

AE339: High-speed Aerodynamics

Vineeth Nair

Department of Aerospace Engineering
IIT Bombay



Outline

Total credits	6.0
Instructor	Vineeth Nair
Lecture hours	36
Quizzes	2

TAs: S. Ram Kumar (194010010)
Dinesh Brindavanam (22D0004)
Vanhar Shaik (23M0007)



Some ground rules

1. Attendance is not imposed explicitly
2. Discussions are welcome. Involve me!
3. Raise your hand, introduce yourself (at least in the beginning of the semester) before asking questions
4. Please take notes as required. Do not expect notes (may/may not be provided).
5. Tutorials will be shared to work out problems on various modules learned
6. Make sure to purchase gas tables and a calculator (needed for the exams)



Grading policy

Quizzes (2x15)	30 points
Mid-semester exam	20 points
End-semester exam	30 points
Individual project	10 points
Group project	10 points
Surprise quiz	5 points!!



Content

Module I: Isentropic flows

Module II: Normal shock waves

Module III: Supersonic flow turning

Module IV: Variable area flows

Module V: Subsonic compressible flow over airfoils and wings

Module VI: Transonic flow over airfoils and wings

Module VII: Linearized supersonic flow over airfoils and wings

Module VIII: Hypersonic flow



References

1. Oosthuizen & Carscallen, Compressible Fluid Flow, CRC Press.
2. Bertin, J. J., Aerodynamics for Engineers, Pearson Education.
3. Houghton, E. L. & Carpenter, P. W., Aerodynamics for Engineers, Butterworth-Heinemann.

