



Demonstrate an understanding of the scientific method by using the scientific method in laboratory exercises  
 Demonstrate an understanding of geologic concepts by being able to apply these concepts to identify and/or interpret facets of plate tectonics, earth materials, geologic dating or maps  
 Solve quantitative problems associated with plate tectonic rates, earthquake epicenter determination or topographic maps  
 Interpret seismic-wave travel-time curves, topographic contours, map scales or mapping coordinates  
 Draw appropriate conclusions from the application of principles of plate tectonics or relative dating  
 Identify earth materials using empirical results

7. **Course Objectives** (Identify specific teaching objectives detailing course content and activities. *For some courses, the course objectives will be the same as the student learning outcomes. If this is the case, please simply indicate this in this section).*

- same as SLO's -

8. **Course Content** (Brief but complete topical outline of the course that includes major subject areas [1-2 pages]. Should reflect all course objectives listed above. In addition, you may attach a sample course syllabus with a timeline.)

Plate Tectonics

Mapping plate boundaries  
 Determining Plate Rates

Earthquakes & Seismology

Types of Seismographs  
 Seismic Waves & their Propagation  
 Triangulation  
 Determination of earthquake magnitude  
 First motion application

Geologic Structures

Faults  
 Folds  
 Interpretation of geologic maps & cross-sections

Minerals

Criteria  
 Mineral Groups  
 Physical Properties (10)  
 Identification of minerals

Igneous Processes & Rocks

Igneous Compositions  
 Cooling Rates & Crystal Size  
 Igneous Textures  
 Identification of Igneous Rocks

Sedimentary Structures & Rocks

Sediment  
 Interpreting Sedimentary Features & Structures  
 Identifying Sedimentary Rocks

Metamorphic Processes Rocks

Agents/Causes of Metamorphism

- Types/Environments
- Changes to the Parent Rock
- Identifying Metamorphic Rocks
- Topographic Maps
  - Reading maps
  - Location/coordinate systems
  - Interpretation of topographic contours
  - Construction of topographic profiles
- Geologic Time & Dating Methods
  - Geologic Time Scale
  - Relative Dating Laws & Application

9. **Representative Instructional Methods** (Describe instructor-initiated teaching strategies that will assist students in meeting course objectives. Include examples of out-of-class assignments, required reading and writing assignments, and methods for teaching critical thinking skills.) **If hours by arrangement are required by this course, indicate the additional instructional activity which will be provided during this time.**

The following methodologies are appropriate. Individual faculty will use whatever mix of these they find most effective in the presentation of each topic.

Review of geologic principles lecture with visual aids (transparencies, samples, maps), laboratory exercises, hands-on experience with minerals and rocks, required reading of lab manual, required application of key terms, concepts and techniques, and field trips. One hour by arrangement per week is required for additional instruction and practice of laboratory methods using computer tutorials, mineral and rock samples, maps and geologic cross-sections.

10. **Representative Methods of Evaluation** (Describe measurement of student progress toward course objectives. Courses with required writing component and/or problem-solving emphasis must reflect critical thinking component. If skills class, then applied skills.)

Instructors have considerable discretion in determining course grades, but the department expects in-class tests to account for at least 80-90% of the final grade. Laboratory assignments and homework typically combine to account for the remaining 10-20% of the grade.

Methods of evaluation include written tests with both objective questions (true/false, multiple choice, matching), and application of geologic methods and concepts applied to seismograms, graphs, minerals, rocks, maps and cross-sections.

11. **Representative Text Materials** (With few exceptions, texts need to be current. Include publication dates.)

AGI/NAGT, Laboratory Manual in Physical Geology, currently 7th edition, Pearson/Prentice Hall, 2006.

Prepared by: \_\_\_\_\_  
(Signature)

Email address: hand@smccd.edu

Submission Date: \_\_\_\_\_