BIOL 350: Foundations of Biostatistics

Syllabus

Spring 2022

This is an in person course that meets
Tuesdays and Thursdays, 11:30 AM – 12:45 PM in ISC 115

What is this course about?

Generally speaking, biostatistics is the application of statistics to the life sciences. In this class, you will use the biological knowledge that you have gained from other classes and experiences to identify and understand patterns in biological data. We will be working in the free R programming environment, a reliable and powerful tool for statistical computing and visualization, because it is used in many scientific disciplines. This course is also about learning and practicing skills for today's careers. Expect an opportunity to challenge yourself and be rewarded for your growth. You'll also be practicing the 4Cs: communication, collaboration, critical thinking, and creativity.

Land Acknowledgment

Acknowledging the original occupants of the land upon which SUNY Geneseo resides is essential to our understanding of our obligation to analyze and interpret data in a way that benefits all people. Furthermore, I share this land acknowledgement as a reminder to honor and express gratitude to those who are the traditional stewards of the land. The location of our classroom is on the homeland of the Seneca Nation of Indians and Tonawanda Seneca Nation. We will also be analyzing data collected from places where these original occupants and other Indigenous groups have lived. If you would like to get started now, check out the Native Land app and/or websites such as sni.org to learn more about the community of more than 7,000 enrolled Indigenous Peoples.

Who will be helping you to learn?

Instructor: Dr. Suann Yang
Pronouns: She/her/hers

Office: ISC 256

Email: yang@geneseo.edu

Drop-in hours (no appointment necessary): Mon 11:30 AM-12:20 PM (in person) and Fri 11:30 AM-12:20 PM(Zoom)

By Appointment hours (Zoom only): Thursdays 1:30-2:20 PM, email for other times

Teaching assistants and quiz proctors: Julia Chapin, Anna Lares, Grace Maley, Xander Michaels, and Hannah Smith

We will schedule regular drop-in hours after the first week of classes

What will you learn?

Upon completion of this course, successful students will be able to:

1. Explain how and why biologists use statistics
2. Apply the principles of experimental design to study biological phenomena in an ethical manner
3. Evaluate the design of research experiments, relate an experiment's design to the statistical analyses that can be conducted on the data collected, and identify any limitations on generalizability
4. Conduct the proper statistical analysis of different types of biological data
5. Use computers to do statistical analysis, particularly using the R programming language
6. Ensure reproducibility of data analyses by applying the principles of modern data management
7. Interpret, present, and communicate the results of statistical tests and analyses of data using the conventions of the biology discipline
8. Demonstrate competency in fundamental science skills, such as solving problems and working in teams

The **learning outcomes** of this course, listed above, support your progress toward the Geneseo Learning Outcomes for a Baccalaureate Education (GLOBE), particularly *Broad and Specialized Knowledge* and *Intellectual and Practical Skills* (critical thinking; communication; quantitative, computational, and symbolic reasoning; informational and digital literacy; creativity and creative thinking; leadership and collaboration; diversity and pluralism; and global awareness and engagement).

This course also helps you achieve these learning outcomes of the biology major:

- Students will have the knowledge base and intellectual (conceptual) framework to use reasoning and problem-solving skills to; (1) read critically, (2) evaluate support for competing hypotheses, and (3) critique experimental design.

- Students will have the laboratory and inquiry skills and technical ability to formulate hypotheses, design and run experiments using instruments to test their hypotheses, and analyze and interpret the results. They will be able to build on earlier work to design further experiments.
- Students will be able to communicate biological ideas from literature or their own laboratory investigations to audiences of biologists and non-biologists in a variety of formats including written reports, poster and oral presentations.
- Students will recognize the importance of scientific integrity and ethical research and applications of biology to science policy. They will be able to work independently and in teams for life-long learning.
- Students will be able to demonstrate a broad and diverse background in biology and related sciences and a strong foundation for graduate and professional programs of study or employment.

What are the required materials for this class?

