First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Introduction**

Content	Title	You tube Link
Concept of System	System, Surroundings, Boundary, Types of System, Examples, Basic Mechanical Engineering	https://youtu.be/8r82OXAzPNc
Change of state, Path, Process, Cycle	Working Fluid, Intensive Property, Extensive Property, Change of state, Path, Process, Cycle.	https://youtu.be/NbsWIUrzf8I
Force, Weight, Mass	Force, Weight, Mass	https://youtu.be/b9vyKf3w6uw
Pressure	Pressure, Measurement of Pressure, Atmospheric Pressure, System Pressure, Gauge Pressure, Absolute Pressure	https://youtu.be/mQ3O4WNQAyM
Temperature	Temperature, Different Temperature Scales, Absolute Zero Temperature, Numerical	https://youtu.be/NtGba4mDRLs
Work, Power, Energy	Work, Power, Energy, High Grade Energy, Low Grade Energy, Energy in Transition, Stored Energy, Potential, Kinetic Energy	https://youtu.be/DkPJCdNuXas
Heat	Heat, Transfer of Heat, Change in State due to Heat Transfer, Boiling Point, Melting Point, Sign Conversion for Heat and Work, Mechanical Equivalent of Heat,	https://youtu.be/rb8eIoSIg90
Specific Heat	Specific Heat, Specific Heat at Const. Pressure and Const. Volume, Why Cp is always higher than Cv, Heat Capacity.	https://youtu.be/ZvQ_Vukk4Uk
Internal energy, Enthalpy, Entropy	Internal energy, Enthalpy, Entropy, Specific Gravity.	https://youtu.be/30BOKOkcn8s
Laws of Thermodynamics, Prime movers and its types	Laws of Thermodynamics, Zeroth Law, First Law for Closed system and Cyclic Process, Second Law, Kelvin Plank Statement, Clausius Statement, Third Law, Prime movers and its types	https://youtu.be/gGndknUVgnE
Numerical_Introduction	Numerical on Gauge Pressure and Absolute Pressure, Numerical on Potential Energy and Kinetic Energy	https://youtu.be/wTEp0noYQcs
Numerical_Introduction	Numerical on Absolute Pressure based on Barometer Reading and Manometer/Vacuum Gauge Reading	https://youtu.be/HeAl2f5vueo

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Properties of Gases**

Content	Title	You tube Link
Boyle's law, Charles's law, Gay-Lussac's law, Avogadro's law, Combined gas law, Gas constant	STP and NTP, Boyle's law, Charles's law, Gay-Lussac's law, Avogadro's law, Combined gas law, Gas constant	https://youtu.be/_bleo2IYxV4
Universal Gas Equation	Universal Gas Equation, Universal Gas Constant	https://youtu.be/B8roOEFKWW8
Specific Heats, Relation between Cp and Cv.	Specific Heat, Specific Heat at Const. Pressure and Const. Volume, Why Cp is always higher than Cv, Regnault's Law, Relation Between Cp, Cv and R,	https://youtu.be/tXz4ysA6qyM
Constant volume process, numerical	Constant Volume Process (Isochoric Process), Numerical on Constant Volume Process	https://youtu.be/DL7bzz-iJbc
Constant pressure process, numerical	Constant Pressure Process (Isobaric Process), Numerical on Constant Pressure Process	https://youtu.be/D0IZleMlAH4
Constant temperature process, numerical	Constant Temperature Process (Isothermal Process), Numerical on Constant Temperature Process.	https://youtu.be/q3iQCDqI04c
Adiabatic process	Adiabatic Process (Reversible Adiabatic Process, Isentropic Process), Law of Adiabatic Process.	https://youtu.be/I72x9PhxCJI
Adiabatic process - numerical	Numerical on Adiabatic Process (Reversible Adiabatic Process, Isentropic Process	https://youtu.be/980zzJzu2Zc
Polytropic process	Polytropic Process, Various Processes on Same P-v Diagram, Interrelationship between Heat Transfer, Work Done and Internal Energy.	https://youtu.be/ftKl8aay7hU
Polytropic process - numerical	Numerical on Polytropic Process	https://youtu.be/q0NXv6e99ZM
Properties of Gases - numerical	Numerical on Polytropic Process	https://youtu.be/n48garwEl-8

