COURSE VALIDATION STUDY

Target Course: BIOL 120: General Organismal, Ecological and Evolutionary Biology
Prerequisite: ENGL 101

The following is statistical data on the validation of the following course prerequisite: Successful completion of ENGL 101 as a prerequisite for BIOL 120.

BIOL 120 Success * ENGL101 Crosstabulation

Count

		Completed ENGL 101		Total
		No	Yes	
BIOL 120 SUCCESS	No	43	40	83
	Yes	83	103	186
Total		126	143	269

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.189(b)	1	.275		
Continuity Correction(a)	.918	1	.338		
Likelihood Ratio	1.188	1	.276		
Fisher's Exact Test				.292	.169
Linear-by-Linear Association	1.185	1	.276		
N of Valid Cases	269				

a Computed only for a 2x2 table
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 38.88.

Chi-Square Measurement:

The *Chi-Square* measurement tests the hypothesis (*null hypothesis*) that there is *"no difference"* between the two groups. In order to reject this hypothesis and conclude that there is a statistically significant difference between the two groups Chi-Square must be greater than **3.84**. To ensure the validity of the Chi-Square test there is a minimum frequency threshold for a 2x2 table that should be obeyed. If any of the observed frequencies in the cross-tabulation table are **5 or below** than the validity of the Chi-Square measurement is questionable.

CHI-SQUARE = 1.189 FAIL TO REJECT NULL HYPOTHESIS

Fisher's Exact Measurement:

The *Fisher's Exact* measurement can be used as an alternative to the Chi-Square measurement where a large sample is difficult to obtain. In order to reject the null hypothesis and conclude that there is a statistically significant difference between the two groups Fisher's Exact must have a P-value **less than** the standard **.05**.

FISHER'S EXACT = .292 FAIL TO REJECT NULL HYPOTHESIS

Ratio:
The ratio to be measured is the ratio of ***right response:wrong response***.
A *right response* would be nonsuccess in the prerequisite course combined with nonsuccess in the target course or success in the prerequisite course combined with success in the target course. A *wrong response* would be nonsuccess in the prerequisite course combined with success in the target course or success in the prerequisite course combined with nonsuccess in the target course. For the *study ratio* to meet the *ratio criteria* it must be greater than or equal to **2:1**.

RATIO: 43+103:83+40 = **146:123** FAILED CRITERIA

Percent increase:
Percent increase is measured by subtracting the percent success before adjusting for the prerequisite from the percent success after adjusting for the prerequisite. For the *study percent increase* to meet the *percent increase criteria* there must be a difference greater than or equal to **10%** in the positive direction.

PERCENT INCREASE: FAILED CRITERIA
186/269 = 69.1% Before Prerequisite
103/143 = 72.0% After Prerequisite

Summary
A total sample of 100, with at least 20 students in the non-successful group for the target course is recommended. In this case the total sample is sufficient (269). Additionally, the number in the non-successful group is above the recommended level (83). Both the chi-square test and the Fishers Exact test fail to reject the null hypothesis that success in BIOL 120 is independent of success in ENGL 101, showing that there is no statistical evidence that ENGL 101 is necessary for success in BIOL 120. ENGL 101 also fails both the Ratio and Percent Increase criteria. At this time there is no statistical evidence that ENGL 101 is suitable as a prerequisite for BIOL 120.