1. **Laptop** and reliable **Internet** access
2. Daily access to our course **Canvas** site. This is the starting point for everything you need to do in the course, and the primary mode of communication used by the instructional team to send you regular announcements and updates.
3. This **software** installed on your laptop
   a. R software (free download, https://cran.r-project.org/)
   b. RStudio (free download, https://www.rstudio.com/products/RStudio/#Desktop)
   c. Microsoft Excel (free to all Geneseo students, https://wiki.geneseo.edu/display/cit/Software+at+Geneseo)
4. **Required textbook**: *Introduction to Statistics for the Life and Biomedical Sciences*, 1st ed. by Julie Vu, Dave Harrington, and OpenIntro. Free PDFs of each chapter can be found on our Canvas course page. A physical copy can be ordered online through Amazon or other retailers for about $20.
5. **Optional additional textbook (not required)**: *A Primer in Biological Data Analysis and Visualization Using R* by Gregg Hartvigsen. You may have this already from another course, such as BIOL 116 or 203.

How will you know that you are learning?

Learning to do statistics requires just that - *doing statistics*. To accomplish this, I have designed the course to be a combination of self-paced work (such as readings and

assignments) along with interactive lectures and group activities during class sessions (such as paired programming exercises). In general, after exploring the topics at the beginning of each class together, be ready to get started on the code tutorial and concept check for the remainder of each class period. A problem set or other applied assignment will follow to wrap up each topic. Work that is started during the class period should be finished as homework unless otherwise indicated. Every three weeks, we'll test your skills in R with live coding quizzes.

You will receive feedback on your progress in three major categories: **assignments, quizzes, and a collaborative project.** All of these activities are opportunities for you to learn new concepts, and apply and integrate your understanding.

Grading scheme

Item	Percent	Notes
Assignments	60	Tutorials, concept checks, problem sets, etc.
Live coding quizzes	20	4 total, all require the use of R
Collaborative project	20	Includes deadlines throughout semester & peer evaluation
Statistics in the Media		Regular extra credit opportunity (limit of 7)

Components of your grade

1. **Assignments:** To help you master each topic, I will assign readings, code tutorials, problem sets, and other activities *every week*. These will be worth a range of point values (0 to ~20), and the proportion of the points you earn out of the total (~200) will be used to calculate your overall assignment score.

2. **Live coding quizzes:** Every three weeks, you sign up for a 10 minute block of time for an online, live coding quiz (see exact dates in schedule; all are Thursdays during class time). The quizzes will be administered via Zoom, so you will need a reliable internet connection and a quiet place to work during your block of time. During your quiz time, you will be assigned a small set of coding tasks. To take the quiz, you will screen share with your quiz proctor (instructor or TA), and we will follow along as you complete the coding tasks. Working with R under a time constraint is naturally stressful for many students. To help you prepare yourself for this part of the quizzes, I will post the upcoming quiz's data set (a CSV file) on the day before each quiz, along with a list of possible coding tasks that you should be prepared to complete.

3. **Collaborative Data Analysis Project:** In this project, our class will contribute to the Wyoming County Soil and Water Conservation District's efforts to establish a water quality sampling program for streams in Wyoming County, New York. Students will work in assigned teams to study various parameters that can be monitored in streams to evaluate water quality. We will use data collected in the past by the Soil and Water Conservation District and other sources. Several class meeting times will be devoted to developing, discussing, and working on these projects. There are multiple components and deadlines throughout the semester: i) preliminary proposal, ii) peer reviews of proposals, iii) cleaning and processing the data and constructing exploratory graphs, iv) revised proposal v) analysis plan, vi) individual analysis report, vii) group analysis report, viii) final oral presentation, and ix) peer evaluations throughout the semester. Adjustments to individual scores will be made based on final peer evaluations. To facilitate group development, you complete a survey on your interests, experience, and availability at the beginning of the semester. I will use the results of this survey to assign you to your project teams.
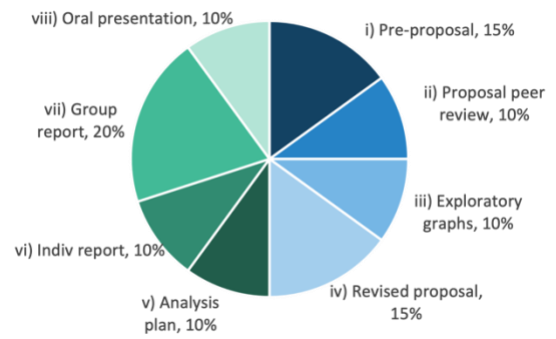

