

## ABSTRAK

Tugas akhir ini membahas tentang konsep model regresi polinomial ortogonal dalam menjelaskan hubungan fungsional antara respon dan taraf perlakuan pada rancangan percobaan. Pada tugas akhir ini, model regresi polinomial ortogonal diterapkan pada hasil percobaan Rancangan Acak Lengkap (RAL) dan Rancangan Acak Kelompok (RAK).

Secara umum, langkah-langkah yang diperlukan dalam menduga model regresi polinomial ortogonal pada rancangan percobaan, yaitu memulainya dengan menentukan persamaan polinomial ortogonal berdasarkan taraf perlakuan, dilanjutkan dengan pengujian asumsi, menyusun tabel Analisis Variansi pada data, Kemudian menentukan koefisien polinomial ortogonal, melakukan uji polinomial ortogonal, diakhir dengan penentuan model regresi polinomial terbaik.

Penggunaan model regresi polinomial ortogonal memiliki kelebihan dalam hal mencegah terjadinya *overfitting* kurva, karena adanya seleksi derajat polinomial yang signifikan dan memiliki galat terkecil.

**Kata kunci:** *Polinomial Ortogonal, Rancangan Acak Lengkap, Rancangan Acak Kelompok*

## ABSTRACT

This final project discusses the concept of orthogonal polynomial regression model in explaining the functional relationship between response and treatment level in the experimental design. In this final project, orthogonal polynomial regression model has applied to the completely randomized design and randomized block design of experimental data.

In general, the estimation of orthogonal polynomial regression model in the experimental design need the following steps. First is starting by determining the orthogonal polynomial equation based on the treatment level, followed by testing assumptions, compiling an Analysis of Variance table on the data, then determining the coefficients of orthogonal polynomials, testing orthogonal polynomials, and finally determine of the best polynomial regression model.

The use of orthogonal polynomial regression models has the advantage of preventing curve overfitting due to the selection of polynomial degrees which are significant and have the smallest error.

**key words:** *Orthogonal polynomial, completely randomized design, randomized block design*

