INSTRUCTORS	Maggie Rahmoeller	Jan Minton
	Trexler Hall 270J	Trexler Hall 461
	Email: rahmoeller@roanoke.edu	*Email:* jminton@roanoke.edu

OFFICE HOURS	Aug 31 – Oct 14	Oct 24 – Dec 9
	Mondays: 3:30PM-5PM	Mondays: 3:30PM – 4:30PM
	Wednesdays: 3:30PM-5PM	Wednesdays: 3:30PM – 4:30PM
	Thursdays: 10:30AM-12PM	Tuesdays & Thursdays: 3:00PM – 5:00PM

CLASS MEETINGS   Mondays, Wednesdays, Fridays: 9:40-10:40AM in Olin 231

COURSE INFORMATION

This course provides a continuation of the statistics knowledge gained in INQ 240, focused for students intending to pursue a degree in the biological sciences, along with an introduction to calculus and mathematical modeling. Students will learn how to apply appropriate models and statistical tests to a variety of situations and will learn how to research other modes and tests out there to apply to their own research in the future. A focus of the course is using real data from the past work done by the biology faculty and students and on reading and understanding the models and statistics found in biological journals.

INTENDED LEARNING OUTCOMES

By the end of this course, successful students will be able to:

- Given a research question or data set, choose an appropriate statistical test to use.
- Research, find, and utilize additional statistical tests outside of those found in INQ 240 or this course
- Understand the concepts of a derivative and its importance in mathematical modeling.
- Understand the terms that appear in mathematical models relevant to biology and apply those models in appropriate ways
- Understand the mathematics and statistics present in biology research papers.

REQUIRED MATERIALS

Textbook 1: *Mathematics for the Life Sciences*; Bodine, Lenhart, and Gross
Textbook 2: *Handbook of Biological Statistics*; McDonald (PDF- free copy)
          http://www.biostathandbook.com/
Supplemental Handouts provided by professors
Calculator: TI-83 Calculator, or similar (with graphing capabilities)

COURSE GRADES

The following table lists the weights for the various forms of assessment for this class.

Participation	5%
Labs	5%
Homework	10%
Article Reflections	10%
Project	15%
Friday Activities	15%
Tests	40%

A grade scale will be determined after final grades are computed, but will be no worse than the scale given below.

		B+	87-89	C+	77-79	D+	67-69		
A	93-100	B	83-86	C	73-76	D	63-66	F	0-59
A-	90-92	B-	80-82	C-	70-72	D-	60-62		

PARTICIPATION AND MAKE-UP WORK

Students are expected to attend every class. Any absence that is not discussed with the instructor prior to the missed class is considered unexcused. Unexcused absences may result in the lowering of the final grade (for example, a B to a B-). When absent, excused or unexcused, you are responsible for all material covered in class. **You will not be allowed to make up any work missed due to an unexcused absence.**

HOMEWORK

Homework will be assigned regularly in this class (virtually every class period) and may take several forms. Typically, it will be due at the start of the class period immediately following the assigning of the homework. Homework will be graded partly on effort and partly on correctness. Late homework is not accepted. If you miss class, get a friend to turn in your homework for you.

PROJECTS

There will be one semester-long project that will be divided into two parts. The first part will assess your understanding of experimental design and statistical analysis. The second part will assess your understanding of modeling a scenario based on assumptions about scientific principles that underlie the phenomena being modeled.

FRIDAY ACTIVITIES

During the first half of the semester, every Friday will be held in a lab and will include a case study. The goal of these case studies is to give you the opportunity to get hands-on experience with real-world data and with different methods of statistical analyses discussed in class.

RESEARCH ARTICLE REFLECTIONS

You will read research articles that use topics discussed in class, and answer specific reflective questions on the article. The aim of these assignments is to allow you to see how researchers utilize the methods discussed in class to learn about the world around them.

TESTS

There will be 3 tests for the first half of the semester. The first and third test will be mostly a group test; however, there will be a short individual part of the test. The second test will be entirely individual. During the second half of the semester there will be 3 standard individual tests.

FINAL EXAM

The final exam for this class is held during the scheduled time for the final exam for Block 2, i.e. **Wednesday, Dec 14 from 8:30-11:30AM.** This time will be used for the term project presentations and discussion.

MCSP
CONVERSATIONS

The MCSP 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 our discipline. You are invited to be involved with all of these meetings; however, participation in **at least one** of these sessions is mandatory. After attending, students will submit a one-page paper to Inquire reflecting on the discussion. This should **NOT** be a regurgitation of the content, but rather a personal contemplation of the experience. These reflections will be part of your participation grade.

STUDY ROOM

The MCSP Study Room, Trexler 271, is a great place for you and your friends to meet in order to work on homework together or prepare for tests. It is open virtually 24 hours a day, 7 days a week (very occasionally there are meetings in that room). Your student ID card should grant you access to Trexler Hall at any time of day if the doors happen to be locked (use the card access point located by the first floor entrance facing the parking lot). Take advantage of this area and time, especially during weekdays when other faculty who are teaching calculus and statistics are around!

COMMUNITY

Please feel free to become an active member of our department's community. Each of the three disciplines in our department has a student club and you should join! The Roanoke College Student Chapter of the Mathematical Association of America (or "Math Club" for short) holds meetings every other week, plays and learns about games and hosts evening events.

In addition, our department offers MCSP Tea every week on Wednesdays from 2:30 PM to 3:30 PM; come by Trexler 271 to talk to and meet other students as well as chat with the MCSP faculty members in a casual setting!

ACADEMIC
INTEGRITY

Students are expected to adhere to the Academic Integrity policies of Roanoke College. All work submitted for a grade is to be your own work! No electronic devices other than your graphing calculator can be used during any class or testing period (this includes cell phones; please silence or turn them off before class). Note that looking at or using your cell phone during a test or quiz is considered a violation of Academic Integrity regardless of your purpose or intent in doing so.