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Steam Generation**

Content	Title	You tube Link
Introduction	Difference Between Gas and Vapour, Application of Steam, Effect of Pressure on Boiling Point, Formation of Steam.	https://youtu.be/vZKj-8ghc7E
Steam Formation - Types of steam, Enthalpy, Specific volume	Steam Formation, Types of Steam, Specific Enthalpy and Specific Volume of Different Type of Steam, Dryness Fraction, Wet Steam.	https://youtu.be/VZyy7_VSkyA
Use of steam tables	Steam Formation, Critical Point, Understanding of Saturation Curve, Use of Steam Table	https://youtu.be/3vPH95cOUm8
Numerical – Specific Enthalpy	Numerical on Specific Enthalpy and Total Enthalpy of Wet Steam and Superheated Steam.	https://youtu.be/1FuOfS0lzDM
Numerical – Specific Volume	Numerical on Specific Volume and Total Volume of Wet Steam, Dry Steam and Superheated Steam, Determination of Condition of Steam.	https://youtu.be/zMu6HVS1Xbg
Density of Steam, numerical	Density of Different Type of Steam, Numerical on Density of Wet Steam, Dry Steam and Superheated Steam.	https://youtu.be/ZSce2j9OyYM
Internal Energy of Steam	External Work Done and Specific Internal Energy (Total Internal Energy) of Wet Steam, Dry Steam and Superheated Steam.	https://youtu.be/kEoAFB02Y4g
Numerical - Internal Energy of Steam	Numerical on Specific Internal Energy and Total Internal Energy of Wet Steam, Dry Steam and Superheated Steam.	https://youtu.be/8RQWquPyHV0
Dryness fraction, Introduction to Calorimeter	Dryness Fraction of Wet Steam, Wetness Fraction, Different Methods to Determine Dryness Fraction of Wet Steam	https://youtu.be/w1g9eYjnnUo
Bucket Calorimeter	Construction and Working of Barrel/Bucket Calorimeter	https://youtu.be/7znM2jIvKY8
Numerical - Bucket Calorimeter	Numerical on Barrel/Bucket Calorimeter	https://youtu.be/N6S2eo8etPM
Separating Calorimeter	Construction and Working of Separating Calorimeter	https://youtu.be/1Jk8gl5QH74
Numerical - Separating Calorimeter	Numerical on Separating Calorimeter	https://youtu.be/JKjr65r4vgc
Throttling Calorimeter	Construction and Working of Throttling Calorimeter	https://youtu.be/9MVqYtnVM9c
Numerical - Throttling Calorimeter	Numerical on Throttling Calorimeter	https://youtu.be/cDtI13gh_Gs
Combined Calorimeter	Limitations of Separating and Throttling Calorimeter, Construction and Working of Combined Calorimeter	https://youtu.be/S9ogqIHz2fU
Numerical - Combined Calorimeter	Numerical on Combined Calorimeter	https://youtu.be/54Iw6u_KPMM

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Steam Generator (Boiler)**

Content	Title	YouTube Link
Boiler – Introduction	Introduction to Boiler (Steam Generator), Classification of Boiler.	https://youtu.be/6Bw6HFni12o
Working of Boilers	Construction and Working of Cochran Boiler	https://youtu.be/ffIWSbaHmlc
Working of Boilers	Construction and Working of Lancashire Boiler	https://youtu.be/aLOm-tsg9Gs
Working of Boilers	Construction and Working of Babcock and Wilcox Boiler	https://youtu.be/PvKt7PsErpI
Boiler Mountings and Accessories	Boiler Mountings and Accessories, Importance of Boiler Mountings and Accessories and Difference Between Boiler Mountings and Accessories	https://youtu.be/vnVpZC2ecBk
Boiler Mountings Part I	Location, Function, Working of Pressure Gauge, Water Level Indicator, Steam Stop Valve	https://youtu.be/Q28AzChscQw
Boiler Mountings Part II	Location, Function, Working of Feed Check Valve, Fusible Plug, Blow Off Cock	https://youtu.be/UH9C_Wa2RFo
Boiler Mountings Part III	Location, Function, Working of Different Types of Safety Valves	https://youtu.be/O7iWP2ZUmA0
Boiler Accessories Part I	Location, Function, Working of Super heater, Economizer, Air Preheater	https://youtu.be/mHIeTmgbg-8
Boiler Accessories Part II	Location, Function, Working of Feed Water Heater, Steam Separator, Anti Priming Pipe, Feed Pump	https://youtu.be/he1lMqV8oMY

