Wednesday, December 15, 1976.

The Fourth regular meeting of the Senate of The University of British Columbia for the Session 1976-77 was held on Wednesday, December 15, 1976 at 8.00 p.m. in the Board and Senate Room, Administration Building.

Present: President D. T. Kenny (Chairman), Chancellor D. F. Miller, Dean J. H. M. Andrews, Dean D. V. Bates, Mr. W. H. Black, Dr. C. B. Bourne, Dr. K. T. Brearley, Mr. W. L. Broddy, Dr. T. H. Brown, Rev. P. C. Burns, Mr. R. J. Carter, Mr. W. Chow, Dr. R. M. Clark, Dr. D. H. Copp, Dr. J. D. Dennison, Dr. B. A. Dunell, Mrs. F. Field, Dr. C. V. Finnegan, Dean E. M. Fulton, Dr. D. Haley, Acting Dean S. W. Hamilton, Dr. R. H. Hill, Dr. J. M. Houston, Miss S. E. Hoyles, Dr. R. F. Kelly, Dr. L. Kraintz, Mr. J. Kulich, Mr. J. B. Le Huquet, Dean S. W. Leung, Dr. P. A. Lusztig, Dean K. M. Lysyk, Mrs. H. McCrae, Dr. D. J. MacDougall, Dr. C. A. McDowell, Dr. M. F. McGregor, Mr. J. F. McWilliams, Rev. J. P. Martin, Dr. H. Mitchell, Mr. G.R. Moore, Dr. B. N. Moyls, Dr. P. H. Pearse, Mrs. M. L. Peters, Dr. M. E. Prang, Dr. J. F. Richards, Dean B. E. Riedel, Dr. V. C. Runeckles, Dr. S. O. Russell, Dr. R. F. Sharp, Vice-President M. Shaw, Mr. A. F. Sheppard, Dr. M. J. A. Smith, Dr. J. K. Stager, Mr. G. A. Thom, Dean G. M. Volkoff, Miss C. L. V. Warren, Mr. R. S. Whyte, Dean R. M. Will.

Observer: Mr. J. A. Banham

Messages of regret for their inability to attend were received from Mrs. M. F. Angus, Dr. C. S. Belshaw, Mr. D. M. Brousson, Dean W. D. Finn, Dean J. A. F. Gardner, Dr. W. M. Keenlyside, Dean W. D. Kitts, Mrs. W. T. Lane, Dean P. A. Larkin, Dr. J. H. McNeill, Mr. R. F. Osborne, Mr. B. Stuart-Stubbs, Dr. P. Suedfeld, Dr. M. Uprichard.

Senate Membership

Senate was informed that Miss Linda R. Erdman had replaced Mr. R. L. Salkeld as student representative for the Faculty of Science for the remainder of the one-year term ending March 1977.

Wednesday, December 15, 1976.

Minutes of the previous meeting

Dr. McGregor)
Dr. Moyls)

That the minutes of the Third regular meeting of Senate for the Session 1976-77, having been circulated be taken as read and adopted.

Dean Bates referred to a statement he made at the previous meeting to the effect that the Residency Training Programs had been approved by Senate. He explained that the statement was not quite correct. Senate had approved two motions, one that the courses offered in the Postgraduate (Residency) Training Programs be listed in the Calendar, the other recommended the establishment of a committee to review the Postgraduate (Residency) Training Programs of the Faculty of Medicine to assure Senate of the academic nature and quality of these offerings. The committee had not yet submitted its report to Senate.

The motion was put and carried.

From the Board of Governors

Notification of approval in principle of Senate recommendations - subject, where applicable, to the proviso that none of the programs be implemented without formal reference to the President and the formal agreement of the President; and that the Deans and Heads concerned with new programs be asked to indicate the space requirements, if any, of such new programs.

