CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

LSC Use Only
Number 147
Action Approved
Date 11-8-90

UWUCC Use Only
Number 27
Action _____
Date _____

I. TITLE/AUTHOR OF CHANGE

COURSE/PROGRAM TITLE Geology of National Parks - GS 150
DEPARTMENT Geoscience
CONTACT PERSON Karen Rose Cercone

II. THIS COURSE IS BEING PROPOSED FOR:

_____ Course Approval Only
X Course Approval and Liberal Studies Approval
_____ Liberal Studies Approval only (course previously has been approved by the University Senate)

III. APPROVALS

Darlene Richard 9-26-90
Department Curriculum Committee

[signature] 9-26-90
Department Chairperson

[signature]
College Curriculum Committee

[signature]
College Dean*

Charles D Cashdollar
Director of Liberal Studies
(where applicable)

_____
Provost
(where applicable)

*College Dean must consult with Provost before approving curriculum changes. Approval by College Dean indicates that the proposed change is consistent with long range planning documents, that all requests for resources made as part of the proposal can be met, and that the proposal has the support of the university administration.

IV. TIMETABLE

Date Submitted to LSC _____
to UWUCC _____

Semester/Year to be implemented Spring 91

Date to be published in Catalog 1991-92

Revised 5/88

[Attach remaining parts of proposal to this form.]

CATALOG DESCRIPTION

GS 150 Geology of National Parks 3c-01-3sh
Prerequisites: none

A study of geological processes and earth history as documented by the classic geological features of U.S. and Canadian national parks. Includes Badlands, Glacier, Grand Canyon, Great Smokies, Gros Morne, Mammoth Caves, Yellowstone, Yosemite and others. Not open to Geoscience majors or minors.

COURSE SYLLABUS

GS 150 Geology of National Parks

I. Catalog description

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II. Course objectives

This course will enable students:

1.) to examine the growth and development of the North American continent as preserved in the spectacular rock outcrops of its national parks.

2.) to explore and analyze major geologic hypotheses and unresolved controversies, as they pertain to national parks.

3.) to appreciate and value the scientific as well as scenic value of national parks, and to become aware of the threats to their preservation.

III. Course outline

A. Geological processes and the national parks they have shaped:

Sedimentation (5 lectures):
marine sequences - Grand Canyon
desert sands - Zion, Canyonlands
reef carbonates - Virgin Islands, Guadalupe
continental margins - Gros Morne

Volcanism (5 lectures):
strato-volcanoes - Mount Rainier, North Cascades
shield volcanoes - Hawaii Volcanoes, Haleakala
collapsed calderas - Crater Lake, Katmai
hot springs - Yellowstone, Hot Springs

Deformation and metamorphism (5 lectures):
block faulting - Grand Teton, Rocky Mountain
thrust faulting - Great Smokies, Shenandoah
basin and range faulting - Great Basin, Death Valley
tectonic melanges - Olympic, Gros Morne
metamorphism = Acadia, Isle Royale

Weathering and erosion (7 lectures)
river systems - Grand Canyon, Shenandoah
mass wasting - Bryce Canyon, Capitol Reef
fracture and joint control - Canyonlands, Arches
paleosols and caliche - Badlands, Petrified Forest
cave development - Mammoth Caves, Carlsbad Caverns

Glaciation (4 lectures):
mountain glaciers - Glacier, Yosemite, Glacier Bay
continental glaciers - Voyageurs, Isle Royale

B. The history of the earth as illustrated by national parks:

Assembly of the continent (2 lectures):
- Voyageurs, Rocky Mountain

Tectonics at the edge (4 lectures):
Appalachian - Gros Morne, Shenandoah, Great Smokies
Laramide - Grand Teton, Denali, Rocky Mountain

Life through time (4 lectures):
Precambrian life - Isle Royale, Glacier
Paleozoic life - Burgess, Grand Canyon, Big Bend
Mesozoic life - Dinosaur National Monument
Cenozoic life - Badlands

C. Human interaction with national parks (3 lectures):
pollution - Grand Canyon, Death Valley
groundwater use - Mammoth Caves, Everglades
ancient cultures - Mesa Verde

IV. Evaluation methods

The grade in this course will be determined from one book review (worth 50 points), two hourly exams (each worth 100 points), and one two-hour cumulative final (worth 200 points). Scores on all exams will be adjusted to a mean of 75% so that 90-100%=A; 80-89%=B; 70-79%=C; 60-69%=D; and below 60%=F.

V. Required books

Text: Harris, Ann and Tuttle, Esther, 1990, Geology of National parks (4th Edition): Kendall-Hunt Publishers.

Non-text: Gould, Stephen J., 1990, Wonderful Life: the Burgess Shale and the nature of history: Norton & Company.

LIBERAL STUDIES COURSE APPROVAL FORM

Part I: Basic Information

Catagory:	Natural Sciences Non-lab
Approval type:	Regular
Substitution for Gen.Ed.:	None

Part II: Liberal Studies Goals

A. Intellectual Skills:

1.) Scientific inquiry (primary) - students will learn to use classic geological principles, such as uniformitarianism, superposition and facies change, as tools to reconstruct past events and processes recorded in the rocks of national parks.

2.) Values (secondary) - students will develop a new set of values, learning to appreciate national parks not only as scenic landscapes but as repositories of scientific knowlege.

B. Acquiring a body of knowlege:

1.) Geologic processes (primary) - students will learn about processes such as volcanic eruptions, river erosion and glaciation by observing them in action in national parks.

2.) Earth history (primary) - students will discover the vastness of geologic time and learn to reconstruct past life-forms and landscapes from the geology of national parks.

