CSET Preparation - Physics

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Class website: **www.csun.edu/science/credential/cset/cset-physics**

**Science Subtests 1 & 2**

* **CSET Subset 1 Topics:** 1. Position and Displacement 2. Speed and Velocity 3. Acceleration 4. Graphing Motion 5. Isaac Newton 6. Newtons First Law and the Concept of Force 7. Newton’s Second Law 8. Types of Forces 9. Newton’s Third Law 10. Gravity and Circular Motion 11. Levers and Other Simple Machines 12. Biophysics: Levers in the Human Body 13. Fluids and Fluid Dynamics

**Course Curriculum**

**1.  Math Review**

Scientific Notations, Significant Figures, Exponent Rules

Conversions-Units

Algebraic Manipulations

Graphing and Graph interpretations

**2. Vectors**

Vector Diagrams

Vector Quantities

**3.   Motion**

Kinematics

Distance, Time, Speed, Acceleration, Frames of Reference

Dynamics

Force and the Laws of Motions

Inertia

Acceleration-friction, free body diagrams, weight and mass

Action / Reaction

Gravity

Free Fall Motion

Law of Universal Gravitation

Projectiles

Momentum

Linear and Angular Momentum, Circular Motion

Conservation of Momentum-Collisions

**4.  Work, Energy**

Work-Kinetic Energy Theorem

Mechanical Energy, Conservation of Mechanical Energy

Combination of Energy and Momentum

Mechanical Power

**5.  Electricity and Magnetism**

Electrostatics

Coulomb's Law

Electrical Units, Potential, Current, and Resistance

Circuits-Series and Parallel

Magnetism

Fields and Forces

Induction and Faraday's Law

Magnetic Circuits

**6.  Waves**

Wave Characteristics and Types

Frequency, Wavelength, Speed, and Amplitude

Longitudinal, Transverse

Sound Waves

Tuning Forks

Pitch and Intensity

**7.  Light and Electromagnetism**

Mirrors (reflection), Lenses (refraction)

Color, Intensity

Interference, Diffraction, Polarization

**CSET Exam**

* [CSET Exam](http://www.csun.edu/science/credential/cset/index.html) | [CSET Guides in Science](http://www.cset.nesinc.com/CS_testguide_Sciopener.asp)
* [The Physics Classroom](http://www.physicsclassroom.com/)
* [Domain 1: Investigation and Experimentation](http://www.csun.edu/science/credential/cset/cset-physics/experimentation&investigation.html)
* [Domain 2: Nature of Science](http://www.csun.edu/science/credential/cset/cset-physics/nature-of-science.html)
* [Domain 3: Science & Society](http://www.csun.edu/science/credential/cset/cset-physics/science&society.html)
* [Domain 8: Waves](http://www.csun.edu/science/credential/cset/cset-physics/waves.html)
* [Domain 9: Forces and Motion](http://www.csun.edu/science/credential/cset/cset-physics/forces.html)
* [Domain 10: Electricity and Magnetism](http://www.csun.edu/science/credential/cset/cset-physics/e&m.html)
* [Domain 11: Heat Transfer and Thermodynamics](http://www.csun.edu/science/credential/cset/cset-physics/thermodynamics.html)

**Simultaions & Animations**

1. [PhET - University of Colorado](http://phet.colorado.edu/simulations/) - Physics Simulations
2. [ExploreLearning](http://www.explorelearning.com/) - Physics Simulations
3. [WolframAlpha](http://www.wolframalpha.com/) - Computational Knowledge Engine

**Resources**

* [California Content Standards - Science](http://www.csun.edu/science/standards/index.html)
* [MIT Physics Course - Classical Mechanics](http://ocw.mit.edu/OcwWeb/Physics/8-01Physics-IFall1999/CourseHome/index.htm)
* [Physics Instructional Resources](http://www.csun.edu/science/physics/index.html)

**Books for Teaching Physics (and other sciences)**

* [Hands-On Physics Activities with Real-Life Applicaitons](http://www.csun.edu/science/books/physics/index.html) (Cunningham & Herr)
* [Hands-On Physics Activities with Real-Life Applicaitons](http://www.csun.edu/science/books/chemistry/index.html) (Herr & Cunningham)
* [Sourcebook for Teaching Science](http://www.csun.edu/science/index.html) (Herr)

**Physics Review**

* [Physics review sheets](http://www.csun.edu/science/physics/formula-sheets/index.html)
* [Cliffs Quick Review](http://www.amazon.com/Physics-Cliffs-Quick-Review-Huetinck/dp/0764563831) (Huetinck)
* [CSET Exam -Sample Questions](http://www.cset.nesinc.com/PDFs/CS_118items.pdf) (Subtest 1)
* [CSET Exam](http://www.cset.nesinc.com/PDFs/CS_119items.pdf) [-Sample Questions](http://www.cset.nesinc.com/PDFs/CS_118items.pdf)(Subtest 2)
* [CSET Exam --Sample Questions](http://www.cset.nesinc.com/CS_testguide_Sciopener.asp) - other sciences