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Submission Date: App 10/10/95
Action-Date: Sen-App 11/7/95

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. CONTACT

Contact Person John Taylor Phone x4469

Department Geoscience

II. PROPOSAL TYPE (Check All Appropriate Lines)

X **COURSE** Geol. Newfoundland
Suggested 20 character title

X New Course* GS 337 Geology of Newfoundland
Course Number and Full Title

____ Course Revision _____
Course Number and Full Title

____ Liberal Studies Approval + for new or existing course _____
Course Number and Full Title

____ Course Deletion _____
Course Number and Full Title

____ Number and/or Title Change _____
Old Number and/or Full Old Title

_____
New Number and/or Full New Title

____ Course or Catalog Description Change _____
Course Number and Full Title

____ **PROGRAM:** ____ Major ____ Minor ____ Track

____ New Program* _____
Program Name

____ Program Revision* _____
Program Name

____ Program Deletion* _____
Program Name

____ Title Change _____
Old Program Name

_____
New Program Name

III. Approvals (signatures and date)

Department Curriculum Committee 4-7-95

Department Chair 4-7-95

College Curriculum Committee

College Dean 9/11/95

+Director of Liberal Studies (where applicable)

*Provost (where applicable)

PART II. DESCRIPTION OF CURRICULUM CHANGE

1. New Syllabi of Record:

I. Catalog Description

GS 337 Geology of Newfoundland — 3 credits
Pre-requisite: Permission of instructor — (var-3sh)

A field course designed to utilize the exceptional and diverse geologic features of Newfoundland for instruction of departmental majors and minors in tectonic analysis utilizing sedimentologic, stratigraphic and paleontologic observations. (3 weeks, summer only)

II. Course Objectives

1. Students will learn to collect physical and fossil data from sedimentary rock exposures and assign the rocks to specific ages and depositional environments.

2. Students will gain experience in observing compositional and textural properties in igneous and metamorphic rock complexes and interpreting the conditions and tectonic settings that produced them.

3. Students will learn how spatial and age relationships of the sedimentary sequences and igneous/metamorphic rock complexes are used to reconstruct the tectonic history of the Appalachian Mountains.

4. Students will learn to recognize geologic features (erosional and depositional) attributable to glacial and periglacial processes.

5. Students will learn how to cooperate and contribute as members of a geologic field party engaged in data collection and analysis, facing the physical and psychological challenges of long-term field work under primitive conditions.

III. Course Outline

This course is a 3-week field study of the island of Newfoundland. Thus, a course outline is an itinerary of field activities. The first day is used for a briefing session, packing and other logistics. Travel to and from Newfoundland requires approximately 1.5 days each way. An itinerary of the remaining days is provided on the following page.

Day Activities

1 IUP: Registration, packing of camping equipment and personal gear in the vans, shopping to stock coolers with food for first week of trip. Briefing session in the afternoon for an overview of Newfoundland geology, ground rules for the trip, and course policies.

2 Travel from IUP to northern Maine or New Brunswick

3 Travel to North Sydney, Nova Scotia, Take ferry (5-6 hours) to Port aux Basques, Newfoundland. Examine metamorphic complexes and glacial deposits near Port aux Basques.

4 Examine and interpret origin of Hawke Bay Sandstone, Port au Port Group, and St George Group on Port au Port Peninsula.

5 Describe and evaluate depositional and tectonic significance of Table Head Group, American Tickle Formation, and overlying chert-mudstone rhythmites in Black Cove, Port au Port Peninsula. Examine the Mississippian "cold seep" marine vent fauna at Aguathuna Quarry.

6 Visit Cape Cormorant and Long Point on north and west coast of Port au Port Peninsula to examine and interpret clastic and carbonate successions in those areas.

7 Travel north to Blow-me-down Mountain area and examine igneous and metamorphic rock complexes within and below the Bay of Islands ophiolite.

8 Travel to Gros Morne National Park to set up base camp for the next four days, stopping in Corner Brook for groceries and other supplies in the morning. Hike up onto Table Mountain (approximately seven miles) to examine peridotite and gabbros at the base of the ophiolite sequence.

9 Hike (approximately 6 miles) down to coastal exposures of sea floor volcanics at Green Gardens in the morning. Examine limestone-shale rhythmites and faunas of the Cow Head Group at Green Point in the afternoon.

10 Visit exposures of Cow Head Group at Broom Point and at Cow Head in the morning; review session in afternoon; midterm in evening.

11 Free day to allow students to take advantage of Visitor Center and services provided, hike to the top of Gros Morne (second-highest mountain in Newfoundland) or relax in camp.

12 Travel from Gros Morne (stopping for a few exposures in the eastern part of the park) to north-central Newfoundland to examine island arc volcanics along north coast, intrusive igneous rocks in the interior and metamorphics near the Dover Fault.

13 Examine Precambrian sedimentary rocks in the western part of the Avalon Zone; rhythmites, glaciomarine diamictites, and the Precambrian-Cambrian boundary.

14 Examine Middle Cambrian sedimentary rocks with Paradoxites fauna and interpret coarse clastic sequences of the Cape Spear and Signal Hill Groups on the southeastern coast of the Avalon Peninsula.

15 Visit Bell Island in Conception Bay to examine Upper Cambrian and Ordovician sedimentary rocks that contain abundant graptolites, rich trace-fossil assemblages and hematitic ore deposits.

16 Free half-day in St. Johns, Newfoundland for students to visit historic sites, purchase souvenirs, etc. Depart in early afternoon for Port aux Basques.

