Methods in Ecology & Evolution
Spring 2023 – 2nd Half

Dr. Romi L. Burks, Professor of Biology
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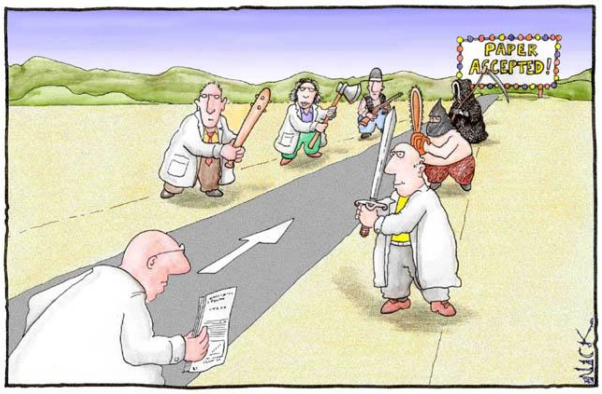

Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

COURSE DESCRIPTION: Methods in Ecology and Evolution is an intermediate course in the Department of Biology. It is a foundational-building course that contains instructions on reading the primary literature in ecology and evolutionary biology, conducting literature searches, designing experiments, writing in scientific format, using quantitative methods, exercising critical thinking skills for data analysis, creating graphs and developing specific laboratory skills as needed for ecology and evolutionary biology. Students that have taken a methods course in Psychology or Kinesiology can use those courses to substitute for the pre-requisite course needed to take upper-level ecology courses.

DATA SCIENCE MINOR: This course fulfills one of the required courses for the Data Science Minor. Data Science is the use of quantitative data to describe the world. The theoretical foundation is based in mathematics and computer science; the practical applied meanings come from interpreting the data in the context from which it arose. However, data science cannot exist outside of its larger issues of ethics and fairness. The Data Science minor provides students with fundamental tools in statistics and computing, experience applying those tools in two different departments in the social sciences and/or natural sciences, and consideration of broader societal implications raised by data science and its capabilities.

SYLLABUS PHILOSOPHY: Most of the information that you need for success occurs in this syllabus. Keep It handy similar to a car manual in the glove box. **Any changes in the syllabus---particularly deadlines --- may be posted on Moodle.**

STUDENT LEARNING OBJECTIVES: By the end of the course, students should be:

1. Quite adept at finding appropriate peer reviewed literature;

2. Experienced in the concepts of experimental design, data collection and analysis;

3. More skilled at reading primary literature;

4. Cognizant of the important of revision and the constructive feedback of peers;

5. Knowledgeable about the methods of scientific writing;

6. Better equipped to conduct and analyze statistical analyses;

7. Capable of running a basic program in R;

8. Able to hold intriguing conversations about the 'peripherals' of being a scientist

COURSE WORKS IN CONCERT WITH BIOLOGY DPT STUDENT LEARNING OBJECTIVES:

1. Students will understand & apply knowledge & concepts about functioning of living systems;

2. Students will accurately and thoughtfully identify, evaluate and critique research and research literature on biological phenomena;

3. Students will clearly, accurately and in appropriate styles, communicate about biological phenomena and research orally, in writing and graphically;

4. Students will accurately, appropriately and safely perform physical techniques of biological investigation; and

5. Students will accurately and appropriately apply quantitative reasoning and methods to biological problems.

COURSE LOAD AND GRADING PRACTICE – WRITING ATTENTIVE:

· First, I make line edits. Providing extensive suggestions for revision and identifying areas of improvement. I do not correct everything, but instead try and point out repeatable errors. I consider it your responsibility to then apply the edits I make. If you do not know how to do this, then you must inquire.

· Second, I look at the content - are all the expected parts there? What's missing? What's in the wrong place?

· Third, I look for the depth and/or quality of the reasoning. Does the sentence make sense, connect to literature, etc...

· Fourth, I look at the Rubric dimensions -which are usually divided up into 5 or 10 point increments intended to correspond to the elements above.

· Fifth, I examine the rubric and then determine if the work associated with that element reflects an A, B, C or D. Repeat for each element and assign the relative points.

· Sixth, I tally up the score and see if the total score reflects the quality of the work. In a few cases, I consider it too "picky" and then modify the above elements.