(i) B.Ed. 5-year Major in Special Education recommended by the Faculty of Education *(P. 6656 & 6668-73)*

(ii) New courses recommended by the Faculty of Education *(P. 6673)*

(iii) Changes in Mathematics Concentration and Major in the Elementary and Secondary divisions recommended by the Faculty of Education *(P. 6673-4)*

(iv) New courses recommended by the Faculty of Graduate Studies *(P. 6674)*

(v) Amendments to regulations on supplemental examinations and proposals for possible time limit on course credit recommended by the Faculty of Arts *(P. 6658-60)*

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Committee on Prizes, Scholarships and Bursaries

Dean Lysyk)
Dean Riedel)

That the new awards listed in Appendix 'A' be accepted subject to the approval of the Board of Governors, and that letters of thanks be sent to the donors.

Carried

Reports of Committees of Senate

Curriculum Committee

Faculty of Arts (See Appendix 'B')

The committee recommended approval of all items submitted by the Faculty of Arts, the School of Home Economics and the School of Librarianship, with the exception of Home Economics 422. This item was withheld pending clarification of the statistical background required by students entering this course. It was also recommended that Chemistry 110 be deleted from the list of First Year courses in the Division of Family Sciences since it was unlikely that students would have the co-requisites required for this course. It was noted that Home Economics 230 listed under the Division of Family Sciences, Second Year, had not yet been approved by the Faculty of Arts.

Attention was drawn to Home Economics 203 and the statement that students would not get credit for both 203 and 305/307. Dr. Finnegan expressed concern at this restriction. It was agreed that the Faculties of Arts and Sciences should discuss this matter with a view to the possibility of changing the restriction.

Attention was also drawn to the title of a new course Creative Writing 403 Writing for Children. It was suggested that the title was unclear and that

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Reports of Committees of Senate

Curriculum Committee

Faculty of Arts (continued)

"The Writing of Children's Literature" would be more appropriate. Senate agreed that the Faculty of Arts and the Department of Creative Writing be informed of this suggestion.

Faculty of Education (See Appendix 'B')

The committee recommended approval of the Collaborative Program for Professional Development, new courses, and course and curriculum changes submitted by the Faculty of Education with the exception of a new course Education 339 Canadian Studies in the Curriculum. The committee felt that since all the students entering the course would have a substantial background in the disciplinary area relating to Canadian Studies, particularly History, Geography and the Social Sciences, much of the material presented in the course would be redundant and therefore the course did not justify 1½ units of credit within the Faculty of Education.

It was noted that the Faculty of Education had withdrawn the proposal to change the title and description of Education 493. The committee also recommended that the description of Education 415 be changed to read "Aims to prepare teachers of the visually impaired to teach blind students to become independent readers with Optacon and other electronic reading devices as they are developed".

Faculty of Medicine (See Appendix 'B')

The committee recommended approval of a new course Pathology 401 and a change in the number and title of General Medicine 445 to Oral Medicine 448

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Reports of Committees of Senate

Curriculum Committee

Faculty of Medicine (continued)

General Medicine. Dr. Runeckles explained that General Medicine 445 had been omitted from the Calendar since 1974-75 due to the fact that there was another course with the same number, Oral Medicine and Oral Diagnosis, and the computer would not accept two Dentistry courses with the same number. This change has also been approved by the Faculty of Dentistry.

The committee recommended that approval of the following items be withheld pending statistical evidence concerning the failure rate of students who did not obtain a second class average: -

1. The addition of a statement to the description of Biochemistry 402 to the effect that at least a second class average in Biochemistry 300 is recommended. (Approval of the same proposal from the Faculty of Science was withheld at the October meeting of Senate.)

2. The proposed Calendar statement that a student is required to obtain a second class standing in Chemistry 203 prior to entering the Third Year of a Majors or Honours program in Biochemistry.

Faculty of Science (See Appendix 'B')

All items submitted by the Faculty of Science were recommended for approval with the exception of Oceanography 310 which required approval by the Faculty of Graduate Studies.