3.) Park development (secondary) - students will gain a better understanding of the political processes by which areas become protected as national parks, both within the historical context of the past and in today's society.

Part III: General Criteria

A. This is not a multi-section, multiple-instructor course.

B. Ethnic and racial minorities and women played important roles in establishing several national parks. This class will cover Marjory Stoneman Douglas' efforts to protect the Everglades, Virginia McClurg's fight to establish Mesa Verde and the efforts of native Americans to insure the preservation of their traditional way of life within the national park system.

C. The required non-text reading in this course ("Wonderful Life" by Stephen Jay Gould) covers the impact of the spectacular middle Cambrian Burgess Shale fauna on scientific thinking both past and present. Students will be required to read this book and write an essay summarizing its major themes and ideas.

D. We currently offer two introductory courses in geology:

Earth Science, a two-semester sequence in which non-majors get a half-semester overview of geology along with oceanography, astronomy and meteorology; and Physical/Historical Geology, a two-semester sequence in which majors and non-majors gain an in-depth appreciation of the field. This course will provide a one-semester overview of geology, illustrated with examples familiar to many non-major students. Discussions will emphasize geological aspects of human activity, such as the impact of global pollution on the Grand Canyon and Great Smokies.

E. This course will (1) confront major issues of use and abuse of our national resources as crystallized by the debate over preservation of the national park system. This problem has no easy answer, and the "suspended judgement" that has been practiced by Congress and by the nation as a whole has clearly worsened it. In confronting this issue, we will (2) define and analyze various environmental problems as they affect national parks; (3) exchange knowlege and ideas that bear on these problems by reading scientific and media reports; and (4) propose creative solutions of our own. Our discussions will (5) resonate with students in future visits to national parks, and make it clear that (6) the fate of our national parks hinges on the current political debate over the environment.

Part IV. Criteria for curriculum category

This course will fulfill the requirements of the non-lab science criteria by ensuring that students:

1.) gain an in-depth understanding of the complexities of science, in this case the geological processes that have shaped the North American continent.

2.) explore major unresolved scientific questions about geological processes (mountain-building, glaciation, volcanism, etc.) as they specifically pertain to our national parks.

3.) learn to apply geological theories and hypotheses such as plate tectonics to interpret the rock record of national parks, and also to critically analyze the results.

4.) examine the geologic knowlege obtained from national parks, and appreciate the efforts of the many individuals, including women and minorities, who gathered that knowlege.

5.) learn to appreciate and value the spectacular and scientifically significant landscape of national parks

6.) become aware of the impact that geological processes have had on human development through time, and of the impact that humans are currently having on national park geology.

7.) see in multicultural perspective how national parks systems have developed in the U.S and Canada, and how this model is faring in preservation efforts around the world.

UWUCC COURSE ANALYSIS QUESTIONNAIRE

Section A: Details of the course

A1: This course has been specifically designed to fulfill the Liberal Studies non-lab science requirement. It cannot be taken for credit by any department major/minor student.

A2: This course requires no changes in any other course.

A3: This is a traditional three-hour three-credit lecture class.

A4: A version of this course was offered as a Special Topics course in Spring 1990. That course was designed as a review of geologic principles for departmental majors and minors. Aftre teaching it, we decided the subject matter was more appropriate for non-major Liberal Studies students and have redesigned the course accordingly.

A5-6: This is not a dual-level or a variable-credit course.

A7: Many universities offer a course similar to this; catalog descriptions are attached at the end of the application.

A8: The content of this course is not required by any accrediting agencies.

Section B: Interdisciplinary implications

B1: This course will be taught by only one instructor.

B2: No other courses are needed to teach this course.

B3: Other departments at IUP should not be affected by the adoption of this course.

B4: Students from Continuing Education are welcome.

Section C: Implementation

C1: Resources:
a.) Because of a recently approved change in some Geoscience Department lab courses (from three to two hours of contact), faculty resources are now available for teaching this course.

b.-e.) No new space, equipment, lab supplies, library materials or travel funds are needed for this course.

C2: No grant-funding is available for this course.

C3-5: This course will be offered on a yearly basis, as a single lecture section for up to 75 students.

C6: No enrollment limits have been placed on this course by any professional society.

CATALOG DESCRIPTIONS FROM OTHER SCHOOLS

University of Akron

202 GEOLOGY OF THE NATIONAL PARKS 3 credits
Prerequisite: 1100.223, or 100 or 101. Geologic setting of major national parks, interpreted in terms of geological principles and processes which shaped them in past and/or currently affect them, including the rock cycle, evolution of landscapes and plate tectonics.

Bowling Green University

GEOL 304. Geology of the National Parks (4) II alternate years and III U S regional geology as illustrated in the national park system Three lectures and one two-hour laboratory Prerequisite GEOL 100 or GE OL 104

Idaho State University

g358 Geology of North America 3 credits. Regional stratigraphy and tectonics of North America emphasizing National Parks and the Intermountain West. Graduate students will do extensive additional reading in current literature. PREREQ: GEOL 106.

University of Iowa

12:17 Geology of the U.S. National Parks 2 s.h.
Illustrated discussion of the features responsible for setting aside our national parks, including basic geology, stratigraphy, landforms, geologic history, and important biological and archeological features. Prerequisite: geology course or consent of instructor.

University of Washington

GEOL 300 Geology of the National Parks (3) Sp Important geological processes and concepts of North American national parks. Prerequisite: 101 or 205 or equivalent.

Youngstown State University

510. *Geology of National Parks.* Geologic history of national parks; geologic processes observed in North American parks and Hawaii. Simulated field trips to several major parks. Not applicable toward a Geology major. 4 q.h.