

87-88/70

INDIANA UNIVERSITY OF PENNSYLVANIA
SENATE CURRICULUM COMMITTEE B-2

NEW COURSE PROPOSAL

Department: Geoscience

Person to contact for further information: Mr. Paul A. Prince

Course affected: GS - 362 Plate Tectonics (formerly Marine Geology & Plate Tectonics)
(name and description change only)

Desired semester of change: Spring 1988

Approvals:

Department Curriculum Committee Chairperson: _____

Department Chairperson: _____

College Advisory Committee Chairperson: _____

A1. Catalog Description: (PLEASE ATTACH)

A2. Course Syllabus: (PLEASE ATTACH)

A3. Need Fulfilled: It is a culminating course, synthesizing and explaining the major new paradigm in geology. Its aim is to tie together the diverse concepts of all previous geology courses and introduce new geophysical parameters: seismicity, magnetics, heat flow and gravimetric methods as they relate to sea floor spreading, ocean floor creation, kinematics of the plates and dynamics

... in the department? Yes

Has this course been offered at IUP on a trial basis? Course is #GS - 362
Intent is to drop

B. INTERDISCIPLINARY IMPLICATIONS

B1. Will the course be offered by one instructor or will there be a team? _____

One Instructor

B2. Are additional or corollary courses needed? _____

Prerequisites are Physics 111 and 112 plus 20 semester hours in geology.

courses offered by other departments? .*

None, it is unique to geology.

C. EVALUATION

C1. What procedures are expected to be used to evaluate student progress? _____

The normal evaluative procedures. Two or three major examinations plus
a comprehensive final. A required term paper and 32 assignments.

C2. Variable credit? No.

D. IMPLEMENTATION

D1. What resources are needed to teach this course? All resources on hand.

Special 300 page Manual has been prepared. Library resources are adequate.
Departmental lab supplies sufficient. Expect no additional instruments or
supplies.

D2. How many sections? One section only.

D3. How often will the course be offered? Once a year, second semester

D4. How many students will be accommodated? 20 - 24 maximum

PLATE TECTONICS

Course Title: Plate Tectonics

Course Number: GS 362

Credit Hours: Lecture and Laboratory 2c-31-3sh

Prerequisite - one year of physics and 20 semester hours in geology

crustal generation, sea floor spreading, collision and
and subduction deformation".

Course Outline: Plate Tectonics

1 week

teach plate tectonics. Texts. Reading assignments. Laboratory assignments. ~~Lecture courses~~ Examinations. Critique. Citation

II. CONTINENTAL DRIFT

1 week

Concepts pre-Wegener. Vertical tectonics-Suessian geology. The German School. Shields and geosynclines. Mobilists vs Stabilists. Theory of continental drift.

Course Outline: Plate Tectonics

VIII ACCRETION SPREADING CENTERS RIDGES AND RISES

1 week

Proper terms. Plate boundaries-vectors of motions. Rift valley morphology. The Heezen zones. Basic parameters across ridges and rise. Sequence: doming-rifting. The Red Sea. The Rhine graben. ~~Local hydro thermal conditions. Aqueous fluids and gases~~

The Galapagos. Sulphide ore deposits. Sea water and igneous cooling. Kuroko-Cyprus-Carlsberg. He^3 . TiO_2 . Oceanic Crust: the ophiolitic complex. Metamorphic facies. Problems. Tectonics of ridges-morphology. Spreading rates-vectors. Elevation vs age ratio. Sedimentary facies. Pondered sediments. Oceanic sediments in time. ~~9. Mid-oceanic Ridges FAMOUS Global accretive episodes. The~~

magma chamber. Aseismic ridges. Ancient continental mantle. Bonatti's hypothesis. Characteristics of mid-oceanic basalts.

IX. INTRODUCTION TO SEISMOLOGY

~~1. Elastic rebound theory Seismic waves-body and surface~~

Plate Tectonics:

Evaluation Methods:

Several written hour examinations and a long comprehensive final. All exams are essay. No curve is used only a straight percentage scale. Final grade

is based on the final examination, term papers, and laboratory exercises and

Final examination will count 70% of the grade while term papers and

Catalog Description
GS - 362
Geoscience Department
November 23, 1987

PLATE TECTONICS

GS - 362 Plate Tectonics

2c-31-3sh

Prerequisites: PH111/112 and a minimum of 20 semester hours of geology.

"Introduction to formal theory of plate tectonics. Topics include: magnetic anomalies, first motion studies, thermal structure of the plates, kinematics, crustal generation, sea floor spreading, collision and subduction deformation."