

INSTITUTE OF AERONAUTICAL ENGINEERING



(Autonomous)

Dundigal, Hyderabad -500 043

COMPUTER SCIENCE AND ENGINEERING

COURSE PPT

Course Name	PROBABILITY AND STATISTICS
Course Code	AHS010
Programme	B.Tech
Semester	II
Course Coordinator	Mr. J Suresh Goud
Course Faculty	Ms. P Srilatha
Lecture Number	37
Topic Covered	Problems on Estimation
Course Learning Outcome's	Understand the concept of estimation for classical inference involving confidence interval.

PROBLEMS ON ESTIMATION

CONFIDENCE INTERVAL:

A Confidence Interval (CI) refers to the amount of uncertainty associated with a sample population estimate (the mean or proportion) of a true population.

Example:

Say you wanted to determine the average age of victims of robberies in Chicago last year. Now, while there is a true answer, say 30 years old, the best you can do is find an interval that that true answer probably lies in, say, 20-40 years old.

NOTE:

Before calculating the CI from a sample mean or proportion, choose either a 90%, 95%, or 99% confidence level (CL). This is the amount of uncertainty in the sampling method. Meaning each time the same sampling method is used, the true population value would be represented in 90%, 95%, or 99% of all the sample estimated CI's. That also means that 10%, or 5%, or 1% would not contain the true population score.

LEVEL OF SIGNIFICANCE:

The null hypothesis is rejected if the p-value is less than a predetermined level, α . α is called the significance level, and is the probability of rejecting the null hypothesis given that it is true (a type I error). It is usually set at or below 5%.

MAXIMUM ERROR:

The maximum difference between the point estimate and the actual parameter, which is $1/2$ the width of the confidence interval for means and proportions.