



Course Number and Title: MAT 152 Quantitative Reasoning

Campus Location:

Georgetown, Dover, Stanton, Wilmington

Effective Date:

2022-51

Prerequisite:

MAT 010 or MAT 052 or concurrent

Co-Requisites:

None

Course Credits and Hours:

3.00 credits

3.00 lecture hours/week

0.00 lab hours/week

Course Description:

Quantitative Reasoning serves students who are focused on developing quantitative literacy skills that will be meaningful for their professional, civic, and personal lives. Such reasoning is a habit of mind, seeking pattern and order when faced with unfamiliar contexts. In this course, an emphasis is placed on the need for data to make good decisions and an understanding of the dangers inherent in basing decisions on anecdotal evidence rather than data. Students will focus on number, ratio, and proportional reasoning; modeling; probability; statistics.

Required Text(s):

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:

Scientific Calculator

Schedule Type:

Classroom Course

Video Conferencing

Web Conferencing

Hybrid Course

Online Course

Hyflex

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Develop conclusions and make decisions based on analysis and critique of quantitative information using proportional reasoning. (CCC 2, 6)
2. Evaluate mathematical models, including situations where underlying assumptions must be recognized and/or where reasonable assumptions must be made for the model. (CCC 2, 6)
3. Assess probabilistic reasoning in order to draw conclusions, to make decisions, and to evaluate outcomes of decisions. (CCC 2, 6)
4. Defend the rationale of decisions based on understanding, analysis, and critique of statistical information and summaries. (CCC 2, 6)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Develop conclusions and make decisions based on analysis and critique of quantitative information using proportional reasoning.
 1. Solve real-life problems requiring interpretation of ratios in a variety of contexts.
 2. Solve real-life problems relating to rates of change, distinguishing between and utilizing models that describe absolute change and relative change including growth and decay.
 3. Distinguish between proportional and nonproportional situations and, when appropriate, apply proportional reasoning such as with scaling, dimensional analysis and modeling.
2. Evaluate mathematical models, including situations where underlying assumptions must be recognized and/or where reasonable assumptions must be made for the model.
 1. Analyze and critique mathematical models and be able to describe their limitations.
 2. Use models, including models created with spreadsheets or other tools, to estimate solutions to contextual questions, identify patterns, and identify how changing parameters affect the results.
 3. Choose and create models for bivariate data sets, and use the models to answer questions and draw conclusions or make decisions.
3. Assess probabilistic reasoning in order to draw conclusions, to make decisions, and to evaluate outcomes of decisions
 1. Analyze claims based on empirical, theoretical, and subjective probabilities.
 2. Use data displays and models to determine probabilities (including conditional probabilities) and use these probabilities to make informed decisions.
4. Defend the rationale of decisions based on understanding, analysis, and critique of statistical information and summaries.
 1. Use statistical information from studies, surveys, and polls (including when reported in condensed form or as summary statistics) to make informed decisions.
 2. Create visual displays of real-world data using charts, tables and graphs and describe their strengths and limitations.
 3. Summarize, represent, and interpret data sets on a single count or measurable variable.
 4. Use properties of distributions to analyze data and answer questions.

Evaluation Criteria/Policies:

The grade will be determined using the Delaware Tech grading system:

90	-	100	=	A
80	-	89	=	B
70	-	79	=	C
0	-	69	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Final Course Grade:

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Summative Assessments	50%
Activities/Quizzes	20%
Mini-Projects	15%
Homework	10%
Notebook Check/Discussion	5%
TOTAL	100%

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

None

Disabilities Support Statement:

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.