Fig. 1. Breakdown of collaborative data analysis project by i-iv) planning (blues) and v-viii) execution (greens) steps, in one of the only pie graphs you'll see in this class.

4. **Statistics in the Media:** You can find statistics everywhere! In this extra credit assignment, you will find an example of statistics usage in the media, and summarize and critique it. There will be seven windows of opportunity for you to complete this assignment for extra credit points (submit via Canvas). The article, blog post, etc. must be published within each window of time to be valid. Each example must be unique; only the first student to turn in a particular example will get the credit. You may want to consider this extra credit opportunity like disaster insurance: invest the time in completing the assignment from the first opportunity, just in case you need these points later.

Final course grades will be determined as shown here:

A	93.3 - 100%	B+	86.6 - 89.99%	C+	76.6 - 79.99%	D	60.0 - 69.99%
A-	90.0 - 93.29%	B	83.3 - 86.59%	C	73.3 - 76.59%	E	<59.99%
		B-	80.0 - 83.29%	C-	70.0 - 73.29%		

What are our shared responsibilities to our learning community?

Students, teaching assistants, and the professor have communal responsibilities to our community, to promote learning, maintain a respectful environment, and prioritize our health and wellbeing during this stressful time. In our classroom, we are preparing you for not only other courses in the biology program, but also for your professional career.

Responsibilities to promote learning

1. **Making space for everyone to contribute.** Scientific innovation arises from the insights of a diverse community. The unique talents, experiences, and contributions of each individual in our class are crucial and necessary. Be ready to learn from others and be willing to teach what you can in return. As in any learning endeavor, we naturally may make mistakes despite good intentions. Each person will do their best, and believe that others are doing their best, to learn from and correct mistakes that are harmful to others.

2. **Class attendance.** Class meeting times will be used for interactive lectures and to get live help while completing assignments. If you need to miss a class meeting (e.g., COVID-related reasons), please let me know as soon as possible so that we can discuss ways to keep you on track. If you are experiencing longer-term disruptions, please be proactive in communicating with me and contact the Dean of Students if you expect to be out for an extended period of time. If I need to cancel a class meeting because of an emergency, I will use Canvas to inform you as soon as I can.

3. **Preparation.** Science is a process of discovery, and we will engage in this process during every class. Be prepared to take an active role in learning the material and practicing new skills. The course is designed with a workload that is typical for 3 credit classes: about 9-10 hours per week. Please check Canvas frequently for updates on what you need to be ready for each class or any changes in assignment deadlines. I will also use Canvas to send you weekly announcements to remind you of the tasks to be completed each week.

4. **Timeliness and deadlines.** Arriving to class on time and completing our work in a timely fashion are critical. Posted deadlines and your own personal deadlines keep the work in this class manageable. Please be considerate to yourself (and your teammates) and create mini-deadlines well in advance of the major deadlines. Likewise, do your best to stick to deadlines and meeting times that are planned by you and your team, and communicate immediately if something interferes with those plans. The instructional team will also return feedback on assignments

promptly, to help you monitor your learning. Occasionally, I will only be able to offer general feedback on the work of the class as a whole, especially during the month of advising. If you discover that a due date might be a problem, you should contact me immediately with a proposed solution so that we can discuss what is possible for your situation.

