

CONTENTS TABLE

Prologue	iv
Preface	v
Introduction	1

Section A. Nomenclature Topics

Part I. Thermodynamic Processes, Real and Ideal Gases

Chapter 1. General Characteristic of Thermodynamic System and Heat and Work Mutual Conversions

Lecture 1. Thermodynamic System and Surrounding Medium	2
§ 1.1. Mutual conversions of heat and work	2
§ 1.2. Thermodynamic system	2
Lecture 2. The Main Thermodynamic Parameters of State	4
§ 1.3. Parameters of state	4

Chapter 2. Basic Considerations of Thermodynamic Processes

Lecture 3. Main Thermodynamic Processes	10
§ 1.4. Thermodynamic process	10

Chapter 3. Theoretical Dependencies for an Ideal Gas

Lecture 4. Parameters of an Ideal Gas in Interrelationships	14
§ 1.5. The equation of state for an ideal gas	14

Chapter 4. Approaches for a Real Gas Dependencies Derivation

Lecture 5. Dependencies in a Real Gas	21
§ 1.6. The equation of state for a real gas	21

Part II. Thermal Coefficients, Energy, and Work

Chapter 5. Thermal Coefficients

Lecture 6. Interrelation between Thermal Coefficients	40
§ 1.7. Thermal coefficients and connection between them	40

Chapter 6. Internal Energy Characteristic of Thermodynamics

Lecture 7. Internal Energy	45
§ 1.8. Energy. Internal energy	45

Chapter 7. Heat and Work Consideration

Lecture 8. Heat and Work Relations	47
§ 1.9. Heat and work	47

Part III. First Law of Thermodynamics

Chapter 8. Law of Energy Conservation in Thermodynamics

Lecture 9. Nothing Disappears	49
§ 1.10. The first law of thermodynamics	49

Chapter 9. Calculus Methods

Lecture 10. Functions by Pfaff	55
§ 1.11. Application of calculus to thermodynamics	55

Chapter 10. Heat Capacities

Lecture 11. Heat Capacity	61
§ 1.12. Heat capacity	61

Section B. Heat Engines Cycles

Lectures 1. – XXX

Section C. Piston Engines

Lectures 1. – XXX

Section D. Gas Turbine Engines

Lectures 1. – XXX

Conclusions	vi
Postscript	vii
Epilogue	viii
References	ix
Appendixes	xv