Chap. 6 – Synchronous Machines: Transient Performance
1. Synchronous machine transients – cross-section with typical parts
2. Transformation to DQ axis variables – dq0 ↔ abc transformation matrix
3. Basic machine relations in dq0 variables – define inductances & flux linkages
4. Analysis of sudden 3-phase short circuit – understand physics of problem; transient reactance & time constants defined
5. Effects of additional rotor circuits – subtransient
6. Models of Sync. Mach. for transient analysis – e.g., voltage behind transient reactance
7. Sync. Mach. Dynamics -- $J \frac{d^2 \theta}{dt^2} = T_{mech} - T_{elec}$ (generator action)

Chap. 7 – Polyphase Induction Machines
1. Intro- basic concepts, define slip
3. Equivalent Circuit
4. Basic circuit analysis concepts
5. Torque & power relationships – circuit analysis for torque and power vs. speed; generator action, motor action, braking region; breakdown torque; slip @ max torque & max torque
6. Tests to determine machine parameters

Chap. 8 – Polyphase Induction Machine Dynamics & Control
1. Effects of rotor resistance
2. Induction machine dynamics – similar to Section 7 of Chap. 6
3. Speed control
4. Transients – voltage behind transient reactance; time constants
5. App. of adjustable-speed drives – why beneficial, not related to drive design

Chap. 9 – DC machines
Basic physical, magnetic and electrical construction details – mainly DC machine related material in Chap 4. Compare with comparable details for AC (synchronous and induction) machines.