5. **Commitment.** Everyone will dedicate ourselves to doing our best work within the circumstances that we're experiencing. The COVID-19 pandemic is only one of several situations that anyone in our community is managing. Thus, we should all try to promote an effective learning environment by minimizing distractions and designing a place to work that helps us to focus and stay on task. In addition, we should also try to help others to stay on task, especially during class sessions, or time we have scheduled to work with our teammates.

Responsibilities to maintain a respectful environment

1. **Communication**. Everyone is expected to check their email at least twice a day, and use email, Canvas, or other mutually-agreed upon methods to communicate with each other. Please make sure to set Canvas notifications to send you emails with updates, and set aside time to read these so you don't miss anything important. You can also meet with professors and teaching assistants in drop-in hours or by appointment.

2. **Uphold the Student Code of Conduct.** Plagiarism and other forms of academic dishonesty (cheating, turning in another student's work as your own) is not tolerated at SUNY Geneseo. Consulting with other students for individual assignments is fine, but you must each produce original written answers or code (no copying and pasting). Check with the instructional team if you are not sure where the line between collaboration and copying stands on any assignment. Evidence of plagiarism and/or academic dishonesty is grounds for a score of '0' on any assignment and further action including notifying the department chair, which can result a report filed with the Dean of Students. For full details of the Student Code of Conduct, please see the Student Handbook.

3. **Respect copyright and licensing.** All materials used in this course, including lectures, slides, videos, and handouts, have specific licensing and copyright restrictions that identify how they can be used, distributed, and adapted. The original work created by me, your instructor, is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. Materials created by other authors have their own licensing and copyright restrictions. Please do not violate the restrictions we have put on our intellectual property. This includes, but is not limited

to, transferring files to websites such as StudyBlue and Course Hero, storing old tests in sorority/fraternity test banks, and passing on assignments to friends who may take the course in the future. Be aware that UUP (Union of University Professionals, the union representing faculty on this campus) is seeking to take legal action against groups who violate copyright, and that posting or selling copies of materials to such groups may put a student in legal jeopardy.

Responsibilities to prioritize health and wellbeing in a stressful time

College policy requires that we all wear a face mask in instructional spaces including classrooms, lecture halls, and laboratories, and all common areas including residence halls and all buildings. The mask needs to fit securely, covering your nose and mouth. There is misinformation circulating about exemptions from face mask requirements connected to interpretations of the Americans with Disabilities Act (ADA). At this time, the ADA does not cite a blanket exemption from face covering requirements for individuals with disabilities and has not issued documentation to support this exemption (e.g., "ADA cards"/letters/flyers). Please refer to the ADA and Facemask Policy Guide for more information.

The changes brought on by COVID-19 have impacted us all in a number of ways, and will continue to do so at various times and to varying degrees during the upcoming semester. Your health and wellbeing are foundational to your ability to learn, and if you find that you are feeling unwell (physically or mentally) and it is impacting your ability to complete your coursework, please reach out. Because the learning environment will be different than it has been in the past, the indicators that usually let you know something is wrong may not be as clear to you or those around you as they would be during a typical semester. Additionally, the ways in which you normally engage in self-care may have been disrupted. Please remember that it's never too late to ask for help. The Dean of Students (585-245-5706, Dean's website) can assist and provide direction to appropriate campus resources. The college also has collected resources in a Coping with COVID webpage.

In a similar way, I will occasionally ask for some patience and flexibility on your part. The pandemic is affecting faculty as well as students and creating demands that would not be present in an ordinary semester. If I am slow responding to an email or taking more time than usual to post lecture materials, please be patient (and feel free to send me a gentle 'nudge'; I will not be offended). You will never suffer any disadvantage in the course because of delays on my part. Remember that we are all in this together.

How else does this class support your success and well-being?

At Geneseo, we strive to support your academic success and well-being. This course works with and complements the resources available campus wide, such as academic support services, accessibility, mental health, diversity and inclusion policies, and many more.

