

```

/* SAS program for a factorial experiment */
/* with two random factors, using PROC MIXED.*/
/* Data are from the text, Example 17.2, p. */
/* 987. Response is amount of calcium */
/* measured in a standardized preparation */
/* containing 10 mg calcium. Random factor */
/* ASSAY is assay method, random factor LAB */
/* is laboratory. */
options nocenter ls=72;
data;
  input y assay lab @@;
  cards;
10.9 1 1 10.9 1 1 10.5 1 2 9.8 1 2 9.7 1 3 10.0 1 3
11.3 2 1 11.7 2 1 9.4 2 2 10.2 2 2 8.8 2 3 9.2 2 3
11.8 3 1 11.2 3 1 10.0 3 2 10.7 3 2 10.4 3 3 10.7 3 3
;
proc mixed method=reml covtest;
  class assay lab;
  model y=;
  random lab assay lab*assay;
run;

```

The Mixed Procedure

Model Information

Data Set	WORK.DATAS
Dependent Variable	y
Covariance Structure	Variance Components
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Model-Based
Degrees of Freedom Method	Containment

Class Level Information

Class	Levels	Values
assay	3	1 2 3
lab	3	1 2 3

Dimensions

Covariance Parameters	4
Columns in X	1
Columns in Z	15
Subjects	1
Max Obs Per Subject	18
Observations Used	18
Observations Not Used	0
Total Observations	18

Iteration History

Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	45.21306808	
1	1	31.89139593	0.00000000

Convergence criteria met.

Covariance Parameter Estimates

Cov Parm	Estimate	Standard Error	Z Value	Pr Z
lab	0.5617	0.6319	0.89	0.1870
assay	0.06167	0.1387	0.44	0.3283
assay*lab	0.1361	0.1485	0.92	0.1798
Residual	0.1378	0.06495	2.12	0.0169

Fit Statistics

-2 Res Log Likelihood	31.9
AIC (smaller is better)	39.9
AICC (smaller is better)	43.2
BIC (smaller is better)	36.3