TEXT: Not mandatory but copies should be available.

Isaiah Shavitt and R. J Bartlett,
“Many-Body Methods in Chemistry and Physics: MBPT and Coupled-cluster Theory”
Cambridge Molecular Science
Handout. Bartlett and Musial in “Reviews of Modern Physics”.

I. Why coupled-cluster theory?
   Extensivity. Power of exponential wavefunction.
II. Systematic development of CC tools.
   Second-quantization
   Normal Ordered Operators
   Wick’s Theorem-Contractions
III. Coupled-cluster doubles Eqns.
   Algebraic Derivation
   Diagrammatic derivation
   Connections with Perturbation Theory
IV. CCSD Eqns.
V. Density Matrices
VI. CCSDT Eqns.
   CCSD(T)
   CCSDTQ$_f$
   CCSDT(Q)

VII. Unusual Cluster Approximations

VIII. Analytic Gradients and Properties

IX. Equation-of Motion CC Method for Excited States
   IP/EA-EOM-CC
   EE-EOM-CC

X. STEOM-CC


Office Hrs. no one to 2, Tuesday and Thursday. Anytime I’m in my office the door is open.

Homework and Oral Exams to determine performance.