# Tentative Course Schedule STT 2810

*Alan Arnholt*

*2015-08-19*

General Notes:

1. Direct links for CrowdGrader assignments will be updated during the course. Consequently, this page will update on a weekly basis.
2. All due dates are 5 PM Friday for CrowdGrader assignments.
3. All CrowdGrader peer reviews must be completed by 11 PM on Tuesdays.
4. Peer review feedback will close for CrowdGrader assignments Wednesdays at 8 AM.
5. Grading rubrics will be updated/tweaked throughout the semester.

**Week 1: (Aug 18, 20)**

- This week you will sign-up for free accounts on GitHub and Rpubs.
- When you register for a free individual GitHub account, request a student discount to obtain a few private repositories as well as unlimited public repositories. Please use something similar to **first__name__last__name** as your username when you register with GitHub. For example, my username on GitHub is *alanarnholt*. If you have a popular name such as John Smith, you may need to provide some other distinquishing characteristic in your username. Please use the same **username** for your account on Rpubs.
- Once you have a GitHub account, send an email to arnholtat@appstate.edu with a Subject line of **STT 2810 - GitHub Username** and tell me in the body of your email your first name, last name, and your GitHub username. I will then manually add you as a team member to the repository in the STT2810-SP15 organization that has your name (**Last__name-First__name**). This repository will be where you store all of your work for this course. I will also change your repository to a private repository.
- Become familiar with the Appstate RStudio server. You will use your Appstate user name and password to log in to the server. You must be registered in the class to access the server.
- Read Chapters 1-3 in Passion Driven Statistics (Light Weight) (PDS), and watch all linked videos in PDS. The PDS text is maintained at this repository. There is also a copy on RPubs (but it may not be as current as the repository).

Watch the following videos:

- Creating RStudio projects from Github Repos (5 min)
- Colaboration and time travel: version control with git, github and RStudio (48 minutes)
- Reproducible Reporting (58 minutes)
- Test drive RStudio by following the directions from Jenny Bryan's STAT 545 course.
- Select a data set you will work with and update your GitHub repository **README** with your chosen data set.
- Complete the Medical Record Assignment, and push your excel spreadsheet to your GitHub account.

**Optional**

- Read chapters 1-2 of Reproducible Research with R and RStudio.
- You may want to install Git, R, RStudio, zotero, and optionally *LaTeX* on your personal computer. If you do, you will want to follow Jenny Bryan's excellent advice for installing R and RStudio and installing Git. Note: Git, R, RStudio, and *LaTeX* are installed on the Appstate RStudio server.
- Watch the following videos as appropriate:
- Install R on Mac (2 min)
- Install R for Windows (3 min)
- Install R and RStudio on Windows (5 min)

**Week 2: (Aug 25, 27)**

- Read Chapters 4 and 5 of PDS (Conducting a Literature Review and Writing About Empirical Research).
- Using zotero will be covered the first part of the week.
- This week you will work on your personal Code Book. You will show the instructor your folder in class. The instructor will record your folder in the grade book as either a GO or NOGO.
- Watch the first 22 minutes of Speaking Analytics: RStudio, Shiny, and RMarkdown Webinar.
- This week you will work on the citation assignment.
- Fork this repository.
- Watch Creating RStudio projects from Github Repos (5 min).
- Clone the repository to your local machine using RStudio by following these instructions:

1. Fork the repository (to your public account).
2. Copy the clone URL to the clipboard.
3. Click `File > New Project > Version Control > Git`
4. Paste the clone URL (`https://github.com/YourUserName/STAT-ATA-ASU/STT5811ClassRepo.git`) in the `Repository URL:` box.
5. Type a name (suggestion `UserNameSTT5811`) in the `Project directory name:` box.
6. Change if needed the location in the `Create project as subdirectory of:` box.
7. Click the `Create Project` box. You should now have a local copy of the forked repository on your local machine. Congratulations!

- Set the upstream remote in your fork to this repository with the command

```
git remote add upstream https://github.com/STT2810-ASU/STT2810ClassRepo.git
```

- Verify with

```
git remote -v
```

- To obtain updates from the upstream repository type

```
git pull upstream master
```

- If there are conflicts, you will need to resolve them before proceeding.

**Optional**

- Read chapter 3 of Reproducible Research with R and RStudio.

