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RGPV B.Tech – First Year Syllabus

BT-203: Basic Mechanical Engineering

Unit I: Materials

- Classification of engineering materials
- Composition of cast iron and carbon steels
- Iron-carbon diagram, alloy steels and applications
- Mechanical properties: strength, hardness, ductility, toughness, etc.
- Stress-strain diagram, Hooke's law, modulus of elasticity
- Hardness and impact testing, BHN

Unit II: Measurement & Production Engineering

- Concept of measurements and errors
- Measurement of temperature, pressure, velocity, flow, strain, force, torque
- Instruments: Vernier caliper, micrometer, dial gauge, slip gauge, sine-bar
- Production processes: casting, carpentry, welding
- Introduction to lathe and drilling machines

Unit III: Fluid Mechanics

- Fluid properties: pressure, density, viscosity
- Types of fluids, Newton's law of viscosity
- Pascal's law, Bernoulli's equation
- Working principles of hydraulic machines, pumps, turbines
- Reciprocating pumps

Unit IV: Thermodynamics & Steam Engineering

- Thermodynamic systems, properties, state, process
- Zeroth, First, and Second laws of thermodynamics
- Processes at constant pressure, volume, enthalpy, entropy

- Boilers: classification, working, mountings, accessories
- Efficiency, performance, draught, steam properties

Unit V: Reciprocating Machines

- Steam engine working principle
- Carnot, Otto, Diesel, Dual cycles with P-V and T-S diagrams
- Two-stroke and four-stroke petrol and diesel engines
- Working principle of compressors



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- [RGPV Notes – BT-203 Breakdown](#)
- [Career Shiksha – BT-203 PYQs](#)

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