Decision Theory

Decisions Under Risk
 - Single Stage
 - Multi-Stage

In this case it is assumed that, although inputs & processes are no longer deterministic, the variability in the input & process parameters can be described through PDFs.

There are various criteria which are used to make decisions under risk. In this class we are going to look at a few of them.

Expected-Value Criterion

If the decision is to be based on something which is random, then the suggestion here is to base the decision on expected values.

Lets us look at the application of this principle through an example.

Example: As a traffic engineer in charge of all traffic facilities in your zone, you need to come up with a preventive maintenance strategy for signals. The decision situation is thus: A signal in a group of n signals is serviced when it breaks down. All signals are taken up for preventive maintenance at the end of T periods. The problem is to determine T such that the total cost of servicing plus preventive maintenance per period is minimized.