Course Syllabus for INQ 241C (Snare 2009)
Mathematical Reasoning – Mathematics of Government

Instructor Information

Name: Mr. Bryan Snare
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Office: Trexler, 270-F
Phone Number: (540) 375-4906

Class Information

Meeting Time: MWF (2:20 – 3:20 p.m.)
Meeting Location: Trexler, Room 363
Office Hours: MWF(9:00 -10:00 a.m.), TTH(10:00 – 11:00 a.m.), and by appointment

Final Exam: Monday, April 26th 2:00 – 5:00 p.m.

Required Books:
Excursions in Modern Mathematics(6th ed.), by Tannenbaum

Gaming the Vote, by Poundstone

A writer’s reference, by Hacker

Intended Learning Outcomes:

1) Students will be able to compare and contrast various voting methods, assess their fairness, and compose an argument in favor of a particular voting method.

2) Students will be able to apportion the seats of a legislative body, identify paradoxical situations that have occurred, or could occur, in the apportionment of the U.S. House of Representatives.

3) Students will be able to analyze the role of apportionment throughout American history, investigating various outcomes in past elections that alternative apportionment methods would have produced.

4) Students will be able to describe a routing problem mathematically, determine how to choose an efficient route, and predict possible problems that must be considered.

Attendance Policy:
Visit http://web.roanoke.edu/Documents/catalog/RoanokeCatalog0910.pdf (p. 31) for Roanoke College’s attendance policy. I will take attendance each class period. Arriving after attendance is taken or leaving before the class period is over (without excuse or dismissal) will be considered an absence for the class period. Notify me as soon as possible if you will not be attending class. It is your responsibility to get all notes and assignments that you miss. If you have 6 absences, you will be dropped from the course.
**Academic Integrity:**
All students are expected to read and abide by all policies outlined in the *Academic Integrity at Roanoke College* brochure for 2009-2010. See [http://web.roanoke.edu/Documents/catalog/RoanokeCatalog0910.pdf](http://web.roanoke.edu/Documents/catalog/RoanokeCatalog0910.pdf) (p. 30) for additional information. All tests will be closed books, closed notes. If you have questions about course assignments, I would be happy to discuss them with you. However, you are not to discuss projects/assignments with classmates, unless otherwise stated.

**Software/Technology:**
- Although a basic handheld calculator is sufficient for this class, you are permitted to use a graphing calculator. Please note that you are not permitted to share calculators during tests.
- **Cell phones must be turned off before class begins.** In the event that your cell phone rings during class because you forgot to turn it off, please silence it as quickly as possible. It is **not acceptable** to use your cell phone for any purpose during class. Note that any purpose includes text messaging!
- Additional items not permitted for use in class include (but are not limited to): PalmPilots, Pocket PCs, Blackberrys, and headphones.

**Teaching Method:**
This course will require a lot of class participation. We will have daily class-discussions. You need to be willing to offer answers to questions that may be asked. I expect you to respect your classmate’s opinions and allow them a turn to answer questions. I will lecture most days. As often as possible, I will provide a handout/worksheet in an effort to make the class more interactive.

**Roanoke College’s policy on working with students with disabilities:**
Reasonable accommodations will be made for students with verifiable disabilities. For additional information, see [http://web.roanoke.edu/Documents/catalog/RoanokeCatalog0910.pdf](http://web.roanoke.edu/Documents/catalog/RoanokeCatalog0910.pdf) (p.8)

**The Writing Center @ Roanoke College** is located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library. Student writers working in any field of study at any level of competence meet with trained peer writing tutors in informal, one-on-one sessions. Writers may meet with tutors at any point in the writing process, from brainstorming to drafting to editing. The Writing Center is open Sunday through Thursday from 4 to 9 pm. Simply stop in or schedule an appointment ahead of time by going to MyRoanoke: Academics and looking for the Writing Center Schedule link. Questions? Email us at writingcenter@roanoke.edu or call 375-4949. The Writing Center also sponsors writing workshops, grammar crammers, and creative writing playshops. The Spring 2010 schedule will be posted on our website at [www.roanoke.edu/writingcenter](http://www.roanoke.edu/writingcenter).

