Lampiran 1

Analisis ANOVA

1. Untuk mengetahui perbedaan respon dosis radiasi dari masing-masing alat ukur digunakan uji analisis variansi model One Way ANOVA. Model ini digunakan karena pada penelitian ini menggunakan satu faktor perlakuan tunggal.

Tabel L.1 Tabel a taraf perlakuan faktor tunggal dengan n ulangan

Ulangan (n)	**Perlakuan**		
	Film Badge	**Alat Ukur Standart**	**Dosimeter Elektronik**
1	Y_{11}	Y_{21}	Y_{31}
2	Y_{12}	Y_{22}	Y_{32}
3	Y_{13}	Y_{23}	Y_{33}
Total	Y_1	Y_2	Y_3
Nilai Tengah	$\overline{Y}_1$	$\overline{Y}_2$	$\overline{Y}_3$

Model Linear yang digunakan adalah :

$Y_{ij} = \mu + \tau_i + \varepsilon_{ij}$; i = 1, 2, 3, ..., a ; j = 1, 2, 3, ..., n

Dengan Y_{ij} adalah pengamatan ke-j pada perlakuan ke-i

μ adalah rata-rata umum

τ_i adalah pengaruh perlakuan ke-i

ε_{ij} adalah pengaruh galat/error percobaan ke-j yang mendapat perlakuan ke-i

Hipotesis yang akan diuji adalah :

$H_0 = \mu_1 = \mu_2 = ... = \mu_a$

Lampiran 1 (lanjutan)

$H_1 = \mu_i \neq \mu_j$ untuk paling tidak satu pasang (i , j)

Data pengamatan yang sudah diolah disajikan dalam tabel analisis variansi sebagai berikut :

Tabel L.2 Tabel analisis variansi

Sumber variasi	d . b	JK	KT	F_{hit}	F_{tabel}
Antara perlakuan	a - 1	JKP			
galat/error	a (n – 1)	JKG			
Total	an - 1	JKT			

Langkah-langkah uji F_{hit} untuk pengisian analisis variansi adalah sebagai berikut :

1. JKT $= \sum\sum Y_{ij}^2 - \frac{y_{..}^2}{an}$

2. JKP $= \sum \frac{y_i^2}{n} - \frac{y_{..}^2}{an}$

3. JKG $=$ JKT - JKP

4. KT $= \frac{JK}{a.b}$

5. $F_{hit} = \frac{KTperlakuan}{KTgalat}$

Keputusan yang digunakan adalah H_0 ditolak jika $F_{hit} > F_{tabel}$. Apabila H_0 ditolak maka paling sedikit ada satu perlakuan yang memberikan pengaruh yang signifikan tetapi belum dapat disimpulkan perlakuan-perlakuan mana

yang memberikan pengaruh-pengaruh yang berbeda, untuk itu perlu uji lanjutan. Uji lanjutan yang digunakan adalah uji lanjut Duncan.

2. Uji Lanjut Duncan

Langkah-langkah uji lanjut Duncan adalah :

1. Nilai tengah perlakuan diurutkan dari yang terkecil sampai yang terbesar.

2. $S_{\bar{Y}} = \sqrt{\frac{KTG}{n}}$

3. Dihitung wilayah nyata terpendeknya

   $R_p = r_\alpha (p , f) . S_{\bar{Y}}$, $p = 2, 3, \ldots\ldots\ldots\ldots a$

   $r_\alpha (p , f)$ nilai tabel Duncan, dengan f : derajat bebas untuk galat.

4. a. Nilai tengah terbesar dikurangi dengan nilai tengah terkecil dan dibandingkan dengan Ra, selanjutnya nilai tengah terbesar dengan nilai tengah terkecil kedua dan dibandingkan dengan R_{a-1}, dan seterusnya. Jika nilai perbedaan tersebut lebih besar dengan R_p yang bersesuaian, maka diputuskan bahwa pasangan nilai tengah tersebut berbeda nyata.

   b. Nilai tengah terbesar kedua dikurangkan dengan nilai tengah terkecil dan dibandingkan dengan R_{a-1}, dan seterusnya.

