

BIRLA INSTITUTE OF TECHNOLOGY
MESRA : RANCHI

DEPARTMENT OF SPACE ENGG. & ROCKETRY

Ph. D. Programme

Areas of Research Activities

Computational and Experimental Aerodynamics

Rocket Propulsion

Propellant Technology/ Combustion

Syllabus for Departmental Subject Specific Test

Fluid dynamic conservation equations; Incompressible and compressible flows; High speed flows; Boundary layers; Flow over smooth and rough surfaces; Conduction, convection and radiation heat transfer; Aerodynamic heating; Flow with heat transfer; Dynamics of rigid body; Static and dynamic stability; Open and closed loop control systems; Principle of propulsion; Jet propulsion and Rocket propulsion; Chemical rockets – solid, liquid and hybrid propellant rockets; Flow through nozzles; Atmospheric sounding; Satellite velocity and Satellites, Liquid fuels and atomization; Thermodynamics; Thermo chemistry; General properties of Flames; Stabilization and quenching of Flames; Chemical reactions; Chemical kinetics; Chemical equilibrium; Dissociation of combustion products; Ignition and Combustion of solid, liquid and gaseous fuels.