

**GERMANNA COMMUNITY COLLEGE
FREDERICKSBURG AREA CAMPUS**

Mrs. Delois R. McCormick

**COURSE OUTLINE
MTH 152-I1
Mathematics for the Liberal Arts I**

Spring 2010

I. COURSE DESCRIPTION: MTH 152 presents topics in functions, combinatorics, probability, statistics, and algebraic systems. . Prerequisites: a placement recommendation for MTH 152 and Algebra I, Algebra II and Geometry or equivalent.

II. TEXTBOOK: Blitzer, Robert. Thinking Mathematically, 4th Edition, Prentice Hall: 2008 with Student Access Kit for MyMathLab.

III. TOPICAL OUTLINE:

- A. Counting Methods and Probability Theory (Chapter 11)
- B. Statistics (Chapter 12)
- C. Mathematical Systems (Chapter 13)
- D. Algebra: Graphs, Functions, and Linear Systems (Chapter 7)
- E. Consumer Mathematics and Financial Management (Chapter 8) (Optional)

IV. OBJECTIVES: Upon completion of MTH 152 the student will be able to:

- A. Chapter 11- Counting Methods and Probability Theory
 - 1. Use the Fundamental Counting Principle to determine the number of possible outcomes in a given situation.
 - 2. Use the Fundamental Counting Principle to count permutations.
 - 3. Evaluate factorial expressions.
 - 4. Use the permutation formula.
 - 5. Find the number of permutations when duplicate objects are involved.
 - 6. Distinguish between permutation and combination problems.
 - 7. Solve problems involving combinations using the combinations formula.
 - 8. Compute theoretical probability.
 - 9. Compute empirical probability.
 - 10. Compute probabilities with permutations.
 - 11. Compute probabilities with combinations.
 - 12. Find the probability that an event will not occur.
 - 13. Find the probability of one event or a second event occurring.
 - 14. Find the odds in favor of and the odds against an event

- occurring.
15. Find the probability of one event and a second event occurring.
 16. Compute conditional probabilities.
 17. Compute expected value.
 18. Use expected value to solve application problems.
 19. Use expected value to determine the average payoff or loss in a game of chance.
- B. Chapter 12- Statistics
1. Describe the population whose properties are to be analyzed.
 2. Select an appropriate sampling technique.
 3. Organize and present data.
 4. Identify deceptions in visual displays of data.
 5. Create a frequency table for a given set of data.
 6. Create a histogram for a given set of data.
 7. Determine the mean, median, mode, and midrange for a given set of data.
 8. Determine the range and sample standard deviation for a given set of data.
 9. Recognize the characteristics of normal distributions.
 10. Find scores at specified standard deviation from the mean.
 11. Use the 68-95-99.7 Rule.
 12. Convert a data value to a z-score.
 13. Determine the specified percentile or quartile for a given set of data.
 14. Solve applied problems involving normal distributions.
 15. Use and interpret margins of error.
 16. Recognize distributions that are not normal.
 17. Make a scatter plot for a table of data values.
 18. Interpret the information from a scatter plot.
 19. Compute the correlation coefficient.
 20. Write the equation of the regression line.
 21. Use a sample's correlation coefficient to determine whether there is a correlation in the population.
- C. Chapter 13-Mathematical Systems
1. Define what a mathematical system is.
 2. Given a mathematical system, determine which properties hold for that system.
 3. Recognize rotational symmetry.
 4. Determine if a mathematical system is a group.
 5. Explain why a clock system is a group.
 6. Perform addition in a modulo m system.
- D. Chapter 7-Algebra: Graphs, Functions, and Linear Systems