Dr. Runeckles)
Dr. Richards) *That the proposals submitted by the Faculties of Arts, Education, Medicine and Science, with the exception of the items noted, be approved.*

Carried

Wednesday, December 15, 1976.

Reports of Committees of Senate (continued)

Budget Committee

Dr. McDowell presented the report which had been circulated for information.

Dr. McDowell explained that the committee had been established, in accordance with section 37 (e) of the Universities Act, to meet with the President and assist him in the preparation of the University budget.

It was stated in the report that since no indication was given as to what the duties of the committee might be, a considerable number of discussions were undertaken to try to establish a role which would enable the committee to carry out the expressed function outlined in the Universities Act. Much consideration had been given to the items about which the President might wish to consult the committee and also there had been lengthy discussions concerning the details of the budgeting process which should be made available to the committee to enable it to provide satisfactory and considered advice to the President.

It was felt that if the committee were to be an informed source and give reasonable balanced advice to the President, it would have to have extensive statistical and budgetary data not only on a faculty basis but also at the departmental level in various faculties. Because of the large amount of work which seemed likely to come before the committee it was decided that it would not review the capital budget and building priorities.

The committee expressed concern with regard to positions where salaries allocated for vacant academic position slots were not adjusted at the time of general salary increases. Timing of a resignation (before or after the salary

Reports of Committees of Senate

Budget Committee (continued)

adjustment) affected the following year's budget in a Department or Faculty. This could have an adverse effect on the ability of the Department or Faculty in recruitment. With regard to non-recurring equipment expenditures it was stated that although individual items may be non-recurring there was a recurring requirement for new equipment, the maintenance of existing equipment and the replacement of obsolete equipment and facilities. The committee felt that the budget for these items was inadequate and that future budget estimates should include allowances for equipment, etc.

With regard to budgetary implications for new programs the committee had requested the Chairman of the Senate Curriculum Committee to refer to the Budget Committee all new programs with major budgetary implications, and any cases where a Department or Faculty was seeking 6 or more units of new courses. Two programs which had not been approved for publication in Calendar (1976-77) were the M.Sc. in Dental Science and the Ph.D. program in the Department of Theatre.

The report also outlined some of the difficulties experienced by the committee due to the establishment of the Anti-Inflation Board, to the declared intention of the Minister of Education to require universities in British Columbia to bring all their budget items into line with the fiscal year which begins on the 1st of April, and to the directive that universities should operate without the expectation of an increasing flow of operating funds. Those events made it necessary to conduct an extensive review of the proposed budget for the 1976-77 academic year. As a

Reports of Committees of Senate

Budget Committee (continued)

result the sum of $1.8 million was extracted from the various Faculty and non-faculty budgets and reallocated. The committee discussed possible extra sources of revenue and recommended that the President explore the possibility of increasing student fees.

At the request of the Budget Committee the President had outlined some of the priorities and aims of the administration. In the graduate program it was the view that in budgeting for new Ph.D. programs priority should be given to those programs which would augment and strengthen existing programs. There should be increased research funds and scholarships throughout the University, and interdisciplinary programs, particularly at graduate level were to be encouraged. The administration would also seek to expand professional programs in areas where the cost would not be too great. It was also stressed that there was a great need to preserve the quality of, and to extend, the Continuing Education programs, particularly in areas of the province beyond the lower mainland.

In the final paragraphs of the report it was pointed out that there would be a short fall of $4.549 million in the U.B.C. budget if the Minister maintained his present attitude that the special warrant money grant was non-recurrent.

It was felt that the deficiency could only be met by further reductions in the budgets of all areas of the University and by seeking increases in revenue. Fees provided the only obvious source. Even if both actions were taken it was difficult to see how to prevent further erosion of the academic quality of the education offered to students at U.B.C.

