The NORMAL option in the PROC UNIVARIATE statement requests tests for normality that include the Shapiro-Wilk test and a series of EDF goodness-of-fit tests. The NORMAL option in the HISTOGRAM statement displays a fitted normal density curve, and the MU=EST and SIGMA=EST options specify that μ and σ are to be estimated from the sample.

Tests for Normality

Test		--Statistic---		-----p Value------
Shapiro-Wilk	W	0.87927	Pr < W	0.0001
Kolmogorov-Smirnov	D	0.181735	Pr > D	<0.0100
Cramer-von Mises	W-Sq	0.27774	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	1.663626	Pr > A-Sq	<0.0050

Figure 10: Goodness-of-fit tests

Based on a Shapiro-Wilk statistic *W*=0.879 with a *p*-value of 0.0001, you reject the null hypothesis and conclude that the diameter of the rods are not normally distributed. The Kolmogorov-Smirnov, Anderson-Darling, and Cramer-von Mises statistics also result in *p*-values less than 0.01, which confirm the conclusion that the data are not normally distributed.

Pattern		Interpretation
	All but a few points fall on a line	Outliers in the data
	Left end of the pattern is below the line while the right end of the pattern is above the line	Symmetric, long tails at both ends
	Left end of the pattern is above the line while the right end of the pattern is below the line	Symmetric, short tails at both ends
	Curved pattern with slope increasing from left to right	Skewed to right
	Curved pattern with slope decreasing from left to right	Skewed to left
	Staircase pattern	Data have been rounded or may be discrete

Table 1: Plot Diagnostics

The UNIVARIATE procedure can create high-resolution