

**INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

**NAME OF DEPARTMENT/CENTRE/SCHOOL:** Department of Physics

**Subject Code:** PHL-901

**Course Title:** Physics and Technology of Ion Sources

**L-T-P:** 3-1-0

**Credits:** 4

**Subject Area:** PEC

**Course Outlines:** Review of charged particle dynamics; Gas discharge fundamentals; Classification of ion sources; Transverse and longitudinal particle beam dynamics; Beam optics with and without space charge; Extraction systems for ion sources; Types of ion sources- Penning Ionization Gauge (PIG), Electron Cyclotron Resonance (ECR), Vacuum arc, Duoplasmatron, Radio Frequency (RF), and SNICS ion source (Source of Negative Ions by Cesium Sputtering); Vacuum technology for ion sources, Beam diagnostics for ion sources.