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FACULTY OF ENGINEERING & TECHNOLOGY

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LECTURE- 25

BSc (AG)
2nd Year , IIIrd Sem.
Statistical Methods
AES-213

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Outline of lecture

- Analysis of Variance (ANOVA)
- Introduction
- Analysis of Variance of One way Classification
- ANOVA Table of One way
- Suggested Readings & References

Introduction

A number of sample collected from the same universe give different statistical results and we have discussed the different measure of this scatter or dispersion or variance. The variation in the data may arise due to random causes or due to some specific causes. Thus the analysis of variance (ANOVA) is makes us to study whether the variation in the given data is due to random causes only or due to some other causes. Total variation is divided into two components.

- Within class
- Between class

- Hence, total sum of square = sum of square between class + sum of square with in class

Analysis of Variance of One way Classification

When we are investigating the effect of one factor only i.e. data is classified according to only one factor of classification, the classification is known as **One way classification** of Analysis of variance. Suppose N observations divided into k- classes in such a way that each observation belongs to exactly one class then-

Class	Observations				
1	x11	x12	x13	……	x1n1
2	x21	x22	x23	……	x2n2
3	x31	x32	x33	……	x3n3
.	……	……..	…….	……	…….
k	xk1	xk2	xk3	…….	xknk

ANOVA table for one way classification

Source of Variation	Degree of Freedom d.f.	Sum of Square S.S	Mean Sum of Square M.S.S.	Variance ratio calculated Fc	Table value of Ft
Between classes	k-1	V1	V1/k-1 =W1	W1 / W2	……
With in classes	N-k	V2	V2/N-k =W2		
Total	N-1				

Suggested Readings & References

1) Statistical Methods: P.N. Arora, Sumeet Arora & S. Arora; S. Chand & Company Ltd.

2) Fundamental of Mathematical Statistics: S.C. Gupta & V. Kapoor; Sultan Chand & Sons.

3) Statistics: M.R. Spiegel; Schaum's Outline Series, Mc-Graw Hill Publication.

4) Advanced Engineering Mathematics: Erwin Kreyszig; John Wiley & Sons Inc.

5) Elements of Statistics: J.P. Chauhan & S. Kumar; Krishna Publication.

* THANK YOU *