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Reports of Committees of Senate

Budget Committee (continued)

Amongst other difficulties which faced the University were the problems of how to provide sufficient funds to continue to maintain the library collection, the equipment and supplies budget, and the level of operation of the Computing Centre, because of the marked effect of increased costs on the budget of those particular areas.

Queries were raised concerning the status of the two programs withheld by the Budget Committee. Vice-President Shaw stated that the Budget Committee would take the matter up again at the appropriate time.

Dr. Dennison stated that members of Faculty had expressed concern about the criteria used by the Budget Committee in making recommendations for budget cut-backs. He agreed that the committee could not list every criteria used but felt that Faculty members were entitled to more information.

On behalf of Senate the Chairman expressed thanks and appreciation for the work done by the committee.

Admissions Committee

Dr. Finnegan presented the report. The committee recommended that Senate establish a policy concerning the falsification of academic records.

Dr. Finnegan)
Dr. Copp)

Where the Senate Admissions Committee becomes convinced, through examination of pertinent data, of the falsification of academic records by an applicant to this University, it shall request the Registrar not to consider further application to this University by that individual for a period of time to be set by the Senate Admissions Committee.

Carried

Wednesday, December 15, 1976.

Reports of Committees of Senate (continued)

Nominating Committee

Dr. Bourne presented the report. At its meeting of November 17, 1976 Senate passed a resolution to establish a committee to examine the proposal of the Faculty of Medicine concerning policy on reviews of Departments. The committee nominated the following persons:-

Mrs. F. Field
Mr. G. S. Funt
Dr. D. F. Hardwick
Dean P. A. Larkin
Dr. J. R. Miller
Dr. P. H. Pearse
Dean B. E. Riedel
Dr. C. B. Bourne

Dr. Prang)
Dr. Copp)

That the recommendations of the Nominating Committee be approved.

Carried

Continuing Education

At its meeting of September 15, 1976 Senate received for information a copy of the University's submission to the Commission on University Programs in Non-Metropolitan Areas (The Winegard Commission). At that time Senate requested the Committee on Continuing Education to examine the recommendations in the Winegard Commission report, particularly with regard to the implications for U.B.C. and to report back to Senate with a detailed evaluation.

The main proposal contained in the Winegard Commission report was that a multi-campus university be established to serve the non-metropolitan areas of British Columbia. The university would be needed by 1990 to accommodate the likely increase in student numbers during the last decade of this century. It was

Reports of Committees of Senate

Continuing Education (continued)

stated that the new university should begin as a separately funded Division of Simon Fraser University charged with the responsibility of providing a comprehensive outreach degree credit program. To help accomplish the outreach objective, the Division, headquartered in Vernon, should establish four small University Centres in Prince George, Kamloops, Kelowna and Nelson.

Dr. MacDougall presented the report which had been circulated. He stated that if the Winegard Commission report were implemented in its present form it would significantly affect the nature of university education in the province for some foreseeable period.

Dr. MacDougall stated that in the initial discussions in Senate in September some suggestions were made that the role set out in the Winegard report for this University was not an undesirable one. It was stated in the report that U.B.C. was the major professional graduate research institution in the province and in these areas it was a national and international resource. Clearly the Winegard proposals contemplated that the University would still have a very special role in the province, and in that sense it might be said that it was not an unacceptable role and that U.B.C. did not need to be unduly concerned about the Winegard proposals. The committee's view was that this sort of stand could be a very serious mistake.

The committee first took into account academic standards. It was clear that graduates from the new Division of Simon Fraser University would probably come

Reports of Committees of Senate

Continuing Education (continued)

to U.B.C. either transferring to one of the existing Faculties or to one of the professional schools so the University obviously had an interest in the question of the academic standards which were going to be applied to any new programs offered in the interior of the province. The committee felt that the question needed to be considered now and not in five or six years time.

As far as the movement of students in the province was concerned at the moment there was a distinct flow of students from the interior to the metropolitan areas. The committee felt that if one of the concerns of the Government was to halt that flow it was important that any new institution, or programs offered in the interior, be of a standard and quality that people would respect and regard as a proper alternative to coming to the metropolitan areas.