1. Plot points in the rectangular coordinate system.
 2. Graph equations in the rectangular coordinate system.
 3. Use functional notation.
 4. Graph functions.
 5. Use the vertical line test to identify the graph of a function.
 6. Find the x- and y-intercepts of linear functions.
 7. Calculate the slope of a line.
 8. Use the slope and y-intercept to graph a line.
 9. Graph horizontal and vertical lines.
 10. Interpret slope as rate of change.
 11. Use slope and y-intercept to model data.
 12. Decide whether a given ordered pair is the solution to a system of linear equations.
 13. Solve a linear system by graphing.
 14. Solve a linear system by substitution.
 15. Solve a linear system by addition.
 16. Identify systems that do not have exactly one ordered pair as the solution to the system.
 17. Solve problems using systems of linear equations.
 18. Graph a linear inequality in two variables.
 19. Use mathematical models involving linear inequalities.
 20. Graph a system of linear inequalities.
 21. Write an objective function describing a quantity that must be maximized or minimized.
 22. Use inequalities to describe limitations in a situation.
 23. Use linear programming to solve problems.
- E. Chapter 8- Consumer Mathematics and Financial Management
1. Express a fraction or decimal as a percent.
 2. Express a percent as a fraction or decimal.
 3. Solve applied problems involving discounts and sale tax.
 4. Compute income tax.
 5. Determine percent increase or decrease.
 6. Calculate simple interest.
 7. Use the future value formula.
 8. Use the simple interest formula on discounted loans.
 9. Use compound interest formulas.
 10. Understand and compute annual effective yield.
 11. Determine the value of an annuity.
 12. Determine regular annuity payments needed to achieve a financial goal.
 13. Understand stocks and bonds as investments.
 14. Read stock tables.
 15. Determine the amount financed, the installment price, and the

- finance charge for a fixed loan.
16. Determine the APR.
 17. Compute unearned interest and payoff amount for a loan paid off early.
 18. Find the interest, the balance due, and the minimum monthly payment for credit card loans.
 19. Calculate interest on credit cards using three methods.
 20. Understand mortgage options.
 21. Compute the monthly payment and interest costs for a mortgage.
 22. Prepare a partial loan amortization schedule.
 23. Compute payments and interest for other kinds of installment loans.

V. REQUIREMENTS:

- A. **Course ID:** **mccormick18394** (needed for MyMathLab)
- B. **Schedule:** Students must maintain the schedule that is outlined on the assignment sheet. There are specific due dates for all assignments. Work is assigned on a weekly basis as listed in the schedule. ***Work will not be accepted late except as outlined in this course outline or as authorized by the instructor. Work turned in without documentation and/or authorization will be counted as a zero.***
- C. **Materials:** Students must purchase and have available at home:
 1. Computer with DSL, **high-speed** cable, or FIOS Internet connection on which required plug-ins and players are installed (through MyMathLab). **You must have administrative rights to the computer you plan to use in order to install the required plug-ins and players. Note that if you have dial-up you may have difficulty getting the recorded lectures and sample problems to play correctly on your computer. This will put you at a distinct disadvantage in the course.**
Note for VISTA users: If you have the new Microsoft Vista Operating System on your computer, make sure you do the following before you attempt to take a test or participate in a Discussion forum. Otherwise you will not be able to answer essay questions, and you may have difficulties with adding threads to discussion forums. Click "Tools" on the left side of your Blackboard screen. Then click "Personal Information." Choose "Set Text Box Editor Options," and click "unavailable" and "Submit." Remember to do this for all your future Blackboard courses.
 2. MyMathLab Access Code-If an access code was not packaged

with the text one may be purchased on the MyMathLab site when you go there to register. If you have a code that **you** previously used for this same text you may use that code again. (If you took MTH 151 online with me using the Blitzer text you may use the same access code.) However, you may not use someone else's code. The printed textbook is optional. Note that you will have access to an online textbook on MyMathLab.

