Curriculum Proposal Cover Sheet – form is available on-line as an interactive PDF

LSC Use Only Proposal No:	*UWUCC Use Only* Proposal No: 12-25c.
LSC Action-Date: App- 9/13/12	UWUCC Action-Date: App-10/23/12 Senate Action Date: App-11/6/12

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) **Karen Rose Cercone**	Email Address **kcercone@iup.edu**
Proposing Department/Unit **Geoscience**	Phone **7- 7650**

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or program proposal.

1. Course Proposals (check all that apply)

_____ New Course _____ Course Prefix Change _____ Course Deletion

__X__ Course Revision _____ Course Number and/or Title Change _____ Catalog Description Change

Current course prefix, number and full title: ***GEOS 150 Geology of National Parks***

Proposed course prefix, number and full title, if changing: _____

2. Liberal Studies Course Designations, as appropriate

__X__ This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

_____ Learning Skills __X__ Knowledge Area _____ Global and Multicultural Awareness _____ Writing Intensive (include W cover sheet)

_____ Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)

_____ Global Citizenship _____ Information Literacy _____ Oral Communication

_____ Quantitative Reasoning _____ Scientific Literacy _____ Technological Literacy

Received
APR 20 2012
Liberal Studies

3. Other Designations, as appropriate

_____ Honors College Course _____ Other: (e.g. Women's Studies, Pan African)

4. Program Proposals

_____ Catalog Description Change _____ Program Revision _____ Program Title Change _____ New Track

_____ New Degree Program _____ New Minor Program _____ Liberal Studies Requirement Changes _____ Other

Current program name: _____

Proposed program name, if changing: _____

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)		4/13/12
Department Chairperson(s)		4/13/12
College Curriculum Committee Chair		4/20/12
College Dean		4/20/12
Director of Liberal Studies (as needed)		9/14/12
Director of Honors College (as needed)		
Provost (as needed)		
Additional signature (with title) as appropriate		
UWUCC Co-Chairs	Gail S Sechrist	10/23/12

Part II.

1) Syllabus of Record

I. Catalog Description

GEOS 150 Geology of National Parks 3c-0l-3cr

Prerequisites: No Geoscience Majors/Minors

Explores geological processes and earth history using the classic rock formations of America's national parks. Includes national parks such as Arches, Bryce Canyon, Carlsbad Caverns, Grand Canyon, Great Smokies, Mammoth Cave, Shenandoah, Yellowstone, Yosemite, Zion, and others.

II. Course Outcomes and Assessment (Expected Undergraduate Student Learning Outcomes)

Objective 1:

Students will use the scientific method to interpret the geologic history of North America based on the rocks and landscapes of our national park system.

Expected Student Learning Outcomes 1 and 2

Informed and Empowered Learners

Rationale:

The Earth's landscape is the result of long-term tectonic, depositional and erosional processes. Course assignments will ask students to create and test their own original hypotheses about North America's geologic past using the evidence available in the rock record of the national park system.

Objective 2:

Students will investigate the environments and processes which form the three major rock types (igneous, metamorphic and sedimentary and then apply that knowledge to understand how different types of landscape are controlled within national parks by the underlying bedrock.

Expected Student Learning Outcomes 1 and 2

Informed and Empowered Learners

Rationale:

Rocks are a rich repository of information: their structures, fossil content and composition all tell us something about both their past and current environments. Course content will engage students in the critical interpretation of rocks from the national park system, strengthening their ability to understand and interpret landscape as a function of bedrock geology.

Objective 3:

Students will gain the ability to interpret the historical rock record using physical characteristics and fossil content of rocks from the national park system to reconstruct the environments, tectonic events and global climate changes that have affected North America.

Expected Student Learning Outcomes 1 and 2

Informed and Empowered Learners

Rationale:

North America's ancient geologic past affects both our country's landscape and the distribution of mineral and energy resources. Assignments and course content will ask students to decipher the complex geologic history of our continent using basic principles of stratigraphy and tectonics as illustrated by the national park system.

