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

College/University  Cuyahoga Community College  

Course(s) Submitted (Title & Course #) Laboratory in Historical Geology, ESCI – 151L  

Ohio Articulation Number  OSC012  

Date  June 7, 2006  Course  2 of a 2  

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

Name  Peter Ross  

Title  District Director, Transfer and Alternative Credit  

Address  11000 Pleasant Valley Road  

Parma, OH  44130  

E-mail  peter.ross@tri-c.edu  

Phone  (216) 987-5093  

Fax  (216) 987-5075  

Credit Hours  3 qtr  

Laboratory Hours  3 (if applicable)  

Pre-Requisites(s) Course work (if applicable)  

Concurrent enrollment in ESCI-1510 Historical Geology is highly recommended  

Placement Score (if applicable)
Fall 2005- Summer 2007/Laboratory in Historical Geology, ESCI-151L
Laboratory studies include mineral and rock identification, significance of rock type, relative and absolute dating, stratigraphy, fossilization, fossil identification and significance, evolutionary patterns, cladistics, geology and paleontology of the major geologic time divisions, and field work. Required field work is an integral part of this course.

See Course Outline
C. LABORATORY HOURS: 03

D. OTHER REQUIRED HOURS: 000

E. PREREQUISITE(S): Concurrent enrollment in ESCI-1510 Historical Geology is highly recommended.

II. OUTCOMES/OBJECTIVES:

Upon successful completion of ESCI-151L Laboratory in Historical Geology, the student should be able to:

A. Understand the principles used in interpreting the earth's history.
B. List the components and dates of the geologic time scale.
C. Identify the common minerals and rocks and to decipher their significance in the rock record.
D. Understand the principles and procedures used in relative and absolute dating.
E. Differentiate between the different types of folding, faulting, and jointing.
F. Interpret geologic maps to determine earth history.
G. Understand the anatomy, phylogeny, and relationships between the major groups of animals and plants of each geologic time interval.
H. Understand the principles of plate tectonics.
I. Locate both present and past plate boundaries.
J. Visualize the physical geography of each time period and the relationship between physical geography and sedimentary facies.
K. Make observations and measurements in the field.

III. COURSE CONTENT:

A. Identification of the common earth-forming minerals
   1. Hardness
   2. Luste
   3. Color
   4. Rupture - cleavage, fracture
   5. Tenacity - elastic, plastic, brittle; reaction with hydrochloric acid
   6. Taste
B. Identification of rocks
   1. Igneous - intrusive and extrusive
   2. Sedimentary
   3. Metamorphic
   4. Texture
   5. Composition
C. Relative dating
   1. Age sequencing
   2. Recognition of unconformities
D. Absolute dating
   1. Alpha decay
   2. Beta decay
   3. Beta capture; half life concept
E. Stratigraphy
   1. Lithofacies and lithofacies maps
   2. Transgressions and regressions
   3. Correlation
F. Geologic time scale
   1. Eons
   2. Eras
   3. Periods
   4. Epochs
G. Fossilization
   1. Unaltered soft or hard part
   2. Altered hard parts - recrystallization, permineralization, replacement
   3. Altered soft parts - carbonization
   4. Trace fossils - molds, casts, tracks, trails, burrows, coprolites, gastroliths
   5. Interpretation of incomplete fossil
H. Environments
   1. Metamorphic
   2. Igneous - volcanic, plutonic
   3. Sedimentary
   4. Sedimentary structures
   5. Significance of minerals and color
I. Cladistics
   1. Interpretation of cladograms
   2. Construction of cladograms
J. Construction of phylogenetic trees
K. Evolution
   1. Fossil evidence
   2. Homologous structures
   3. Molecular mechanisms
   4. Molecular evidence
L. Plate tectonics
   1. Characteristics of and location of present plate boundaries
   2. Past continental locations
M. Interpretation of geologic maps
   1. Symbols used for structures and formations
   2. Construction of geologic cross sections
   3. Maps featuring Cryptozoic formations
   4. Maps featuring early Paleozoic formations
   5. Maps featuring late Paleozoic formations
   6. Maps featuring Mesozoic formations
   7. Maps featuring Cenozoic formations

N. Identification of fossils and their features
   1. Complex organic molecules
   2. Stromatolites
   3. Cryptozoic micro-organisms
   4. Cryptozoic metazoans
   5. Arthropoda -- trilobites, ostracods,
   6. Porifera
   7. Graptolithina
   8. Brachiopoda
   9. Cnidaria
   10. Bryozoa
   11. Echinodermata
   12. Chordata - fish, reptiles
   13. Mollusca - bivalves, gastropods, cephalopods
   14. Foraminifera
   15. Plants (extant and extinct) - bryophytes, lycopsids, sphenopsids, pteridophytes,
   cycads, ginkgoes, conifers, angiosperms

O. Survey of life at the Cleveland Museum of Natural History

P. Field work
   1. Local stratigraphy - recognition of formations and sedimentary structures
   2. Determination of joint bearings

IV. METHODS OF STUDENT EVALUATION MAY INCLUDE ANY OF THE FOLLOWING:

A. Quizzes
B. Lab exams (practicals)
C. Field work
D. Laboratory reports

V. RESOURCES MAY INCLUDE ANY OF THE FOLLOWING:

G. Laboratory exercises prepared by faculty.

Description of Assessment and/or Evaluation of Student Learning
See Course Outline

Master Syllabi and Working Syllabi (if both are used)
See Course Outline

Additional Documentation

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