Aerospace Engineering

Course Title : Supersonic Aerodynamics **Number of Credits: 2**

Course Topics:

- Review of Fundamental Principles
- Governing Equation of Compressible Fluid Flow
- Conical flow, axis-symmetric flow
- The Hodograph Shock Polar, Reflection and Interaction of Shock Waves
- The Method of Characteristics
- Unsteady One-dimensional Homentropic Flow
- Wing Section and Finite Wings in Supersonic Flow
- Supersonic Aircraft Design Considerations
- Interaction of Shock and Boundary Layer

Reading Resources:

- Zucrow, Maurice J. Hoffman, Joe D. “Gas Dynamics”. Krieger Publishing Company, 1977.
- Anderson, John D. “Modern Compressible Flow: with Historical Perspective”. McGraw-Hill Education (India), 2003.
- Shapiro, Ascher H. “Dynamics and Thermodynamics of Compressible of Fluid Flow”. John Wiley and Sons, 1953.
- Zel’dovich, Ya. B. Raizer, Yu. P. “Physics of Shock Waves and High-Temperature Hydrodynamics Phenomena”. Dover Publisher, 2002.
- Courant, R. Friedrichs, K. O. “Supersonic Flow and Shock Waves”. Springer Verlag, 1976.
- Vincenti, W. G. Kruger, C. H. “Introduction to Physical Gas Dynamics”. Krieger, 1975.