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Heat Engines**

Content	Title	YouTube Link
Introduction	Prime Mover, Elements of Heat Engine, Heat Source, Heat Sink, Adiabatic Wall, Working Fluid.	https://youtu.be/sI1WAyX9hT8
Working of Heat Engines	Working of Heat Engines, Heat Supplied, Heat Rejected, Work Done, Efficiency of Heat Engine	https://youtu.be/u_ocr0q4zDU
Classification of Heat Engines	Classification of Heat Engines, External and Internal Combustion Engine, Reciprocating and Rotary Engine, Carnot, Rankine, Otto and Diesel Cycle.	https://youtu.be/1MuIpTveOwE
Numerical – Heat Engines	Numerical on Heat Engines	https://youtu.be/PCIsMDq3zp0
Carnot Air Cycle	Carnot Air Cycle, Assumptions in Carnot Cycle, Working and Efficiency of Carnot Air Cycle, Limitations of Carnot Air Cycle	https://youtu.be/EbOQDCNfhh4
Numerical - Carnot Air Cycle	Numerical on Carnot Air Cycle	https://youtu.be/kfBAZHUGx9g
Carnot Vapour Cycle	Carnot Vapour Cycle, Construction, Working and Efficiency of Carnot Vapour Cycle, Limitations of Carnot Vapour Cycle	https://youtu.be/fM6Xzg_yEfA
Numerical - Carnot Vapour Cycle	Numerical on Carnot Vapour Cycle	https://youtu.be/u4PWhpqDQqw
Comparison Between Carnot Air and Carnot Vapour Cycle	Comparison Between Carnot Air and Carnot Vapour Cycle, Numerical on comparison of newly developed heat engine with Carnot cycle.	https://youtu.be/nhzoaMhvucw
Rankine Cycle	Rankine Cycle, Construction of Rankine Cycle, Working of Rankine Cycle, Efficiency of Rankine Cycle	https://youtu.be/_9A1KzI8eOI
Numerical - Rankine Cycle	Numerical on Rankine Cycle	https://youtu.be/fMaELvDAMnE
Comparison Between Carnot Vapour and Rankine Cycle	Comparison Between Carnot Vapour and Rankine Vapour Cycle	https://youtu.be/h0zLrHzmd_g
Air Standard Cycle	Air Standard Cycles, Assumptions for Air Standard Cycle, Terminology Related to Reciprocating Engine, TDC, BDC, IDC, ODC.	https://youtu.be/N-_LFLChqR0
Otto Cycle	Construction of Otto Cycle, Working of Otto Cycle, Efficiency of Otto Cycle	https://youtu.be/tb4d8IueTyw
Numerical - Otto Cycle	Numerical on Otto Cycle	https://youtu.be/1U9mt6KAVCk
Diesel Cycle	Construction of Diesel Cycle, Working of Diesel Cycle, Efficiency of Diesel Cycle	https://youtu.be/ucpYW1hIapc
Comparison Between Otto and Diesel Cycle	Comparison Between Otto and Diesel Cycle	https://youtu.be/Yypb35_q4tA
Numerical - Diesel Cycle	Numerical on Diesel Cycle	https://youtu.be/styIV0wOQDo
Numerical - Diesel Cycle	Numerical on Diesel Cycle	https://youtu.be/hYuhBx3Rg4k

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Internal Combustion Engines**