Getting help with technology

CIT has developed a number of resources that can help you formulate good strategies for success in online courses that apply to ours. These include general strategies for keeping on track with your courses as well as more specific resources about learning experiences that you may encounter in an online course. The Office of the Dean for Academic Planning and Advising has also introduced the new KOALA (Knights' Online Academic Learning Assistance) course support resource. Throughout the semester, if you need help with online learning strategies, you can contact the KOALA support desk, which will assist you with identifying resources and strategies for success.

We will be using computers in our class all the time. For everyday troubleshooting in R, we have the instructor, TAs, and each other. For other assistance, CIT also provides a range of technology support resources. When you are in Canvas, the Help menu on the left side of the screen will also direct you to a number of CIT supports, including self help resources and options to request technology assistance. CIT also provides free access to over 7,500 online tutorials for software, digital tools, web development, programming, and design through LinkedIn Learning.

Library Research

Fraser Hall Library has an award-winning staff trained in finding the best information using library resources and advanced search strategies. Students may ask questions about using library services, locating materials, or conducting research projects. There is a librarian who specializes in the subject matter for each major. Librarians meet with students through a variety of ways, including chat, email, and in-person and virtual one-on-one research consultations. Email libraryhelp@geneseo.edu or visit their online help desk.

Accessibility

All course materials are available on Canvas and I've made every attempt to ensure that they are accessible to everyone. If you have difficulties accessing any materials (including needs for alternative formats), please let me know as soon as possible and I will do my best to address the situation.

SUNY Geneseo is dedicated to providing an equitable and inclusive educational experience for all students. The Office of Accessibility will coordinate reasonable accommodations for persons with documented physical, emotional, or cognitive disabilities, as well as medical conditions related to pregnancy or parenting. Students with letters of accommodation should submit a letter to each faculty member at the beginning of the semester and discuss specific arrangements. Please contact the Office of Accessibility Services for questions related to access and accommodations: Erwin Hall 22 or call (585) 245-5112 or email access@geneseo.edu. Visit the Office of Accessibility Services for more information www.geneseo.edu/accessibility-services

- *Student responsibility:* Please submit your letter of accommodations to me at the beginning of the semester (or as soon as they have been established) and make an appointment to discuss arrangements.
- *Instructor responsibility:* I am committed to working with you to figure out how to create a just learning environment while meeting the learning outcomes of the course. Unless you communicate otherwise, I will keep all accommodations confidential.

Well-Being

Prioritizing well-being can support the achievement of academic goals and alleviate stress. Eating nutritious foods, getting enough sleep, exercising, avoiding drugs and alcohol, maintaining healthy relationships, and building in time to relax all help promote a healthy lifestyle and general well-being. Concerns about academic performance, health situations, family health and wellness (including the loss of a loved one), interpersonal relationships and commitments, and other factors can contribute to stress. I strongly encourage you to communicate any issues related to your well-being to me or other faculty and staff, and seek support before you experience unmanageable stress or have difficulty with daily functioning. Dr. Leonard Sancilio, Dean of Students (585-245-5706), can assist and provide direction to appropriate campus resources. For more information, see www.geneseo.edu/dean_students.

Mental Health

I consider mental health to be no less important than physical health with respect to learning. As a student, you may experience a range of challenges that can impact your mental health and thus impact your learning; common examples include increased anxiety, shifts in mood, strained relationships, difficulties related to substance use, trouble concentrating, and lack of motivation, among many others. These experiences may reduce your ability to participate fully in daily activities and affect your academic performance. SUNY Geneseo offers free, confidential counseling for

students at the Lauderdale Center for Student Health and Counseling (call 585-245-5716 to make an appointment), and seeking support for your mental health can be key to your success at college. You can learn more about the various mental health services available on campus at health.geneseo.edu.

Food Security

If you find that you do not have the financial resources to support your food and nutrition needs, there are resources available for students who are food insecure. If you're unfamiliar with the phrase "food insecurity," you can learn more at the following link: Understanding Food Insecurity.