Each of the rubric elements represents a compilation of a lot of things. Thus, two students can receive exactly the same score on a rubric element --- or on an assignment --- for completely different reasons. When no one receives a "perfect" score on an assignment, then this likely occurred because no assignment submitted lacked grammatical errors. As far as what I "want", I desire care to detail, correctly described statements, attention to revision and literature support. I don't see these as a mystery or something not attainable. At the end of an assignment, I tend to summarize or highlight areas on the rubric. I try to be as transparent as possible. I encourage students to read each other's work and even

compare notes on grading if you wish. However, any unclear discrepancies in points assigned should be brought to my attention. Overall, your grade in this course comprises two components: effort and quality. I expect that you all will put forth great effort with varying degrees of quality that translated into a range of final grades.

WORKLOAD: Generally, something will end up being due **OFTEN** in this course. Per the Southwestern Student Handbook guidelines, you should prepare to devote between 2 and 2.5 hours outside of class for every hour in class. This equates to scheduling an additional 8-10 hours a week to devote to this course. It's intense, especially as a ½ semester course. Students will acquire both writing and analytical skills in the classroom. This Methods Course also involves a significant writing component. Students are encouraged to consult with me, the Guide for Writing in Biology & the Writing Center on campus.

Ecology Methods has a total of 400 points available for students to earn. For this course, I've reduced my graded assignments (not counting completion) from 15 to 12, each worth 25 points (300 pts), including two end of the semester demonstrations of statistical understanding and scientific writing and R competence (also each worth 25 points). An additional four elements (Collaborative Background, Citation Worksheet, Stats Review and iBiology Discussions) will earn completion points (100 pts). Thus, 25% of the course (100 out of 400) will be based on "completed effort" credit.

ENGAGEMENT: I expect students in Methods to engage actively with the material. Seven and a half weeks and the nature of the course material does not give much leeway for getting behind. Students will also come with different skill levels and exposure to statistics, which may make it more challenging for some than others. The key thing to realize early is that SCIENCE TAKES TIME AND THIS CLASS WILL TAKE A LOT OF TIME. Combined with Methods in Cell and Molecular Biology, students receive 4 hours of academic credit for 6 hours in class as occurs with a traditional upper-level biology lecture and lab. In some cases, you will have substantial exercises to complete outside of class time.

PARTICIPATION: Regular class participation is the default circumstance for students in upper level Biology courses. Class participation involves discussing primary literature, posing questions about class materials, following thru exercises and working well in groups.

- ***Outstanding*** = Particularly noteworthy class participation will grant you a 1% benefit of the doubt at final grade time. In other words, an 89% B+ would end up as a 90% A-.
- ***Acceptable*** = Regular class participation assures course standing (no change)
- ***Below Average*** = Less than frequent class participation/poor attendance (i.e. 2 unexcused absences) lowers your grade by ½ letter (i.e. B+ = B)

Unacceptable Number of unexcused absences (> 3) or extreme lack of participation will result in course failure. I will notify you of your status half way through the course (in case improvement is needed).If you are curious at any other time, just ask. Please note that 2 accounts of being excessively late (beyond 15 minute warm-up window) = 1 unexcused absence. Please be on time.

IMPORTANT NOTE: I LOVE methods. I love statistics. I love teaching students how to do science. Thus, sometimes, I can get a little overzealous. I have worked hard to design a course that I think will greatly benefit you in your future courses and hopefully your own research. Of course, there is a caveat. This is always a course in development – so, as things

go along, PLEASE come and talk to me about how it is going and if we need to make any other considerations (although the syllabus schedule is pretty prescribed, THERE IS ALWAYS ROOM FOR CHANGE.