Content	Title	You tube link
Introduction	Difference between Internal Combustion Engine and External Combustion Engine, Components of IC Engine	https://youtu.be/JJLfBsrH-TE
IC Engine Terminology	Terminology related to IC Engine, Top Dead Centre, Bottom Dead Centre, Inner and Outer Dead Centre, Stroke Length, Clearance Length, Stroke (Swept) Volume, Compression Ratio.	https://youtu.be/VL6BK9Uraao
Classification of IC Engine	Classification of Internal Combustion Engine.	https://youtu.be/NLggyZDIv04
Working of Four Stroke Petrol Engine	Working of Four Stroke Petrol Engine, Spark Ignition.	https://youtu.be/flXpf-wl5Ws
Working of Four Stroke Diesel Engine and Difference between Petrol and Diesel Engine	Working of Four Stroke Diesel Engine, Compression Ignition and Difference between Petrol and Diesel Engine	https://youtu.be/-Hwo54uYtWY
Working of Two Stroke Petrol Engine	Working of Two Stroke Petrol Engine	https://youtu.be/7vfgwYRDFeg
Working of Two Stroke Diesel Engine	Working of Two Stroke Diesel Engine	https://youtu.be/O4PYi6rxqnk
Difference between Two Stroke and Four Stroke Engine	Difference between Two Stroke and Four Stroke Engine	https://youtu.be/vxR3GciEizM
Equations to Solve Numerical on IC Engine	Equations to Solve Numerical on IC Engine	https://youtu.be/RAFEnzNA0mY
Numerical – IC Engine	Numerical on IC Engine	https://youtu.be/l8lvoqFccpg
Numerical – IC Engine	Numerical on IC Engine	https://youtu.be/hw86n_UaWfg

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Pumps**

Content	Title	You tube link
Introduction and Classification	Pumps, Introduction, Classification, Positive Displacement, Dynamic Pressure	https://youtu.be/R5t9JqunQAs
Single Acting Reciprocating Pump	Construction and working of Single Acting Single Stage Reciprocating Pump	https://youtu.be/vmZ4YriKI4E
Double Acting Reciprocating Pump	Construction and working of Double Acting Single Stage Reciprocating Pump	https://youtu.be/8WOU7URR-Aw
Single Acting Reciprocating Pump with Air Vessel	Construction and working of Single Acting Single Stage Reciprocating Pump with Air Vessel	https://youtu.be/IKL1YKJyv4g
Plunger Pump and Bucket Pump	Construction and working of Plunger Pump and Bucket Pump	https://youtu.be/JAwiC0MCwuQ
Gear Pump, Vane Pump and Screw Pump	Positive Displacement Pump - Rotary Type, Gear Pump, Vane Pump and Screw Pump	https://youtu.be/yCowH2Q8pr8
Centrifugal Pump	Dynamic Pressure Pump-Rotary Type, Centrifugal Pump, Classification, Construction, Working, Types, Advantages	https://youtu.be/yaTWbwkQYbM
Centrifugal Pump	Dynamic Pressure Pump-Rotary Type, Centrifugal Pump, Single Stage and multistage, Priming	https://youtu.be/8ncH-zA85Qw

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Air Compressor**

Content	Title	You tube link
Introduction and Classification	Air Compressor, Introduction, Classification, Reciprocating & Rotary Compressors	https://youtu.be/K6ATQf0iaYU
Single Stage Single Acting Reciprocating Compressor	Single Stage Single Acting Reciprocating Compressor without Clearance, Work Required to Drive the compressor in case of Isothermal, Polytropic and Adiabatic Process	https://youtu.be/W9aG496gfHk
Single Stage Single Acting Reciprocating Compressor with Clearance	Single Stage Single Acting Reciprocating Compressor Considering Clearance, Work Required to Drive the compressor, Effective Swept Volume and Volumetric Efficiency	https://youtu.be/nAGd-b4oIBQ
Multi Stage Reciprocating Compressor	Multi Stage Reciprocating Compressor, Need, Advantages	https://youtu.be/TMoLC5Yx6kE
Centrifugal Compressor	Rotary Compressor, Non-positive Type Compressor, Centrifugal Compressor	https://youtu.be/pQrKmA_tYAE
Axial Compressor and Roots Blower	Rotary Compressor, Non-positive Type Compressor-Axial Compressor. Positive Displacement Type Compressor – Roots Blower	https://youtu.be/i2H0eCBNAJQ
Vane Compressor	Rotary Compressor, Positive Displacement Type Compressor – Vane Compressor, Comparison between Reciprocating and Centrifugal Compressor	https://youtu.be/CJ4ne-drOjY

