



WEEK 12 STUDY GUIDE

The Big Picture

The least squares predictor of one variable given another, and the error in it

- If you have the scatter diagram of simulated (X, Y) pairs, then Data 8 ideas say that given X , the best predictor of Y is the “center of the vertical strip at X .”
- Formally, “best” means “least squares,” and the “center of the vertical strip at X ” is the conditional expectation of Y given X .
- The error in this estimate, given X , is the conditional SD of Y given X .
- This allows us to decompose the variance of Y into two easier pieces, by conditioning on X .

Week At a Glance

Mon 4/11	Tue 4/12	Wed 4/13	Thu 4/14	Fri 4/15
	Lecture	Section: Quiz 3	Lecture	Section
HW 11 Party 9am to noon HW 11 Due HW 12 (Due Mon 4/18)				
Lab 5B Due Lab 6 (Due Mon 4/18)				Lab 6 Party 3pm to 5pm
Skim Sections 22.1-22.2	Study for the quiz	Take a break	Skim Sections 22.3-22.4	Work through Chapter 22

Reading, Practice, and Live Sessions

Book	Topic	Lectures: Prof. A.	Sections: GSIs	Optional Additional Practice
Ch 22	An approach to prediction <ul style="list-style-type: none"> - 22.1 develops the main reason why conditional expectation is important for prediction - 22.2 shows that conditional expectation is a least squares predictor, and defines the error in the estimate - 22.3 decomposes variance into two pieces, by conditioning - 22.4 is a series of examples of varied uses of the method of 22.3 	Tuesday 4/12 <ul style="list-style-type: none"> - The random variable equivalent of “dropping a perpendicular” - Least squares prediction, and a new variance 	Wednesday 4/13 <ul style="list-style-type: none"> - Quiz 3 - Ch 22 Ex 6, 7 	Ch 22 <ul style="list-style-type: none"> - Ex 3, 4
		Thursday 4/14 <ul style="list-style-type: none"> - Variance by conditioning - Examples, including a look back at Section 9.2 	Friday 4/15 <ul style="list-style-type: none"> - Ch 22 Ex 2, 1, 5 	