DCS 105 Calling Bull

Fall 2024, Bates College MWF 8 - 9:20 or 9:30 - 10:50 AM

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# Schedule Overview

**Wed 9/6 Week 1 - 3: Introduction to Course and Course Themes**

**Mon 9/25 Week 4 - 8: Creating Bullshit with Data**

**Wed 10/30 Week 9 - 11: Mid-Term Project & the Bullshit Ecosystem**

**November Break**

**Mon 11/27 Week 12 - 14: Refuting Bullshit**

**Dec 12-15 Final Project Due**

# Visual Key

In-class R programming language (R programming skills, RStudio)

Data Camp tutorials for the R programming language

 Asynchronous activities to be completed (See Lyceum)

 In-class activities

  [Calling Bull videos](https://callingbullshit.org/videos.html) on Youtube

Perusall Readings on Lyceum

 Case Studies and Projects - Programming and data visualization skills applied to bullshit exploration

 Check-in session, instructor and or attached tutor available to answer questions or check lab reports during scheduled class time.

# Typical Week

 **Monday**: Figure of the Day, Discussion on BS theme

HW: Data Camp benchmark, Case Study Readings

**Wednesday**: Data Sci Byte, Project and/or Case Study

HW**:** Data Camp benchmark and/or complete Case Study

**Friday**: Friday Support for Data Camp benchmark/Project/Case Study

HW: Reflection, watch  Videos and do Readings for next week’s theme

# Week by week overview

**Note: Please follow what is posted on Lyceum.** The links to readings/videos provided below are only for your reference/optional further reading.

