Abstract: The standard notion of the central region of the galactic nucleus is strongly pointing toward the idea of a supermassive black hole residing in the core. The key process taking place is the gradual mass accretion fuelling the central engine. In this thesis, we focus on the well-accepted standard Shakura-Sunyaev thin accretion disc model, however, with additional perturbative elements involved. Specifically, we aim our focus on the broad (optical/UV) spectral properties of such systems and their deviations from the standard traits of the spectral energy distribution (SED). We introduce various perturbers changing either geometry of the accretion flow, namely i) optically thin plasma component in the form of advection driven accretion flow; ii) secondary black hole component; and iii) a combination of both ingredients. We show the qualitative changes in the spectra and discuss the possibility of inferring the perturbed system parameters based certain levels of uncertainty in measured flux. We also contemplate situation in which we supplement the central component (representing a hot corona) with the dust component (representing a more distant complex environment) and discuss possible disentanglement of systems with both components present simultaneously.