**Subject Tutoring,** located in the Goode-Pasfield Center for Learning and Teaching in Fintel Library, is available in various academic subjects such as Business & Economics, Foreign Languages, Lab Sciences, Math, CPSC, Statistics, and Social Sciences. All subject tutors are recommended by faculty members and receive training before working with students. Subject Tutoring is open Sunday through Thursday. Our hours vary by subject, so be sure to visit our homepage for a complete list of tutorial hours: [www.roanoke.edu/tutoring](http://www.roanoke.edu/tutoring). Questions? Call us at 375-4949.
The Office of Special Services: The Office of Special Services provides reasonable accommodations to students with identified disabilities. Although Roanoke College does not have special programs for students with disabilities; reasonable accommodations are provided based on the diagnosed disability and the recommendations of the professional evaluator. In order to be considered for special services, students must identify themselves to the Office of Special Services. Students are required to provide specific current documentation of their disability. Reasonable accommodations may include but are not limited to the following: extended time for tests and examinations, testing in a semi-private testing area, proctoring of examinations, use of interpreters, assistive technology, audio recording of lectures, and/or student notetakers. For additional information please contact Pam Vickers, Special Services Coordinator, at 540-375-2247 or email vickers@roanoke.edu.

Homework: Suggested problems for each section of material will be given on a daily basis. For maximum benefit, you should attempt these problems the same evening corresponding material is covered in class. In-class problems often will be similar to or the same as suggested homework problems.

Projects:

Project #1 – defense of favorite voting system. For this assignment, you will need to pick your favorite voting system. You will write a 2 page paper describing why it is the best system. You should address the fairness criteria and difficulty of the system in your paper. You will trade papers with a peer. The peer will write an informal 1 page paper raising deficiencies in your argument. You will make corrections to your original paper in an effort to strengthen your argument. All parts should be turned in to your instructor.

Project #2 – George W. Bush defeated Al Gore by a margin of four electoral votes in the 2000 presidential election. Would things have turned out differently if the House of Representatives had been apportioned under a different method? In this project, you are asked to analyze how the election would have turned out using all apportionment methods discussed in the class. You should summarize your report with a 2-3 page paper including the apportionment for each method.

Project #3 – lighting Alaska. You will be given 6 different cities in Alaska and a location of a power source. You will find the most efficient way to connect all of these cities to the power source. You will need to find the distance between each of the cities. You will write a 2-3 page report, including the optimal way to connect. In your paper, you should include unknowns. What could go wrong with your solution?
Determination of Final Grades:
MCSP Conversation Series (1%)
The Mathematics, Computer Science and Physics department offers a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions will engage the community to think about ongoing research, novel applications and other issues that face these disciplines. As a member of this class, you are invited to attend all meetings. You are required to attend one meeting and submit to your instructor a correctly completed Conversation Series Form (available to download from Blackboard). For full credit, you must submit the correctly completed form no later than one week after the date of the talk. In addition, a detailed summary of the talk will be required for a perfect score. For a listing of dates, times, speakers, and topics, visit http://cs.roanoke.edu/MCSPSeries/ (updated throughout the semester).

In-class Problems (7%)
During many class periods, you will be required to complete at least one problem based on material presented in class and/or daily reading notes. You will be permitted to use your notes. Credit will not be awarded for late submissions to in-class problems; however, your two lowest in-class problem grades will be dropped.

Projects (30%)
Three projects will be assigned during the semester. You will have at least one week to complete each. Projects will not be accepted late.

Tests (42% - 3 tests worth 14% each)
Dates: The tentative date of your tests will be provided through your tentative schedule. Any changes will be announced in class at least one week prior to the change.

If you miss or will be missing a test for reasons beyond your control (college sports team event, sickness, family tragedy, etc.), notify your instructor as soon as possible. The make-up test may be an oral exam.

If you have no more than 2 absences (for any reason) at the end of the semester, your lowest test grade will count 8% and the other two will count 18% each.

Cumulative Final Exam (20%)
Letter Grade

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<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
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<td>Grade</td>
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<td>D+</td>
<td>D</td>
<td>D-</td>
<td>Below 60</td>
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