

SIMON FRASER UNIVERSITY

S.81-156

MEMORANDUM

To Senate

From Senate Committee on Undergraduate Studies

Subject Kinesiology - NEW COURSES
KIN. 460-3, Cellular Mechanisms and Theories of Aging.
KIN. 461-3, Physiological Aspects of Aging.

Date November 18, 1981

Action undertaken by the Senate Committee of Undergraduate Studies at its meeting of November 3, 1981 gives rise to the following motion:

MOTION: "That Senate approve and recommend approval to the Board of Governors, as set forth in S.81-156 , the proposed new courses
KIN. 460-3, Cellular Mechanisms and Theories in Aging.
KIN. 461-3, Physiological Aspects of Aging."

In discussion it was indicated that these courses are intended as part of the regular course offerings of the Department of Kinesiology but it also is intended that the courses become components of the proposed Diploma Program in Gerontology.

At SCUS there was discussion on the suitability of the proposed prerequisite with decision that no formal change be made. Suitable judgment will be necessary on the part of advisors in determining whether or not an individual student has adequate background for prerequisites to be waived.

SIMON FRASER UNIVERSITY

SCUS ~~81-43~~
81-53

MEMORANDUM

To: Mr. H.M. Evans, Registrar and
Secretary to the Senate Cmtee.
on Undergraduate Studies.

From: Janet Blanchet, Secretary to the
Faculty of Interdisciplinary Studies
Undergraduate Curriculum Committee.

Subject: NEW COURSE PROPOSALS:
KIN. 460-3 and KIN. 461-3

Date: September 14, 1981

RE: New Course Proposals.
KIN. 460-3, Cellular Mechanisms and Theories of Aging.
KIN. 461-3, Physiological Aspects of Aging.
I.S.C. 81-17

The above two courses were considered and approved at a meeting of the Faculty of Interdisciplinary Studies held on September 1, 1981. These courses are intended as part of the regular course offerings of the Department of Kinesiology, but it is intended that, should the Diploma Program in Gerontology be approved, KIN. 460-3 and KIN. 461-3 will also become components of that Program. I am forwarding these courses to you for inclusion on the next agenda of the Senate Committee on Undergraduate Studies.

attachments

JB/pgm

J. J. Blanchet

RECEIVED

SEP 16 1981

REGISTRAR'S OFFICE
MAIL DESK

SIMON FRASER UNIVERSITY

MEMORANDUM

To.....DISTRIBUTION SHOWN BELOW.....

From.....Janet Blanchet, Secretary to the.....
Faculty of Interdisciplinary Studies
Undergraduate Curriculum Committee,.....

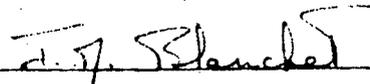
Subject...NEW COURSE PROPOSALS:.....
KIN. 460-3 and KIN. 461-3

Date.....September 14, 1981.....

Re: New Course Proposals
KIN. 460-3, Cellular Mechanisms and Theories of Aging
KIN. 461-3, Physiological Aspects of Aging
I.S.C. 81-17

The attached course proposals are being sent to you for consideration in terms of content overlap. Please let us have your comments as soon as possible.

Many thanks.



JB/pgm

attachments

DISTRIBUTION

- C. Hamilton, Chairman, Undergraduate Curriculum Committee,
Faculty of Arts. (c/o History)
- K. Egan, Chairman, Undergraduate Curriculum Committee,
Faculty of Education.
- A. Sherwood, Chairman, Undergraduate Curriculum Committee,
Faculty of Science (c/o Chemistry)

For Your Information:

- G. Bridwell, Library
- H. Evans, Registrar and Secretary to the Senate Committee on
Undergraduate Studies.

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: Kinesiology

Abbreviation Code: KIN Course Number: 460 Credit Hours: 3 Vector: 3-1-0

Title of Course: Cellular mechanisms and theories of aging.

Calendar Description of Course:

This course will review the models used in gerontological research at cellular and molecular level and discuss the validity of various theories of aging.

Nature of Course Three lectures and one tutorial per week.

Prerequisites (or special instructions):

BISC 202-3, KINES 330, 90 semester hours of credit or permission of the instructor.