The Food Security Advocates (FSA) is a student group run out of the Center for Community who support access to food for those who are food insecure (on campus and in the community). Food pantry interns facilitate an on campus pantry in collaboration with the local Geneseo Groveland Emergency Food Pantry.

Any student who is food insecure can submit a request here: Food Pantry Request Form to receive a bag of food that will provide them with items that will last a few days. Once submitted, interns will connect directly with the student to communicate next steps and the time and location of your pick up (most pickups will take place in the MacVittie College Union). This program will provide individuals with a bag of food up to two times a month. We will do our utmost to ensure anonymity, while also working to destigmatize food insecurity in our community.

Students are also able to access the Geneseo Groveland Emergency Food Pantry on their own if that is their preference. The pantry is open for walk-ins Tuesdays & Thursdays 10am - 2pm and Wednesdays 4 - 6:30. It is located at 31 Center Street, Geneseo, NY, lower level of Central Presbyterian Church. No appointment is necessary to access the pantry.

If you have any questions about this process or anything relating to food insecurity, or have a need beyond what is outlined above, please contact Garth Freeman, director of student volunteerism and community engagement at freeman@geneseo.edu / 585-245-5893.

Religious Observances and Class Attendance/deadlines

If you anticipate an absence or conflict with an assignment deadline due to religious observances, please contact me as early in the semester as possible to make alternative arrangements for those days that you'll miss. Student attendance in classes on religious holidays is governed by New York State Education Law 224-a (see https://www.geneseo.edu/apca/classroom-policies). See calendar of major religious observances.

Bias-Related Incidents

"We are here to listen, to learn, to teach, to debate, to change, to grow. We should all be safe to pursue these goals at SUNY Geneseo while being who we are. Together, we commit ourselves to pluralism, cultivating a community that respects difference and promotes a sense of inclusion and belonging." As this excerpt from our Community Commitment to Diversity, Equity, and Inclusion states, here at SUNY Geneseo, we want to provide a space where everyone feels welcome to learn and grow in their identities as well as in their role as students, faculty, and staff. If in the unfortunate instance you experience an incident of bias, we encourage you to reach out to the Chief Diversity Officer (routenberg@geneseo.edu) and/or our University Police Department. In trying to create an environment that facilitates growth through diverse thoughts and ideas, reporting incidents of bias - including threats, vandalism, and microaggressive behaviors - can help bring a better understanding of our campus climate as well as provide opportunities for learning and restoring harm.

Proposed schedule outline

The table below is we are aiming for. Assignments will be described in detail on Canvas. I may adjust the topics and dates during the semester; be assured I will inform you of any changes in a timely fashion. Please be aware that we may need to adapt to changing pandemic conditions after the semester has started, including adjustments to our syllabus and mode of instruction. Remember that I will continue to prioritize your wellbeing and success in the course, and do my best to maintain an environment that supports your continued learning.

Jan 26 – 28

Date	Day	Agenda	What's due (11:59 PM)
1/26	Wed		
1/27	Thurs	Introduction to R	
1/28	Fri		

Jan 31 – Feb 4

Date	Day	Agenda	What's due (11:59 PM)
1/31	Mon		Introduction to R tutorial/concept checks
2/1	Tues	Designing Biological Research	
2/2	Wed		
2/3	Thurs	Designing Biological Research	Introduction to R problem set
2/4	Fri		

Feb 7 – 11

Date	Day	Agenda	What's due (11:59 PM)
2/7	Mon		Designing biological research tutorial/concept checks
2/8	Tues	Designing Biological Research	
2/9	Wed		
2/10	Thurs	Getting to Know the Data	
2/11	Fri		

Feb 14 – 18

Date	Day	Agenda	What's due (11:59 PM)
2/14	Mon		Getting to know the data tutorial/concept checks Project preliminary proposal Sign up for live coding quiz time slot
2/15	Tues	Getting to Know the Data	
2/16	Wed	Diversity Summit!	

