AE 306 AERODYNAMICS II (COMPRESSIBLE AERO.) AE 306

CHAPTER 0

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Course Objectives and Syllabus

by

Dr. Emre Kara , Univ. of Gaziantep, TURKEY

Instructor

Asst. Prof. Dr. Emre Kara

Office: Z04

Email: emrekara@gantep.edu.tr

Lecture webpage:

http://www1.gantep.edu.tr/~emrekara/index.php/ae306/

Office hour: FRIDAYS 16.00-17.00

Lecture assistant: Burak Çiftçioğlu

For his office hours, check his announcements:
https://akbis.gantep.edu.tr/detay/?A_ID=303026_ars-gor_burak-ciftcioglu

Course Information

Lectures: Friday – 13:30-16:00 (A11)

Credits: 3 (Theory)

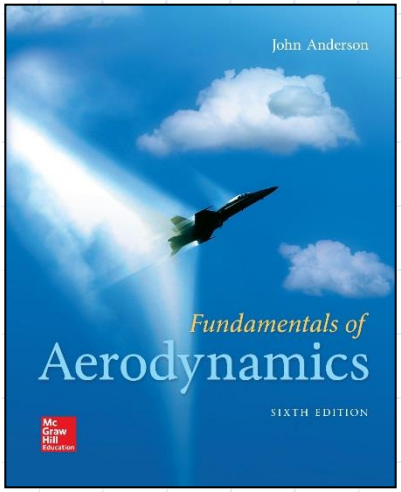
Prerequisite: AE 305

Compulsory Texts

Fundamentals of Aerodynamics

6th Edition or newer

J.D. Anderson

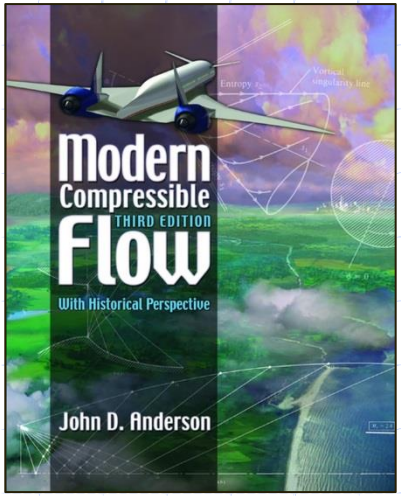


Modern Compressible Flow:

With Historical Perspective

Third Edition or newer

J.D. Anderson



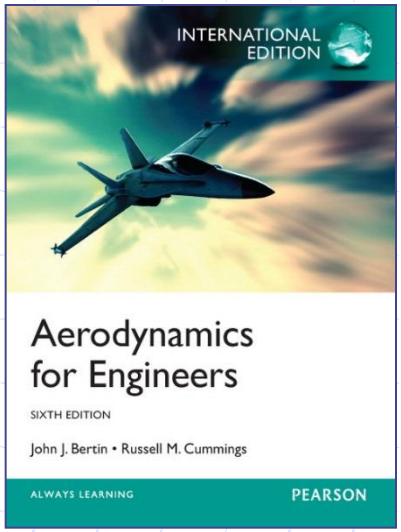
Lecture Notes

AE306 lecture notes will be shared in a password-protected site. Details will be given now.

Read the first page of the lecture notes about copyright statement carefully before reading the rest of it.

Recommended Texts

- Aerodynamics for Engineers
  International Edition
  by John J. Bertin,
  Russell M. Cummings



- "Gas Dynamics", M.H. Aksel and O.C. Eralp, Prentice-Hall, 1993.
- "Aerodynamics for Engineering Students", Fifth Edition, E.L. Houghton and P.W. Carpenter, Butterworth-Heinemann, 2003.
- "Compressible Flow", M.A. Saad, Prentice Hall, 1993.
- "The Dynamics and Thermodynamics of Compressible Fluid Flow", A.H. Shapiro, Wiley, 1953.

