COURSE DESCRIPTION: (can be taken from the Curriculum Guide)
This course is a broad survey of physics, covering such topics as linear motion, motion in a plane, energy, momentum, rotation, the behavior of solids and fluids, waves, sound, electromagnetism, circuits and light. The concept of heat is introduced during the study of energy, but thermodynamics is not a significant part of this course.

Most introductory physics classes emphasize mathematical problem solving. Problem solving is a part of this course. However, developing an understanding of the concepts is also emphasized. Lab work, both formal and informal, is a major component of the course. The testing-out exam is representative of the course final exam, but not representative of the course itself. There is no lab component on the exam.

COURSE SYLLABUS:

METRIC SYSTEM
Units and Conversions
Significant Figures

CLASSICAL MECHANICS
Basic kinematics (Chapter 2, Hewitt)
d-t, v-t, and a-t graphs (Ch. 2)
Free-fall (Ch. 2)
2D Projectile motion (Ch. 3)
Relative velocity (Ch. 3)
Newton’s Laws of Motion (Ch. 4, 5 & 6)
Gravitation: Newtonian (Ch. 12, 13 & 14) and General Relativity
Work, energy and power (Ch. 8), including a brief review of specific heat and phase change
Impulse and momentum (Ch. 7)
Rotational motion (Ch. 9, 10 & 11)
Pendulum Motion

WAVES
Description and behavior (Ch. 25)

SOUND
Physics of sound (Ch. 26)
Subjective vs. objective sounds
Basic theory of European music

ELASTICITY AND THE BEHAVIOR OF FLUIDS
Fluid pressure (Ch. 19)
Pascal’s Principle (Ch. 19)
Archimedes’ Principle (Ch. 19)
Bernoulli’s Principle (Ch. 20)

ELECTROSTATICS
Methods of charging (Ch. 32)
Coulomb’s Law (Ch. 32)
Electric field (Ch. 33)
Electric potential (Ch. 33)

CIRCUITRY
DC and basics of AC (Ch. 34 & 35)
Calculate voltages, currents, resistances, and power for circuits composed of voltage sources and resistors

ELECTROMAGNETISM
Permanent magnets (Ch. 36)
Electromagnets (Ch. 36)
Magnetic forces and fields (Ch. 36)
Induction (Ch. 37)
Faraday’s Law (Ch. 37)
Motors, generators and transformers (Ch. 37)
Antennas, Solenoids, Speakers
Digital vs. Analog

OPTICS
Light (Ch. 37, 27, 29)
Color (Ch. 28)
Lenses (Ch. 30)

KEY COMPONENTS TO TESTING OUT

1. Name of Course - Physics
2. Course description (above)
3. Course syllabus (above)
4. Final Requirements (check those that apply)
   _x_ exam  ___portfolio
   ___demonstration performances  ___presentation
   ___papers  ___projects
5. A description of the requirement(s) checked above and how it (they) will be assessed.

To test out of this course, a student must pass a written exam. A minimum score of 77% is required to pass. A calculator will be provided for the student’s use. A 3x5 in. card with equations written on it may be brought to the exam. All equations on the topics listed should be considered, including those found in the textbook in small print.

The exam consists of approximately 100 questions. The conceptual questions will be multiple choice and short answer, and the more mathematical questions will require calculation. The number of questions
given to a particular subject will be roughly equal to the percentage of the course dedicated to that subject.

6. Grade calculation for attainment of C+
A minimum score of 77% is required to pass.
Conceptual Physics
Testing-out Procedure

Course Description

This course is a broad survey of physics, covering such topics as linear motion, motion in a plane, energy, momentum, rotation, the behavior of solids and fluids, waves, sound, electromagnetism, circuits and light. The concept of heat is introduced during the study of energy, but thermodynamics is not a significant part of this course.

Most introductory physics classes emphasize mathematical problem solving. Problem solving is a part of this course, however, developing an understanding of the concepts is also emphasized. Lab work, both formal and informal, is a major component of the course. However, Okemos school district lawyers have interpreted state law as disallowing a lab component on the exam. The testing-out exam is therefore representative of the course final exam, but not representative of the course itself. There is no lab component on the exam.

Testing-out Requirements

To test out of this course, a student must pass a written exam. A minimum score of 77% is required to pass. A calculator will be provided for the student’s use. A 3x5 in. card with equations written on it may be brought to the exam. All equations on the topics listed should be considered, including those found in the textbook in small print.

The exam consists of approximately 50 questions. The conceptual questions will be multiple choice and short answer, and the more mathematical questions will require calculation. The number of questions given to a particular subject will be roughly equal to the percentage of the course dedicated to that subject.