2/17	Thurs	Live coding quiz 1	Getting to know the data problem set
2/18	Fri		

Feb 21 – 25

Date	Day	Agenda	What's due (11:59 PM)
2/21	Mon		Peer review of pre-proposal
2/22	Tues	The Data Life Cycle	
2/23	Wed		
2/24	Thurs	Projects	
2/25	Fri		

Feb 28 – Mar 4

Date	Day	Agenda	What's due (11:59 PM)
2/28	Mon		Data life cycle tutorial/concept checks Project exploratory data analysis
3/1	Tues	Hypothesis Testing	
3/2	Wed		
3/3	Thurs	Hypothesis Testing	Project concept checks Group peer evaluation #1
3/4	Fri		

Mar 7 – 11

Date	Day	Agenda	What's due (11:59 PM)
3/7	Mon		Hypothesis testing tutorial/concept checks Sign up for live coding quiz time slot
3/8	Tues	Projects	
3/9	Wed		
3/10	Thurs	Live coding quiz 2	Hypothesis testing problem set
3/11	Fri		

Mar 14 – 18 (Spring Break)

No class and no deadlines this week

Mar 21 – 25

Date	Day	Agenda	What's due (11:59 PM)
3/21	Mon		Final project proposal
3/22	Tues	Goodness of Fit/Contingency	
3/23	Wed		
3/24	Thurs	Goodness of Fit/Contingency	
3/21	Fri		

Mar 28 – Apr 1

Date	Day	Agenda	What's due (11:59 PM)

3/28	Mon		Goodness of fit and contingency tests tutorial/concept checks
3/29	Tues	Tests of Difference: Two Samples	
3/30	Wed		
3/31	Thurs	Tests of Difference: Two Samples	Goodness of fit/contingency Problem set
4/1	Fri		

Apr 4 – 8

Date	Day	Agenda	What's due (11:59 PM)
4/4	Mon		Two sample comparisons tutorial/concept checks Sign up for live coding quiz time slot
4/5	Tues	Tests of Difference: Two or More Samples	
4/6	Wed		
4/7	Thurs	Live coding quiz 3	All the statistical tests so far problem set
4/8	Fri		

Apr 11 – 15

Date	Day	Agenda	What's due (11:59 PM)
4/11	Mon		Two or more sample comparisons tutorial/concept checks
4/12	Tues	Tests of Difference: Two or More Samples	
4/13	Wed		
4/14	Thurs	Correlation and Regression	All the statistical tests so far problem set
4/15	Fri		

Apr 18 – 22

Date	Day	Agenda	What's due (11:59 PM)
4/18	Mon		Correlation and regression tutorial/concept checks
4/19	Tues	Correlation and Regression	
4/20	Wed		
4/21	Thurs	GREAT Day – no class	Participate in GREAT Day!
4/22	Fri		

Apr 25 – 29

Date	Day	Agenda	What's due (11:59 PM)
4/25	Mon		All the statistical tests so far problem set

			Sign up for live coding quiz time slot
4/26	Tues	Projects	
4/27	Wed		
4/28	Thurs	Live coding quiz 4	Updated project analysis plan
4/29	Fri		

May 2 – 6

Date	Day	Agenda	What's due (11:59 PM)
5/2	Mon		
5/3	Tues	Projects	
5/4	Wed		
5/5	Thurs	Projects	Individual project report
5/6	Fri		

May 9 – 13

Date	Day	Agenda	What's due (11:59 PM)
5/9	Mon		
5/10	Tues	Projects	
5/11	Wed		
5/12	Thurs	Projects	Group project report
5/13	Fri		

May 16 – 20

Date	Day	Agenda	What's due (5:00 PM)
5/16	Mon		
5/17	Tues		
5/18	Wed		Group presentation slides
5/19	Thurs	8:00-10:30 AM Project symposium!	Group peer evaluation #2
5/20	Fri		