Exercises in Extragalactic Astrophysics

Topic	*Notes*
Light I	fluxes, bandpasses, K-corrections, surface bright dimming
Light II	Planck radiation, emission and absorption lines, scattering
Telescopes	optical designs, PSFs
Atmosphere	transmission, coherence, emission
Detectors	throughput, noise models
Images	calibration, backgrounds, centroids, PSFs, fluxes
Spectra	calibration, backgrounds, extraction, LSFs
Distance ladder	parallax, photometric parallax, standard candles
Cosmology	expansion, lookback time, luminosity distance, angular diameter distance
Structure formation	linear growth, spherical collapse, halo formation
Galaxies	observations and trends for ellipticals, spirals
Interstellar medium	
Star clusters	observations of open and globular clusters
Stellar evolution	main sequence, post-MS phases
Stellar populations	ingredients, uncertainties, methods
Stellar dynamics I	orbits, CBE, Jeans equations & theorem, virial (spherical)
Stellar dynamics II	relaxation, dynamical friction, tidal effects (spherical)
Galaxy dynamics	Oort constants, dynamical modeling
Excitation & deexcitation basics	
Emission line spectra	
Star formation	
Active Galactic Nuclei	
Quasars	
Nucleosynthesis	processes, time scales, yields
Chemical evolution	single zone models
Groups & Clusters	
Gravitational Lensing	
High redshift galaxies	