

ME 6101: Course Outline

Dr. Md. Zahurul Haq, *Ph.D., CEA, FBSME, FIEB*

Professor
Department of Mechanical Engineering
Bangladesh University of Engineering & Technology (BUET)
Dhaka-1000, Bangladesh

zahurul@me.buet.ac.bd
<http://zahurul.buet.ac.bd/>

ME 6101: Classical Thermodynamics

<http://zahurul.buet.ac.bd/ME6101/>



Syllabus

Fundamentals of classical thermodynamics, first and second laws; Concept of properties. Reversible and irreversible processes, entropy and other characteristic functions. Maxwell's relations. Equation of state and generalized coordinates; Equilibrium and stability.



Tentative Lecture Plan [2023]

Topic	No. of Lectures ¹
1. Introductory Concepts, Terminology, Work & Heat	1
2. First Law of Thermodynamics	1
3. Second Law of Thermodynamics & Entropy	2
4. Irreversibility	1
5. Thermodynamic Processes & Efficiency Parameters	1
6. Exergy Concepts and Applications	3
7. Thermodynamic Properties & Equations of State (EOS)	2
8. Thermodynamics of Mixtures	3
9. Thermodynamic Relations	3
10. Stability, Phase & Chemical Equilibrium	5

¹75 minutes/lecture



Reference Books

- Moran, M.J. & Shapiro, H.N., *Fundamentals of Engineering Thermodynamics*, J. Wiley & Sons, Inc.
- Wark, K. & Richards, D.E., *Thermodynamics*, McGraw-Hill, Inc.
- Wark, K., *Advanced Thermodynamics for Engineers*, McGraw-Hill, Inc.
- Shell, M.S., *Thermodynamics and Statistical Mechanics: An Integrated Approach*, Cambridge University Press.
- Winterbone, D. *Advanced Thermodynamics for Engineers*, Butterworth-Heinemann.

