The National Ignition facility (NIF) relies on a suite of nuclear diagnostics to measure the neutronic output of experiments in ICF, HED, and fundamental sciences. Neutron time-of-flight (NTOF) and neutron activation diagnostics (NAD) provide the basic performance metrics of absolute neutron yield and neutron spectral content: spectral width and non-thermal content, from which implosion physical quantities of temperature and scattering mass are inferred. Three primary and three secondary instruments participate on a typical DT layered cryogenic experiment. Additionally, spatially-distributed flange-mounted NADs (FNAD) measure, with nearly identical systematic uncertainties, primary DT neutron emission to infer a whole-sky neutron field. A magnetic recoil spectrometer (MRS) shares few systematics with the comparable NTOF and NAD devices, and as such is deployed as an independent measurement of the primary neutronic quantities. The gas-Cherenkov Gamma Reaction History (GRH) instrument records four energy channels of time-resolved gamma emission to measure nuclear bang time and burn width, as well as infer carbon areal density in experiments utilizing plastic or diamond capsules. A neutron imaging system (NIS) takes two images of the neutron source, typically gated to create a coregistered primary and downscattered image. The radiochemical analysis of gaseous samples (RAGS) instrument pumps target chamber gas to a chemical reaction and fractionation system with gamma counters, allowing measurement of radionuclides with half-lives as short as 8 seconds. Solid radiochemistry collectors (SRC) with backing NAD foils collect target debris, where activated materials from the target are used as indicators of neutron spectrum content, and also serve as primary experimental diagnostic for nuclear forensics experiments. Particle time-of-flight (PTOF) measures the compression-bang time using DT- or DD-neutrons, as well as the shock bang-time using D3He-protons in implosions with lower x-ray background. In concert, these diagnostics serve to measure the basic and advanced quantities required to understand NIF experimental results.