# Chapter-5
(Understand the power system stability)

Presented by

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- Power system stability Definition:
- Power system stability is defined as the property of a power system that enables it to remain in a state of operating equilibrium under normal operating conditions and to regain an acceptable state of equilibrium after being subjected to a disturbance. Disturbances can be small or large.

Types of Power system stability:
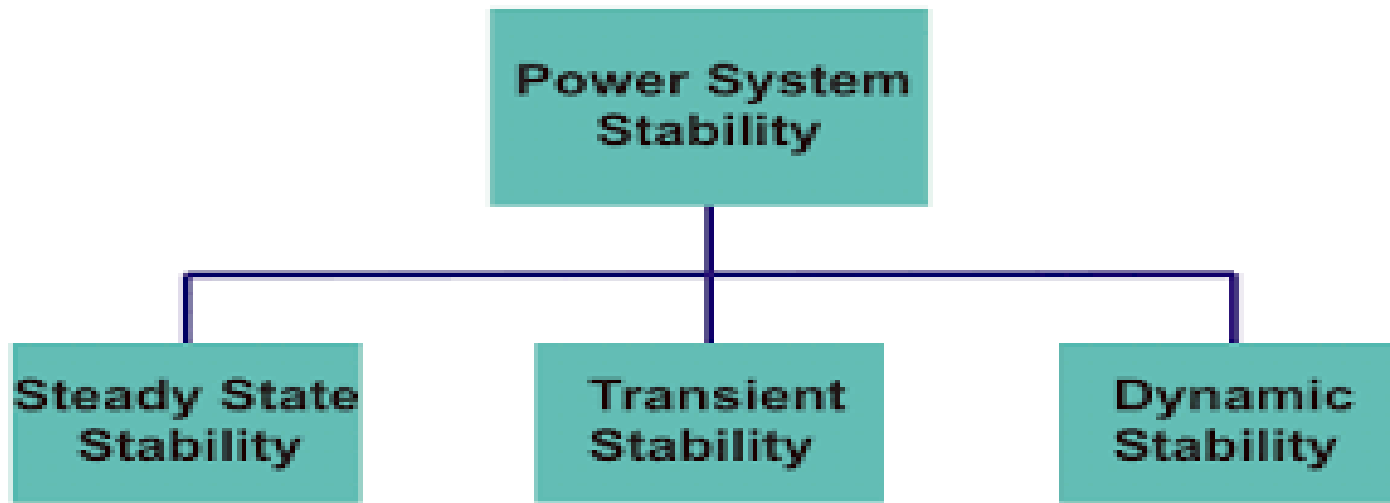
Method of power system stability:

- The ability of a synchronous power system to return to stable condition and maintain its synchronism following a relatively large disturbance arising from very general situations like switching ON and OFF of circuit elements, or clearing of faults, etc. is referred to as the transient stability in power system. More often than not, the power generation systems are subjected to faults of this kind, and hence its extremely important for power engineers to be well-versed with the stability conditions of the system.

- In general practice studies related to transient stability in the power system are done over a minimum period equal to the time required for one swing, which approximates to around 1 sec or even less. If the system is found to be stable during this first swing, its assumed that the disturbance will reduce in the subsequent swings, and the system will be stable after that as is the case. Now to mathematically determine whether a system is stable or not we need to derive the swing equation of power system.