What course (courses), if any, is being dropped from the calendar if this course is approved:

None

2. Scheduling

How frequently will the course be offered? Once a year

Semester in which the course will first be offered? 1983-1

Which of your present faculty would be available to make the proposed offering possible? None (Except within the Budgetary Accommodation shown below)

3. Objectives of the Course

To review the status of cellular mechanisms implicated in various theories of aging and discuss the multi-disciplinary approach required for understanding the process of aging.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty 1 full-time Faculty and Teaching Assistant

Staff

Library

Audio Visual \$600

Space

Equipment

5. Approval

Date:

3/11/81
[Signature]

3 Sept 81

[Signature]
Dean

[Signature]
Chairman, SCUS

Department Chairman

Dean

Chairman, SCUS

KINESIOLOGY 460-3

THEORIES AND CELLULAR MECHANISMS OF AGING

COURSE OUTLINE

1. Comparative Biology and Evolution of Aging
Comparative Biology of Aging
Comparative Longevity in Vertebrates and Invertebrates
Factors contributing to the longevity of Animals
Manifestations of Aging
The Evolution of Aging and Longevity
2. The Molecular Genetics of Aging
Mutation and Error
Chromosomal Aberrations
Mutation in the Germ line
The rate of somatic mutation
Are aging mutations dominant or recessive
Chemical changes in DNA
Repair and Life span
Aging, mutation and repair
Programmed aging
Altered phenotype as a cause of Aging
Must aging repair recapitulate ontogeny?
Residual protein of DNA
Satellite and Redundant DNA
Messenger RNA
Transfer RNA
End product analysis
3. Macromolecular metabolism during Aging
Regulation of enzyme activity
General metabolism of DNA, RNA and Protein
Control of metabolic reactions
Enzyme changes with Age
Lipid metabolism
Energy metabolism
4. Cell Division and Cell cycle
Effect of Aging on the cell cycle times and growth fraction
Effect of Aging on biochemical events occurring in the cell cycle
Lengthening of G_0 as an expression of senescence
5. Cell Longevity in vivo
Cell culture
In vivo aging studies and experimental design
In situ observations of cell proliferation
Serial transplantation: limited or unlimited life span?
Role of cell division in cellular aging
The influence of donor age
Tissue interactions and aging
Transplantation-induced alterations in cell regulation

Cellular transformation and in vivo aging.

6. The Cellular Basis of Biological Aging

The inverse relationships between donor age and culture longevity

Progeria and Werner's syndrome

The finite lifetime of cultured normal chick cells

Cultured normal fibroblasts from other vertebrates

Functional decrements that occur in cultured normal human cells

Possible correlation between population doubling potential of cultural normal fibroblasts and mean maximum species life span

Can cell death be normal?

7. Genetic Basis for Longevity

The statistical facts

Evidence from sex differences

Evidence from species-specific life spans

Evidence from twin longevity data

8. The Programmed Theory of Aging

Sequences of built-in events

Selective pressures

Reasons for the existence of aging

Survival and natural selection

9. Free Radicals and the Aging Process

Free radicals and lipid peroxidation

Lipid peroxidation in vivo

Free radical-induced pathology in aging

Antioxidant effects in aging

Lipofuscin and aging pigments

10. Chemotherapeutic techniques in the retardation of aging process

Gerovital H3 Vs Procaine HCl.

Clinical studies in North America

Mono amine oxidase and aging

11. The study of Aging in man: Practical and theoretical problems

Genetic mish-mash

Environmental Diversity

Population sampling

Interaction of aging and disease

12. A new age-scale for humans

Life span of animals and plants

Factors affecting the life span of man

Parameters measuring the life span of Homosapiens

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

1. Calendar Information

Department: KINESIOLOGY

Abbreviation Code: KIN Course Number: 461

Credit Hours: 3 Vector: 3-1-0

Title of Course: Physiological Aspects of Aging

Calendar Description of Course:

This course is designed for those who require a serious but fairly broad discussion of specific physiological aspects of aging. The overall emphasis is on humans and other mammalian species and the varieties of aging changes they manifest.

Nature of Course Three lectures and one tutorial per week.