Objective 4:

Students will examine what scientific factors make a region worthy of being classified as a national park and will assess the environmental issues that could impact protected areas in the future.

Expected Student Learning Outcomes 1, 2 and 3

Informed, Empowered and Responsible Learners

Rationale:

The national park system is a microcosm of the intersecting economic, political, scientific and social forces that determine how Americans use the land we live on. In their course assignments, students will debate the question of why we preserve special regions of our continent for future generations, and how we can recognize when human activities threaten endangered ecosystems in these regions.

III. Course Outline

Part A: The scientific method, plate tectonics and the rock cycle	7 hours
Part B: Weathering and erosion in the national parks	6 hours
Exam One	1 hour
Part C: Sedimentation and river development in the national parks	5 hours
Part D: Stratigraphy and geologic time in the national parks	5 hours
Part E: Cave development and wetlands in the national parks	3 hours
Exam Two	1 hour
Part F: Volcanic activity in the national parks	5 hours
Part G: Mountain building and deformation in the national parks	5 hours
Part H: Glaciers and ice ages in the national parks	4 hours
Final Exam: held during the scheduled final exam period	2 hours

IV. Evaluation Methods

Each component of the course will contribute to final grade according to:

Exam 1	25%
Exam 2	25%
Final Exam	25%
Park Portfolio	25%
Total	100%

V. Example Grading Scale

The final grade for this course will be determined using the following schedule:
A=90-100%; B=80-89%, C=70-79%, D=60-69%, F=<60%

VI. Attendance Policy

The attendance policy will conform to IUP's undergraduate course attendance policy as outlined in the undergraduate catalog.

VII. Required textbooks, supplemental books and readings

Text: Harris, Ann, Tuttle, Esther and Tuttle, Sherwood, 2002, Geology of National Parks 6th Edition: Kendall Hunt, 896 pages.

Non-text: Runte, Alfred, 2010, National Parks: The American Experience 4th Edition: Taylor Trade Publishing, 336 pages.

VIII. Special resource requirements
There are no special resource requirements for this course.

IX. Bibliography
In addition to the required textbooks and supplemental readings from science journals, the following will be used to develop the course curriculum:

Chronic, Halka and Chronic, Lucy M., 2004, Pages of Stone: Geology of the Grand Canyon and Plateau Country National Parks and Monuments 2nd Edition: Mountaineers Books, 176 pages.
Duncan, Dayton, and Burns, Ken, 2009, The National Parks: America's Best Idea: Alfred Knopf, 432 pages.
Fillmore, Robert, 2011, Geological Evolution of the Colorado Plateau of Eastern Utah and Western Colorado: University of Utah Press, 524 pages.
Lillie, Robert J., 2005, Parks and Plates: The Geology of Our National Parks, Monuments, and Seashores: W.W. Norton and Company, 298 pages.
Lutkins, Frederick K., Tarbuck, Edward J. and Tasa, Dennis, 2010, Earth: An Introduction to Physical Geology 10th Edition: Prentice Hall 744 pages.
Marshak, Steve, Wilkerson, M. Beth & Wilkerson, M. Scott, 2009, Essentials of Geology 3rd Edition: Norton, 776 pages.

2. SUMMARY OF PROPOSED REVISIONS
1. Objectives – course objectives were modified from the syllabus of record and aligned with the Expected Undergraduate Student Learning Outcomes (EUSLO).

2. Common Learning Objectives for a non-laboratory Natural Science course were incorporated into the content of the course. These objectives include: examine a body of knowledge of natural science that will contribute to an understanding of the natural world and an appreciation of the impacts that natural sciences have on the lives of individuals and the world in which they live; understand the differences between science as a knowledge base and science as a process that generates knowledge; develop an inquiring attitude consistent with the tenets of natural science; understand the empirical nature of science; understand the concept of bias and the efforts to which scientists go to avoid it.