3. Paper/Notebook

4. Scientific calculator

- D. **Attendance:** *Students who do not complete the provided information sheet by the end of the second week of classes will be administratively withdrawn from the course.* Otherwise, it is the student's responsibility to withdraw from class. Those who withdraw by the last date to withdraw without academic penalty will receive a "W" in lieu of an "F." (See important dates in this outline.)
- E. **Readings:** Student must read each section of the text relative to the assigned problems.
- F. **Lectures:** *Mrs. McCormick's Lecture Notes, Mrs. McCormick's Lectures, and Mrs. McCormick's Sample Problems are located under the LECTURES button on the course menu. After you have the players and plug-ins installed on your computer, you should print the lecture notes and watch the weekly assigned lectures and sample problems.* If your computer breaks down in the middle of the semester you may temporarily use the computers in the Academic Computing Centers at either campus. If you have extenuating circumstances, you should contact the instructor and request an extension. Extensions will not be made repeatedly made for the same student.
- G. **Ask the Instructor Forum:** The "Ask the Instructor" Forum will be located under the **DISCUSSION BOARD** button. Please ask general questions regarding the functioning of the course there so that the entire class can benefit from the question and answer. The students should check the "Ask the Instructor" Forum whenever they have questions to see if those questions have already been addressed in the forum. Questions will be answered within 48 hours excluding weekends and holidays. Questions of a personal nature should be submitted via email.
- H. **Email:** *Students should check their GCC email at least five times a week for updates and announcements. Students must contact the instructor through the GCC email system unless the system is down. In that case another email system may be used, but the student must put his or her name and course name in the subject line.* Generally the instructor will respond to

email and phone messages within 48 hours, excluding some weekends and holidays. Email is the preferred method of communication.

- I. **Announcements:** *Students should sign onto the MyMathLab site at least five times a week to work on assignments and to check for updates and announcements.* Weekly schedule reminders will be posted in the Announcements section of MyMathLab. Students should spend between 15 and 20 hours a week online viewing Mrs. McCormick's recordings of lectures and sample problems, completing online work including homework and quizzes, and completing written homework.
- J. **Online Homework:** The student must complete the online homework assignments for each section as listed on the assignment sheet. The online homework is located under the **HOMEWORK** button and will be scored by MyMathLab.
- K. **Written Homework:** The student must complete the written homework as listed on the assignment sheet; exam question most closely resemble the written homework questions. The student may use the written homework on the exam. You should check your own written homework in the back of the textbook. Questions on it should be placed in the "Ask the Instructor" forum under the **DISCUSSION BOARD** button.
- L. **Labs:** The student must complete the labs as listed on the assignment sheet. The labs are located under the **LABS** button and must be submitted by email. The labs may be submitted up to **one week** late with a ten point reduction in the grade. Any labs submitted more than a week late will receive a zero. Some labs will include a discussion board component. The discussion board assignment description with grading rubric is located under the **LABS** button while the place for posting your answer is located under the **DISCUSSION BOARD** button. Labs submitted on time will be graded within a week of the due date.
- M. **Online Quizzes:** The student must take several online quizzes no more than 3 times each until the due date. No make-up quizzes will be given. All quizzes are located under the **QUIZZES** button and must be completed by the due date listed on the assignment sheet. Quizzes are scored by MyMathLab. If a student experiences technical difficulties when taking an online quiz, the instructor must be notified by e-mail or phone within 24 hours of the due date to make alternate arrangements for taking the quiz. Make sure you submit the quiz when you have completed it. ***Please print a copy of your quiz after submitting it so that you have a back-up copy in case an error is made during the electronic transmission of***

your grade. In the event you find that your quizzes are being “lost” and not recorded on MyMathLab, you should make a copy of the score sheet by pressing the control key and the Print Screen key. Then open WORD and select “paste” to paste the sheet on a WORD page. Attach the WORD page to an email and send it to the instructor so that the quiz score can be recorded.

- N. **Exams:** The student must take **three** exams in one of the two Testing Centers of the college during the one-week time-periods listed on the assignment sheet. The exams are paper and pencil exams and will be **open notes and homework** but **not open book**. A **calculator is permitted** and must be brought to the Testing Center by the student. Students must provide information on whether they will be using the Fredericksburg or Locust Grove Testing Center on the required information sheet. (If the exam needs to be administered by a proctor in another location, the student must complete and submit the necessary forms to the instructor by the end of the third week of classes.) A photo ID is required to take a test and students should plan to arrive at least one hour and a half before closing to allow sufficient time to complete the exam. **Students who miss an exam must contact the instructor by phone or email within 24 hours of the due date for the exam to schedule a make-up exam. Documentation will be required.** Any missed exam must be made up within a week of the original due date or it will be recorded as a zero. Exams will be graded within a week of the due date.
- O. **Academic Honesty:** The student is expected to act in accordance with academic honesty in this class. Those caught cheating on homework, a quiz, test or exam or plagiarizing (copying from another's work) will receive a zero on that quiz, test, exam, or assignment. The cheating incident will be reported to the Dean of Student Development Services who will place the information in the student's file. See the Student Handbook at the end of the current catalog for the complete college policy on academic honesty.
- P. **Disabilities:** If a student has a disability, it is the responsibility of the student to contact the special needs counselor to obtain the appropriate paperwork to receive accommodations. The student should then arrange to ***meet with the instructor during office hours to discuss the appropriate accommodations for the class.***
- Q. **Tuesday Evening Chats:** The instructor will be available in the course Chat Room every Tuesday evening from 8 to 9 pm to answer student questions. To access the Chat Room, go to the **OFFICE CHAT** button on your course menu and select it. Then click “JOIN”