Prerequisites (or special instructions):

Kin 305 and 306; At least 90 semester hours of credit or permission of the Instructor

What course (courses), if any, is being dropped from the calendar if this course is approved:

None

2. Scheduling

How frequently will the course be offered? At least once a year

Semester in which the course will first be offered? 1982-3

Which of your present faculty would be available to make the proposed offering possible?

None (Except within the Budgetary Accommodation shown below)

3. Objectives of the Course

To review the status of physiological and biochemical knowledge in gerontology from molecules to man. Although future research in Gerontology will certainly radically alter our views on the nature of biological aging and its relation to the quality of life in the later years, it is hoped that the topics covered in this course will provide a useful entry into the very diverse areas of this rapidly expanding field.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty 1 full-time Faculty and Teaching Assistant

Staff

Library

Audio Visual \$600

Space

Equipment

5. Approval

Date:

3 Aug / 81

3 Sept 81

[Signature]
Department Chairman

[Signature]
Dean

[Signature]
Chairman, SCUS

PHYSIOLOGICAL ASPECTS OF AGING

Course Outline

1. ANATOMIC AND BODY COMPOSITION CHANGES WITH AGING
Changes in Stature
Changes in Body Fat
Other Anthropometric Changes
Body Composition Changes
Anatomic Regression Related to Diminishing K Content
Other Morphologic Changes
Aging and Pathology
2. INTERCELLULAR MATRIX OF CONNECTIVE TISSUE
The Matrix
The Macromolecules
The Tissues
3. AGING OF THE SKIN AND ITS APPENDAGES
Biologic Features of Aging Skin
Geriatric Dermatoses
Progeroid Syndromes
Dermal Tissue Culture
4. AGING OF SKELETAL-DENTAL SYSTEMS AND SUPPORTING TISSUES
Skeletal System
Dental System
5. MUSCLE
Historical Aspects, Research Trends, and Methodology
Changes in Aging Muscles
Factors Affecting the Rate of Changes in Senescent Muscles
6. NEUROENDOCRINE AND AUTONOMIC ASPECTS OF AGING
The Problem of Aging and Disease in the Central Nervous System
Overview of Cellular Functions in the Central Nervous System
during Aging
Synaptic Function and Neurotransmitters
Neuroendocrine Function and Aging
Autonomic Mechanisms and Aging
7. HEART AND CARDIOVASCULAR SYSTEM
Functional Changes with Age
Cardiovascular Disease and Age
Basic Aging Processes

8. *AGING OF THE EXCRETORY SYSTEM: KIDNEY AND BLADDER*
 Changes in Renal Anatomy with Age
 Renal Physiology
 Compensatory Renal Hypertrophy
 The Bladder
9. *AGING OF THE REPRODUCTIVE SYSTEM*
 Female Reproductive System
 Male Reproductive System
10. *ENDOCRINE SYSTEMS*
 Insulin
 Proinsulin
 Glucagon
 Thickening of Capillary Basement Membrane-Relation to Aging
 to Diabetes Mellitus
 Anterior Pituitary
 Growth Hormone (GH)
 Thyrotropin (TSH)
 Adrenal Cortex
 Glucocorticoids
 Adrenal Androgens
 Thyroid
 Effect of Age on the Mechanisms of Hormonal Action
11. *IMMUNITY AND AGING*
 The Immune System
 Age-Related Changes in Immune Functions
 Disease Associated with Age-Related Decline in Normal Immune
 Functions
 Methods Used to Analyze Immunodeficient States
 Nature, Cause(s), and Mechanism(s) of Decline with Age in Normal
 Immune Functions
 Immunoengineering
12. *AGING AND GASTROINTESTINAL FUNCTION*
 Esophagus
 Stomach
 Small Intestine
 Colon
 Liver
 Pancreas
 Gall Bladder
13. *NUTRITION*
 Effect of Age on Nutritional Status
 Nutritional Deficiencies and Physiological Impairments
 Reversal of Deficiencies by Supplementation
 Food Additives
 Dietary Restriction

14. EXERCISE AND AGING

Acute responses to Exercise
 Static Effort
 Dynamic Effort
 Chronic effects of Exercise
 Lifelong physical activity
 Aging of "Primitive" groups

