

SIMON FRASER UNIVERSITY

S.82-95

MEMORANDUM

To..... SENATE

From..... SENATE COMMITTEE ON UNDERGRADUATE STUDIES

.....
WOMEN'S STUDIES - PROPOSED NEW COURSE
Subject... W.S. 204-3 - WOMEN, SCIENCE AND
TECHNOLOGY

.....
Date. September 15, 1982.....

Action undertaken by the Senate Committee on Undergraduate Studies at its meeting of September 14, 1982 gives rise to the following motion:-

MOTION:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.82-95 , the proposed new course W.S. 204-3 - Women, Science and Technology."

Subject to the approval of the course by Senate and the Board of Governors the Senate Committee on Undergraduate Studies gave approval to waiver of the two semester time lag requirement in order that this course may be first offered in Spring 1983-1.

There was considerable discussion of this course by the Committee without clear resolution of differing views, and with tie vote on approval resolved by vote of the Chair.

SENATE COMMITTEE ON UNDERGRADUATE STUDIES

NEW COURSE PROPOSAL FORM

Department: Women's Studies

1. Calendar Information

Abbreviation Code: W.S. Course Number: 204 Credit Hours: 3 Vector: 2-1-1

Title of Course: Women, Science and Technology

Calendar Description of Course: We live in a society based on science and technology. Women have, in large part, been excluded from the development and practice of both of these. Mathematics, the foundation of scientific and technical work, appears to be one of the crucial filters acting to maintain this situation. In this course we will 1) examine some of the important factors that influence the participation of women in these fields, including particularly the relation between women and math and 2) explore, through practical projects, some of the conditions for women's success in scientific or technical work.

Nature of course: Lecture/tutorial

Prerequisites (or special instructions): None

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 or twice a year

Semester in which the course will first be offered? Spring 1983

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

3. Objectives of the Course

To provide an overview of the situation of women in relation to scientific and technical work and to provide an exposure to scientific and/or mathematical practice. See also the Calendar description.

4. Budgetary and Space Requirements (for information only)

What additional resources will be required in the following areas:

Faculty Possibly an occasional sessional lecturer when taught twice a year.

Staff None

Library Existing resources are adequate.

Audio Visual None

Space None

Equipment Access to one microcomputer/10 students for approximately five weeks.
Estimated enrolment is around thirty students.

5. Approval

Date: 21 June 82 August 13th 1982

U. S. Wong Boag
Department Chairman

S. J. Vander Lugt
Dean

Chairman, SCUS

RATIONALE

It is well documented that the low participation of women in scientific and technical fields is related to gender differences in the relation to and experiences of math, sciences and technology (see the attached bibliography).

In the proposed course, we will be providing an interdisciplinary (historical, psychological, sociological and mathematical/technical) look at the important factors in such gender differences. Besides theoretical material, the course will involve practical projects providing "skills maps" illustrating basic principles of the areas involved and allowing students to assess their own changing reactions to the areas as they give greater understanding of them. We do not intend to teach mathematics or computing or science. We will show what is required to do them. Student participation in the projects, together with the accompanying theoretical material, will allow students to analyse and understand how motivation and confidence are shaped and changed. The notes following the lecture outline provide further details on the practical work.

