Statistics 151a: Linear models

UC Berkeley, Spring 2026

Table 1: Calendar (tentative)

Date	Day	Note	Unit	Topic	Assignment
Jan 21	Wednesday	Lecture	Introduction	Class policies	Lab 0
Jan 23	Friday	Lecture		Real-world questions	
Jan 26	Monday	Lecture		Inference and probability	
Jan 28	Wednesday	Lecture		Prediction and uncertainty	Lab 1
Jan 30	Friday	Lecture		Linear algebra review	HW 0
Feb 2	Monday	Lecture	Unit 1: Multilinear regression	Simple linear regression	
Feb 4	Wednesday	Lecture		Multilinear regression	Lab (review)
Feb 6	Friday	Lecture		———	Quiz 0
Feb 9	Monday	Lecture		Paths to the least squares objective	
Feb 11	Wednesday	Lecture		Transforming the regressors	Lab 2
Feb 13	Friday	Lecture		Transforming the response	
Feb 16	Monday	Administrative holiday			
Feb 18	Wednesday	Lecture	Unit 2: Testing and inference	Confidence intervals review	Lab 3
Feb 20	Friday	Lecture		The multivariate normal	HW 1
Feb 23	Monday	Lecture		Z and T tests	
Feb 25	Wednesday	Lecture		Asymptotics and consistency	Lab (review)

Date	Day	Note	Unit	Topic	Assignment
Feb 27	Friday	Lecture		———	Quiz 1
Mar 2	Monday	Lecture		Heteroskedasticity and grouping	
Mar 4	Wednesday	Lecture		Model selection and F-tests	Lab 5
Mar 6	Friday	Lecture		The bootstrap	
Mar 9	Monday	Lecture	Unit 3: Regularization and machine learning	Splines and basis expansions	
Mar 11	Wednesday	Lecture		Ridge regression	Lab 6
Mar 13	Friday	Lecture		Lasso regression	HW 2
Mar 16	Monday	Lecture		Cross validation and model selection	
Mar 18	Wednesday	Lecture		Conformal intervals	Lab (review)
Mar 20	Friday	Lecture		———	Quiz 2
Mar 23	Monday	Spring break		———	
Mar 24	Tuesday	Spring break		———	
Mar 25	Wednesday	Spring break		———	
Mar 26	Thursday	Spring break		———	
Mar 27	Friday	Spring break		———	
Mar 30	Monday	Lecture	Unit 4: Criticism and diagnostics	Outliers and leverage	
Apr 1	Wednesday	Lecture		The influence function	Lab 7
Apr 3	Friday	Lecture		Regression to the mean	HW 3
Apr 6	Monday	Lecture		The FWL theorem	
Apr 8	Wednesday	Lecture		Omitted variable bias	Lab (review)
Apr 10	Friday	Lecture		———	Quiz 3
Apr 13	Monday	Lecture	Unit 5: Generalizations	Logistic regression	
Apr 15	Wednesday	Lecture		Poisson regression	Lab 8
Apr 17	Friday	Lecture		Nonlinear least squares	HW 4
Apr 20	Monday	Lecture		Random effects models	

Date	Day	Note	Unit	Topic	Assignment
Apr 22	Wednesday	Lecture		Hierarchial modeling	Lab (review)
Apr 24	Friday	Lecture		Hierarchial modeling	Quiz 4
Apr 27	Monday	Lecture	Unit 6: Special topic	TBD	
Apr 29	Wednesday	Lecture		TBD	Lab (projects)
May 1	Friday	Lecture		TBD	HW 5
May 4	Monday	Lecture	Final projects		
May 6	Wednesday	Lecture			Lab (projects)
May 8	Friday	Lecture			

Unelss otherwise noted, the primary materials for the course are the lecture notes, which will be posted to the course website in advance of class. The following textbooks are useful supplementary texts and are all either freely available online or available electronically through the UC Berkeley library:

- SMT: Statistical Models: Theory and Practice Freedman
- LME: Linear Models and Extensions Ding
- ISL: An Introduction to Statistical Learning James, Witten, Hastie, Tibshirani
- VDS: Veridical Data Science Yu, Barter
- ETM: Econometric Theory and Methods Davidson, MacKinnon

Other books of interest to the class are

- FPP: Statistics Freedman, Pisami, Purves
- RDS: R for Data Science, Wickham, Grolemund
- ROS: Regression and other Stories Gelman, Hill, Vehtari