

HOWARD COLLEGE

Math 1332

Contemporary Mathematics I (Quantitative Reasoning)

Fall 2026

Instructor: Heather Gohl

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Prerequisites: A score of 350 on the TSI Assessment.

Class Meeting Dates/Days/Times: MTWRF

Tutorials: Tuesday after school, Wednesday before school, Monday, Thursday, and Friday during Bobcat block, and any other times by request.

I. Course Description

Topics may include introductory treatments of sets, logic, number systems, number theory, relations, functions, probability and statistics. Appropriate applications are included.

Intended for Non STEM (Science, Technology, Engineering, and Mathematics) majors. Topics include introductory treatments of sets and logic, financial mathematics, probability and statistics with appropriate applications. Number sense, proportional reasoning, estimation, technology, and communication should be embedded throughout the course. Additional topics may be covered.

II. Instructional Materials: Pencil, colored pencils/pens, paper, binder, Chromebook

Required Text: *Excursions in Modern Mathematics 10th ed.* by Peter Tannenbaum,

Prentice Hall. ISBN-13: 9780137417438

III. Course Requirements

There will be a total of 8 exams each over 2-3 chapters. Also a final exam at the end over all the material. Daily assignments and/or quizzes will also be given for practice.

IV. Program Outcomes

- *Critical Thinking Skills - To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.*
- *Communication Skills - To include effective development, interpretation, and expression of ideas through written, oral, and visual communication.*
- *Empirical and Quantitative Skills - To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.*

V. Student Learning Outcomes

- *Apply the language and notation of sets.*
- *Determine the validity of an argument or statement and provide mathematical evidence.*
- *Solve problems in mathematics of finance.*
- *Demonstrate fundamental probability/counting techniques and apply those techniques to solve problems.*
- *Interpret and analyze various representations of data.*
- *Demonstrate the ability to choose and analyze mathematical models to solve problems from real-world settings, including, but not limited to, personal finance, health literacy, and civic engagement.*

VI. Attendance Policy/Makeup Work

You are required by the state to be present 90% of the time. Any time you are absent you are still responsible for the notes and assignments. The completed notes will be available to you and assignments will always post online. If you miss an exam you are responsible for setting up a time during tutorials to come make up the exam.

VII. Class Assessment/Grading

70% of your grade will come from 4 exams each nine weeks (One will be dropped at the end of the nine weeks). 30% will come from the homework assignments (Two minor grades will be dropped at the end of the nine weeks). You will be using MyMathlab to complete all of your homework assignments.

VIII. Course Content and Rigor: College-level courses may include controversial, sensitive, and/or adult material. Students are expected to have the readiness for college-level rigor and content.

IX. Confidentiality in Courses: Any personal information shared by students in college-level courses, either written or verbal, face-to-face or online, is not considered confidential nor does it fall under FERPA guidelines. Students should refrain from sharing information they do not wish to make public knowledge. The instructor reserves

the right to report pertinent information to the appropriate administration if s/he feels that the student may be a danger to him/herself or others.

X. **ADA Statement:** Any student who requires special accommodations due to a documented disability under the provisions of the Americans with Disabilities Act is encouraged to contact the Site Coordinator prior to classes beginning but no later than the end of the first two weeks of class.

XI. Course Calendar

1 The Mathematics of Elections: *The Basic Elements of an Election, The Plurality*

Method, The Borda Count Method, The Plurality-with-Elimination Method, The Method of Pairwise Comparisons, Fairness Criteria and Arrow's Impossibility Theorem

2 The Mathematics of Power: *An Introduction to Weighted Voting, Banzhaf Power, Shapley-Shubik Power, Subsets and Permutations*

3 The Mathematics of Sharing: *Fair-Division Games, The Divider-Chooser Method, The Lone-Divider Method, The Lone-Chooser Method, The Method of Sealed Bids, The Method of Markers*

4 The Mathematics of Apportionment: *Apportionment Problems and Apportionment Methods, Hamilton's Method, Jefferson's Method, Adams's and Webster's Methods, The Huntington-Hill Method, The Quota Rule and Apportionment Paradoxes*

5 The Mathematics of Getting Around: *Street-Routing Problems, An Introduction to Graphs, Euler's Theorems and Fleury's Algorithm, Eulerizing and Semi-Eulerizing Graphs*

6 The Mathematics of Touring: *What Is a Traveling Salesman Problem?, Hamilton Paths and Circuits, The Brute-Force Algorithm, The Nearest-Neighbor and Repetitive Nearest-Neighbor Algorithms, The Cheapest-Link Algorithm*

7 The Mathematics of Networks: Networks and Trees, Spanning Trees, MSTs, and MaxSTs, Kruskal's Algorithm

8 The Mathematics of Scheduling: An Introduction to Scheduling, Directed Graphs, Priority-List Scheduling, The Decreasing-Time Algorithm, Critical Paths and the Critical-Path Algorithm

9 Population Growth Models: Sequences and Population Sequences, The Linear Growth Model, The Exponential Growth Model, The Logistic Growth Model

10 Financial Mathematics: Percentages, Simple Interest, Compound Interest, Retirement Savings, Consumer Debt

11 The Mathematics of Symmetry: Rigid Motions, Reflections, Rotations, Translations, Glide Reflections, Symmetries and Symmetry Types, Patterns

12 Fractal Geometry: The Koch Snowflake and Self-Similarity, The Sierpinski Gasket and the Chaos Game, The Twisted Sierpinski Gasket, The Mandelbrot Set

13 Fibonacci Numbers and the Golden Ratio: Fibonacci Numbers, The Golden Ratio, Gnomons, Spiral Growth in Nature

14 Censuses, Surveys, Polls, and Studies: Enumeration, Measurement, Cause and Effect

15 Graphs, Charts, and Numbers: Graphs and Charts, Means, Medians, and Percentiles, Ranges and Standard Deviations

16 Probabilities, Odds, and Expectations: Sample Spaces and Events, The Multiplication Rule, Permutations, and Combinations, Probabilities and Odds, Expectations, Measuring Risk

17 The Mathematics of Normality: Approximately Normal Data Sets, Normal Curves and Normal Distributions, Modeling Approximately Normal Distributions, Normality in Random Events

XII. **Smoking and eCigarettes:** Smoking or other use of tobacco products and use of electronic cigarette devices is prohibited in all Howard County Junior College district facilities and vehicles.

XIII. **Additional Information:**

Cell phones, earbuds, and smart watches are prohibited during class. You will need to bring your Chromebook charged every day to class. No other devices will be allowed.

Please use Google form on Schoology or scan the QR code to the right to acknowledge that you are aware and agree to all content on this syllabus.



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