Measurement Error Programs.

The programs are posted with a .txt extension since with a .sas extension some systems will automatically try to start up SAS to run the program when you click on the link

1. Estimating a Proportion.
   - \texttt{prop.k}
     Corrected estimates and confidence interval for a proportion in the presence of misclassification with sensitivity and specificity assumed known.
   - \texttt{prop.ext}
     Corrected estimates and confidence interval for a proportion in the presence of misclassification with sensitivity and specificity estimated from external validation data.
   - \texttt{prop.iv}
     Corrected estimate and confidence interval for a proportion in the presence of misclassification with sensitivity and specificity estimated from internal validation data.

2. Misclassification in $2 \times 2$ tables.
   - \texttt{22oneext}
     Analysis of two by two table with misclassification in one of the variables using estimates from external validation data. Design can be either overall random or stratified on the perfectly observed variable. Analysis is conditional on the number of observations with 0 and 1 in the perfectly measured predictor. Notation is in terms of the error being in $X$; in which case this looks at estimating $P(X = 1|y)$ for $y = 0$ or 1 and the odds ratio. In this setting this is a case-control or random sample with perfectly measured outcome and mismeasured exposure. If you reverse the role of $X$ and $Y$ then this handles a random sample or cohort (stratified on $X$) design where the error is in the response $Y$.
     Allows differential or non-differential misclassification. The data layout as given in the program assumes validation data includes the non-misclassified variable so differential misclassification can be considered.
   - \texttt{22oneext_no}
     Similar to the previous program but here the validation data does not include $Y$ and so misclassification is assumed nondifferential.
   - \texttt{22xiv}
     One variable mismeasured with internal validation data.
   - \texttt{22bothext}
     Two by two table with misclassification in both variables with external validation data and an overall random sample. Gets estimated standard errors using the bootstrap.
   - \texttt{22bothiv}
     Two by two table with misclassification in both variables with internal validation data and an overall random sample. Gets estimated standard errors using the bootstrap.

3. Simple Linear Regression
   - \texttt{slrest}
     Simple linear regression allowing error in $X$ or $Y$ or both. The measurement error variances can change across observations and the two measurement errors (if both are measured with error) can be correlated.

4. Multiple Linear Regression
   These programs handle additive measurement error in multiple linear regression. As of now, they are set up with different versions based on the number of mismeasured predictors. They all allow additional predictors not measured with error.
• mregone
  Additive error in one predictor. There can also be measurement error in the response and it can be correlated with error in the predictor.

• mregtwo.
  Additive error in two predictor. The measurement error in the two predictors can be correlated. There can be error in the response but this version assumes that if there is error in the response it is NOT correlated with errors in the predictors.