

Week	Date	Lesson Topics	Readings	Assessments (due on Sunday at 5 PM)	Notes
Week 1	September 4, 2025	Module 1: Introduction to R and data analysis Role of programming in contemporary data analysis workflow R syntax Navigating R environment	See BB For All Course Readings	Practice Problems (1% for completion)	
Week 2	September 8, September 11, 2025	Module 2: Data wrangling and management Importing/exporting data Data types (numeric vs character, continuous vs discrete) Data structures in R (vectors, dataframes)	See BB For All Course Readings	Practice Problems (1% for completion)	
Week 3	15,18 September	Module 2: Data wrangling and management con't Principles of "clean" data Tidyverse	See BB For All Course Readings	Practice Problems (1% for completion)	
Week 4	22,25 September	Module 3: Data visualization Advanced exploration of data types & figure types Base plots with ggplot2 Formatting customizations	See BB For All Course Readings	Practice Problems (1% for completion) Worksheet 1: Intro & Wrangling (6%)	
Week 5	29 September,02 October	Module 3: Data visualization con't Creating modules for consistent formatting Formatting individual figures into a panel Effective communication with data visualization	See BB For All Course Readings		
Week 6	06 ,09 October	Module 4: Predictive data modeling Continuous data Simple linear models: associations between variables	See BB For All Course Readings	Practice Problems (1% for completion) Worksheet 2: Data Cleaning (6%)	
Week 7	13(Holliday),16 October	Module 4: Predictive data modeling con't Simple linear models: predictions based on dependent variables	See BB For All Course Readings	Practice Problems (1% for completion)	
Week 8	27,30 October	Module 5: Differential gene expression Introduction to differential gene expression with microarray data Differential gene expression with RNA-seq data	See BB For All Course Readings	Practice Problems (1% for completion) Worksheet 3: Data Visualizations and Modeling (6%)	

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Reading Week - No Classes

Week 9	3,6 November	Module 6: Dimensionality Reduction and Clustering Challenges of large datasets Principal Component Analysis Introduce loadings in principal components	See BB For All Course Readings	Practice Problems (1% for completion) Final Project Proposal (15%)	
Week 10	10,13 November	Module 6: Dimensionality Reduction and Clustering con't Determining number of clusters Introduction to differential gene expression with microarray data Microarray versus RNA-seq	See BB For All Course Readings	Worksheet 4: Gene Expression (6%)	
Week 11	17,20 November	Module 4: Predictive data modeling con't Multiple Effects Models Binomial and Poisson generalized linear models	See BB For All Course Readings	Practice Problems (1% for completion)	
Week 12	24,27 November	Module 7: The Research Pipeline Combining mining, analytics, and visualizations Principles of robust code and "good" coding practices Review for Final Project	See BB For All Course Readings	Worksheet 5: Clustering and Dimensionality Reduction (6%)	
Week 13	2,4 December	Module 7: Presentations	See BB For All Course Readings	Final Project Presentation (10%)	
Week 14	8,11 December	Module 7: Review & Catch Up Review Class work time	See BB For All Course Readings	Final Project (35%) Course evaluations (1% for completion)	