Ohio Articulation Number (OAN)  
Course Submission Form  
2005-2006

College/University  Cuyahoga Community College

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Ohio Articulation Number  OSC011

Name and title of individual submitting on behalf of the college/university

<table>
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<tr>
<th>Name</th>
<th>Peter Ross</th>
<th>Title</th>
<th>District Director, Transfer and Alternative Credit</th>
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Address  11000 Pleasant Valley Road  Parma, OH  44130

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Phone  (216) 987-5093

Fax  (216) 987-5075

Credit Hours  1 qtr  3 sem

Lecture Hours  0

Laboratory Hours  3 (if applicable)

Pre-Requisites(s) Course work (if applicable)  None

Placement Score (if applicable)

(Name of test)
Catalog/Course Description (Includes Course Title and Course #)

Fall 2005- Summer 2007/Physical Geology, ESCI-1410
Topics include materials and structures of the Earth; processes and agencies which change the Earth’s crust. Mineral composition of rocks; work of gravity, water, winds, and glaciers as agents of erosion; and volcanoes and earthquakes as forces which change the Earth’s surface. To fulfill laboratory science requirements, students should also enroll in related laboratory course.

Texts/Outside Readings/Ancillary Materials
See Course Outline

Course Objectives and/or Plan of Work

CUYAHOGA COMMUNITY COLLEGE
OFFICIAL COURSE OUTLINE

SUBJECT AREA TITLE             Earth Science

COURSE TITLE                    Laboratory in Physical Geology

SUBJECT AREA CODE-COURSE NUMBER ESCI - 141L

COURSE CREDIT HOURS            01

I.  DESCRIPTION OF COURSE:

A.  CATALOG DESCRIPTION:

Laboratory studies include minerals, rocks, volcanoes, geologic dating, topographic maps and the determination of depositional and erosional features, earthquake epicenter locations, folds and faults, interpretation of geologic maps, plate tectonic processes and boundaries, and field work to become familiar with the local geology. Regularly scheduled field trips are an integral part of this course.

B.  LECTURE HOURS:                00

C.  LABORATORY HOURS:            03
D. OTHER REQUIRED HOURS: 000

E. PREREQUISITE(S): Concurrent enrollment in ESCI-1410 Physical Geology or ESCI-141H Honors Physical Geology is highly recommended.

II. OUTCOMES/OBJECTIVES:

Upon successful completion of ESCI-141L Laboratory in Physical Geology, the student should be able to:
A. Identify minerals by their physical characteristics and know their chemical composition.
B. Identify igneous, sedimentary, and metamorphic rocks using their texture and composition.
C. Recognize the type of and activity of volcanoes by their geomorphology.
D. Explain development of major landforms and recognize and discuss the actions and interaction of water, ice, and wind on the earth's surface.
E. Interpret topographic maps, aerial photos, and remote sensing images to understand the earth’s landforms.
F. Interpret geologic maps to understand the earth's internal structure.
G. Use relative dating procedures to interpret geologic cross sections.
H. Differentiate between the different types of folds, faults, and joints.
I. Locate plate boundaries and identify the plates and the types of boundaries that separate them.
J. Differentiate between erosional and depositional processes and features of gravity, water, wind and ice.
K. Differentiate between P, S, and L seismic waves and use them to locate earthquake epicenters.
L. Differentiate between P, S, and L seismic waves and use them to locate earthquake epicenters.

III. COURSE CONTENT:

A. Minerals
   1. Determination of hardness
2. Crystal classes and growing of crystals
3. Diaphaneity - transparent, translucent, opaque
4. Color
5. Rupture - cleavage and fracture
6. Effervescence with hydrochloric acid
7. Chemical composition
8. Specific gravity - heft, precise determination
9. Reaction to a magnet
10. Striations
11. Taste
12. Feel
13. Streak
14. Tenacity - elastic, plastic, brittle
15. Luster

B. Study of volcanoes
1. Activity -- extinct, dormant, active
2. Type -- shield, composite, cinder cone

C. Igneous rocks
1. Intrusive
2. Extrusive
3. Texture
4. Composition
5. Environment of formation

D. Sedimentary rocks
1. Texture
2. Composition
3. Environment of formation
4. Sedimentary structures - mud cracks, cross beds, graded beds, etc.

E. Metamorphic rocks
1. Composition
2. Parent rocks and environment of formation

F. Relative geologic dating

G. Topographic maps
1. Contour lines - construction and reading
2. Scales - verbal, graphic, and representative fractions
3. Location by latitude and longitude
4. Location by tiers and ranges
5. Magnetic declination
6. Legend
7. Construction of profiles

H. Streams
1. Erosional features
2. Depositional features
3. Types of streams
4. Gradients
5. Stages of valley development
I. Hydrology and ground water
   1. The hydrologic cycle
   2. Water tables and aquifers
   3. Karst - erosional features
   4. Stages of karst development
J. Glaciers
   1. Erosional features
   2. Depositional features
   3. Alpine and continental
K. Wind
   1. Erosional features
   2. Depositional features
L. Waves
   1. Erosional features
   2. Depositional features
M. Earthquakes
   1. Characteristics of P and S waves
   2. Epicenter location
N. Structural geology
   1. Folds - anticlines, synclines, domes, basins
   2. Faults - normal, reverse, transform
   3. Joints
   4. Use of age and symbols for determining structure
O. Geologic maps
   1. Symbols used for structures
   2. Symbols used for formations
   3. Interpretation
   4. Constructions of cross-sections
P. Plate tectonics
   1. Plate boundaries - rift, subduction and transform
   2. Plate names
   3. Location of mountains in relation to plate boundaries
   4. Changes in plate size and location
Q. Field work
   1. Using the Brunton compass: bearings; strike and dip
   2. Making maps
   3. Determining stream gradients
   4. Determining stream velocity
   5. Determining characteristics of local formations and glacial tills
   6. Identifying rocks and minerals in the field
   7. Using GPS sensors
   8. Determining and plotting joint bearings
   9. Determining and plotting strikes and dips of inclined beds
R. Remote sensing
   1. Aerial photos - single and stereo pairs
   2. Satellite images
IV. METHODS OF STUDENT EVALUATION MAY INCLUDE ANY OF THE FOLLOWING:

A. Quizzes
B. Lab exams (practicals)
C. Participation in class discussions
D. Participation in and completion of field work
E. Laboratory reports

V. RESOURCES MAY INCLUDE ANY OF THE FOLLOWING:

C. Faculty prepared laboratory exercises.