**Week 3 (Sep 1, No Class Sep 3—Convocation)**

- Read/reread Chapters 4-5 of PDS and take notes as needed.
- Practice with https://www.crowdgrader.org/crowdgrader/venues/view_venue/762.
- Integrating zotero with RMarkdown will be discussed during the first part of the week. Example document will be stored in this folder.
- You may find these videos helpful:.
- Students will continue to work on the Literature Review / Citation assignment.
- Submit the Literature Review / Citation assignment to http://www.crowdgrader.org no later than 5 pm Friday (Sep 4). The direct link for this assignment is http://www.crowdgrader.org/
- In the YAML, use the title **Literature Review / Citation Assignment**, and leave the author field blank.

```
title: "Literature Review / Citation Assignment"
author:
```

**Grading Rubric for Literature Review / Citation Assignment (PR#1)**

1. Does the document open without problems? Is the grammar and punctuation acceptable? 0/1
2. How convincing is the written document that further work can be performed on the chosen topic? 0/1
3. Does the author have at least five references? 0/1

A well-written paper that convinces you the author has reviewed the literature, has a topic that will expand the knowledge in the area, and has used at least five references should receive a 3. A submission that satisfies two of the three criteria perfectly or most but not all of the three criteria should receive a 2. A submission that satisfies only one of the three criteria should receive a 1. If the submission does not render or the submitter did not submit the correct assignment, they should receive a 0.

**Optional**

- Read chapter 4 of Reproducible Research with R and RStudio.

**Week 4: (Sep 8, 10)**

- Read/review Chapters 4-5 of PDS as needed.

- Work on **Research Plan Assignment** PDS.
- Peer reviews for **Literature Review / Citation Assignment** are due NLT 11 PM Tuesday.
- **Research Plan Assignment** PDS is due NLT 5 PM Friday (Sep 11). Submit assignment via http://www.crowdgrader.org. The direct link for the **Research Plan Assignment** is http://www.crowdgrader.org/

**Grading Rubric for Research Plan Assignment (PR#2)**

1. Does the document open without problems? (0.25)
2. Is the grammar and punctuation acceptable? (0.25)
3. Is the title a concise statement of the main topic? (0.25)
4. Does the title identify the actual variables under investigation and the relationship between them? (0.25)
5. Does the introduction describe the question the author intends to investigate and how their research relates to other work in the field? (0.25)
6. Does the literature review justify the proposed research by identifying a hole in existing scholarship? (0.25)
7. Does the introduction build to and conclude with the research questions or study objectives the author proposes to address? (0.25)
8. Is the literature review supported with at least five citations? (0.25)
9. Is there a **Methods** section that describes how the research was conducted? (0.25)
10. Does the **Methods** section include a discussion of the *sample*, *measures*, and *procedures*. (0.50)
11. Is there an **Implications/Predicted Results** section that discusses real implications linked to possible results? (0.25)

A well-written paper that convinces you the author can fill a gap in the existing scholarship, has a title that is a concise statement of the main topic and identifies the actual variables under investigation and the relationship between them, has an introduction supported with at least five references, has a Methods section that describes the sample, measures, and procedures, and has a section that discusses real implications linked to possible results should receive a 3. A submission that satisfies two of the three criteria perfectly or most but not all of the three criteria should receive a 2. A submission that satisfies only one of the three criteria should receive a 1. If the submission does not render or the submitter did not submit the correct assignment, they should receive a 0.

**Optional**

- Read chapter 5 of Reproducible Research with R and RStudio.

**Week 5: (Sep 14, 16)**

- Read Chapters 6 and 7 of PDS (Working with Data and Data Management).
- This week you will "work with data".
- Complete your required peer reviews of the **Research Plan Assignment** by 11 PM Tuesday.
- Revise your Research Plan Assignment as needed.
- Watch the Data Wrangling with R and RStudio (55 minutes) video.
- Watch the first 30 minutes of The Grammar of Graphics and Data Science.
- Watch the Working with Data video (41 min).
- Watch the Data Management video (39 min).
- Complete you peer grading evaluations for the **Research Plan Assignment** NLT 11 PM Tuesday.

**The Data Management Assignment is Challenging and will require many hours of your time—so please start now — not next week when it is due**

**Optional**

- Read chapter 6 of Reproducible Research with R and RStudio.