next to the “Office Hours Chat.” This requires a JAVA platform and may take a moment or so to load. You may then type any questions you have as you would with any Instant Messaging System.

R. **Meet Your Classmates:** The “Meet Your Classmates” Forum is located under the **DISCUSSION BOARD** button so that students may get acquainted. Please follow the rules of “netiquette” as listed below. Everyone is required to post a self-introduction to the forum during the first week of class. Complete instructions will be on the Online Student Information Sheet.

1. Treat others as you would wish to be treated.
2. Please do not use foul language.
3. There is to be no name-calling.
4. Don’t use all caps as it is considered to be “shouting.”
5. Differences of opinion can be expressed with respect and courtesy.

S. **Grades:** Your online quiz and homework grades will be located under the **MyMathLab Grades** button on the MyMathLab site. Your lab and exam grades will be located under the **My Grades** button on the Blackboard site for the course. At the end of the semester your online quiz and homework averages will be transferred to the Blackboard site so that you will be able to see your final grade in the course there.

VI. **EVALUATION:**

A. Each student's semester grade will be based on:

1. Labs—15%
2. Online Homework-15%
3. Quizzes—20%
4. Exams—50%

B. The grades will be awarded on the basis of:

1. 90%-100% A
2. 80%-89% B
3. 70%-79% C
4. 60%-69% D
5. Below 60% F

VII. **OFFICE INFORMATION:**

A. Room: 206 in Phase II of FAC

B. Phone: (540) 891-3037

C. Office Hours:

Monday, Tuesday, & Thursday
8:30am-12:30pm

Online Office Chat:

Tuesday
8-9pm

D. E-mail address: dmccormick@germanna.edu Note: All communication between the student and the instructor must be made via GCC email accounts. Students may not communicate with the instructor via other email systems.

Mail sent by other systems will not be opened. The only exception is when the GCC e-mail is down; in that case you may use your personal e-mail account **as long as you put your name and the course name in the subject line.**

VIII. IMPORTANT DATES:

- A. Classes begin: January 11
- B. Last day to add a class or change from audit to credit: January 15
- C. Holiday (College closed): January 18
- D. Last day to drop with refund: January 27
- E. College Learning Day(No classes): February 9
- F. Spring Break: March 8-13
- G. Last day to withdraw without grade penalty: March 23
- H. Classes end: May 4
- I. Final examination: Must be completed by Monday, May 10

**MTH 152-I1 Assignments
Spring 2010
Course ID: **mccormick18394****

Week	Assignment	Due Date
Week 1 1-11 to 1-18	1. Complete the “Are You Ready?” module found on the Blackboard site under the “Are you ready?” button. 2. Print the course outline and assignment sheet found on the Blackboard site under the “Course Information” button and read them. 3. Watch the “Getting Started Videos” found under the “Get Started” button on the Blackboard site. 4. Sign into MyMathLab as explained in the “Getting Started” videos and locate the course materials. 5. Complete the Online Student Information Sheet and email it to dmccormick@germanna.edu. This counts as a lab grade. 6. Post your self-introduction in the “Meet Your Classmates” Forum found under the Discussion Board button on the MyMathLab site. (Note that you can just make a copy of the answer to the last question on the Online Student Information Sheet and paste it in the forum.) Respond to the postings by at least two of your classmates. See the grading rubric attached to the Online Information Sheet for complete information.	1-18 at midnight Note that all assignments are due at midnight on the given date. Items in bold are items that are graded.

