

# SIMON FRASER UNIVERSITY

S.82-36

## MEMORANDUM

To..... SENATE .....

From..... OFFICE OF THE DEAN OF GRADUATE STUDIES .....

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Subject..... GRADUATE CURRICULUM CHANGES, NEW  
GRADUATE COURSES, MRM. 613-5, 634-5.....

.....  
Date..... February 2, 1982.....

MOTION: "That Senate approve and recommend approval to the Board, as set forth in S.82-36 - New Graduate Courses, MRM. 613-5 - Current Topics in Fisheries Management, and MRM. 634-5 - Slope Stability and Snow Avalanches in Resource Management."

These courses were approved by the Executive Committee, Senate Graduate Studies Committee at its meeting on January 18, 1982.



Bryan P. Beirne  
Dean of Graduate Studies

Graduate Course Proposal Form

GENERAL INFORMATION:

Department: Natural Resource Management Course Number: ENR613

Title: Current Topics in Fisheries Management

Description: Current methods of evaluation of fisheries management problems, with emphasis on the biological aspects; case studies of world fisheries.

Credit Hours: 5 Vector: 3-1-2 Prerequisite(s) if any: MRE 611 (611)

and 612 or permission of instructor.

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 7-10 When will the course first be offered: FALL 1982

How often will the course be offered: once per year

JUSTIFICATION:

This course will fill a gap in current course offerings at SFU by covering current difficulties in management of a variety of worldwide fisheries and advanced methodologies in evaluating management alternatives.

RESOURCES:

Which Faculty member will normally teach the course: Dr. R.M. Peterman

What are the budgetary implications of mounting the course: None

Are there sufficient Library resources (append details):

- Required: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

Approved: Departmental Graduate Studies Committee: [Signature] Date: 1/2/82

Faculty Graduate Studies Committee: [Signature] Date: 2/2/82

Faculty: [Signature] Date: 2/1/82

Senate Graduate Studies Committee: [Signature] Date: Jan 19/82

Senate: \_\_\_\_\_ Date: \_\_\_\_\_

Course Outline

CURRENT TOPICS IN FISHERIES MANAGEMENT

Brief review of models of fish population dynamics, methods of data analysis and management in the context of uncertainty. Case studies of management of various world fisheries. In-depth exploration of selected current problems in fisheries, including extensive data analysis. Focus will be primarily on biological aspects of fisheries management while at the same time illustrating how these interface with economic, social and institutional concerns of managers.

Appendix B

Course Instructor

The course will be taught by Dr. R.M. Peterman who is a specialist in systems analysis and its applications to fisheries management. He has numerous publications in this area.

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**SIMON FRASER UNIVERSITY**

**MEMORANDUM**

To: Chad Day  
Director, Natural Resources Management  
Subject: MRM613

From: Maurice Deutsch  
Library-Science Division  
Date: 21st Dec., 1981

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The Library's book and monograph, journal, and index/abstract collections are adequate to support the proposed Natural Resource Management course MRM613, Current Topics in Fisheries Management. Fee based computer searches are also available in the area of fisheries management on machine readable versions of printed indexes as well as on some indexes which do not have printed counterparts (Environment Canada, Water Documentation Database is only available as a computer searchable database).

The few items on the attached list not already in the Library will be ordered as soon as possible.

Library ResourcesBook List

1. Culland, J.A. (ed.). 1977. Fish Population Dynamics. John Wiley and Sons., 372 pp.
2. Regier, H.A. 1978. A Balanced Science of Renewable Resources, with Particular Reference to Fisheries. University of Washington Press, Seattle, Wash. 108 pp.
3. Ricker, W.E. 1975. Computation and Interpretation of Biological Statistics of Fish Populations. Bull. Fish. Res. Board Can. 191:1-382.
4. Lackey, R.T. 1974. Introductory Fisheries Science. Sea Grant Extension Div., Virginia Polytechnic Inst. and State University, Blacksburg, Virginia, 275 pp.
5. Cushing, D.H. 1975. Marine Ecology and Fisheries. Cambridge Univ. Press, 278 pp.
6. McNeil, W.J. & D.C. Hingsworth (eds.). 1980. Benthic Ecosystem of the North Pacific. Oregon State University Press, 334 pp.
7. Reedell, P.N. (ed.). Optimum Sustainable Yield as a Concept in Fisheries Management. Spec. Publ. 2. American Fish. Soc., 89 pp.
8. Clinte, H.H. and E.P. Thompson (eds.). 1981. Resource Management and Environmental Uncertainty: Lessons from Coastal Upwelling Fisheries. John Wiley, 491 pp.
9. Rothschild, B.J. (ed.). 1972. World Fisheries Policy: Multidisciplinary Views, University of Wash. press, Seattle, 272 pp.

