

SYLLABUS :-

External field methods- quantum effective action , calculation of effective potential , energy interpretation , symmetries of the effective action ; Operator product expansion- the expansion , renormalization group equations for coefficient functions , spectral function sum rules , deep inelastic scattering ; Anomalies- π^0 decay problem , transformation of the measure: the Abelian anomaly , anomaly free gauge theories ; Two dimensional field theories- the Sine-Gordon model , other integrable theories ; Introduction to Conformal field theories ; Large N theories and $1/N$ expansion. Methods for solving Einstein s equation , Causal structures , Singularities , Initial value formulation , Asymptotic flatness ; Quantum fields in curved space-time ; Quantum Gravity.