With regard to the allocation of funds the committee felt that the amounts available for tertiary education in the province in the near future were going to be limited. From the committee's viewpoint any misallocation of the available funds was likely to have serious consequences.

The committee felt that the University should be concerned about the proposals of the Winegard Commission insofar as existing programs and resources of U.B.C. were concerned, in particular the independent study program. In terms of resources the committee was concerned about the Library since there were assumptions in the proposals that the U.B.C. Library would service the needs of people in the interior. There was certainly an inadequate provision made in terms

Reports of Committees of Senate

Continuing Education (continued)

of finances to enable other needs to be met without significantly affecting the services that were available currently on campus.

The Winegard Commission report contemplated that the new Division of Simon Fraser University would have access to the resources of the other metropolitan universities by means of a "contract agreement". This appeared to be inconsistent with earlier recommendations that nothing should be done to dilute the role of U.B.C. as the major, professional, graduate and research institution of the province.

The committee thought the contract arrangements were unrealistic. The recommendations called for a drastic change in the courses to be offered by U.B.C. - courses offered in Arts, Science, Education and Commerce were to be phased out or brought under the aegis of the proposed new Division of Simon Fraser University. On the other hand, U.B.C. was expected to expand its offerings in the professional programs, especially Forestry and Nursing.

The question of how the contract arrangements would work in practice was a matter of serious concern to the committee. It was not known whether the contract would relate to courses or to personnel, whether U.B.C. would be expected to teach U.B.C. or Simon Fraser University courses. It was also not known what security the institutions, and teachers, involved in the contract arrangements would have; whether U.B.C. would be expected to employ teachers on the basis of such contracts and whether the contracts would last for a year or a longer period.

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Reports of Committees of Senate

Continuing Education (continued)

It was the view of the committee that the Winegard Commission proposals should not be implemented and that there was a better alternative available.

Dr. MacDougall)
Dr. Pearse)

That the report be adopted and a copy forwarded to the Minister of Education.

Dean Andrews expressed the hope that this University would continue to offer its programs in the interior until such time as a policy is announced by the government clarifying the situation.

Following a brief discussion it was agreed that the Universities Council, the University of Victoria and Simon Fraser University should each receive a copy of the report.

The motion was put and carried unanimously.

The Chairman expressed thanks and appreciation for the work done by the committee.

Faculty of Medicine

Proposal to increase undergraduate enrolment

In March 1976 Senate was informed that the President had received a letter from the Minister of Education indicating that the Government was most concerned that several hundred qualified students from British Columbia were being turned away each year from the Medical School while there was a demand in the province for almost four times as many doctors as were being turned out by this University. At the time the Government had given the University 60 days to come up with an

Faculty of Medicine

Proposal to increase undergraduate enrolment (continued)

acceptable plan for a 240 bed community teaching hospital on campus and the upgrading of teaching facilities in affiliated hospitals. If the University could produce an acceptable plan $50 million would be made available, half from the federal Health Resources Fund and half from the provincial government.

Dean Bates informed Senate that the University had responded to the challenge, and that this had had the support of the downtown medical people. In a letter from the Minister of Education dated November 18, 1976 the President had been assured that the additional operating funds would in no way compete with other funds that would normally be made available to the University for its existing programs and their development, including those in the Faculty of Medicine, or to any other new programs that The University of British Columbia might wish to put forward.

Dean Bates stated that the proposal provided a unique opportunity to overcome some of the serious deficiencies, particularly as far as academic resources in clinical departments were concerned. He stated that this year the Faculty of Medicine Admissions Committee had rejected, from B.C. residents, four students with an 85/89% average, twenty students with an 80/84% average and eighty-four students with a 75/79% average.