3. Updated text and non-text to more current editions and also updated the bibliography.

3. JUSTIFICATION/RATIONALE FOR REVISIONS
The course is currently approved for Liberal Studies Non-Laboratory Natural Science and is being revised to meet the new curriculum criteria.

Part III. Letters of Support or Acknowledgement
None attached.

Liberal Studies Course Approval General Information

1. This course will generally be taught in one section by a single instructor.

2. Students will read selections from Polly Welts Kaufman's 1997 book, *National Parks and the Woman's Voice: A History*. As described on Amazon.com, "Kaufman presents the untold story of women's contributions to the national parks, making clear for the first time the role of women who have helped shape our national park system. Also included in this edition is information on women's history sites in the national parks."

Students will also investigate the complicated relationships of national park preservation and the rights of Native Americans living on preserved lands, using Philip Burnham's 2000 book, *Indian Country, Gods Country: Native Americans and the National Parks.* Amazon.com's book description notes, "Historian Philip Burnham traces the complex relationship between Native Americans and the national parks, relating how Indians were removed, relocated, or otherwise kept at arm's length from lands that became some of our nation's most hallowed ground... Burnham reports on hard-won compromises that have given tribes more autonomy and greater cultural recognition in recent years, while highlighting stubborn conflicts that continue to mark relations between tribes and the parks."

3. In addition to the text and non-text, the class will read a variety of government and university web-sites (updated each term) to engage in interactive learning about plate tectonics, geologic time, weathering, erosion and volcanism in the national parks.

4. This course introduces students to fundamental principles of geology as demonstrated in the spectacular landscapes of the national parks. This course is intended to give students enough knowledge of earth science and the scientific method to permit them to make informed and responsible decisions, particularly in regard to the future of the national park system and our country's environment in general. The strong emphasis on preservation of park landscapes makes this course very different from our majors courses such as GEOS 201, 202 and 203 that go into more detail and depth about the materials and evidence required for actual geologic investigations.

Example Assignment and Rubric

Park Portfolio (100 points) **Instructions**

Each student will receive a specific rock formation topic (for example, the Redwall Limestone of the Grand Canyon) during the first week of class. Portfolios can either be turned in midway through the semester (early turn-ins will earn 10 bonus points) or by the final exam period.

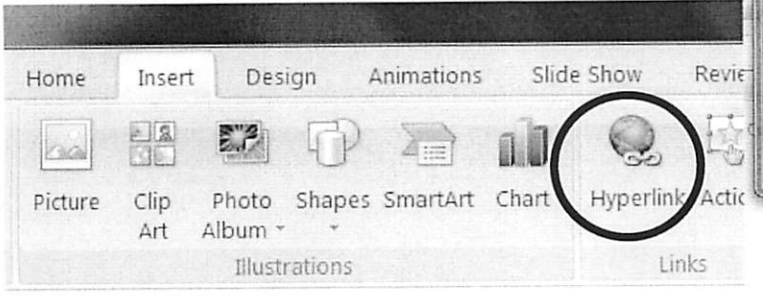
1) Do basic research on your assigned topic using your textbook, the IUP library and the internet. You should focus mostly on educational and government websites to obtain photos, maps and other illustrations that are copyright free. You may also use Wikimedia Commons to find copyright-free illustrations.

