

## Study Concepts for Exam 1

Geology 10113

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## General Comments

- Anything in the presentations or that I have talked about is fair game for the exam.
- I will not ask you about information in the book I have not talked about.
- I do not expect and will not ask simple fact regurgitation - I expect you to have a working knowledge of the concepts discussed.
- If you do well on the various multiple choice questions given by the textbook publisher ([http://wps.prenhall.com/esm\\_tarbuck\\_earth\\_8](http://wps.prenhall.com/esm_tarbuck_earth_8)) for the chapters we have covered you should do well.
- Those who wait to study until the weekend before the exam usually do fairly poorly.

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## Introduction

- What is geology?
- Geological Time
- The scientific method and geology
- The Earth system and "Earth-system science"
- Development and evolution of the solar system and the Earth
- The surface and interior of the Earth

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## Matter and Minerals

- Definitions and differences between minerals and rocks
- Basics of minerals: Elements, atoms and atomic bonds
- Building minerals: Atomic structure and factors of crystal form
- Primary and secondary diagnostic properties of minerals
- The rock-forming minerals and the composition of the crust
- The Si-O tetrahedron and silicate minerals
- Non-silicate minerals

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## Igneous Rocks

- The nature of magma and lava, and the effects of cooling and crystallization
- Textures of igneous rocks and their interpretation
- Compositions of igneous rocks and their meaning
- Naming, differentiating and comparing igneous rocks
- The importance of Bowen's reaction series: Understanding magma processes and igneous rocks
- The production and evolution of magma
- Types of intrusive structures

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## Volcanoes

- Factors that determine the nature of volcanic eruptions
- Materials associated with volcanic eruptions
- Types of volcanoes and styles of eruption
- Landforms associated with volcanoes and volcanic terrains
- Classification of igneous rock bodies

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## Weathering and Soils

- "Weathering" and Earth's external and internal processes
- Processes of mechanical weathering
- Processes of chemical weathering
- Controls on rates of weathering processes
- Soil and soil-forming processes
- The "soil profile" and three major types of soils

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## Sedimentary Rocks

- Formation of sedimentary rocks: Lithification of sediment
- Detrital sedimentary rocks
- Chemical sedimentary rocks
- Further classification and interpretation of textures in sedimentary rocks
- Sedimentary environments

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## Metamorphic Rocks

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- "Metamorphism" and the agents that drive it
- Metamorphic textures
- Common metamorphic rocks
- Metamorphic environments
- Metamorphic zones and metamorphic "grade"

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