**MOHAWK VALLEY COMMUNITY COLLEGE**

**UTICA, NEW YORK**

**COURSE OUTLINE**

**INTRODUCTION TO PHYSICAL GEOLOGY**

**GL101**

**REVIEWED & FOUND ACCEPTABLE 2/1/13**

**REVIEWED & FOUND ACCEPTABLE 1/10/17**

**GL 101 COURSE OUTLINE**

**Course Number:** GL101

**Course Title:** Physical Geology

**Credit Hours:** 4

 **I. Course Description**

This course explores the composition and formation of minerals and rocks that make up the Earth. Additionally, the primary surface and subsurface properties that continually shape the Earth are discussed. In the laboratory, the common rock-forming minerals as well as igneous, sedimentary, and metamorphic rocks are examined. Additionally, the concepts of surface and groundwater flow are discussed as well as topographic map interpretation and construction. Field trips may be taken during laboratory periods.

**II. Student Learning Outcomes**

**Lecture**

 A. The student will be able to describe the basic scientific and geological principles that govern modern geology.

B. The student will be able to describe how science is an investigative

process.

C. The student will be able to describe the earth’s place in the universe, both physically and cosmologically.

D. The student will demonstrate an understanding of the necessity of deep time to achieve the earth’s current state.

E. The students will be able to illustrate the early evolution of the earth.

F. The students will be able to explain the primary surface processes that shape and form the earth.

G. The students will be able to explain the primary deep earth processes that shape and form the earth.

H. The students will be able to describe how plate tectonics is responsible for volcanism, earthquakes, and mountain building events.

 **Laboratory**

A. The student will use mineral and rock keys to identify selected specimens from the primary mineral and rock groups.

B. The student will be able to identify said specimens on a mineral and rock practical.

 D. The student will demonstrate the skills of observation, data collection, and data analysis while investigating the processes of surface and ground water flow.

 E. The student will write formal laboratory reports on the results of the above investigative laboratories.

F. The student will learn to identify symbols and features on topographical maps, and have a working knowledge of topographic maps.

G. The student will be able to produce a topographical map from elevation data and construct a topographic profile from said map.

**III. Organization and Procedures**

 A. Time Allotment (4 credit hours)

 1. Lecture: 3 hours per week for 15 weeks

 2. Laboratory: 2 hours per week for 15 weeks

**GEOLOGY 101 PHYSICAL GEOLOGY**

**FALL/SPRING LECTURE OUTLINE**

**Week Topic Chapter**

1 Nature of Science & The Scientific Preface &

 Method, Atomic Structure Review Appen. A

2 Cosmology 1

3 The Atmosphere 20

4 Exploring the Earth’s Interior Int. C, 2

5 Mineralogy 3

6 The Rock Cycle & The 3 Types of Rocks Int. A &

 B, 6 - 8

7 Weathering & Erosion, & Lithification 7

8 Geologic Time 12

9 Fossils & Evolution Int. D

10 Volcanoes 9

11 Streams, The Hydrologic Cycle Int.E,

 & Ground Water 7 & 19

12 Glaciers 22

13 The Sea Floor & Plate Tectonics 3 & 4

14 Earthquakes 10

15 Mountain Building 11

**GEOLOGY 101 PHYSICAL GEOLOGY**

**FALL/SPRING LABORATORY OUTLINE**

Week Topic Chapter

1 Math & Science Review 1

 Determining the Size of a Molecule 2

2 Introduction to Minerals 3

3 Minerals Continued 3

4 Minerals Continued 3

5 Identifying Igneous Rocks 4

6 Identifying Sedimentary Rocks 4

7 Identifying Metamorphic Rocks 4

8 The Deposition of Sediments 5

9 Flood Recurrence Intervals 5

10 Introduction to GPS / Aerial Photography -

11 Porosity & Permeability 6

12 Topographic Quadrangles 7

13 Constructing a Topographic Map 7

14 Exploring Earthquakes 8