Senate was informed that in 1974-75 only 18% of the new medical residents in British Columbia were from U.B.C. In the same year there were 19% from the United Kingdom and 17.4% from other Canadian medical schools. It was stated

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Faculty of Medicine

Proposal to increase undergraduate enrolment (continued)

that the federal government was taking steps to restrict immigration of foreign medical graduates.

Dean Bates)
Dr. Copp)

That the ceiling for undergraduate medical student enrolment be raised to 100 per year in 1978, 120 per year in 1979 and 160 per year in 1980, and that the Faculty be authorized to move to these new levels as rapidly as the preservation of academic quality and the provision of physical resources, staff and operating budget, as described in the Kenny and Kelly Reports, permit. To ensure an orderly expansion, increases in the academic budget should be available at least one year in advance of each step of increase in enrolment.

In amendment:

Dr. Clark)
Dean Fulton)

That prior to expansion of enrolment in the M.D. program beyond 120 students a year, the Senate will review the desirability of further expansion to 160 a year.

Lost

Dr. Pearse expressed concern that the information provided to Senate was seriously deficient, particularly insofar as it ignored evidence of an emerging surplus of physicians. He referred to U.S. and Canadian studies and noted their conclusion that a serious physician surplus was emerging throughout the continent, and that this would have an adverse effect on the quality and cost of medical care. It was this impending surplus that had motivated the federal government to restrict immigration of doctors. He felt that increasing the number of graduating doctors in the province would not necessarily increase the number of doctors practicing in British Columbia. He agreed that medical school places were fewer in relation to the provincial population than in other provinces but if

Faculty of Medicine

Proposal to increase undergraduate enrolment (continued)

academic priorities were to be fixed on those grounds then opportunities for study in areas such as journalism and veterinary medicine should be provided.

Some members felt that there was insufficient information to enable them to vote at that time.

Dr. Dunell)
Dr. Mitchell) *That discussion of the proposal be adjourned until the January meeting of Senate.*

Lost

Dr. Finnegan expressed concern for the possible repercussions in the Faculty of Science that would flow from increasing the student body in the Faculty of Medicine since Science dealt with nearly all of the students who applied for admission to the Faculty of Medicine.

Following further discussion the motion was put and carried.

Student Representative Assembly

Due to the lateness of the hour it was agreed that a motion concerning time for students to address classes on matters of student interest be tabled until the January meeting.

Report of the Registrar on Enrolment 1976-77

The report on enrolment for 1976-77 was circulated for information.

Other business

February Senate Meeting

The Chairman informed Senate that he had received a letter from the Secretary/Treasurer of the Student Representative Assembly requesting that

Wednesday, December 15, 1976.

Other business

February Senate Meeting (continued)

Senate hold its February 16, 1977 meeting in the chambers of the Student Representative Assembly.

Mr. Thom)
Mrs. Field) *That the February 16, 1977 meeting of Senate be held in the chambers of the Student Representative Assembly.*

Carried

Report of the Tributes Committee

Dr. Stager presented the report of the Tributes Committee. Members of the gallery were asked to leave.

Memorial Minute

The following memorial statement had been prepared in accordance with the custom of Senate in recognition by the University and the Senate of the late Mollie E. Cottingham.

IN MEMORIAM
MOLLIE E. COTTINGHAM

Mollie Cottingham, Professor Emerita of Education, died on December 1, 1976. A native of Ontario, she took her B.A. at the University of British Columbia in 1927 and in the following year began her teaching career in the secondary schools of the Province. In these schools she taught continuously, with the exception of a year (1928-9) in the secondary schools of Ontario and a year with the Provincial Normal School (1955-6), until 1957, when a long period of devoted service to the British Columbia Teachers' Federation culminated in the Presidency of that organization. From this office she passed to the new Faculty and College of Education, where she stayed until her retirement in 1971. A mere history of the contributions that Mollie Cottingham made to the schools would produce a lengthy document. Although she was always ready to examine proposals for change without bias, she remained committed to the traditional discipline of fundamental education. Thus she proved to be a wise choice as representative of the British Columbia Teachers' Federation in this Senate from 1953 to 1958. During these critical years, in which the Faculty and College of Education came into existence, it was Mollie Cottingham whose advice and experienced counsel were constantly