<p>Week 2 1-19 to 1-25</p>	<ol style="list-style-type: none"> 1. Read sections 11.1, 11.2, & 11.3 in the text. 2. Print the lecture notes and watch Mrs. McCormick's recorded lectures and sample problems for 11.1, 11.2, & 11.3. 3. Do the online homework for 11.1, 11.2, & 11.3. 4. Do the written homework as needed: pp. 612-613 #1-21(odd) p. 619 #1-55(odd) pp. 625-626 #1-19, 29-49(odd) <p>Note: Keep your notes and written homework in a notebook. You will be able to use them on your exams.</p>	<p>1-25</p>
<p>Week 3 1-26 to 2-1</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 11.1, 11.2, & 11.3. 2. Read sections 11.4, 11.5, & 11.6 in the text. 3. Print the lecture notes and watch the recorded lectures and sample problems for 11.4, 11.5, & 11.6. 4. Do the online homework for 11.4, 11.5, & 11.6. 5. Do the written homework as needed: pp. 633-634 #1-65(odd) pp. 639-640 #1-17(odd) pp. 649-652 #1-89(eoo)* 6. Do the Monty Hall Lab and email it to dmccormick@germanna.edu. 	<p>2-1</p> <p>*Note that eoo means every other odd.</p>
<p>Week 4 2-2 to 2-8</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 11.4, 11.5, & 11.6. 2. Read sections 11.7 & 11.8 in the text. 3. Print the lecture notes and watch the recorded lectures and sample problems for 11.7 & 11.8. 4. Do the online homework for 11.7 & 11.8. 5. Do the written homework: pp. 660-662 #1-71(odd), 81, 83 pp. 668-670 #1-19(odd) 	<p>2-8</p>
<p>Week 5 2-9 to 2-15</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 11.7 & 11.8. 2. Do practice test in text: p. 677 #1-28(all) 3. Take Exam #1 on Chapter 11 in one of the Testing Centers. Hours are posted on the 	<p>2-15</p> <p>Note: The</p>

	<p>Germanna website at www.germanna.edu. Look up the Testing Centers to get the hours and rules for taking tests. You must bring a photo ID and arrive at least an hour before closing or you won't be permitted to start the exam. The exam must be completed in one sitting. I recommend that you allow at least one and a half hours to complete the exam (more if you work slowly). Remember to bring a calculator and your notes and written homework with you because the exam is open notes and homework. The exam must be completed by the close of the Testing Centers on 2/15/2010.</p>	<p>exam must be completed by close of the Testing Centers.</p>
<p>Week 6 2-16 to 2-22</p>	<ol style="list-style-type: none"> 1. Read sections 12.1 & 12.2 in the text. 2. Print the lecture notes and watch the recorded lectures and sample problems for 12.1 & 12.2. 3. Do the online homework for 12.1 & 12.2. 4. Do the written homework: pp. 689-691 #1-31(odd) pp. 702-703 #1-65(odd) 5. Do the Measures of Central Tendency Lab and email it to dmccormick@germanna.edu. 	<p>2-22</p>
<p>Week 7 2-23 to 3-1</p>	<ol style="list-style-type: none"> 1. Take the Online Quiz on 12.1 & 12.2. 2. Read sections 12.3 & 12.4 in the text. 3. Print the lecture notes and watch the recorded lectures and sample problems for 12.3 & 12.4. 4. Do the online homework for 12.3 & 12.4. 5. Do the written homework: pp. 710-711 #1-37(odd) pp. 727-729 #1-103(eoo) 6. Do Five-Number Summary Lab and email it to dmccormick@germanna.edu, 	<p>3-1</p>
<p>Week 8 3-2 to 3-15</p> <p>Note that this</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 12.3 & 12.4. 2. Read sections 12.5 & 13.1 in the text. 3. Print the lecture notes and watch the recorded lectures and sample problems for 12.5 & 13.1. 4. Do the online homework for 12.5 & 13.1. 5. Do the written homework: 	<p>3-15</p>