| **Week** | **Theme** | **Due** |
| --- | --- | --- |
| **Part I: The 5 Ws of Bullshit** |
| **Week 1**: Sept 4**Intro to Course** | W: Introduction to each other, bullshit, and the courseF: Introduction to programming software and ideas, R, RStudio, DataCamp, Colab | W: asynchronous eventFirst Day ?sF: indicates Data Camp activitySign up for DataCamp and complete first benchmark *Introduction to R Ch 1 & 2*, [Install R & RStudio](https://docs.google.com/document/d/1x57M6qLERMI8H4FLUxK06DV2kWQDI8xxTpkOYUJL3UI/edit?usp=sharing), Self-assessment baseline |
| **Week 2:**Sept 11**Spotting a wild bull** | M:What is BS?, [BS inventory](https://docs.google.com/document/d/1t1MmXX3WoG-QDmsIwPXimGhGmvzZXOUfKtJhMQfd_uA/edit?usp=sharing)W: Spotting bull, Storing variables[Food Stamp](https://callingbullshit.org/case_studies/case_study_foodstamp_fraud.html) Data Byteoptional information eventF: indicates Data Camp activity DataCamp Lab CAT/TA Support | M: event recorded and available afterV1, Perusall readings on LyceumR1W: event recorded and available afterV2, Perusall readings on LyceumR2 F: indicates Data Camp activity *Introduction to R Course* due, BS inventory help & Reflection 1 |
| **Week 3:**Sept 18**Open Science** | M: Data, bias, and open science, BS inventory discussionW: computer icon5W framework and Case Study Lab [Caffeine-Free in R](https://docs.google.com/document/d/1v90mPh2a-G-oH3IBZuGbN9ECOLWOuIvJJjjGHEsvx-s/edit) optional information eventF:  Support  | M: asynchronous event[BS inventory](https://docs.google.com/document/d/1t1MmXX3WoG-QDmsIwPXimGhGmvzZXOUfKtJhMQfd_uA/edit?usp=sharing) due, [How do you know podcast](https://open.spotify.com/episode/5hnNe8a5qFXXhIPPdxEXDS?si=bHQjuX5ETtSj_m1JRfm4Fg)W: Perusall readings on Lyceum[Caffeine](https://callingbullshit.org/case_studies/case_study_caffeine_free.html) readingsF: computer iconCaffeine Case Study |
| **Part II: How to lie with data** |
| **Week 4:**Sept 25**It’s a trap!** | M: Statistical traps, Musicians and mortality Organizing Data W: computer iconCase Study Lab: [Mammograms](https://docs.google.com/document/d/1n8_63626nlwK8OV1L0eEKbOnOecn2L4W8DGfmw9hvko/edit?usp=sharing)optional information eventF: Support  | M: event recorded and available afterV4, Perusall readings on Lyceum [R5](https://www.callingbullshit.org/syllabus.html#Statistical) W: Perusall readings on LyceumMammogram readingsF: indicates Data Camp activity *Intermediate R Ch 1-2* & asynchronous eventReflection 2 |
| **Week 5:**Oct 2**Causation vs Correlation** | M: Causality, Traffic W: computer iconCase Study Lab: [Storks and Babies in R](https://docs.google.com/document/d/1SZjkhepznXkET9bIWzoQrfGzLp7cwsDhHnPI1_ewOVQ/edit?usp=sharing)optional information eventF:  Support  | M: Reflection, event recorded and available afterV3, Perusall readings on Lyceum [R4](https://www.callingbullshit.org/syllabus.html#Causality) & [Pearson](https://www.cambridge.org/core/journals/historical-journal/article/making-of-a-new-race-in-the-early-twentieth-century-imperial-imaginary/742428EAB535EBE440B49DE4145FCCB0)W: Perusall readings on LyceumStorks and Babies readingF: computer iconStorks and Babies Case Study, keep working on indicates Data Camp activityDC *Intermediate R* |
| **Week 6:**Oct 9**WM(ath)D** | M: Big data, [Criminal ML](https://callingbullshit.org/case_studies/case_study_criminal_machine_learning.html) &[ML on Sexual Orientation](https://callingbullshit.org/case_studies/case_study_ml_sexual_orientation.html)W: Algorithmic biasoptional information eventF:  & indicates Data Camp activity Support  | M**:** event recorded and available afterV5, Perusall readings on Lyceum [R7](https://callingbullshit.org/syllabus.html#Big)W: indicates Data Camp activityDC *Intermediate R* due F: asynchronous eventBiweekly Reflection  |
| **Week 7:**Oct 16**Responsible AI** | M: Generative AI - LLMs and deep fakesW - F: October Recess | M: Perusall readings on Lyceum[Stochastic Parrots](https://dl.acm.org/doi/pdf/10.1145/3442188.3445922), [LLM BS](https://undark.org/2023/04/06/chatgpt-isnt-hallucinating-its-bullshitting), [Coding with AI](https://www.businessinsider.com/codex-github-copilot-chatgpt-openai-productivity-2023-3) [YouTube video AI art](https://www.youtube.com/watch?v=nIRbN52PA0o), indicates Data Camp activityDC *Introduction to Data* |
| **Week 8:**Oct 23**Data viz** | M: Visualization, Data Viz RubricW: computer icon[Track and field in R](https://docs.google.com/document/d/10aQSEEoaAB0Mn3Z-t9J8stJswrdD6-LfrE0U_Duwy3A/edit?usp=sharing)optional information eventF:  & indicates Data Camp activity Support  | M: event recorded and available afterV6, Perusall readings on Lyceum [R6](https://callingbullshit.org/syllabus.html#Visual) W: Perusall readings on LyceumTrack and FieldF: indicates Data Camp activityDC *Communicating Data Insights,* computer iconTrack and Field Case Study |
| **Part III: The Bullshit Ecosystem** |
| **Week 9:**Oct 30**It’s significant!** | M: Publication biasW: [P-hacking](https://projects.fivethirtyeight.com/p-hacking/), Peer Review #1optional information eventF:  & indicates Data Camp activity Support  | M: event recorded and available afterV7, Perusall readings on Lyceum[R8](https://callingbullshit.org/syllabus.html#Publication)W: computer icon[Final project proposal](https://docs.google.com/document/d/1XQ0cUHU-4--VP9MrxvbZVrqXhUWCPMI8B4HPfi0o54Q/edit?usp=sharing) #1F: indicates Data Camp activity DC *Intro to the TidyVerse Ch 1 -2*, asynchronous eventMid-term Self-assessment & reflection |