Women's Studies 204-3

WOMEN, SCIENCE AND TECHNOLOGY

WEEK	TOPIC	SUGGESTED READING
<u>PART ONE: GENERAL CONSIDERATIONS</u>		
1	a) Science and Technology: the Ambiguous Legacy	<u>Firestone Dialectics of Sex</u> <u>Gearhart Wanderground</u> Marcuse, Mumford, Roszak (selected parts from the above)
	b) Women in Science and Technology: Statistics and Attitudes	Keller "Women in Science" Rossi "Women in Engineering", "Women in Chemistry"
2	a) The Development of Modern Science and the Role of Women	Keller "Bacon and Patriarchy in Science" Merchant <u>The Death of Nature</u>
	b) Technology and Automation: Some History	Benston "Women and Automation" Kraft <u>Programmers and Managers</u> , Chapter 2
3	a) Why Aren't Women in Science and Technology	<u>Report on Science Education in B.C.</u> <u>Science Council Workshop on Women and Science Education Proceedings</u> Stehelin "Science, Women and Ideology" Cole <u>Fair Science</u> (excerpts)
	b) Experiences of Women in Scientific and Technical Fields	<u>Biographies from Conversations and Working it Out</u> Lowe "Cooperation and Competition in Science"
4	a) Science and Social Issues	Rose and Jammer "Reproduction and the Technical Fix" from <u>Ideology of/in Natural Sciences</u> , Rose and Rose, ed. Rose and Rose "The Incorporation of Science" UC Collective "Science and the Military" from <u>Science and Liberation</u> , Ardetto, et al ed.
<u>PART TWO: BARRIERS TO THE PRACTICES OF MATH AND SCIENCE: PRACTICAL AND THEORETICAL WORK</u>		
	b) Basic Approaches to Mathematics	For the whole of Part Two: Tobias <u>Overcoming Math Anxiety</u>
5	a) Statistics: Basic Notation and Definitions	Hill <u>Statistics for Social Change</u> Beckwith and Durlin "Girls, Boys and Math"
	b) Statistics: Basic Notation and Definitions	
6	a) Statistics: Basic Notation and Definitions	Kimball "Women and Science: A critique of Biological Theories of Sex Differences"
	b) Group work on projects	Fields <u>About Computers</u>

- 7 a) Group work on projects Readings on the psychology of sex roles
b) Introduction to Computing

ALL DAY WEEKEND WORKSHOP (SATURDAY) BASIC Primer

- 8 a) Computer extensions of stats projects Kuhn, S. "Women and Computer Programming"
b) Computer extensions of stats projects Graham, The Mind Tool (excerpts)
Benston, M. "Artificial Intelligence and Dehumanization"
Fields About Computers

- 9 a) Computer extensions of stats projects
b) Computer extensions of stats projects

- 10 a) Computer extensions of stats projects
b) Sunday Math: Calculus

- 11 a) Sunday Math: Calculus Report of the Saskatchewan Women in Trades Program
b) Women and Machine Anxiety

- 12 a) Women and Machines: Automobile Mechanics

PART THREE: MORE GENERAL CONSIDERATIONS

- b) Science as a Model for Rationality Benston "Feminism and the Critique of the Scientific Method"
Easlea "Objectivity and Commitment in Science"
Gould "Morton's Ranking of Races"
- 13 a) Science as a Model for Rationality
b) Questions for the Future

Notes on the Lecture Outline

- a) The intent here is to illustrate the structure of mathematics and, additionally, to illustrate the skills and approaches necessary to practice. Statistics has been chosen because it can be used to demonstrate fundamental mathematical concepts, particularly the idea of functions, and it can be used to introduce basic notation. There are a number of problems: statistics on male/female variability, analysis of drug testing results, changes in the distribution of traits as a result of hypothetical eugenics plans, possible effects on population statistics of being able to choose the sex of children and the like, that are simple enough to be feasible and which illustrate some problem of concern in Women's Studies. Students will examine one problem in a group and a second one on their own.

The computer section will involve one intensive workshop that will teach the students to write a very simple program so that they get some feeling of control over the machine and some understanding of language principles. The intent is not to teach any actual programming skills; the work on machines will involve pre-written programs that the students will be expected to read, analyze and understand before using. The work will be done using stand alone micros using BASIC.

- c) Calculus seems to be one of the major symbolic areas of difficulty in approaching math. In this section we will introduce students to numerical integration and to the reasons why one might wish to know these results (they will already have some examples from their statistics works). A careful treatment of basic concepts can lead to a comparison of their numerical results and the analytical solution.
- d) Dealing with machines is another whole area of gender difference. We will examine social and psychological barriers to women's participation in areas involving machinery. (Automobiles, for example, are not just machines; they have a major symbolic significance that is different for men and women in this society.) As a practical exercise in this section the students will do some mechanical repair or procedure - dismantling and reassembling an automobile carburetor, for example - on a machine that is strongly gender typed.