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering

Chapter : **Refrigeration and Air Conditioning**

Content	Title	You tube link
Refrigeration and Air Conditioning	Refrigeration and Air Conditioning, Introduction	https://youtu.be/90-88DLSf0o
Heat Engine, Refrigeration and Heat Pump	Refrigeration and Air Conditioning, Heat Engine, Refrigeration and Heat Pump	https://youtu.be/kYssl4Si0d8
Unit of Refrigeration	Refrigeration and Air Conditioning, Unit of Refrigeration	https://youtu.be/TIVo8Btcqlk
Refrigeration Cycles, VCRS	Refrigeration and Air Conditioning, Refrigeration Cycles, Vapour Compression Refrigeration Cycle	https://youtu.be/zzq8-Tuyolo
Domestic Refrigerator and Water cooler	Refrigeration and Air Conditioning, Domestic Refrigerator and Water cooler	https://youtu.be/NSqci2Ap9Hg
VARS	Refrigeration and Air Conditioning, VARS	https://youtu.be/yu5Lem9qfgQ
Air Conditioning	Refrigeration and Air Conditioning, Air Conditioning, Window Air Conditioner, Split Air Conditioner, and Central Air Conditioner	https://youtu.be/qfSDKmXOOMY

Chapter : **Power Transmission**

Content	Title	You tube link
Introduction, Power Transmission	Power Transmission, Introduction	https://youtu.be/v1skqj3eKro
Belt Drive	Power Transmission, Belt Drive	https://youtu.be/DEuAlpoafp0
Rope Drive	Power Transmission, Rope Drive	https://youtu.be/VC-OoJWGMYM
Chain Drive	Power Transmission, Chain Drive	https://youtu.be/6KlweB_fWN4
Gear Drive	Power Transmission, Gear Drive	https://youtu.be/U9RUSHagOGM
Bearing	Power Transmission, Bearing	https://youtu.be/v9TPIc3H4yU

First Year Engineering (All Branch)

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Subject Name: Basic Mechanical Engineering

Content	Pdf Link
Steam Generator: Different Parts of a Boiler	https://drive.google.com/file/d/1umTpbm6krpN1p6v6 ?usp=sharing
Pumps: Types and operation of Reciprocating, Rotary and Centrifugal pumps, Priming	https://drive.google.com/file/d/1Us6S3-B2Jzk0_f5tZXbXkiEAeMmMTqE4/view?usp=sharin
Air Compressors: Types and operation of Reciprocating and Rotary Air Compressors	https://drive.google.com/file/d/1YivV5dBmH6efNK3 w?usp=sharing
Refrigeration & Air Conditioning: Refrigerant, Vapor compression refrigerationsystem, Domestic Refrigerator, Window and split air conditioners	https://drive.google.com/file/d/1DmbkLkxrYDLN9K f/view?usp=sharing
Transmission of Motion and Power: Shaft and axle, Different arrangement andapplications of Belt drive; Chain drive; Friction drive and Gear drive	https://drive.google.com/file/d/1Tr8Wqv2ubAJHlZu0 ?usp=sharing

Reference Books:

(1). Elements of Mechanical Engineering – MCQ and Numerical as per GTU, By Neeraj Chavda, Lap Lambert Academic Publishing, Germany (ISBN : 978-3-330-07021-9)

(2). Elements of Mechanical Engineering – Laboratory Manual (as per GTU), By Neeraj Chavda, Lap Lambert Academic Publishing, Germany (ISBN : 978-620-2-05650-2)

(3). Elements of Mechanical Engineering – Tutorial (as per GTU), By Neeraj Chavda, Lap Lambert Academic Publishing, Germany (ISBN : 978-613-9-82424-3)

(4). Basic Mechanical Engineering (Elements of Mechanical Engineering), By J. P. Hadiya, H. G. Katariya and S. M. Bhatt, Books India Publications.

(5). Thermodynamics: An Engineering Approach Seventh Edition in SI Units, Yunus A. Cengel, Michael A. Boles, McGraw-Hill, 2011.

(6). Basic Mechanical Engineering, By Pravin Kumar, Pearson Publications.

(7). Engineering Thermodynamics, By Rayner Joel.

(8). Thermal Science and Engineering, By Dr. D. S. Kumar, S. K. Kataria & sons Publications.

(9). Fundamental of Mechanical Engineering, By G. S. Sawhney, PHI Publications.

(10). Elements of Mechanical Engineering, By Sadhu Singh, S. Chand Publication.

(11). Elements of Mechanical Engineering, By P. S.Desai and S. B.Soni.

First Year Engineering (All Branch)

(as per the syllabus of CVM University, GTU and other Universities.)

Subject Name: Basic Mechanical Engineering