| **Week 10:**Nov 6**It’s everyone’s fault** | M: Predatory publishing and scientific misconductW: computer icon[Gap Project in R](https://docs.google.com/document/d/1hF6o_z0CUWNrkZCGZlLJyy_hnFRsBHaSZT0GNQyxgmk/edit?usp=sharing)optional information eventF:  & indicates Data Camp activity Support  | M: event recorded and available afterV8, Perusall readings on Lyceum[R9](https://callingbullshit.org/syllabus.html#Predatory) W: Perusall readings on Lyceum[Gender Gap](https://callingbullshit.org/case_studies/case_study_gender_gap_running.html) Readings F: computer icon Gender Gap Case Study |
| **Week 11:**Nov 13**FAKE** | M: Fake newsW: Bullshit Ecology, computer iconPeer Review #2optional information eventF: Support  | M: event recorded and available afterV9, Perusall readings on Lyceum [R11](https://callingbullshit.org/syllabus.html#Fake) & Operation InfektionW: R3, [Final Project proposal](https://docs.google.com/document/d/1XQ0cUHU-4--VP9MrxvbZVrqXhUWCPMI8B4HPfi0o54Q/edit?usp=sharing) #2F: indicates Data Camp activity DC *Intro to the TidyVerse in R Course,*  asynchronous event Week 10 Reflection  |
| **November Break 18 - 26** |
| **Part IV: The Bull is in your Court** |
| **Week 12:**Nov 27**Refuting Bullshit** | M: Refuting bullshit, [Refutation rubric](https://docs.google.com/document/d/1vISlgViSJiQjTP6hfHT6Us33wAzCOX7gTyaNzjqI1yU/edit?usp=sharing) W: Bullshit refutation in the wild, computer iconPeer Review BS #3optional information eventF: Support  | M: event recorded and available afterV10, Perusall readings on LyceumR12 (Refutation handbook)W: R10 Reading choice, [Final Project proposal](https://docs.google.com/document/d/1XQ0cUHU-4--VP9MrxvbZVrqXhUWCPMI8B4HPfi0o54Q/edit?usp=sharing) #3,Perusall readings on LyceumReadings on Ethics of Calling Bull. There are no videos this week. This week I am giving you a reading choice!!!! I couldn't figure out how to set this up in Perusall, so they are just included as links this time. Pick one of the reading options. Then come prepared to discuss. What systems are set up to ensure correct sound science? What failed or was not invoked in these systems? How were these failures exposed? Are the accused frauds or did they make a mistake? Are the accusers they being jerks or being diligent?* Option 1 A Physicist decides to expose cultural studies as "fake."
	+ [Alan Sokal (1996)](http://www.physics.nyu.edu/sokal/lingua_franca_v4.pdf) A physicist experiments with cultural studies. *Lingua Franca* 6:62-64
	+ [Jennifer Ruark (2017)](http://www.chronicle.com/article/Anatomy-of-a-Hoax/238728) Anatomy of a hoax. *Chronicle of Higher Education* (Chronicle is free if you are signed into the library)
* Option 2 Psychology researcher, Dr. Fiske, says that calling out the methodology was bullying.
	+ [Susan Fiske (2016)](https://datacolada.org/wp-content/uploads/2016/09/Fiske-presidential-guest-column_APS-Observer_copy-edited.pdf) Mob Rule or Wisdom of Crowds? *APS Observer* preliminary draft.
	+ Also read commentaries [[1]](http://daniellakens.blogspot.com.au/2016/09/why-scientific-criticism-sometimes.html) and [[2]](http://andrewgelman.com/2016/09/21/what-has-happened-down-here-is-the-winds-have-changed/).
* Option 3 Mathematics. In this case a mathematics professor at Williams College with little statistical experience decides to analyze 2020 election data, finds fraud, and writes a certified testimony. However, that investigation was itself fraudulent.
	+ [Williams Record investigation](https://williamsrecord.com/434506/news/professor-of-mathematics-steven-miller-issues-legal-statement-suggesting-ballot-irregularities-in-pa-conclusions-repudiated-by-statisticians-and-political-scientists/)
		- [Original piece](https://williamsrecord.com/wp-content/uploads/2020/11/Attachment-A.pdf) by Steven J Miller
		- [Calling out](https://liorpachter.wordpress.com/2020/11/22/williams-math-professor-investigating-voter-fraud-in-pennsylvania-finds-no-evidence/) by Lior Patcher
	+ Miller's colleague at Williams, De Veaux, looks at this from a [professional ethics](https://williamsrecord.com/435109/opinions/a-rebuttal-to-steven-millers-report-on-pa-gop-mail-in-ballot-requests/) perspective.
	+ And then De Veaux turns around writes a blog [against bullying](https://magazine.amstat.org/blog/2021/02/01/miller-controversy-perspective/)?

computer iconF target: Finish BS#3, indicates Data Camp activity DC *Intro to Data Literacy* |
| **Week 13:**Dec 4**Put it all together** | M: Introduction to ePortfoliosW: computer iconPeer Review of ePortfoliosoptional information eventF: Support  | M: Perusall readings on Lyceum[Course Summary](https://royalsocietypublishing.org/doi/10.1098/rsos.190161) W: computer iconDraft of ePortfoliocomputer iconF target: Finish portfolio housing/assembly |
| **Dec 12-15****Final Exam week** | ePortfolios are due Wednesday | computer icon[Final project](https://docs.google.com/document/d/1XQ0cUHU-4--VP9MrxvbZVrqXhUWCPMI8B4HPfi0o54Q/edit?usp=sharing) due online w/Final reflection and final self assessment |