**Week 6: (Sep 22, 24)**

- Read/review Chapters 6 and 7 of PDS as needed.
- This week you will "Manage your Data" based on your research proposal.
- Submit via http://www.crowdgrader.org the **Data Management Assignment** NLT 5 PM Friday (Sep 25). Directions: Select three *secondary* categorical variables from the data set you are using. Recode your data to create factors with appropriate labels. Create a barplot for each of your factors, and write a sentence or two explaining each barplot. Show all `R` code used to manage your data and used to create your barplots with `R` code chunks in your `*.Rmd` file. Submit the resulting `*.html` file to crowdgrader. The direct link for the **Data Management Assignment** is http://www.crowdgrader.org/.

**Grading Rubric for Data Management Assignment (PR#3)**

1. Does the *.html file include three categorical variables? 0/1
2. Is there a barplot for each categorical variable with appropriate labels and R code? 0/1
3. Are original variables recoded to readable names and numeric values recoded appropriately? 0/1

- Push your "Research Proposal" to your private repository NLT 5 PM Friday (Sep 27) and resulting `*.html` files.

I will use the same grading rubric (below) you used in the peer evaluation phase of the research proposals. I will also check to make sure the document compiles based on the `*.Rmd` and `*.bib` files in your **Research Proposal** folder.

**Grading Rubric for Research Proposal**

1. Does the document open without problems? (0.25)
2. Is the grammar and punctuation acceptable? (0.25)
3. Is the title a concise statement of the main topic? (0.25)
4. Does the title identify the actual variables under investigation and the relationship between them? (0.25)
5. Does the introduction describe the question the author intends to investigate and how their research relates to other work in the field? (0.25)
6. Does the literature review justify the proposed research by identifying a hole in existing scholarship? (0.25)
7. Does the introduction build to and conclude with the research questions or study objectives the author proposes to address? (0.25)
8. Is the literature review supported with at least five citations? (0.25)
9. Is there a **Methods** section which describes how the research was conducted? (0.25)
10. Does the **Methods** section include a discussion of the *sample*, *measures*, and *procedures*. (0.50)
11. Is there an **Implications/Predicted Results** section that discusses real implications linked to possible results? (0.25)

A well-written paper that convinces you the author can fill a gap in the existing scholarship, has a title that is a concise statement of the main topic and identifies the actual variables under investigation and the relationship between them, has an introduction supported with at least five references, has a Methods section that describes the sample, measures, and procedures, and has a section that discusses real implications linked to possible results should receive a 3. A submission that satisfies two of the three criteria perfectly or most but not all of the three criteria should receive a 2. A submission that satisfies only one of the three criteria should receive a 1. If the submission does not render or the submitter did not submit the correct assignment, they should receive a 0.

**Optional**

- Read chapter 7 of Reproducible Research with R and RStudio.

**Week 7: (Sep 29, Oct 1)**

- Read Chapter 8 of PDS (Graphing One Variable at a Time).
- Watch Graphing 1 Video.
- Work on **Univariate Graphing Assignment** PDS.
- The **Univariate Graphing Assignment** is due NLT 5 PM Friday (Oct 2). Submit assignment. via http://www.crowdgrader.org. The direct link for the **Univariate Graphing Assignment** is (http://www.crowdgrader.org/).

**Grading Rubric for Univariate Graphing Assignment (PR#4)** Does the document have sections that explain the `Purpose of the Study` (0.25), the `Variables` used in the study (0.25), and how the data was managed (0.25)?

Have the variables proposed for use in the project been labeled and renamed? (0.25)

Are there graphs for at least two of the categorical variables? (0.25) Is there a sentence or two describing what the reader is viewing? (0.25) Have the $x$- and $y$-axes been labeled appropriately? (0.25)

Is there either a histogram or density plot of one of the numeric variables proposed in the study? 0.5

When describing the distribution of the reported histogram or density plot, does the author describe the shape (0.25) and use appropriate statistics to characterize the center (0.25) and spread (0.25)?

**Optional**

- Read chapter 8 of Reproducible Research with R and RStudio.