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Report of the Tributes Committee

Memorial Minute (continued)

sought. Naturally, she became a member of that Faculty and over the years hundreds of students learned from her what it means to be a teacher. She brought to her responsibility a firm comprehension of what teachers should know and how they should impart that knowledge humanely to boys and girls. In 1967 she won the Fergusson Memorial Award as the Outstanding Educator of the Year; and her colleagues rejoiced. On this campus Mollie Cottingham was revered as highly in the other Faculties as in her own. As a Teacher and as a Teacher of teachers she was indeed a master.

To her cousin Mrs. Allison Duncan, of Mayne Island and Vancouver, and to her cousins in Quebec and Ontario the members of the Senate express their sympathy.

Dr. Stager)
Dr. McGregor)

That this Memorial statement be spread on the minutes of Senate and that a copy be sent to the relatives of the deceased.

Carried

Honorary Degrees

The committee recommended that invitations be extended to the following persons to receive honorary degrees at the 1977 Congregation: -

Gobind Khorana, Biochemist and Nobel Prize Winner
- Degree of Doctor of Science (Honoris Causa)

Grace McInnes, former Member of Parliament
- Degree of Doctor of Laws (Honoris Causa)

Gertrude Laing, Chairman, Canada Council
- Degree of Doctor of Laws (Honoris Causa)

Arthur Fouks, former Chairman of The University of British Columbia Board of Governors
- Degree of Doctor of Laws (Honoris Causa)

Ian McTaggart Cowan, ecologist and former Dean of Graduate Studies
- Degree of Doctor of Science (Honoris Causa)

George Woodcock, editor and writer
- Degree of Doctor of Letters (Honoris Causa)

Wednesday, December 15, 1976.

Report of the Tributes Committee

Honorary Degrees (continued)

Dr. Stager)
Dean Volkoff) *That the recommendations of the Tributes Committee concerning Honorary Degrees be approved.*

Carried

The meeting adjourned at 11.15 p.m.

The next regular meeting of Senate will be held on Wednesday, January 19, 1977.

Secretary

Confirmed,

Chairman

Wednesday, December 15, 1976.

APPENDIX 'A'

New Awards Recommended to Senate

The Mary and James Fyfe-Smith Memorial Bursaries - Through a bequest of the late Florence Fyfe-Smith, three bursaries of approximately $750 each will be awarded to native Indian students entering or in attendance respectively; as to the first, in the School of Social Work or Nursing, as to the second in the Faculty of Education and as to the third, in the Faculty of Law. In the event that there is no student eligible for any of the three bursaries in any year, the income accruing for the bursary is to be accumulated until there is a student eligible for any of the three bursaries in any year, the income accruing for the bursary is to be accumulated until there is a student eligible or an additional bursary may be awarded to a student in the other school in which the first bursary was not awarded.

The Mary and James Fyfe-Smith Memorial Bursaries in Plant Science - Through a bequest of the late Florence Fyfe-Smith two bursaries of approximately $750 each will be awarded to students undertaking courses in (a) ornamental horticulture and (b) landscape gardening. The award will be made on the recommendation of the Department of Plant Science.

Japan Foundation Fellowships - Proceeds from a fund endowed by the Japan Foundation have been designated to provide graduate fellowships in the amount of $3,500 (for M.A. students) or $4,000 (Ph.D. students). The fund has been established to promote the development of Japanese Studies in The University of British Columbia. The fellowships are open to students in any field of Japanese Studies. It is expected that two or three fellowships will be awarded in any one year.