REQUIRED TEXT: REQUIRED: Getting Started with R

- **Paperback:** 240 pages; **Publisher:** Oxford University Press; 2 edition (March 26, 2017); **Language:** English; **ISBN-10:** 9780198787846 or **ISBN-13:** 978-0198787846

COURSE MANAGEMENT SYSTEM: Moodle represents the learning management system now used by Southwestern. This web-based, open source program will be instrumental to this class. You sign into Moodle with your regular su-ID and password either through the SU-Portal or at the website: lms.southwestern.edu. This interactive system will allow you to:

· Download files (primary literature, assignment instructions/rubrics, etc...)
· Keep track of your grades
· Submit assignment and get on-line feedback
· Keep a calendar and view each week and the upcoming activities and/or assignments
· Communicate with your peers

STUDENTS' BILL OF RIGHTS FOR METHODS:

Each student can expect access to course materials prior to class**.** Although we will focus on apple snails and invasive species throughout the course, students can expect to improve their general writing & presentation skills. Each student can expect a classroom environment conducive to learning. If this is not the case, see me immediately. In addition, students can expect that I will be attentive to their needs and flexible if excused absences (illness, sports, etc.) occur. By using Moodle, students can expect Methods to be as "green" or "paperless" as possible.

PROFESSOR AND COURSE EXPECTATIONS FOR STUDENTS:

METHODS expects that you take a good amount of responsibility for your own learning as you will be developing your skills as a scientist. **I expect that students check their email routinely.** I expect the classroom environment to have a relaxed atmosphere where students can feel free to express opinions or ask questions. Students must respect other people's opinions even if they differ from theirs. I expect that students will take some time to reflect on what they are learning. I expect that, although the course focuses on apple snails, the skill gained can be applied to any set of biological research.

<u>OTHER POLICIES:</u>

ATTENDANCE:

Students are expected to prepare for and attend each class meeting. More importantly than just attendance, lack of preparation will diminish your capacity to fully engage in intellectual pursuit.

However, a lot of effort has been made to conduct in-person classes at Southwestern and

upper level biology courses. We meet for a considerable time each week.

In general, **I ENCOURAGE YOU TO ONLY ATTEND CLASS IF AND ONLY IF YOU FEEL GOOD. WHEN IN DOUBT, STAY HOME.**

- **Attendance itself is not directly part of your grade.** Your engagement and participation can be assessed in multiple other ways.
- If you develop any symptoms of COVID-19 (esp. fever, cough), call the SU Health Center at 512-863-1252 to schedule an appointment.
- If you need help getting medical care, contact RA or SUPD at 512-863-1944.
- Do your best to communicate with me or designate a peer to communicate updates if that is easier.
- Do not worry about missing class if necessary. I promise to work individually with everyone on a case-by-case basis.

SELF-CARE:

College life is great, but also stressful and demanding, especially now.. College life under the umbrella of covid is a new frontier. Keep in mind that **nothing is as important as you and your support system.** Take care of yourself first and then you can be there to help others.

Some Self-Care Basics
• Prioritize • Stick to a routine • Don't skimp on the basics (eat, sleep, move) • Stay connected • Limit news consumption • Be mindful of substance use • Practice mindfulness and other relaxation techniques • Cut yourself some slack • Watch for signs of trouble in yourself • Check in with friends and other supporters Reference: https://www.apa.org/monitor/2020/07/self-care

ATTENDANCE RELIGIOUS AND CULTURAL TRADITIONS:

Southwestern University recognizes that it has students from a variety of religious and cultural traditions that have special days of observance or celebration that may take students out of their regular activities on certain days during the school year.

1. *As far in advance as possible, the student is expected to notify the professor(s) or instructor(s) of the class(es) to be missed.*

2. The student is expected to learn what assignments or exams are due or will be assigned on those dates and negotiate with the professor(s) or instructor(s) alternate times for fulfilling those requirements.

3. Students should be prepared to fulfill the requirements prior to the class(es) to be missed.•

IMPORTANT DATES:

Due to the rapid nature of the mini-courses, please note the early drop dates. *Drop without Record: 03/29/23; Drop with Record: 04/12/23.*

- First day of second half courses: **Tue., Mar. 7**
- Last day to add second half courses (via faculty consent): **Mon., Mar. 20**
- Last day to drop second half courses without record OR change to/from P/D/F via faculty consent): **Wed., Mar. 29**
- **SU closed: Fri., Apr. 7 (no classes)**
- **Redefined day - students attend Friday classes: Tue., Apr. 11**
- Last day to drop second half courses (via faculty consent): **Wed., Apr. 12**
- **Spring Research & Creative Works Symposium: Fri., Apr. 14 (no classes)**
- Last day of second half courses: **Tue., May 2**

ACCOMMODATIONS:

Official accommodation notification should be communicated as soon as reasonably possible. Beyond this, we all need some version of accommodations to make our class space accessible, because we all learn in different ways. Please feel free to manage your classroom experience in the way best for you. Reasonable requests will always be carefully considered for feasibility and equity.

