

GATE 2027 Physics (PH) — Weightage-Based Syllabus

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Based on the **revised GATE 2027 syllabus** released by IIT Madras (organising institute). The syllabus now has **11 sections** — a new **Section 1: Measurements and Error Analysis** and a dedicated **Section 6: Optical Physics** have been added, and Optics content has been separated from Electromagnetic Theory.

Section	Priority	Expected Weightage	Key Topics
1. Measurements and Error Analysis	NEW	3–5%	Units, dimensions, significant figures, error analysis, 2-probe & 4-probe methods, grounding, DC power supply, lock-in amplifier.
2. Mathematical Physics	HIGH	10–13%	Linear vector spaces, matrices, differential equations, complex analysis, Fourier analysis, tensors.
3. Classical Mechanics	HIGH	10–12%	Lagrangian & Hamiltonian mechanics, central force, small oscillations, rigid body, Poisson brackets, special relativity.
4. Thermodynamics & Statistical Mechanics	MEDIUM	8–10%	Laws of thermo, ensembles, partition function, quantum statistics, BEC, phase transitions.
5. Electromagnetic Theory	HIGH	10–12%	Boundary value problems, method of images, Maxwell's equations, EM waves, polarization, Poynting theorem.
6. Optical Physics	NEW / MEDIUM	6–8%	Wave equation, interference, diffraction, polarization (Jones matrices), ray-transfer matrices, lasers.
7. Quantum Mechanics	HIGHEST	14–17%	Schrödinger equation, 1D potentials, harmonic oscillator, hydrogen atom, angular momentum, perturbation, scattering.
8. Atomic & Molecular Physics	MEDIUM	6–8%	Atomic spectra, LS/jj coupling, Zeeman/Stark, rotational/vibrational spectra, Raman, NMR/ESR/Mössbauer.
9. Solid State Physics	HIGH	10–12%	Crystallography, lattice vibrations, free electron & band theory, semiconductors, dielectrics, magnetism, superconductivity.
10. Nuclear & Particle Physics	MEDIUM	6–8%	Binding energy, SEMF, shell model, decays, reactions, fission/fusion, quark model, symmetries.

Section	Priority	Expected Weightage	Key Topics
11. Electronics	MEDIUM	6–8%	Diodes, BJT, FET, op-amps, oscillators, active filters, digital logic, flip-flops, ADC/DAC.

What's new in GATE 2027 Physics syllabus

- **Section 1 — Measurements and Error Analysis** is a brand-new section. Expect direct questions on error propagation, significant figures, 4-probe technique and lock-in amplifiers.
- **Section 6 — Optical Physics** is now a stand-alone section (previously merged with EMT). Interference, diffraction, polarization (Jones matrices) and lasers are emphasised.
- Total sections: **11** (earlier 10, excluding General Aptitude which remains common across all GATE papers).

Weightage percentages above are estimates from PhysicsByAaryan based on 2012–2026 GATE PH papers, adjusted for the 2027 syllabus revision. The official syllabus PDF is the final reference.