Journals

Canadian J. Fisheries and Aquatic Sci.  
 Conseil International l'Explor. Mer, Rasp. et Proc.-Verbaux.  
 Ecology.  
 Fishery Bulletin (U.S.).  
 J. du Conseil.  
 J. of Environmental Economics and Management.  
 J. of Environmental Management.  
 J. of Fisheries Research Board of Canada (renamed Can. J. Fish. Aquat. Sci. Jan. 1980).  
 Limnology and Oceanography.  
 Mathematical Biosciences.  
 North American J. of Fisheries Management  
 Transactions of American Fisheries Soc.

Government Agency Publications

Canada Dept. of Fisheries and Oceans (Tech. Report, Annual Report, Statistical Data Report, Manuscript Report).  
 Oregon Dept. of Fish and Wildlife (several series).  
 Washington Dept. of Fisheries (several series).  
 International North Pacific Salmon Fisheries Commission (Annual Report, Bulletin, Statistical Yearbook).  
 FAO Fisheries Report.  
 U.S. Fish and Wildlife Serv. (Circular).  
 University of Washington (Sea Grant Projects, Special Report in Fisheries, Fisheries Research Inst. Circulars).  
 National Marine Fisheries Service (U.S.).

New Graduate Course Proposal Form

CALENDAR INFORMATION:

JAN 1982

Department: Natural Resources Management Program Course Number: MRM 634

Title: Slope Stability and Snow Avalanches in Resource Management

Description: Impact of slope failure and snow avalanches in mountainous environments. Technical counter measures, zoning techniques, and the appraisal of acceptable risk are discussed within different geologic, climatic, and socioeconomic context.

Credit Hours: 5 Vector: 3-1-2 Prerequisite(s) if any: \_\_\_\_\_

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 10-20 When will the course first be offered: Fall '83

How often will the course be offered: At least once every two years

JUSTIFICATION:

See attached

RESOURCES:

Which Faculty member will normally teach the course: Dr. Gerhard Ejsbacher

What are the budgetary implications of mounting the course: no special funding required, two day-long field trips

Are there sufficient Library resources (append details): \_\_\_\_\_

- Appendix: a) Outline of the Course
- b) An indication of the competence of the Faculty member to give the course.
- c) Library resources

Approved: Departmental Graduate Studies Committee: John Hardwick Day Date: 21 January 1982

Faculty Graduate Studies Committee: Lowell J. Brantley Date: 22 Jan 1982

Faculty: Lowell J. Brantley Date: 22 Jan 1982

Senate Graduate Studies Committee: Audrey Deen Date: Jan 19/82

Course: \_\_\_\_\_ Date: \_\_\_\_\_

## Justification

An overwhelming proportion of B.C.'s land surface is mountainous. Planning and maintenance of transportation routes, location of permanent settlements, use of forest and fish resources, and recreational activities are strongly restrained by processes related to steep slopes - instabilities in bedrock, excessive erosion along torrents, avalanches of colluvial veneers and snow. Appropriate preventive or remedial techniques have to be seriously considered in future comprehensive resource management of poorly known frontier environments of mountainous Canada.

## Description

The course develops an understanding of slope stability, slope failure, debris flows, and snow avalanches. Technical countermeasures ('Active measures'), zoning techniques ('Passive measures'), and the appraisal of acceptable risk are discussed within different geologic, climatic, and socioeconomic contexts. Stability of slopes as related to long-range and efficient management of land, forest, fish, hydropower, and recreational resources are discussed within the framework of international historical experience.

## Appendix A

### COURSE OUTLINE

The course consists of three parts: the first part conveys an understanding of the basic physical mechanisms governing slope failure, debris flows, and snow avalanches; the second part uses this knowledge to discuss remedial measures (active and passive), cartographic representation, and acceptable risk; the third part consists of two one-day field trips in southwestern B.C. and a student project (archival and/or field oriented).

As no single text covers the topics presented in the course, handouts and selected library materials will supplement the lectures (see Appendix C). It is planned to eventually produce a scriptum entitled 'Slope stability, torrents, and snow avalanches in resource management of mountainous terrain'; this might replace individual handouts.