<p>“week” includes spring break.</p>	<p>pp. 737-739 #1-45(odd) pp. 755-756 #1-63(odd) 6. Do the Correlation and Regression Lab and email it to dmccormick@germanna.edu. Post your response to the discussion board question this week and respond to at least two classmates’ postings.</p>	
<p>Week 9 3-16 to 3-22</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 12.5 & 13.1. 2. Read section 13.2 in the text. 3. Print the lecture notes and watch the recorded lecture and sample problems for 13.2. 4. Do the online homework for 13.2. 5. Do written homework: pp. 765-766 #1-41(odd) 6. Do practice tests: pp. 745-746 #1-26(all) p. 769 #1-14(all) 	<p>3-22</p>
<p>Week 10 3-23 to 3-29</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 13.2. 2. Take Exam #2 on Chapters 12 & 13 in one of the Testing Centers. Hours are posted on the Germanna website at www.germanna.edu. Look up the Testing Centers to get the hours and rules for taking tests. You must bring a photo ID and arrive at least an hour before closing or you won’t be permitted to start the exam. The exam must be completed in one sitting. I recommend that you allow at least one and a half hours to complete the exam (more if you work slowly). Remember to bring a calculator and your notes and written homework with you because the exam is open notes and homework. The exam must be completed by the close of the Testing Centers on 3/29/2010. 3. Read section 7.1 in the text. 4. Print the lecture notes and watch the recorded lecture and sample problems for 7.1. 5. Do the online homework for 7.1. 6. Do the written homework: pp. 376-377 #1-57(odd) 	<p>3-29</p>

<p>Week 11 3-30 to 4-5</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 7.1. 2. Read sections 7.2 & 7.3 in the text. 3. Print the lecture notes and watch the recorded lectures and sample problems for 7.2 & 7.3. 4. Do the online homework for 7.2 & 7.3. 5. Do the written homework: pp. 388-389 #1-47(odd) pp. 402-403 #1-43 & 51-57(odd) 	<p>4-5</p>
<p>Week 12 4-6 to 4-12</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 7.2 & 7.3. 2. Read sections 7.4 & 7.5. 3. Print lecture notes and watch lectures and sample problems for 7.4 & 7.5. 4. Do online homework for 7.4 & 7.5. 5. Do written homework: pp. 411-412 #1-49(odd) p. 418 #1-13(odd) 	<p>4-12</p>
<p>Week 13 4-13 to 4-19</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 7.4 & 7.5. 2. Read sections 8.1 & 8.2. 3. Print lecture notes and watch lectures and sample problems for 8.1 & 8.2. 4. Do online homework for 8.1 & 8.2. 5. Do written homework: pp. 452-453 #1-59(odd) pp. 458-459 #1-39(odd) 6. Do the Credit Card Lab and email it to dmccormick@germanna.edu. Post your response to the discussion board question this week and respond to at least two of your classmates' postings. 	<p>4-19</p>
<p>Week 14 4-20 to 4-26</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 8.1 & 8.2. 2. Read sections 8.3 & 8.4. 3. Print lecture notes and watch lectures and sample problems for 8.3 & 8.4. 4. Do online homework for 8.3 & 8.4. 5. Do written homework: pp. 465-466 #1-43(odd) pp. 477-478 #1-19(odd) 6. Do the Buying a Car Lab and email it to dmccormick@germanna.edu. 	<p>4-26</p>

<p>Week 15 4-27 to 5-3</p>	<ol style="list-style-type: none"> 1. Take Online Quiz on 8.3 & 8.4. 2. Read sections 8.5 & 8.6. 3. Print lecture notes and watch lectures and sample problems for 8.5 & 8.6. 4. Do online homework for 8.5 & 8.6. 5. Do written homework: pp. 488-489 #1-19(odd) pp. 497-498 #1-17(odd) 6. Do practice tests: pp. 439-440 #1-21(all) pp. 505-506 #1-30(all) 	<p>5-3</p>
<p>Week 16 5-4 to 5-10</p>	<p>Take Exam #3 on Chapters 7 & 8 in one of the Testing Centers. It is open notes and homework. Be sure to bring your photo ID, calculator, notes and homework with you. You should allow between two and two and a half hours to complete the exam. The exam must be completed by the close of the Testing Centers on 5/10/2010.</p>	<p>5-10</p>