Curvature and Einstein equations: Sources of gravity: the energy momentum tensor. Fluids and conservation laws, sound waves, gravitational perturbations and Jeans-instability, the basics of gravitational collapse. Relativistic fluids and covariant conservation of the energy momentum tensor. Geometry: curvature, Bianchi identities and Einstein equations, the Newtonian limit. The Einstein-Hilbert action.


Linearized gravity with and without sources. Gravitational waves: the quadrupole formula, experiments and observations. The Taylor-Hulse pulsar and gravitational radiation. Ligo and gravitational waves from collapsing compact stars.
