AMMR-14 PHASE TRANSFORMATION IN METALS

1. Thermodynamic order of transformations,
2. Theory of nucleation -kinetics of homogeneous, transient & heterogeneous nucleation,
3. Theory of thermally activated growth, interface controlled growth diffusion controlled growth, interface instability & Widmanstatten growth,
4. Eutectoid growth, Discontinuous precipitation, massive transformation,
5. Transformation kinetics: Johnson-Mehl equation, Avrami model,
6. Transformation kinetics in diffusion controlled transformations,
7. Isothermal & continuous cooling transformation diagrams,
8. Precipitation & particle coarsening, Kinetics of recrystallization, theory of grain growth,
9. Effect of second phase particles Solidification
10. Nature & growth of solid liquid interfaces rapid solidification, glass transition, metallic glasses.

Reference Books:

1. Materials Science and Engineering, V. Raghvan
2. Phase Transformation in Metals and Alloys, D. A. Porter & K. E. Easterling