

ME 6139 High Speed Aerodynamics

Semester: October 2019

Course Teacher

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Class Time: Sunday 5:30 PM – 7:00 PM
Wednesday 5:30 PM – 7:00 PM

Course Assessment

Attendance	10%
Tutorials (2 nos.)	30%
Assignment	10%
Final Exam	<u>50%</u>
Total	100%

Course Outline

Introduction to low speed flow and high speed flows;
Review of thermodynamics of compressible flow;
Integral form of conservation equations;
Isentropic flow relations;
Normal shock waves;
One-dimensional flow with heat addition and friction;
Oblique shock waves;
Shock reflections and interactions;
Prandtl-Meyer expansion waves;
Airfoils and wings in transonic and supersonic flows; Supercritical airfoils;
Linearized theory;
Method of characteristics for supersonic flow; Design of propulsion nozzles;
Characteristics of supersonic jets;
Thrust vectoring;
Measurement in high speed flows.

Reference Texts

Modern compressible flow- J D Anderson

Gas Dynamics - James E A John and Theo G Keith

Introduction to compressible fluid flow - P H Oosthuizen and W E Carscallen

Fundamentals of gas dynamics - R D Zucker and O Biblarz