- ❏ Library and Academic Support services -Academic Success website and the "Support During COVID-19" section of that website.
- ❏ Technical / computer help support services - Students can receive technical support through the InfoDesk. They can call the support line (512.819.7333) or send an email to infodesk@southwestern.edu. Support is available M-F, 8-12 and 1-5.
- ❏ Counseling / health support services - See Counseling Center's website.

OPEN COMMUNICATION:

Students are expected to discuss questions and areas of concern with me.

FLUID DEADLINES:

Given the pandemic world, I'm okay with some fluidity of deadlines that do not affect others. However, please note that if no deadlines exist, then everyone will procrastinate. If you anticipate not meeting a deadline for legitimate reasons, please ask for an extension **at least 12-hours in advance.** Group work needs to be completed **on time.** If you feel that you need more time to produce quality work, then extensions or revised deadlines can be implemented but **I encourage you to meet deadlines so that work does not pile up.** Late work submitted without notice will receive a reduction of 20%.

HONOR CODE:

You must complete all work independently unless otherwise noted by Dr. Burks. As all work will be electronic, you must type out the honor pledge IN FULL on all assignments.

I have acted with honesty and integrity in producing this work and am unaware of anyone who has not.

Please take responsibility for taking care of this; I will not chase you down if you forgot the pledge. **On electronic submissions, you must have it on your submission (the best practice is to place it in the Heading followed by your initials).** If you are unclear on the concept of plagiarism or cannot sign the honor code in good faith, please see Dr. Burks. When in doubt, paraphrase and cite the BIOLOGY CITATION GUIDE. Any perceived impropriety will be discussed with the student and appropriate action taken. **Unless otherwise instructed, all citations in this course should use APA style.**

FOOD:

Not allowed in Room 220. Try to avoid bringing it to class at all. We will take a 10-minute break each block..

FACEBOOK/TWITTER/INSTAGRAM:

I'm happy to be "A Friend" with SU students with the knowledge that I am a faculty member at Southwestern first. I will not ask students to be Friends because I do not want to exert inappropriate pressure. As a "friend" and professor, I have a vested interest in students and an obligation to the University to take any concerns that catch my attention seriously. I'm not in the habit of checking up on students but I cannot help but read updates when posted. So, if there were something posted in an update that spoke to a personal concern or threat to any other student, then I feel obligated to follow up on the post. In what I hope to be rare instances, my follow-up actions may take the form of a message from me or a call by me to appropriate University personnel better equipped to handle dramatic situations. I think it is important that you know this ahead of time. My Profile page serves as an all-inclusive insight into my life for my friends, family and some students. I do not post anything there that I am not willing to publicly share (this is good advice). If you are happy with this "condition," then great. If it makes you at all uncomfortable, then feel free to Defriend - will not take it personally at all.

- You can also follow me on Twitter @ProfRomi

CELL PHONES:

Please turn all cell phones to SILENT/VIBRATE during class. You may use cell phones to keep track of the time but should not be actively texting or e-mailing in class. In the case that you need to be in contact with another party (family emergency, etc...), then quietly and unobtrusively leave the room to respond to a call if received. Violation of such a policy will reduce your effort evaluation in class.

CLASS OR LAPTOP COMPUTERS:

You should plan to bring a laptop to class every day. If this is a hardship, please request assistance from The Southwestern Fund. If such activity enriches your material retention, feel free to take notes during class on a laptop computer. In some classes, we will utilize laptops in class for interactive exercises. At all times, your focus should be on the class activity and not on alternative activities (i.e. Facebook, e-mail, etc...). Violation of such a policy will reduce your effort evaluation in class.

ABOUT ME THIS SEMESTER:

Mental State: I spent most of summer and all of the Fall 2022 in the UK. I do not think it could have been much better and I would describe it as the best six months of my life. Consequently, I continue to suffer from London withdrawal. Even now two months later, I'm still not back in the full swing of things. Appreciate your patience.

