Course Subject, Number and Title
MATH 141 – Quantitative Reasoning and Problem Solving

Credits
3

Course Designations and Attributes
Gen Ed - Quantitative Reasoning Part A
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S

Meeting Time and Location
TTh: 2:30-3:45 in 6104 Social Sciences

Instructional Mode
Face-to-face

Specify how Credit Hours are met by the Course
This class meets for two 75-minute class periods each week over the fall/spring semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc) for about 3 hours out of classroom for every class period. The syllabus includes more information about meeting times and expectations for student work.

INSTRUCTORS AND TEACHING ASSISTANTS
Instructor Title and Name
Dr. Siddhesh Wagh

Instructor Availability
Tue 4:00-5:30, Thu 1:00-2:00 in Van Vleek B127

Instructor Email/Preferred Contact
swagh@math.wisc.edu

OFFICIAL COURSE DESCRIPTION
Official Course Description
Quantitative reasoning for students who need to satisfy part A of the Quantitative Reasoning requirement and prepare for QR-B courses, but do not want to continue in the calculus sequence. Enroll Info: None

Requisites
MATH 96 or placement into MATH 141. MATH 118 does not fulfill the requisite

LEARNING OUTCOMES
Course Learning Outcomes
- The student is able to determine the nature of the algorithmic solution to a graph based urban planning or business problem.
- She then can adapt the real world problem to a graph problem and apply the correct algorithmic solution.
- For example the student can apply the list processing algorithm and understands that some conflicts can be solved by graph coloring
- The student can solve mixture problems, graph convex regions in the plane, and optimize over corner points
- She can plan for her financial future by calculating the accumulations in saving accounts, monthly savings plans, understands stock, bond and mutual fund tables and can compute for example the current yield of a bond.
- She can compute the real growth of her investments,
- She can do financial planning by computing the future value, and the monthly contributions to a savings plan.
- The student understands about fixed and adjustable rate loans, can compute the total payment for a fixed rate loan.
- She can use a spreadsheet to compute accumulations for savings accounts, savings plans, repaying mortgages and budgets
- She can compute basic income taxes, FICA, and capital gains taxes, as well as the change in take home pay after using pretax retirement vehicles
- The student can describe the spread of discrete and normal distributions
- She can choose simple random sample and can critique bad sampling methods,
- She can describe compute the mean and the standard deviation of the distribution and the margin of error for different confidence intervals
- She can compute the correlation and least square regression line for a set of data points in the plane.
- She can compute the probability of an independent event happening at least once in n tries.
- She can compute the expected winnings in participating in a lottery
- She can compute the probability of getting certain Poker hands
- The student learns that different voting methods will give different outcomes
- She can assess the fairness of voting outcomes by testing against the Irrelevant Alternatives Criterion
- The student can share assets among two or three players and assess the fairness of the division
- She can compute the individual portions for the Lone Divider Method and can assess whether the recipients feel envy

GRADING
• Quizzes - 20%
• 2 Book Reports – 10%
• Participation – 5%
• Midterm 1 - 20%
• Midterm 2 - 20%
• Final - 25%

REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS
• COMAP: For all Practical Purposes
• Canvas
• Two other books chosen by the student for the book reports. If it is not from the pre-approved list on the course webpage, it must be pre-approved by the instructor to receive credit.

EXAMS, QUIZZES, PAPERS & OTHER MAJOR GRADED WORK
• Midterm 1 on 10/3/19 in class
• Midterm 2 on 11/7/19 in class
• Cumulative Final exam on 12/14/2019 at 2:45PM - 4:45PM in room TBA.

HOMEWORK & OTHER ASSIGNMENTS
• Homeworks will be posted on the course canvas page.
• Homeworks will not be turned in, but the weekly quiz will be on problems directly from the homework. As the quiz is timed, you must do all of the homework problems before beginning the quiz.
• Every student will be expected to submit and present in class on some topic of their choice which involves statistics.

RULES, RIGHTS & RESPONSIBILITIES
• To see the Guide’s Rules, Rights and Responsibilities information, refer to http://guide.wisc.edu/undergraduate/#rulesrightsandresponsibilitiestext.

ACADEMIC INTEGRITY
By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison’s community of scholars in which everyone’s academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be
forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

**ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES**

McBurney Disability Resource Center syllabus statement: “The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.” [http://mcburney.wisc.edu/facstaff/other/faculty/syllabus.php](http://mcburney.wisc.edu/facstaff/other/faculty/syllabus.php)

**DIVERSITY & INCLUSION**

Institutional statement on diversity: “Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.” [https://diversity.wisc.edu/](https://diversity.wisc.edu/)