ST 204 – TOPICS ON MIDTERM EXAM

To prepare for this test, it is best to read over your notes, handouts, homework, and **previous tests and quizzes**. To do well on this test, you will need to be able to answer questions on the topics below. Read through each topic and decide whether or not you are comfortable with it. If you are not absolutely comfortable, make sure you study it, or ask for help.

	I fully understand	***I do not understand as well***
• Atoms and Molecules	☐	☐
- The difference between atoms and molecules	☐	☐
- The difference between elements and compounds	☐	☐
- Dalton's atomic model	☐	☐
• Atomic Structure and the Periodic Table	☐	☐
- The shape of an atom (nucleus surrounded by e^-)	☐	☐
- Protons (+), electrons (–) and neutrons (no charge)	☐	☐
- Atoms are mostly empty space.	☐	☐
- Valence electrons and energy shells	☐	☐
- Using the Periodic Table (atomic number, mass)	☐	☐
- The difference between groups and periods	☐	☐
- Calculating the number of neutrons in an atom	☐	☐
- Drawing Bohr-Rutherford Models	☐	☐
• The *Law of Conservation of Mass*	☐	☐
- State the *Law of Conservation of Mass* (and explain)	☐	☐
- Predicting the mass of final products.	☐	☐
• Physical and chemical changes	☐	☐
- How to recognize a physical change (3 ways)	☐	☐
- How to recognize a chemical change (5 ways)	☐	☐
- The concept of reversibility	☐	☐
- The 5 types of chemical changes: Synthesis (photosynthesis), decomposition (cellular respiration), oxidation, combustion, fermentation.	☐	☐
• Density		
- How to calculate density using formula	☐	☐
- Units of density	☐	☐
- Determining volume (by calculating $l \times w \times h$)	☐	☐
- Determining volume by water displacement	☐	☐
• Rocks and Minerals		
- The difference between rocks and minerals	☐	☐
- The mineral tests, and how to perform them	☐	☐
- Igneous, sedimentary, and metamorphic rocks	☐	☐
- The rock cycle	☐	☐
- Rock cycle transformations (erosion, melting, etc)	☐	☐

- Soil
  - Soil profiles and their tendencies (humus, rock size) ☐ ☐
  - Soil horizons and their composition ☐ ☐
  - Soil particle sizes (sand, silt, clay) ☐ ☐
  - Water retention in soil ☐ ☐
  - Soil nutrients and minerals ☐ ☐

- Types of Energy
  - Law of Conservation of Energy ☐ ☐
  - Types of energy (sound, thermal, electric, etc) ☐ ☐
  - Energy transformations ☐ ☐
  - Difference between potential and kinetic energy ☐ ☐

- Simple Machines
  - The purpose of simple machines ☐ ☐
  - Inclined planes (screws, wedges) ☐ ☐
  - Levers (1st, 2nd and 3rd class) ☐ ☐
  - Wheels (gears, wheels and axels, pulleys) ☐ ☐
  - The concept of mechanical advantage ☐ ☐
  - Identifying the effort and resistant forces in levers ☐ ☐
  - Identifying the fulcrum in levers ☐ ☐
  - Giving and recognizing examples of each machine ☐ ☐

- Forces and Motion
  - The 5 different types of forces (compression, tension, torsion, deflection, shearing) ☐ ☐
  - The symbols for each force ☐ ☐
  - Giving and recognizing examples of each force ☐ ☐
  - The 4 different types of motion (rectilinear, alternating, circular, and oscillatory) ☐ ☐
  - Giving and recognizing examples of each motion ☐ ☐