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## FACULTY OF ENGINEERING & TECHNOLOGY

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# LECTURE- 26

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



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# Outline of Lecture

## Outline of lecture

- Analysis of Variance (ANOVA)
- Level of significance in ANOVA
- Analysis of Result in ANOVA
- Applications of ANOVA
- Assumption on ANOVA
- Suggested Readings & References



## Analysis of ANOVA table with the given level of significance

- 5 % level of significance means 5% error accepted and 95% pure in sample.
- 10 % level of significance means 10% error accepted and 90% pure in sample.
- 1 % level of significance means 1% error accepted and 99% pure in sample.
- When table value  $F_t >$  Calculated value  $F_c$  then our hypothesis is accepted and errors are not significant. Also we can say that our hypothesis is correct and there is high degree of agreement between theory and practical's with the given level of significance.
- When table value  $F_t <$  Calculated value  $F_c$  then our hypothesis is rejected and errors are significant. Also we can say that our hypothesis is false and there is no agreement between theory and practical's with the given level of significance.

## Application or Advantages of ANOVA

Application of the technique of analysis of variance in the study of relationship-

- Test for the relationship between two variables.
- Test for linearity of regression.
- Test for polynomial regression.
- Test the homogeneity of a group of regression coefficients
- Test for equality of the regression equations from p-groups.
- Test for multiple linear regression model.

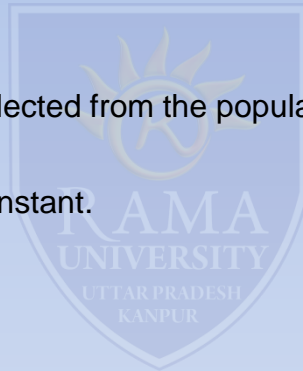


## Assumptions on ANOVA

Calculation of F is based on following assumptions-

- The sample population is normal.
- The individuals have been randomly selected from the population.
- The variance between the sample is constant.
- The treatment effects are additive.
- In one way classification observed value is

$$x_{ij} = u + a_i + b_j + e_{ij}$$



# Suggested Readings & References

## 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.

The logo of Rama University is a shield-shaped emblem. At the top is a sun with rays. Below the sun is a circle containing the letter 'R'. Underneath the circle, the word 'RAMA' is written in a serif font, followed by 'UNIVERSITY' in a smaller font. At the bottom of the shield, the word 'Rama' is written in a script font.

**\* THANK YOU \***