**Week 8: (Oct 6, 8)**

- Read Chapter 9 of PDS (Graphing Relationships), and watch all videos in the chapter.
- Graphing 2 Video
- Graphing Rules
- Common Graphing Mistakes
- Work on **Bivariate Graphing Assignment**.
- **Bivariate Graphing Assignment** due NLT 5 PM Friday (Oct 9). Submit assignment via http://www.crowdgrader.org. The direct link for the **Bivariate Graphing Assignment** is (http://www.crowdgrader.org/)

**Bivariate Graphing Assignment**

This is a continuation of the material submitted for the **Univariate Graphing Assignment** assignment submitted in week07. You should revise your assignment as needed from last week and add one bivariate graph of your principal constructs and one one multivariate graph of your principal constructs.

**Grading Rubric for Bivariate Graphing Assignment (PR#5)** Does the document have sections that explain the `Purpose of the Study` (0.25), the `Variables` used in the study (0.25), and how the data was managed (0.25)?

Are there graphs for at least two of the categorical variables? (0.25) Is there a sentence or two describing what the reader is viewing? (0.25)

Is there either a histogram or density plot of one of the numeric variables proposed in the study? (0.25)

Is there a bivariate graph of the principal constructs the researcher is proposing to study? (0.50)

Is there a multivariate graph of the principal constructs the researcher is proposing to study? (0.50)

Do all graphs have the $x$- and $y$-axes labeled appropriately? (0.25). Do all graphs have descriptive titles? (0.25)

**Optional**

- Read chapter 9 of Reproducible Research with R and RStudio.

**Week 9: (Oct 13 — Fall Break Oct 15, 16)**

- Read Chapter 10 of PDS (Hypothesis Testing), and watch all videos in the chapter.
- Read the documents `SamplingDistributions.html` and `StatisticsTemplate.html` in the `/Statistics` folder.

You should revise your assignment from last week as needed based on peer comments. I encourage everyone to make an appointment with the writing center and to have the writing center review your current assignment.

**Optional**

- Read chapter 10 of Reproducible Research with R and RStudio.

**Week 10: (Oct 20, 22)**

- Read Chapter 11 of PDS (Analysis of Variance), and watch all videos in the chapter,
- Read the document `ANOVA.html` in the `/Statistics` folder.
- Work on the **ANOVA assignment**.
- The **ANOVA assignment** is due NLT 5 PM Friday (Oct 23). Submit the assignment via http://www.crowdgrader.org. The direct link for the **ANOVA Assignment** is (http://www.crowdgrader.org/).

**ANOVA Assignment**

This is a continuation of the material submitted for the **Bivariate Graphing Assignment** submitted in week 09. You should revise your assignment as needed based on peer comments. I encourage everyone to make an appointment with the writing center and to have the writing center review your current assignment.

**Grading Rubric for ANOVA Assignment (PR#6)** Does the document have sections that explain the `Purpose of the Study` (0.1), the `Variables` used in the study (0.1), and how the data was managed (0.1)?

Are there graphs for at least two of the categorical variables? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Is there either a histogram or density plot of one of the numeric variables proposed in the study? (0.1)

Is there a bivariate graph of the principal constructs the researcher is proposing to study? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Is there a multivariate graph of the principal constructs the researcher is proposing to study? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Do all graphs have the $x$- and $y$-axes labeled appropriately? (0.1). Do all graphs have descriptive titles? (0.1)

Is there a null and alternative hypothesis appropriate for the data? (0.6)

Is there code and output for testing the null hypothesis with an ANOVA? (0.6)

Is there an appropriate explanation of the results including a post hoc test with interpretation if the results from the ANOVA are significant? (0.6)

**Optional**

- Read chapter 11 of Reproducible Research with R and RStudio.

**Week 11: (Oct 27, 29)**

- Read Chapter 12 of PDS (Chi-Square Test of Independence), and watch the embedded videos.
- Read the document `ChiSquare.html` in the `/Statistics` folder.
- Work on the **Chi-Square Assignment**.
- The **Chi-Square assignment** is due NLT 5 PM Friday (Oct 30). Submit assignment via http://www.crowdgrader.org. The direct link for the **Chi-Square Assignment** is (http://www.crowdgrader.org/).

**Chi-Square Assignment**

This is a continuation of the material submitted for the **ANOVA assignment** submitted in week 10. You should revise your assignment as needed based on peer comments. I encourage everyone to make an appointment with the writing center and to have the writing center review your current assignment.

**Grading Rubric for Chi-Square Assignment (PR#7)** Does the document have sections that explain the `Purpose of the Study` (0.1), the `Variables` used in the study (0.1), and how the data was managed (0.1)?