17 Take ferry from Port aux Basques to northern Nova Scotia. Then continue driving back toward IUP.

18 Complete return trip to IUP. Unpack the vans and prepare for final exam.

19 Study for final (morning); take final (afternoon).

IV. Evaluation Methods

Each student will keep a field notebook that will include daily entries on times and locations (a road log) and field descriptions of the rocks examined on the trip. The field notebook will be collected at the end of the trip and graded for organization, scientific accuracy and completeness. A midterm exam will be given near the middle of the trip (in Gros Morne National Park). A final exam will be given at the end of the trip at IUP. You will also be graded on participation, showing enthusiasm and cooperation, asking and volunteering answers to questions in the field, discussing geology with your classmates and fulfilling your responsibilities in the work to be shared in camp and on the road.

The final grade for this course will be determined as follows:

30% Midterm exam (essay)
30% Final exam *(comprehensive, essay)
20% Field notebook.
20% Participation

The final point total will be divided by maximum possible points and grades will be assigned on the scale: 90-100%=A; 80-89%=B; 70-79%=C; 60-69%=D; and below 60%=F.

V. Required Textbook, Supplemental Book and Readings

There is no required text but students must purchase a manual describing the rock sequences we will be examining, with an introductory chapter that reviews rock classification and other basic geologic principles. This manual is necessary for properly describing the rocks and is available at Pro-Packet. Each van will carry a "library" of other maps, articles and monographs on Newfoundland geology to supplement the required reading in your manual. You are expected to keep up with assigned readings and to read on your own from material in our "van libraries".

VI. Special Resource Requirements: None

Be sure to bring the following in addition to your other personal gear: clothes suited to cool, wet weather including good rain gear; sleeping bag; field boots (already worn in!) and a pair of tennis shoes to give your feet a break; water bottle or canteen; flashlight; rock hammer, hand lens, field notebook, and writing utensils; small day pack for daily use; small first-aid kit with insect repellent, sunscreen, a few adhesive bandages, lip balm, lotion for dry skin (or sunburn), and an ace bandage; toiletries, including a personal bath towel.

VII. Bibliography:

Colman-Sadd, S.P. and Scott, S.A., 1994, Newfoundland and Labrador: traveller's guide to the geology and guidebook to stops of interest: Canada-Newfoundland Cooperation Agreement on Mineral Development, 91 p.

James, N.P. and Stevens, R.K., 1986, Stratigraphy and correlation of the Cambro-Ordovician Cow Head Group, western Newfoundland: Geological Survey of Canada Bulletin 366, 143 p.

James, N.P., Knight, I., Stevens, R.K. and Barnes, C.R., 1988, Sedimentology and paleontology of an Early Paleozoic continental margin, western Newfoundland: Geological Association of Canada Annual Meeting, St. Johns, Field Trip Guidebook B1, 121 p.

King, A.F., 1988, Geology of the Avalon Peninsula, Newfoundland: Newfoundland Department of Mines and Energy, Geological Survey Branch, Map 88-01.

Geological Society of America, DNAG (Decade of North American Geology) Series, Centennial Field Guide 2, Northeastern North America.

This list will be updated each summer the trip is run with other recently-published articles from professional journals in the geosciences (Geological Society of America Bulletin, Geology, Sedimentology, Palaios).

Course Analysis Questionnaire

Section A: Details of the course

A1: This course is intended for majors and minors in the Geoscience Department. It may serve as a controlled elective in both the Geology and Environmental Geoscience programs. It is not a Liberal Studies course. Like other summer field courses in the department (GS 336 and GS 338), it serves a vital function in providing students with an opportunity to examine areas and features studied in the classroom and laboratory, to gain an appreciation for the scale of the features involved and to learn how to collect field data directly from rock exposures (particularly important for access to rock types not exposed anywhere near IUP).

A2: No changes are required in existing courses or requirements.

A3: Yes. This course has been offered three times as a special topics course and has improved dramatically with each offering. Literature review and on-site reconnaissance on each trip has expanded the number and improved the quality of the selected field sites ten-fold. The instructional methodology has improved progressively to where the course, as proposed herein, is extremely well-organized and utilizes a problem-solving approach where students operate independently and in small groups to interpret geologic features encountered at individual localities and synthesize the data into a large scale tectonic model in a plate tectonic framework.

A4: It will not be a dual-level class.

A5: It will not be taken for variable credit.

A6: Many other institutions, recognizing the need for field experiences in geology, offer similar field courses. Penn State University, for example, offers GEOS 471 Field Studies in North America. An extended excursion to areas of geologic, mineralogic and petrologic interest. Includes observations, recording and interpretation (3 sh).

A7: The content of this course cannot be incorporated into existing courses because the geologic history, rock types and geologic features of Newfoundland differ considerable from those in the central Appalachian region.

Section B: Interdisciplinary Implications

B1: This course will be taught by one instructor.

B2: This course is a focused upper-level geology course and does not overlap with existing courses in other departments.

B3: Continuing Education students will be accepted if they have sufficient breadth and depth in geology.

Section C: Implementation

C1: Faculty resources are adequate. The proposed course will continue to be offered on a rotating basis once every three years, alternating with GS 336 Geology of the Northern Rockies, and GS 338 Geology of the American Southwest.

C2: Other resources are also adequate, with continued replacement of the 15-passenger vans maintained by the college as they age and deteriorate with use.

C3: No resources for this course are provided from a grant.

C4: This course will be offered every three years and must be scheduled in early August (second summer session) for suitable weather and to avoid the major hatches of biting insects (mosquitos, black flies, no-see-ums, deer flies).

C5: Only one section of the class will be offered.

C6: A maximum of 14 students can be accomodated, owing to space limitations in two 15-passenger vans, with all the gear necessary for the trip. This also allows for transport of the entire group in one van for daily excursions out of base camp, or in case of vehicle failure or other emergency.

C7: No professional society recommends limits or parameters for this course.