2.830J / 6.780J / ESD.63J Control of Manufacturing Processes (SMA 6303)
Spring 2008

Degrees of Freedom summary

For use in ANOVA during model fitting/testing

Type	Symbol	Description	Value taken	Notes
Model	M	Constant	1 *or* 0	if supplied data are not centered about the mean if supplied data *are* centered about the mean
		Model		1 per parameter included in the model
Curvature	C		1 *or* 0	if test of curvature is done* if test not done
Error	E		P+L = T–M–C	
		Pure	P	1 d.o.f for every datapoint that replicates an already existing combination of input values (see, e.g., Lecture 15 slides 14 and 15). For example, if there are five values for the centerpoint, and that is the only location replicated, P would be 5–1 = 4.
		Lack-of-fit	L	L = T–C–M–P
Total	T		N *or* N–1	if supplied N data are not centered about the mean if supplied N data *are* centered about the mean

* The example in Lecture 13 slide 39 was wrong to assign 3 d.o.f. to the quadratic SS.