

**MARION TECHNICAL COLLEGE
COURSE SYLLABUS**

COURSE NUMBER & NAME: MTH 1230 Quantitative Reasoning – Section 01
TERM/YEAR: Spring 2017
DAY/TIME: Tuesdays and Thursdays 3 to 4:20 PM
DEPARTMENT NAME: Arts & Sciences
DELIVERY METHOD: Traditional Blended Online
CREDIT HOURS: 3
PREREQUISITE(s): MTH1100 or MTH0910 or meet current placement guidelines
INSTRUCTOR(s): Tyler Maley
TELEPHONE: 740-386-4116 **EMAIL/OTHER CONTACT INFO:** maleyt@mtc.edu
BLDG/OFFICE NO: Bryson Hall 164F
OFFICE HOURS: Tuesdays and Thursdays 10 to 11 AM in Bryson Hall 164F
 Tuesdays and Thursdays 12 to 1:30 PM in Bryson Hall 191
IN CASE OF EMERGENCY: Dial 9-911 from any office or courtesy phone on-campus.

COURSE DESCRIPTION:

Quantitative reasoning allows students to explore mathematical topics encountered on a day-to-day basis. Students will learn to communicate with numbers effectively through real-life problems and situations. Topics include ratios, rates, percentages, units, descriptive statistics, linear and exponential modeling, personal finance, and probability.

TEXTBOOK: *Thinking Quantitatively Communicating with Numbers Update MyMathLab Access Card with Guided Worksheets -- Access Card Package* (ISBN 9780134539539)

AUTHOR(s): Eric Gaze

PUBLISHER: Pearson

YEAR/EDITION: 2016/ 1st edition

OTHER RESOURCES/ TEXTBOOK: Microsoft Excel Software

CALCULATOR USAGE: Students may use a scientific or graphing calculator.

MAJOR COURSE LEARNING OBJECTIVES

A student completing this course will be able to:

1. Solve real-world problems requiring the use and interpretation of ratios in a variety of contexts: Parts to whole comparisons, converting decimals to percentages and vice versa, quantifying risks by calculating and interpreting probabilities, rates of change, and margins of error.
2. Solve real-world problems relating to rates of change, distinguishing between and utilizing models that describe absolute change and relative change including growth and decay.
3. Compare and contrast statements which are proportional and those that are not by applying proportional reasoning appropriately to real-world situations such as scaling, dimensional analysis, and modeling.

4. Demonstrate numerical reasoning orally and/or by writing coherent statements and paragraphs.
5. Create and use tables, graphs, and equations to model real-world situations including: using variables to represent quantities or attributes, estimating solutions to real-world problems using equations with variables, identifying pattern behavior, identifying how changing parameters can affect results, and identifying limitations in proposed models.
6. Model financial applications such as credit card debt, installment savings, loans, etc. and calculate income taxes.
7. Create basic linear and exponential models for real-world problems and be able to choose which one is the most appropriate for a given context and describe the limitations of the proposed models.
8. Use basic logarithm properties to address questions (regarding time periods etc.) arising in real-world situations modeled exponentially.
9. Explain and critique models orally and/or by writing coherent statements and paragraphs.
10. Critically evaluate statistics being presented in the media, journals, and other publications including evaluating the research methodology, critiquing how the author(s) came to their conclusions, identifying sources of bias, and identifying confounding variables. Students will be able to critically evaluate sampling strategy, the impact of sample size, correlation versus causation, and any inferences made.
11. Summarize and interpret datasets with regard to shape, center, and spread. Use both graphical and numerical information. Use statistics appropriate to the shape. Students will be able to compare two or more datasets in light of this type of information.
12. Create visual representations of real-world data sets such as charts, tables, and graphs and be able to describe their strengths, limitations, and deceptiveness.
13. Calculate probabilities and conditional probabilities in real-world settings, and employ them to draw conclusions.
14. Justify decisions based on statistical (probabilistic) modeling orally and or by writing coherent statements and paragraphs.

Competencies from Ohio Department of Higher Education's TMM011 Quantitative Reasoning (December 21, 2015 version)

