

College of San Mateo

Course Outline

- New Course
 Update/No change
 Course Revision (Minor)
 Course Revision (Major)

Date: 12/8/11

Department: **GEOL** Number: **101**
Course Title: **Geology Laboratory** Units: **1**
Total Semester Hours Lecture: Lab: **48** Homework: By Arrangement: **none**

Length of Course

- Semester-long
 Short course (Number of weeks____)
 Open entry/Open exit

Grading

- Letter
 Pass/No Pass
 Grade Option (letter or Pass/No Pass)

Faculty Load Credit (To be completed by Division Office; show calculations.):

3hrs/wk x 16wk x 0.8FLC/hr = 2.4FLC

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- 1. Prerequisite** (Attach Enrollment Limitation Validation Form.)
Completion of or concurrent enrollment in Geol 100.
- 2. Corequisite** (Attach Enrollment Limitation Validation Form.)
none
- 3. Recommended Preparation** (Attach Enrollment Validation Form.)
Eligibility for Engl 838/848
- 4. Catalog Description** (Include prerequisites/corequisites/recommended preparation. For format, please see model course outline.)
GEOL 101 Geology Laboratory (1) Minimum 48 lab hours per term. Prerequisite: completion of or concurrent enrollment in GEOL 100. Recommended Preparation: Eligibility for ENGL 838/848. Optional introductory geology laboratory course designed to be taken concurrently with or following GEOL 100. Identification of tectonic plates, minerals, rocks; interpretation of cross sections, maps and seismograms; geologic processes and features. (AA: Area E5a, CSU: Area B3, UC: Area 5C only if Geol 100 is successfully completed prior to or concurrently with Geol 101)
- 5. Class Schedule Description** (Include prerequisites/corequisites/recommended preparation. For format, please see model course outline.)
Identification of tectonic plates, minerals, rocks; interpretation of cross sections, maps and seismograms; geologic processes and features. Prerequisite: concurrent enrollment in or completion of GEOL 100 with a grade of C or higher. Recommended Preparation: Eligibility for ENGL 838/848. (AA: Area E5a, CSU: Area B3, UC: Area 5C only if Geol 100 is successfully completed prior to or concurrently with Geol 101)

6. **Student Learning Outcomes** (Identify 1-6 expected learner outcomes using active verbs.)

Upon successful completion of the course, the student will be able to:

1. Demonstrate an understanding of the scientific method by applying the scientific method in laboratory exercises
2. Demonstrate an understanding of geologic concepts and principles by being able to apply these concepts to identify and/or interpret geologic features
3. Solve quantitative problems associated with geologic processes and maps
4. Demonstrate the ability to read and interpret topographic and geologic maps
5. Draw appropriate conclusions from the application of principles of plate tectonics, geologic structures or dating
6. Identify and evaluate earth materials

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. In this case, "Same as Student Learning Outcomes" is appropriate here.*)

Same as Student Learning Outcomes

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, a sample course syllabus with timeline may be attached.)

A minimum of 10 of the following activity topics:

Plate Tectonics

- Tectonic Plates
- 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

Geologic Maps & Cross Sections

- Interpretation Of Geologic Maps & Cross-Sections

Minerals

- Criteria
- Mineral Groups
- Physical Properties
- Identification And Evaluation Of Minerals

Rocks

- Igneous Processes & Rocks
 - Igneous Compositions
 - Cooling Rates & Crystal Size
 - Igneous Textures
- Identification And Evaluation Of Igneous Rocks

Sedimentary Rocks

- Sediment
- Interpreting Sedimentary Features
- Identification And Evaluation Of Sedimentary Rocks

- Metamorphic Processes And Rocks
 - Agents/Causes/Types Of Metamorphism
 - Changes To The Parent Rock
 - Identification And Evaluation Of Metamorphic Rocks
- Topographic Maps
 - Reading Maps
 - Location/Coordinate Systems
 - Interpretation Of Topographic Contours
 - Construction Of Topographic Profiles
- Groundwater Processes
 - Groundwater Movement
 - Features And Karst Topography
 - Hazards And Risks
- Geologic Time
 - Geologic Time Scale
- Dating Methods
 - Relative Dating
 - Absolute Dating
 - Application Of Dating Principles
- Field Trip

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

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 (photos, diagrams, 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 trip.

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 9th edition, Pearson/Prentice Hall, 2011.

Prepared by: _____
(Signature)

Email address:

Submission Date: _____