Course Objectives

This course deals with the fundamentals of Compressible Aerodynamics that includes:

- To define compressibility and its effects on fundamental flow equations.
- To teach students shock and expansion waves and related calculation methods.
- To teach students linearization of fundamental equations and the conditions under which they apply.
- To furnish the students with the ability to calculate the flow field and aerodynamic forces in compressible flow.

Assessment (LOOK OUT !)

- Attendance
- Quizzes (NEW)
- Examinations
- Final Grades

Assessment (LOOK OUT !)

- Attendance

Late attendances to lecture hours in class and **in quizzes** are not encouraged.

In the event of a student's class attendance falling below 70 percent, they will be designated as 'NA' (Not Attending). **This policy is not subject to exception.**

In case you have to miss a class, **you are responsible for keeping up** with the class work and being informed of all announcements made in the class concerning midterms, quiz times etc.

If you encounter difficulties of any kind, feel free to send me e-mail. I can answer them during my spare time, not in week ends.

Assessment (LOOK OUT !)

- Quizzes:
  - Quiz topics will be about the finished chapter.
  - Quiz time will be around 30 minutes. Details will be announced in class next week.
  - Tentative schedule is given four slides forward, if there happens a change, an announcement can be made in class. Otherwise we will follow the schedule.
  - IF YOU MISS A QUIZ THERE IS NO MAKE UP FOR IT.

Assessment (LOOK OUT !)

- Examinations

Two term tests are scheduled. A final comprehensive examination will be given according to the school schedules based on the same format as the term tests. They will consist of a section on concepts, definitions, and short exercises plus section with numerical problems.

You must bring one A4 page (both sides of the page can be filled) of formula sheet (HANDWRITTEN BY YOUR OWN) for each exam. You can bring two A4 pages of formula sheet to the final. Necessary tables will be supplied in apassword-protected internet site (details will be given after MT1); each student should bring his/her own copy of this AERODYNAMICS TABLE to each exam.

Make-up exams may be given for legitimate excuses if you contact the instructor as soon as you return to the school. It will be given for excused absences only and must be scheduled immediately upon returning to class. The excuse letter should be given through the department head by email. Make-ups are given in the final week.

Assessment (LOOK OUT !)

- Final Grades:

Quizzes	15 %
Midterm 1	20 %
Midterm 2	25 %
Final Comprehensive Exam	40 %
Total	100 %

Letter grades will be given relative to the average of the class !

Contents

Tentative Schedule (Dates can change under uncertain conditions.)

Lecture	Lecture Title	Class
Week-1	CHAPTER 0 – Course Objectives and Syllabus & a Demo in LAB	A11
Week-2	CHAPTER 1 – Fundamental Aspects of Compressible Flows	A11
Week-3	CHAPTER 1 – Fundamental Aspects of Compressible Flows (continues)	A11
Week-4	**Quiz 1 -** CHAPTER 2 – Shocks (Normal and Oblique) and Expansion Waves	A11
Week-5	CHAPTER 2 – Shocks (Normal and Oblique) and Expansion Waves (continues) **- Quiz 2**	A11
Week-6	Ramazan Bayramı (Holiday)	A11
Week-7	Problem hour	A11
Week-8	Midterm 1 (April 18th 2025, on Friday at 13.30)	A11
Week-9	CHAPTER 3 – Compressible Flows in Ducts and Nozzles	A11
Week-10	**Quiz 3 -** CHAPTER 4 – Wave Motion in Compressible Flows (continues)	A11
Week-11	CHAPTER 4 – Wave Motion in Compressible Flows (continues) **– Quiz 4**	A11
Week-12	CHAPTER 5 – Two Dimensional (Linearized) Compressible Flows	A11
Week-13	Problem hour	A11
Week-14	Midterm 2 (May 30th 2025, on Friday at 13.30)	A11
Week-15	KURBAN BAYRAMI (HOLIDAY)	A11
Week-16	CHAPTER 5 – Two Dimensional (Linearized) Compressible Flows (Continues) **– Quiz 5**	A11

Next Lecture

⟹ Chapter 1 starts

- Now let’s go to our Aerodynamics lab.