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| COURSE OUTLINE |
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| Week | Day | Date | Readings to Do Before Class | Lecture Topics |
|--------------|-------|------|-------------------------------------------------|----------------------------------------------------------------------------|
| 1 | Tues | 1/10 | | Introduction to class, What is QR?, Why is QR important? Intro to Excel |
| | Thurs | 1/12 | Introduction to Excel (3 sections) in eTextbook | Excel Review |
| 2 | Tues | 1/17 | Section 1.1 & 1.2 in eTextbook | 1.1/1.2 |
| | Thurs | 1/19 | Section 1.3 & 1.4 in eTextbook | 1.3/1.4 |
| 3 | Tues | 1/24 | Section 2.1 & 2.2 in eTextbook | 2.1/2.2 |
| | Thurs | 1/26 | Section 2.3 in eTextbook | 2.3 |
| 4 | Tues | 1/31 | Section 2.4 in eTextbook | 2.4 |
| | Thurs | 2/2 | Section 2.5 in eTextbook | 2.5 |
| 5 | Tues | 2/7 | Section 3.1 & 3.2 in eTextbook | 3.1/3.2 |
| | Thurs | 2/9 | Section 3.3 & 3.4 in eTextbook | 3.3/3.4 |
| 6 | Tues | 2/14 | Section 3.5 in eTextbook | 3.5 |
| | Thurs | 2/16 | Section 4.1 & 4.2 in eTextbook | 4.1/4.2 |
| 7 | Tues | 2/21 | Section 4.3 & 4.4 in eTextbook | 4.3/4.4 |
| | Thurs | 2/23 | Section 4.5 in eTextbook | 4.5 |
| 8 | Tues | 2/28 | | Midterm Exam Review |
| | Thurs | 3/2 | | Midterm Exam (Chapters 1 through 4) |
| 9 | Tues | 3/7 | Section 5.1 & 5.2 in eTextbook | 5.1/5.2 |
| | Thurs | 3/9 | Section 5.3 in eTextbook | 5.3 |
| 10 | Tues | 3/14 | Section 5.4 in eTextbook | 5.4 |
| | Thurs | 3/16 | Section 6.1 & 6.2 in eTextbook | 6.1/6.2 |
| Spring Break | Tues | 3/21 | | Spring Break |
| | Thurs | 3/23 | | Spring Break |
| 11 | Tues | 3/28 | Section 6.3 in eTextbook | 6.3 |
| | Thurs | 3/30 | Section 6.4 in eTextbook | 6.4 |
| 12 | Tues | 4/4 | Section 7.1 in eTextbook | 7.1 |
| | Thurs | 4/6 | Section 7.2 in eTextbook | 7.2 |

| Week | Day | Date | Readings to Do Before Class | Lecture Topics |
|------|-------|------|----------------------------------|-------------------------|
| 13 | Tues | 4/11 | Section 9.1 & 9.2 in eTextbook | 9.1/9.2 |
| | Thurs | 4/13 | Section 9.3 & 9.4 in eTextbook | 9.3/9.4 |
| 14 | Tues | 4/18 | Section 9.5 in eTextbook | 9.5 |
| | Thurs | 4/20 | Section 11.1 & 11.2 in eTextbook | 11.1/11.2 |
| 15 | Tues | 4/25 | Section 11.3 in eTextbook | 11.3 |
| | Thurs | 4/27 | | Review for Final Exam |
| 16 | Tues | 5/2 | | Finals Week Details TBA |
| | Thurs | 5/4 | | Finals Week Details TBA |

NOTE: This is a tentative schedule and subject to change at the discretion of the instructor.

If there is a need for reasonable accommodation or assistance because of mental, physical or learning disability, the student is requested to contact the instructor or if preferred, the Director of the Student Resource Center within the first two weeks of class.

AVAILABLE SUPPORT SERVICE:

A schedule of **Open Math Area** times and tutors will be provided at the start of the semester.

ADDITIONAL INFORMATION:

Eating and drinking is not permitted in any computer classroom or lab. All copyright laws will be observed. It is illegal to copy software.

EVALUATION & GRADING PROCEDURES

ATTENDANCE AND PARTICIPATION:

Consistent with College Policy #520 – Class Attendance and as stated on Page 8 of the **Student Handbook** (<http://www.mtc.edu/adultstudent/pdfs/StudHdbk.pdf>), the student is responsible for attending every class and for the material presented. If a student will not be attending a class, he or she is responsible to contact the instructor and to make sure all assignments are completed, prior to the scheduled class. Some departments have special provisions regarding missed work and absences. Please contact your instructor for additional information.

GRADING PROCEDURES:

Homework/Excel HW

- Homework is assigned and collected in the MyMathLab and our Canvas online classroom. There will be MyMathLab homework assigned for each section and weekly Excel questions assigned through Canvas.
- Use your book, notes, and calculator to complete the homework assignments.
- Homework due dates and times are listed on MyMathLab and Canvas.
 - It is the student's responsibility to check Canvas and MyMathLab regularly to ensure that no assignments are missed.
 - It is recommended that you log in to Canvas and MyMathLab on a **daily** basis and check whether you have any assignments due.
- No credit is given for assignments that are not completed by the due date/time. Any assignment items that are not completed will be given a 0.

Quizzes

- There will be two types of quizzes given in class: in-class quizzes and take-home quizzes.
- The in-class quiz will be “pop” quiz given once a week and will ensure that the students are keeping up with the required readings outside of class. These quizzes will be more skill-based in nature.
- The take-home quiz will be more challenging and reasoning based.

Projects

- There will be 1 project submitted online in Canvas.
- The project demonstrates an application and deeper meaning of the material learned.
- Students are expected to answer project questions carefully and thoughtfully. It is expected that students will use proper spelling and grammar. Credit will be deducted from your score for incoherent, sloppy answers.

Exams

- Exams will be given in class, on paper.
- Exams are timed.
 - 1 hour and 20 minutes will be provided for the midterm exam.
 - 1 hour and 50 minutes will be provided for the final exam.
- Students are permitted to use a calculator on the exams. No other materials are permitted.
- Students are allowed 1 attempt on an exam.
- The final exam will include a section focused on the last chapters covered in the course since the Midterm, and will also include a ‘comprehensive’ section that includes all material covered in the course.

