

**INTERPOLATION, EXTRAPOLATION AND LEAST SQUARE ANALYSIS OF THE
BOARD PASSERS RATE IN SELECTED PROGRAMS OF
CAVITE STATE UNIVERSITY- MAIN CAMPUS**

Undergraduate Thesis
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ABSTRACT

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The study was conducted to: interpolate the polynomial function defined by board passers rate data, extrapolate the board passers rate next year in three selected programs, trace the appropriate model for the least square analysis and regression analysis, compare the interpolating function model to the least square model and predict the rate of change of the board passers rate using the interpolating polynomial.

The secondary data used in the study came from the College Registrars Office of the three selected programs of Cavite State University namely Bachelor of Science in Nursing, Bachelor of Science in Agricultural Engineering and Bachelor of Science in Secondary Education. Different models were formulated using interpolation and least square analysis. The best model for the board passers rate of the three selected programs was selected using the statistical software. The best model fitted for the board passers rate of the Bachelor of Science in Nursing was the least square model

$$y = 0.011x + 0.010x^2 - 4.055 \times 10^{-9}x^5 + 1.077 \times 10^{-19}x^{10} + 25.357.$$

The predicted value of the interpolating model was more accurate than the least square model. The least square model for the board passers rate of Bachelor of Science in Agricultural Engineering was the best model fitted to the data whose model was

$y = -0.158x + 0.030x^2 - 2.473E^{-09}x^6 + 2.048E^{-18}x^{11} - 3.012E^{-35}x^{20} + 6.937.$ The least square model predicts the values of the rate of board passers more accurately than the interpolating model because the predicted value from the model shows approximately close to the true value of the board passers rate. The best fitted

model for the for Bachelor of Science in Secondary Education was the interpolating model

$$P(X) = -0.0072942x^9 + 0.357228x^8 - 7.47427x^7 + 87.2641x^6 - 622.938x^5 + 2800.42x^4 - 7863.53x^3 + 13166.6x^2 - 11772.2x + 4240.45.$$
 It was more reliable to use the interpolating polynomial than the least square because predicted value are using interpolating polynomial almost same with the true value of the board passers rate. Therefore, the faculty and administrators of the selected programs can enhance the curriculums of the programs by applying these models.