Week 15:</b>	April 17	April 19	April 21
	14.2 <i>Basic Statistics</i>	14.3 <i>Basic Statistics</i>	14.4 <i>Basic Statistics</i>
<b>Week 16:</b>	April 24	April 26	April 28
	GQ 14.2, 14.3 Section 14.2 HW due by 11:59 pm <i>Basic Statistics</i>	GQ 14.3, 14.4 Section 14.3, 14.4 HW due by 11:59 pm <i>Basic Statistics</i>	REVIEW for Final Exam Chapters 11, 12, 13, 14