WINONA STATE UNIVERSITY GENERAL EDUCATION PROGRAM APPROVAL FORM

Routing form for General Education Program Course approval.

Course GEOS 104 Catastrophes and Extinctions

Department Chair	1/23/14 tdogwier e-mail address			
Dean's Recommendation YesNo*				
Charla SMutschn Dean of College	1)28/14 Date			
*If the dean does not approve the proposal, a w	ritten rationale should be provided to the General Education Program Subcommittee.			
GEPS Recommendation Approved	Disapproved			
	te long spin in property			
Chair, General Education Program Subcommit	tee Date			
A2C2 Recommendation Approved	Disapproved			
Approved				
	2. Or al-Calmination			
Chair of A2C2	Date			
Faculty Senate Recommendation Approved Disapproved				
President of Faculty Senate	Date Date			
Academic Vice President Recommendation Approved Disapproved				
New State Control of Control	160s distribution			
Estable Plane?	The state of the s			
Academic Vice President	Date			
Decision of President Approved	Disapproved			
President	Date			
Please forward to Registrar.				
RegistrarDate entered	Please notify department chair via e-mail that curricular change has been recorded.			

[Revised 10-22-12]

WINONA STATE UNIVERSITY PROPOSAL FOR GENERAL EDUCATION PROGRAM COURSES

Course No. Course Name Credits Prerequisites none Prerequisites none THEME GOAL AREAS Goal 1: Communication	104	Cotootrophon and Cutination			
Prerequisites none Prerequisites none Prerequisites none Proceedings of the following process		Course Name		3 Cradita	
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Application for GEOS 104 Catastrophes and Extinctions with Lab to satisfy Goal Area 3 Natural Sciences (Note: this course is already listed under Goal Area 3, but we are requesting renewal of this goal area at this time so that in the future GEOS 104 and GEOS 114 (Catastrophes and Extinctions with Lab) will come up for renewal at the same time).

Outline:

- 1. Rocks and the rock cycle
 - a. Sedimentary rocks
 - b. Igneous rocks
 - c. Metamorphic rocks
 - d. The rock cycle
- 2. Geologic Time
 - a. Relative dating
 - b. Radiometric dating
 - c. The geologic timescale
- 3. Formation/early history of the Earth
 - a. Formation of the Solar System
 - b. Formation of the Earth
 - c. Iron catastrophe
 - d. Formation of the Moon
 - e. Heavy bombardment
- 4. Plate tectonics
 - a. Layers of the Earth
 - b. Convergent boundaries
 - c. Divergent boundaries
 - d. Transform boundaries
 - e. Hot spot volcanism
 - f. What moves the plates?
- 5. The atmosphere
 - a. Composition
 - b. Climate controls
 - c. Albedo
 - d. Greenhouse effect
 - e. Feedbacks
 - f. The carbon cycle
- 6. Early life
 - a. Tree of life
 - b. Prokaryotes
 - c. Eukaryotes
 - d. Extremophiles
 - e. Stromatolites
 - f. Photosynthesis

- 7. Rise of oxygen
 - a. Causes & evidence
 - b. Banded iron formations
 - c. Paleosols
 - d. Redbeds
 - e. Oxygen holocaust
- 8. Glaciers & Snowball Earth
 - a. Properties and processes of modern glaciers
 - b. Milankovitch cycles
 - c. Evidence for global glaciations
 - d. End-proterozoic snowball Earth
 - e. Emerging from snowball Earth
 - f. Effects on biodiversity
- 9. Fossils and the fossil record
 - a. What is a fossil?
 - b. Methods of preservation
- 10. Evolution and Extinction
 - a. What is evolution?
 - b. Genetic mutation
 - c. Natural selection
 - d. What is extinction?
 - e. Background extinction
 - f. Mass extinction
 - g. The fossil record of extinction
- 11. The Paleozoic
 - a. Cambrian explosion
 - b. Ordovician extinction
 - c. Devonian extinction
 - d. Permian extinction
- 12. The Mesozoic
 - a. Triassic extinction
 - b. Cretaceous extinction
- 13. The Cenozoic
 - a. Megafauna extinction
 - b. Toba catastrophe
 - c. European-influenced extinction
 - d. Present-day extinctions

Student Competencies for GEP Goal 3	Learning Opportunity	Assessment Method
Demonstrate understanding of scientific	Students will have multiple	In in-class assignments, students will
theories	opportunities to investigate scientific	investigate (over multiple weeks) how
	theories and processes pertinent to the	one of the fundamental theories of the
	study of geoscience, global	geosciences, plate tectonics, was one of
	catastrophes and mass extinctions.	the mechanisms that led to several mass
		extinctions during Earth's history.
		Students will demonstrate their
		knowledge of these theories on quizzes and exams .
Formulate and test hypotheses by	Students will have a variety of	In classroom discussions, quizzes and
performing laboratory, simulation, or	opportunities to collect and analyze	exams students will be asked to
field experiments in at least two of the	their own data, analyze existing data	interpret graphical presentations of data
natural science disciplines. One of these	sets, and graph and interpret data in	in order to answer questions.
experimental components should	order to answer questions pertinent to	
develop, in greater depth, students,	the study of geology, global	
laboratory experience in the collection of	catastrophes and mass extinctions.	
data, its statistical and graphical analysis, and an appreciation of its sources of error		
and an appreciation of its sources of error		
Communicate their experimental		
findings, analyses, and interpretations		
both orally and in writing.		
Evaluate societal issues from a	Students will have multiple	In in-class assignments, quizzes and
natural science perspective, ask questions	opportunities to explore the ways our	exams students will be asked to
about the evidence presented, and make	society interacts with the Earth system,	evaluate humanity's impact on the Earth
informed judgments about science-related	and to evaluate implications of these	system, particularly the climate system
topics and policies	interactions.	and the biosphere. They will also
		evaluate human-induced extinctions,
		both historical and modern, and how (or
		if) humans can prevent another mass
		extinction event.