15. ALCOHOL AND OTHER DRUG USE IN THE AGED

Consequences of prescription drug use
 Alcohol
 Misues of other drugs

16. LIFE TABLE MODIFICATION AND LIFE PROLONGATION

The Relation of Mortality to the Physiological State of the Organism
 Environmental and Genetic Determination of the Survival Characteristic
 Relation of the Survival Characteristic to Temperature and the Rate and Quantity of Metabolism: Poikilothermic Organisms
 Relation of the Survival Characteristic to Temperature and the Rate and Quantity of Metabolism and Function: Homeothermic Vertebrates

17. SYSTEM INTEGRATION

Homeostasis
 Control Mechanisms
 Temperature Regulation and Control
 Regulation of the Acid Base Balance of the Blood
 Regulation of Blood Sugar Levels
 Other Endocrine Regulation
 Physiological Stress of Exercise
 Other Environmental Stresses
 Aging as the Breakdown of Regulatory Mechanisms

18. FACTORS IN HUMAN MORTALITY

Measures of mortality
 Causes of death
 Age trends in death rates
 Biological factors in mortality
 Environmental factors in mortality
 Implications of reduced mortality

SIMON FRASER UNIVERSITY

MEMORANDUM

To Marilyn Muter

Registrar's Office

Subject...

From Maurice Deutsch

Library - Science Division (3269)

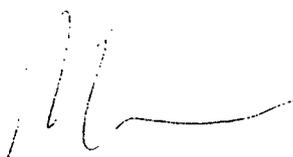
Date 23 September 1981

With regard to the following new course proposals

KIN. 460-3 Cellular Mechanisms and Theories of Aging
KIN. 461-3 Physiological Aspects of Aging

I am waiting for the results of computer searches which were run on CISTI's (Canada Institute for Scientific and Technical Information) Library Catalog and the Union List of Scientific Serials in Canadian Libraries to compare with the book and journal collections in the SFU Library.

The Library's book and journal collections in the area of the physiology of aging look very lean. There are about 70 books and perhaps half a dozen journals, but I will not be able to determine where we stand until the computer printouts arrive from Ottawa.



RECEIVED

SEP 24 1981

REGISTRAR'S OFFICE

23 SEP 1981

SIMON FRASER UNIVERSITY

MEMORANDUM

To..... Mr. H.M. Evans.....
..... Registrar.....
Subject.....

From..... Janet Blanchet, Secretary to.....
..... Faculty of Interdisciplinary.....
..... Studies Undergraduate Committee.....
Date..... October 20, 1981.....

Re: Proposal for a Diploma Program in Gerontology
(I.S.C. 81-12)

Attached is a copy of a memorandum received from the
Faculty of Science Undergraduate Studies Committee concerning
overlap.

J. Blanchet

JB/pgm

c.c. Dr. G. Gutman

ATTACHMENT

RECEIVED

OCT 22 1981

REGISTRAR'S OFFICE
MAIL DESK

SIMON FRASER UNIVERSITY

MEMORANDUM

To: Janet Blanchet, Secretary
Interdisciplinary Studies,
Undergraduate Studies Committee

From: A.G. Sherwood
Chairman, Faculty of Science
Undergraduate Studies Committee

Subject: Gerontology Program

Date: October 13, 1981.

In response to your memo of Sept. 16, there appears to be no serious overlap of content between courses in the above program and courses given by the faculty of Science.

The program has, however, been discussed by members of the faculty with interest in areas such as physiology, genetics and developmental biology. The following questions were raised about the courses KIN 460 and KIN 461.

(1) These courses seem to have more scope than can possibly be handled at the 400 level in a single semester by students with the background indicated by the suggested prerequisites.

(2) The subject matter outlines for these courses appear to be appropriate for an upper level medical school program and the question arises as to whether such courses will be of real use to "persons associated with the planning and delivery of services to older people" i.e. "social workers, recreation directors, nurses and other health care professionals".

I hope that these remarks are useful in the planning of the Gerontology program.


A.G. Sherwood

AGS:ak

c.c. Dr. G. Bhakthan
Dean Cochran
Dr. J. Webster
Assoc. Acad. V.P.