



GRE

Listening. Learning. Leading.®

We invite
you to
**Take a
Closer
Look...**

For more information
about this GRE Subject
Test, contact the GRE
Program:

Phone: 1-609-683-2002

Fax: 1-609-683-2040

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Educational Testing Service
Rosedale Road
Princeton, NJ 08541

The GRE® Physics Test

Does your graduate department require or recommend that graduate applicants take the Physics Test offered by the *Graduate Record Examinations*® Program?

This Subject Test can be very useful in distinguishing among candidates whose credentials are otherwise similar. The test measures undergraduate achievement and provides a common yardstick for comparing the qualifications of students from a variety of colleges and universities with different standards. Consider these factors:

Predictive validity

Subject Test scores are a valid predictor of graduate school performance, as confirmed by a recent meta-analysis performed by independent researchers of over 1,700 studies containing validity data for GRE tests.* This study showed that GRE Subject Tests are reliable predictors of a range of outcome measures, including first-year graduate grade-point average, cumulative graduate grade-point average, comprehensive examination scores, publication citation counts, and faculty ratings. For more information about the predictive validity of the GRE tests, visit www.ets.org/gre/validity.html.

Content that reflects today's curricula

The test consists of approximately 100 multiple-choice questions, some of which are grouped in sets and based on such materials as diagrams, graphs, experimental data, and descriptions of physical situations. The test content reflects the relative emphases placed on these topics in most undergraduate curricula, as determined by a content representativeness survey. There is increased emphasis on the understanding of fundamental theoretical principles of physics. A summary of test topics can be found on the back of this sheet. Additional information about the test and a full-length practice test are provided FREE with test registration and can be downloaded at www.ets.org/gre/greprep.

Developed by leading educators in the field

The content and scope of each edition of the test are specified and reviewed by a distinguished team of undergraduate and graduate faculty representing colleges and universities across the country.

*Source: "A comprehensive meta-analysis of the predictive validity of the Graduate Record Examinations®: Implications for graduate student selection and performance." Kuncel, Nathan R.; Hezlett, Sarah A.; Ones, Deniz S., *Psychological Bulletin*, January 2001, Vol. 127(1), 162-181.

Who develops the GRE Physics Test?

Individuals who serve or have recently served on the Committee of Examiners are faculty members from the following institutions:

California State Polytechnic University

Franklin and Marshall College

Indiana University

Middlebury College

Rutgers University

University of California, Davis

University of Michigan–Flint

University of North Carolina at Asheville

University of Southern California

University of Tennessee

Committee members are selected with the advice of the American Association of Physics Teachers and the American Physical Society.

Test questions are written by committee members and by other subject-matter specialists from ETS and colleges and universities across the country.

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Test Content

1. Classical Mechanics (20%)

(such as kinematics, Newton's laws, work and energy, oscillatory motion, rotational motion about a fixed axis, dynamics of systems of particles, central forces and celestial mechanics, three-dimensional particle dynamics, Lagrangian and Hamiltonian formalism, non-inertial reference frames, elementary topics in fluid dynamics)

2. Electromagnetism (18%)

(such as electrostatics, currents and DC circuits, magnetic fields in free space, Lorentz force, induction, Maxwell's equations and their applications, electromagnetic waves, AC circuits, magnetic and electric fields in matter)

3. Optics And Wave Phenomena (9%)

(such as wave properties, superposition, interference, diffraction, geometrical optics, polarization, Doppler effect)

4. Thermodynamics And Statistical Mechanics (10%)

(such as the laws of thermodynamics, thermodynamic processes, equations of state, ideal gases, kinetic theory, ensembles, statistical concepts and calculation of thermodynamic quantities, thermal expansion and heat transfer)

5. Quantum Mechanics (12%)

(such as fundamental concepts, solutions of the Schrödinger equation [including square wells, harmonic oscillators and hydrogenic atoms], spin, angular momentum, wave function symmetry, elementary perturbation theory)

6. Atomic Physics (10%)

(such as properties of electrons, Bohr model, energy quantization, atomic structure, atomic spectra, selection rules, black-body radiation, x-rays, atoms in electric and magnetic fields)

7. Special Relativity (6%)

(such as introductory concepts, time dilation, length contraction, simultaneity, energy and momentum, four-vectors and Lorentz transformation, velocity addition)

8. Laboratory Methods (6%)

(such as data and error analysis, electronics, instrumentation, radiation detection, counting statistics, interaction of charged particles with matter, lasers and optical interferometers, dimensional analysis, fundamental applications of probability and statistics)

9. Specialized Topics (9%)

Nuclear and Particle physics (such as nuclear properties, radioactive decay, fission and fusion, reactions, fundamental properties of elementary particles), Condensed Matter (such as crystal structure, x-ray diffraction, thermal properties, electron theory of metals, semiconductors, superconductors), Miscellaneous (such as astrophysics, mathematical methods, computer applications)



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