My schedule: I teach Animal Behavior on Mondays and Wednesdays from 11-12:30 pm, I tend to spend Fridays with my lab students. I set office hours for Monday afternoon after lunch. If I am not in my office (see note below), I'm not far away - just email, text or call.

Travel: This semester, I have one travel commitment that will impact class. I will be taking a trip to Ohio at the end of March (29th - April 2nd) to give a chocolate talk at Ashland University on the ties between environmentalism and economic consumerism. In general, classes will not meet in my absence, although you may have work which I expect to receive.

New Puppies: I have recently become a new puppy parent to two Cavachons, Chai & Latte. They are about 3 ½ months old. Consequently, I plan to try and do more work at home than in my office. However, I live 5 minutes away and can usually come and meet with students as needed.

Things I try as modeling good teaching:

1. ***Show Up to Class*** - I'll be there and I'll stay a few minutes after when possible.
2. ***Be Yourself*** - No problem there - what you see is what you get. I'm very straight-forward and no nonsense.
3. ***Put Yourself in Students' Shoes -*** I get this. Shorter attention spans. A lot more to juggle. Pandemic fatigue. Will try to make the best of everything together.
4. ***Organize Course Intuitively*** - Ok. See below. When in doubt, ask.
5. ***Add Visual Appeal*** - Methods should be visual.
6. ***Explain Your Expectations*** - Noted. They're usually pretty high. Often do this verbally and also recap in Moodle Announcements and detail on Rubrics. Will have Q&A time.
7. ***Scaffold Learning*** - Keeping this in mind as I thought of ways to build assignments and also connect between projects.
8. ***Provide examples -*** Try to do this as much as possible.
9. ***Make Your Class An Inviting, Pleasant Place to Be*** - Open to suggestions here.
10. ***Commit to Continuous Improvement*** - Absolutely - I consider all teaching an experiment with "tweaks" often needed.

Consider what you can do to try and be a good student...put in Moodle Box.

After reading the syllabus, please mark important dates on calendars and COMPLETE THE SYLLABUS CHECK by typing in "I have read the syllabus and understand the expectations." By entering this, I know that we start on the same page.

.400 POINTS – Minimum grade points, Assignment & Content: 25% Completion

Points	%	=	Each element (E) worth 25 pts.	# of Elements	Pts	%
370	92.5	A	**Thinking About Science iBiology Discussions** (1st completion)	1	25	6.25
358	89.5	A-				
350	87.5	B+	**Stats & R** Stats Review (2nd completion) R Work 1, 2 & 3	4	100	25
330	82.5	B				
318	79.5	B-	**Hatchling Experiment** (Draft Abstract, Draft Figure & Final Combo)	3	75	18.75
310	77.5	C+				
290	72.5	C	**Grant** (Proposal and Final)	2	50	12.5
278	69.5	C-				
277	< 69	D+	**Writing & Primary Literature** Background (3rd completion), Citation Worksheet (4th completion), Primary Literature Analysis & Short AB	4	100	25
			Final Demos (R & Stats/Writing)	2	50	12.5
			Total	16	400	100

ELEMENTS:

1. **Thinking about Science – iBiology (completion) – 25 pts.**

   For the last half hour(ish) of class each day, two students will be responsible for engaging discussion regarding a set of iBiology videos (https://www.ibiology.org/playlists/) and then recommending a short article to read.

   All students will be responsible for viewing at least two videos from the category (one chosen by the pair and then any other one to add contribution to class discussion).

2. **Stats & R (4 assignments; 3 graded - collaborative - ok; 1 completion) – 100 pts.**

   A major goal of Methods involves quantitative understanding and proper statistical interpretation. Statistical instruction will occur throughout the course through class examples and analysis of class data. Most of this work will occur in class. All R work can be collaborative except each person should have their own notes and code archive. However, realize that each student will need to demonstrate independent abilities at the end of the course.