Are there graphs for at least two of the categorical variables? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Is there either a histogram or density plot of one of the numeric variables proposed in the study? (0.1)

Is there a bivariate graph of the principal constructs the researcher is proposing to study? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Is there a multivariate graph of the principal constructs the researcher is proposing to study? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Do all graphs have the $x$- and $y$- axes labeled appropriately? (0.1). Do all graphs have descriptive titles? (0.1)

Is there a null and alternative hypothesis appropriate for the ANOVA? (0.1)

Is there code and output for testing the null hypothesis with an ANOVA? (0.1)

Is there an appropriate explanation of the results including a post-hoc test with interpretation if the results from the ANOVA are significant? (0.1)

Is there a null an alternative hypothesis for a Chi-Square test of independence? (0.5)

Is there code and output for testing the null hypothesis with a Chi-Square test of independence? (0.5)

Are there appropriate post-hoc tests if the Chi-Square test resulted in a significant *p-value*? (0.2)

Is there a sentence or two describing the results of the Chi-Square test(s)? (0.3)

**Optional**

- Read chapter 12 of Reproducible Research with R and RStudio.

**Week 12: (Nov 3, 5)**

- Read Chapters 13 and 18 in PDS (Correlation Coefficient and Poster Presentation), and watch the embedded videos.
- Work on your poster.
- Work on the **Correlation Assignment**.
- The **Correlation Assignment** is due NLT 5 PM Friday (Nov 6). Submit the assignment via http://www.crowdgrader.org. The direct link for the **Correlation Assignment** is (http://www.crowdgrader.org).

**Correlation Assignment**

This is a continuation of the material submitted for the **Chi Square Assignment** submitted in week 11. You should revise your assignment as needed based on peer comments. I encourage everyone to make an appointment with the writing center and to have the writing center review your current assignment.

**Grading Rubric for Correlation Assignment (PR #8)** Does the document have sections that explain the `Purpose of the Study` (0.1), the `Variables` used in the study (0.1), and how the data was managed (0.1)?

Are there graphs for at least two of the categorical variables? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Is there either a histogram or density plot of one of the numeric variables proposed in the study? (0.1)

Is there a bivariate graph of the principal constructs the researcher is proposing to study? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Is there a multivariate graph of the principal constructs the researcher is proposing to study? (0.1) Is there a sentence or two describing what the reader is viewing? (0.1)

Do all graphs have the $x$- and $y$-axes labeled appropriately? (0.1). Do all graphs have descriptive titles? (0.1)

Is there a section for the Correlation assignment describing the two numeric variables the author uses? (0.5)

Is there code and output for computing the correlation coeffiecient? (0.4)

Does the author explain their results following the example in PDS? (0.3)

Does the author explain their results? (graphs should be used in the explanation) (0.3)

**Optional**

- Read chapter 13 of Reproducible Research with R and RStudio.

**Week 13: (Nov 10, 12)**

- Read Chapters 15 and 17 in PDS (Linear Regression and Confounding and Multivariate Models), and watch the embedded videos.
- Read the document `Regression.html` in the `/Regression` folder.
- Work on your poster.
- Work on the the **Regression Assignment**
- The **Regression Assignment** is due NLT 5 PM Friday (Nov 13). Submit the assignment via http://www.crowdgrader.org. The direct link for the **Regression Assignment** is (http://www.crowdgrader.org/).

**Regression Assignment**

This is a continuation of the material submitted for the **Correlation** submitted in week 13. You should revise your assignment as needed based on peer comments. I encourage everyone to make an appointment with the writing center and to have the writing center review your current assignment.

**Grading Rubric for Regression Assignment (PR#9)** Is there a section for the Regression assignment? (0.5)

Is there code and output for testing appropriate models? (1.5)

Does the author describe their results appropriately? (1)

**Optional**

- Read chapter 14 of Reproducible Research with R and RStudio.

**Week 14: (Nov 17, 19)**

- Read Chapters 16 and 18 in PDS (Sampling and Designing Studies and Poster Presentation), and watch the embedded videos.
- Work on your poster.

**Week 15: (Nov 24, No Class Nov 25, 26, and 27; Dec 1, Poster Dec 3)**

- Work on your poster.
- Print out your poster.
- Present your poster (December 1, 2015, PLEMMONS STUDENT UNION - 137A Calloway Peak).
- Celebrate!