### TOPICS

- 1) Principles of snow avalanches, slope failure, and debris flows
  - a) Snow avalanches (snow structure, classification, dynamics)
  - b) Slope failure (bedrock, surficial deposits, landslide classification, physics of failure, geological controls, climatic variables, role of vegetation)
  - c) Debris flows - torrents - ice floods (debris source mechanisms, transport mechanisms, depositional mechanisms)
- 2) Cartographic presentation of past and potential slope problems
- 3) Dealing with the problem
  - a) Recurrence analysis, hazard indicators

- b) Engineering techniques ('active measures') against
    - snow avalanches
    - debris flows
    - slope failure
    - bioengineering concepts
  - c) Zoning methods ('passive measures') against
    - snow avalanches
    - debris flows
    - incipient slope failures
  - d) Monitoring of slope hazards
  - e) What represents acceptable risk in mountain environments?  
(with class discussion)
- 4) Comprehensive slope management in
  - clearcut logging, building of temporary mountain roads, ski area development, irrigation, municipal runoff control, shoreline protection
- 5) Slope problems of western Canada
  - a) Regional variations in geology, climate, relief, seismicity, and land use
  - b) Existing socio-legal-economic limitations (class discussion)

#### Appendix B

##### Course instructor

The course will be taught by Dr. G.H. Eisbacher, Adjunct Professor. Dr. Eisbacher is a research scientist with the Geological Survey of Canada. He is an expert on the geology of western Canada and has extensive experience with slope stability problems in a variety of high mountain environments (Alps, western Canada, Peru, Nepal).

#### Appendix C

##### Useful publications

J.W. Glen et al. ed. - 1980 - Symposium on snow in motion -  
Journal of Glaciology, Vol.26, no. 94, 527 p.

Perla, R.I. and M. Martinelli - 1976 - Avalanche Handbook -  
U.S. Department of Agriculture, Forest Service

Schiechtel, H. - 1980 - Bioengineering for land reclamation and conservation -  
University of Alberta Press, Edmonton, 404 p.

Schuster, R.L. and Krizek, R.J. - 1978 - Landslides, analysis and control -  
U.S. Nat. Acad. Sci., Nat. Res. Council., Transportation Res. Board,  
Spec. Report 176, 234 p.

U.S. Dept. of Agriculture - 1975 - Avalanche Protection in Switzerland -  
USDA Forest Service Gen. Tech. Rep. RM - 9, 168 p.

Voight, B. ed. - 1973 - Rockslides and Avalanches, Vol. 1 and 2,  
Elsevier Co., Holland.

SIMON FRASER UNIVERSITY LIBRARY COLLECTION EVALUATION

(To be completed only for new course proposals; not needed for re-numbering)

Course number and name MRM 634-5 SLOPE STABILITY AND SNOW  
AVALANCHES IN RESOURCE MANAGEMENT

1. Evaluation of current library collection (indicate method used, as applicable):

Checked a variety of subject headings in our catalogue. It appeared that our collection was adequate, material was available dealing with the technical aspects of slopes and landslides.

2. Recommended additions to collection (monographs, serials, other); attach supplementary lists as necessary:

Professor Day provided a list of useful readings. We have two of the items from this list and have already ordered a third. We should add the other item from this list, they would be useful even if this course were not approved. No additional journal subscriptions recommended at this time. Our subscriptions in geomorphology and geology should be adequate. Perhaps a core journal will be identified for this field once the course is established so a future subscription will be taken out.

3. Estimated costs:

A. Initial costs	monographs	\$100.00
	serials	_____
	Total	\$100.00
B. Continuing costs	monographs	\$200.00 ?
	serials	100.00 ?
	Total	_____

N.B. The continuing costs are very tentative estimates

4. Special budget and scheduling factors (include special processing, equipment, and servicing costs):

There should be no special processing costs apart from the regular costs of adding any books to our collection.

5. Other pertinent details:

None.

mk-fine  
For Library  
Date: Dec 1 / 1981

For Faculty Department  
Date: \_\_\_\_\_

# SIMON FRASER UNIVERSITY

## MEMORANDUM

To..... Ted Hickin, Chairman  
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..... Geography Department  
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..... New Course Proposal  
Subject.....

From..... Chad Day, Director  
.....  
..... MRM Program  
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Date..... December 1981

Please find enclosed a proposal prepared by Geri Eislacher for a new MRM course: Slope Stability. I wanted to ensure it is complementary to your courses before forwarding to Senate.

# SIMON FRASER UNIVERSITY

## MEMORANDUM

To..... Dr. J. C. Day.....  
..... Director, MR. Program  
.....  
Subject..... New Course Proposal.....

From..... E.J. Hickin.....  
..... Chairman  
..... Dept. of Geography.....  
Date..... December 3, 1981.....

The course looks good Chad and will complement our graduate offerings rather well. You may get a few of our graduate students registering for it.

E.J. Hickin

EJH/mgb  
Encl.

DEC - 4 1981

MRM PROGRAM

Slope Stability