3. **Tentative/Dependent: Abstract & Figure Project (3 assignments) – 75 pts.**

   The plan will be to work together to create an experiment examining how NaOH affects hatching of egg clutches of *Pomacea maculata*. One assignment will be a draft figure drawn by hand accompanied by an abstract (5 parts). The second assignment will ask you to convert the figure to a draft of a R-generated figure and figure caption. This final element will culminate in a collective data analysis and then individual students writing an extended abstract (300 words) and providing a R-generated figure and figure caption. If logistics prevent this from occurring, then I will provide you with a data set to analyze and the context necessary to write the abstract and make a figure.

4. **Small Grant Sigma-Xi Style (2 assignments) – 50 pts.**

   Individual students will write a Sigma Xi grant based on a research question associated with apple snails and this will include an outline of a proposed idea and a final version of the grant. We will speed write grants during class time.

5. **Primary Literature (4 assignments) – 100 pts.**

   Part of the learning objectives of Methods include increasing student confidence in locating appropriate primary literature as well as interpreting the main results. Students will illustrate their ability to do this through a collaborative information scavenger hunt (completion grade), a citation worksheet (completion grade), a primary literature paper analysis, and development of a short annotated bibliography.

6.. **Skill Demonstrations (Writing/Editing + Stats & R) – 50 pts. (25 each)**

The course will end with final demonstrations of using R, a “big quiz” on statistical comprehension and demonstration of understanding scientific writing.

"I'm afraid it's brain aphids."

PS - Avoid brain aphids. If you feel your brain being sucked away, please alert Dr. Burks at once.

EE Methods Spring 2023 2nd half

Typical Usual Time: 8:30-11:20 x 2 week = 170 minutes x 2 = 340 minutes = ~5 ½ hours per week x 7.5 weeks

Blue = Completion Grade; Black = Graded for Evaluation

Week	Block	Date	Day	Time	Activity	Notes	Items Due
1	1	3/7	Tues	8:30 - 9:20 am	Intros, Course Info + Syllabus		
	2	3/7	Tues	9:30 - 10:20 am	Intro to Apple Snails, eDNA and reproduction: Hatchlings	Burks Intro Lecture	
	3	3/7	Tues	10:30 - 11:20 am	Start Background Information Scavenger Hunt	Be ready to work collaboratively	
	4	3/9	Thurs	8:30 - 9:50 am	Introduction to R/RStudio/Swirl	After: Load R/RStudio	
	5	3/9	Thurs	10:00 - 10:20 am	Revisit and Finalize Information		**(1) Bckgrnd Info**
	6	3/9	Thurs	10:30 - 11:20 am	iBiology Video Discussion 1 & 2	Topic: Improving Diversity in Science	**(2) iBiology**
SPRING BREAK - NO CLASSES ON TUESDAY, 3/14 OR THURSDAY 3/16							
Week	**Block**	**Date**	**Day**	**Time**	**Activity**	**Notes**	**Items Due**
2	1	3/21	Tues	8:30 - 9:20 am	Statistics Overview; Citation ABT (note citations must be correct)	Complete Stats Pre-Test Sign up Primary Lit days	
	2	3/21	Tues	9:30 - 10:40 am	R Introduction 1 - Literacy	Structure & Using Swirl	
	3	3/21	Tues	10:50 - 11:20 am	iBiology Video Discussion 3 & 4	Topic: Ethics, Rigor and Reproducibility	Zoe & Madison
	4	3/23	Thurs	8:30 - 9:20 am	Experimental Design	ID 5 Papers - Snails/eDNA	**(3) Citation Worksheet (class)** **(4) Short AB -Sunday noon**
	5	3/23	Thurs	9:30 - 10:20 am	Hatchling Experimental Design	Refine Methods	
	6	3/23	Thurs	10:30 - 11:20 am	iBiology Video Discussion 5 & 6	Topic: Science Comm, Education & Advocacy	Lydia & Andrea Assign PL Papers by 3/24