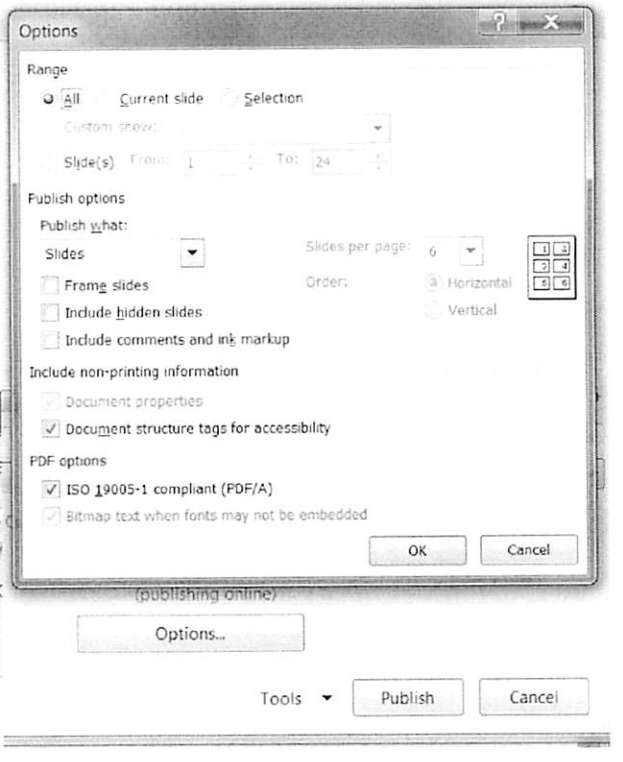
2) Select several important and interesting websites that discuss your rock formation in detail. Summarize the five main facts about your topic that you want to focus on. These should cover both its geologic history (environment of deposition, tectonic setting, fossil content, etc) and its current status (landscape features, resource potential, environmental issues, etc).

3) Design your park portfolio using PowerPoint or an equivalent presentation design software program. You should have at least one introductory slide for your topic, and then two to three slides which explain the major facts you want to present. Do not combine multiple facts on a single page. Use lots of clear, colorful pictures to illustrate your facts, but do not use clashing colors, flashing fonts or distracting animations.

4) Insert external web-site links into each of your PowerPoint slides by using the Hyperlink icon on the Insert menu (shown circled below) Do not place all your external web links on the last page of the portfolio! Your web-links are part of your presentation, not a list of references that you used.

5) Once you have finalized your electronic lesson, use the Save As command and choose the PDF or XPS option. Before you hit Publish, click on Options and make sure to check the box that says 'Document Structure Tags for Accessibility'. That should make your web links work in the PDF version if you formatted them correctly in the PowerPoint file.





GEOS 150 Park Portfolio **Grading Rubric**

Grading Category	Excellent (16-20 points)	Satisfactory (12-15 points)	Unsatisfactory (0-11 points)
Research & Understanding	The Portfolio shows a **complete understanding** of both basic and complex facts about the assigned rock formation.	The Portfolio shows a **correct understanding** of the basic facts about the assigned rock formation.	The Portfolio shows an **incomplete or incorrect understanding** of the assigned rock formation.
Selection of Facts	The Portfolio presents **important facts** correctly, and does not include a lot of trivial information.	The Portfolio mixes **important and trivial facts**; some facts may be wrong in minor ways.	The Portfolio contains **too few facts** or presents facts that are trivial or wrong in major ways.
Design	The student designs an effective Portfolio with no distracting animations, fonts or clashing colors and with **many useful external web links**.	The student designs a clear and simple Portfolio with **at least a few external web links** that help explain the topic.	The student designs a Portfolio that is difficult to view due to excess decoration or that has **no external web links at all**.
Organization	The Portfolio introduces the topic clearly and then presents information in a **thoughtful and well-ordered sequence**.	The Portfolio introduces the topic and presents information about it in an **order that is not confusing**.	The Portfolio either does not introduce the topic well, or presents facts about it in a **confusing or sloppy order**.
Illustration	The Portfolio is illustrated with **many informative pictures** that are not cartoons or line drawings.	The Portfolio is illustrated with adequate pictures or line drawings; a few may be **blurry or too small**.	The Portfolio is illustrated with **inaccurate or cartoon pictures**; many pictures are hard to see.

Comments:

Score:

Old Syllabus of Record

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 Richardson 9-26-90
Department Curriculum Committee

P.W. Hall 9-26-90
Department Chairperson

College Curriculum Committee

W.J. Cole
College Dean*

Charles D. Cerbus
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

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.

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.