Semua data diolah dengan menggunakan program SPSS for Windows Release 6.0.

Lampiran 2

Analisis varian dan uji Duncan untuk paparan radiasi 10 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.0015	.0008	68.6832	.0001
Within Groups	6	.0001	.0000		
Total	8	.0016			

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0024 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

		Grp 1	Grp 2	Grp 3
Mean	X1			
.1833	Grp 1			
.2010	Grp 2	*		
.2153	Grp 3	*	*	

Lampiran 3

Analisis varian dan uji Duncan untuk paparan radiasi 20 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----
Variable X2 hasil
By Variable X1 film

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.0065	.0033	288.2745	.0000
Within Groups	6	.0001	.0000		
Total	8	.0066			

----- ONEWAY -----
Variable X2 hasil
By Variable X1 film

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0024 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

		Grp 1	Grp 2	Grp 3
		1	2	3
Mean	X1			
.3633	Grp 1			
.3967	Grp 2	*		
.4293	Grp 3	*	*	

Lampiran 4

Analisis varian dan uji Duncan untuk paparan radiasi 30 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.0157	.0079	693.1275	.0000
Within Groups	6	.0001	.0000		
Total	8	.0158			

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0021 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

Mean	X1	Grp 1	Grp 2	Grp 3
		1	2	3
.5433	Grp 1			
.5933	Grp 2	*		
.6457	Grp 3	*	*	

Lampiran 5

Analisis varian dan uji Duncan untuk paparan radiasi 40 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.0276	.0138	411.3808	.0000
Within Groups	6	.0002	.0000		
Total	8	.0278			

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0041 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

		Grp 1	Grp 2	Grp 3
Mean	X1			
.7200	Grp 1			
.7877	Grp 2	*		
.8557	Grp 3	*	*	

Lampiran 6

Analisis varian dan uji Duncan untuk paparan radiasi 50 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.0542	.0271	809.6047	.0000
Within Groups	6	.0002	.0000		
Total	8	.0544			

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0041 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

Mean	X1	Grp 1	Grp 2	Grp 3
		1	2	3
.8900	Grp 1			
.9837	Grp 2	*		
1.0800	Grp 3	*	*	

Lampiran 7

Analisis varian dan uji Duncan untuk paparan radiasi 75 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.0964	.0482	867.2000	.0000
Within Groups	6	.0003	.0001		
Total	8	.0967			

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0053 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

		Grp 1	Grp 2	Grp 3
Mean	X1			
1.3400	Grp 1			
1.4733	Grp 2	*		
1.5933	Grp 3	*	*	

Lampiran 8

Analisis varian dan uji Duncan untuk paparan radiasi 100 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.2017	.1008	1815.2000	.0000
Within Groups	6	.0003	.0001		
Total	8	.2020			

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0053 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

Mean	X1	Grp 1	Grp 2	Grp 3
1.7600	Grp 1			
1.9467	Grp 2	*		
2.1267	Grp 3	*	*	

Lampiran 9

Analisis varian dan uji Duncan untuk paparan radiasi 200 mR

31 May 87 SPSS for MS WINDOWS Release 6.0

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	.8289	.4144	35864.7212	.0000
Within Groups	6	.0001	.0000		
Total	8	.828			

----- ONEWAY -----

Variable X2 hasil
By Variable X1

Multiple Range Tests: Duncan test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .0021 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE:

Step	2	3
RANGE	3.46	3.59

(*) Indicates significant differences which are shown in the lower triangle

Mean	X1	Grp 1	Grp 2	Grp 3
		1	2	3
3.5500	Grp 1			
3.9163	Grp 2	*		
4.2933	Grp 3	*	*	