Week	Block	Date	Day	Time	Activity	Notes	Items Due
3	1	3/28	Tues	8:30 - 9:30 am	Primary Literature Recaps, Abstracts & Experimental Design(s) - first 8	**(5) PL Analysis - Group A** **(6) Stats Review**	
	2	3/28	Tues	9:40 - 10:40 am	Prepare Hatchling Project		
	3	3/28	Tues	10:50 - 11:20 am	iBiology Video Discussion 7 & 8	Topic: Tips for Science Trainees 1	
	4	3/30	Thurs	8:30 - 9:20 am	No Official Class - Comp time	Burks in Ohio	
	5	3/30	Thurs	9:30 - 10:20 am	No Official Class - Comp time	Burks in Ohio	
	6	3/30	Thurs	10:30 - 11:20 am	No Official Class - Comp time	Burks in Ohio	**(7) R Work 1 (Sunday noon)**
Week	**Block**	**Date**	**Day**	**Time**	**Activity**	**Notes**	**Items Due**
4	1	4/4	Tues	8:30 - 9:30 am	Primary Literature Recaps, Abstracts & Experimental Design(s) - 2nd 8		**(5cont) PL Analysis - Group B**
	2	4/4	Tues	9:40 - 10:40 am	Methods Discussion & R		
	3	4/4	Tues	10:50 - 11:20 am	iBiology Video Discussion 9 & 10 Mid-way Assessment	Topic: Tips for Science Trainees 2	
	4	4/6	Thurs	8:30 - 9:00 am	Abstracts & Introductions		**(8) Grant Proposal Idea**
	5	4/6	Thurs	9:10 - 10:40 am	R Work Data analysis		
	6	4/6	Thurs	10:50 - 11:20 am	iBiology Video Discussion 11 & 12	Topic: Tips for Science Trainees 3	**(9) R Work 2 (Sunday noon)**

4/11 - NO TUESDAY CLASS IN LIGHT OF CREATIVE WORKS CHANGE - IF YOU HAVE FRIDAY CLASS, GO TO THAT ONE; 4/12 = Drop w W

Week	Block	Date	Day	Time	Activity	Notes	Items Due
5	4	4/13	Thurs	8:30 - 9:05 am	Writing Results	**(10.A) Hand-drawn Draft Figure A**	
	5	4/13	Thurs	9:10 - 10:40 am	Draft Abstract/Peer Review		
	6	4/13	Thurs	10:50 - 11:20 am	Draft Abstract/Peer Review	**(10.B) Draft Abstract-5 points**	
Week	**Block**	**Date**	**Day**	**Time**	**Activity**	**Notes**	**Items Due**
6	1	4/18	Tues	8:30 - 9:50 am	Grant Power Writing		
	2	4/18	Tues	10:00 - 10:40 am	Discussing the Discussion		
	3	4/18	Tues	10:50 - 11:20 am	iBiology Video Discussion 13 & 14	Topic: On Scientific Training	
	4	4/20	Thurs	8:30 - 9:00 am	Funding & Science (Budgets)	For Sigma Xi Grant	**(11) Grant Final**
	5	4/20	Thurs	9:10 - 10:20 am	R Time		
	6	4/20	Thurs	10:30 - 11:20 am	iBiology Video Discussion 15 & 16	Topic Category: Your Choice:	
Week	**Block**	**Date**	**Day**	**Time**	**Activity**	**Notes**	**Items Due**
7	1	4/25	Tues	8:30 - 9:20 am	Figure Captions		
	2	4/25	Tues	9:30 - 10:20 am	R Instruction 3 - FIgures	We will use ggplot2	
	3	4/25	Tues	10:30 - 11:20 am	R Working Time		**(12) R Draft Figure and Caption**
	4	4/27	Thurs	8:30 - 9:20 am	**Flexible/Catch Up Time**		
	5	4/27	Thurs	9:30 - 10:20 am	**Flexible/Catch Up Time**		

	6	4/27	Thurs	10:30 - 11:20 am	**Flexible/Catch Up Time**		**(13) R Work 3**
Week	**Block**	**Date**	**Day**	**Time**	**Activity**	**Notes**	**Items Due**
8	1	5/2	Tues	8:30 - 9:20 am	Review Time/Course Evals		
	2	5/2	Tues	9:30 - 10:20 am	Methods Review		
	3	5/2	Tues	10:30 - 11:20 am	Open		**(14) Final Abstract & Figure**
STATS/WRITING QUIZ (15) - FRIDAY, MAY 5TH - 5 PM							
FINALS TIME - THURSDAY, MAY 11TH 8:30 - 11:30 AM - R DEMO (16)							