GRADING SCALE:

| <u>% Points</u> | = | <u>Grade</u> |
|-----------------|---|--------------|
| 90-100 | = | A |
| 80-89 | = | B |
| 70-79 | = | C |
| 60-69 | = | D |
| 0-59 | = | F |

FINAL GRADE CRITERIA:

| <u>Assignments</u> | <u>%</u> |
|--------------------|------------|
| Homework | 15% |
| Excel HW | 15% |
| Quizzes | 15% |
| Projects | 10% |
| Midterm | 20% |
| <u>Final Exam</u> | <u>25%</u> |
| Total | 100% |

Note: The student's final grade will be rounded to the nearest whole number when calculating their letter grade.

MAKE-UP AND LATE POLICY:

There are NO make-ups for homework assignments, quizzes, or projects. These are submitted online and you are provided a large window of time in which to complete this work. There are no make-ups for the Midterms and Final Exam. If you miss an in-class exam due to an emergency situation, contact your instructor within 24 hours.

CREDIT HOUR DEFINITION

Credit Hour: Marion Technical College subscribes to the federal definition of the “credit hour” endorsed by the Higher Learning Commission that typically requires students to work on out-of-class assignments a *minimum* of twice the amount of time as the amount of formalized instruction.

Examples:

| Minimum Homework Hours Per Week for 3 Credit Course (16-Week Term) | |
|-----------------------------------------------------------------------|-------------------|
| Delivery Format | Homework Per Week |
| Traditional | 6 hours |
| Blended | 6.75 – 8.25 hours |
| Online | 9 hours |

| Minimum Homework Hours Per Week for 3 Credit Course (8-Week Term) | |
|----------------------------------------------------------------------|-------------------|
| Delivery Format | Homework Per Week |
| Traditional | 12 hours |
| Blended | 13.5 – 16.5 hours |
| Online | 18 hours |

COMMUNICATIONS DEVICE USAGE

All personal communication devices, including cell phones, must be set to vibrate or off while in classrooms, labs and participating in other class-related activities, unless the use of such a device is specified in the official course syllabus. Infractions will result in warnings and, eventually, grade-related penalties. Exceptions must be approved in writing by the instructor.

Additionally, all personal communication devices, including cell phones, must be deactivated (turned completely off) during exams, quizzes or other evaluations. Any student found to be using a communication device during an exam will be given a grade of zero for the exam.

ACADEMIC MISCONDUCT

Examples of dishonest or unacceptable scholarly practice at Marion Technical College include but are not limited to:

- A. Work copied verbatim from an original author; work copied practically verbatim with some words altered from the original without proper credit, i.e., reference citations, being given; a copyright explanation and more information is available at www.copyright.com.
- B. Copying answers [and/or electronic data] from another’s test paper, quizzes, notes, book, etc.
- C. Evidence of a deliberate and calculated plan to engage in a dishonest academic practice, such as gaining access to examinations prior to the time the exam was to be given or the extraction of information regarding an examination from other students.
- D. Falsification of clinical, practicum, or laboratory records.
- E. Plagiarism – using someone else’s ideas or words as your own. In an educational setting you can avoid plagiarism by providing appropriate source documentation. For more information on plagiarism, visit www.plagiarism.org.

Note: Please also see the Academic Misconduct section in the **Student Handbook** on the college website at <http://www.mtc.edu/campusresources/pdfs/StudHdbk.pdf>

FINANCIAL AID ATTENDANCE REPORTING

Marion Technical College is required by federal law to verify the enrollment of students who participate in Federal Title IV student aid programs (Federal grants and student loans) and/or who receive educational benefits through the Department of Veterans Affairs. It is the responsibility of the College to identify students who do not commence attendance or who stop attendance in any course for which they are registered and paid. Non-attendance is reported by each instructor, and can result in a student being administratively withdrawn from the class section. Please contact the Financial Aid Office for information regarding the impact of course withdrawals on financial aid eligibility.

COLLEGE GRADUATE COMPETENCIES

Assessment begins with a clear understanding of what students are expected to learn. College Graduate Competencies (CGC's) are common to all areas of study and apply to all students. The individual sub-skills defined in each CGC are taught, reinforced, and/or periodically measured in various courses throughout the curriculum. The six CGC areas and statements are:

1. **Communications:** Communicate effectively both written and orally.
2. **Mathematics:** Solve problems using mathematics.
3. **Problem-Solving:** Solve problems through analysis, creativity, and synthesis to make informed decisions.
4. **Professionalism:** Demonstrate good work habits, effective interpersonal and teamwork skills, and a high level of professionalism.
5. **Technology:** Use technology tools efficiently and effectively to perform personal and professional tasks.
6. **Diversity:** Exhibit respect and sensitivity for individual and institutional differences.

ADDENDUM(s)

1. Student Resource Center Support Services and Tutoring addendum information is available on the college website at the following link:
http://www.mtc.edu/mymtc/pdfs/Syllabus_New%20Addendum.pdf