The Kockums Ltd. Scholarship in Forest Harvesting - A scholarship of $250, the gift of Kockums Ltd., of Guelph, Ontario, will be awarded annually to the graduating Forestry student who has submitted the best Bachelor of Science in Forestry thesis in the forest harvesting interest area. Preference will be given to theses concerning mechanization and safety improvement. The award will be made on the recommendation of the Faculty.

The Dr. M. Pernarowski Memorial Scholarship in Pharmaceutical Sciences - This scholarship of $250 is offered by Merck Sharp and Dohme Canada Limited in memory of the late Dr. Modest Pernarowski, former member of the Faculty of Pharmaceutical Sciences. The scholarship recognizes Dr. Pernarowski's many contributions to all areas of the profession of pharmacy. It will be awarded annually to a student completing third year with an outstanding record in the Pharmaceutical Chemistry courses.

APPENDIX 'A'

New Awards Recommended to Senate (continued)

The R.C.A.F. Women's Division Bursaries - Two awards of $150 each will be made available to students entering The University of British Columbia from Grade 12 who have been involved with the Canadian Forces Cadet program. Where possible, one award will be made to a male student and the other to a female. Students wishing to apply for these awards should clearly indicate the details of their experience with the Cadet program.

The Summer Session Bursaries - Bursaries to a total of approximately $2,000 are available in the Summer Session for undergraduate students who are taking at least three units of work in Summer Session. Special consideration will be given to applicants from more remote parts of the province. Applications and further information are available from the University Awards Office, and completed applications must be received no later than the end of the first day of classes.

The Summer Session Students' Scholarship Fund - The income from this fund, established jointly by the Summer Session Students' Association and The University of British Columbia, provides ten scholarships in the amount of $200 each for students attending Summer Session at The University of British Columbia. In order to qualify, students must be registered in three units or more of Summer Session course work. Students wishing to be considered should make application to the University Awards Office. The deadline for application is the end of the first day of classes of Summer Session.

The University Club Walter H. Gage Bursary - A bursary in the amount of approximately $400 per annum has been made available by the University Club of Vancouver in recognition of the contribution of Walter H. Gage, President Emeritus of The University of British Columbia. The award will be made on the recommendation of the University Awards Committee.

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APPENDIX 'B'

Course and Curriculum Proposals

A = new courses or substantial changes
B = minor changes

FACULTY OF ARTS

Anthropology & Sociology

A	New course	Anthropology 406 (1½) Laboratory Techniques in Archaeology
B	Changes	Anthropology 418 - change in description 420 - change in description and units

Asian Studies

A	New course	Asian Studies 450 (3) History of Rural Societies in Asia

Classics

A	New course	Classical Studies 204 (1½) Introduction to Classical Archaeology
A	Changes	Classical Studies 315 - change in description Classical Studies 430 and 431 to become one course: - Classical Studies 430 (3) Athens and Rome

Creative Writing

A	New courses	Creative Writing 403 (3) Writing for Children *see page 6678 491 (3) Tutorial in Writing for Children

Economics

B	Change	Delete History 200 from requirements for Major in Economics and Honours Economics (Economic History)

English

A	New courses	English 372 (1½) Seventeenth-Century Prose 416 (1½-3) Studies in Modern Irish Literature

Fine Arts

A	New course	Fine Arts 369 (3) North American Indian Art

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APPENDIX 'B'

FACULTY OF ARTS (continued)

Geography

A New courses Geography 102 ($1\frac{1}{2}$) Introduction to Man-Environment Systems
103 ($1\frac{1}{2}$) Introduction to the Geography of Canada
390 ($1\frac{1}{2}$) Geography of Selected Regions

A Deletions Geography 100 and 463

B Changes Geography 200 and 201 - change in title and description

B Change in Major requirements to read as follows:

At least 3 units from Geography 102, 103, 200 and 201, and at least 3 units from Geography 101, 212 and 213

History

B Changes History 200 - change in description
425 - change in title

Linguistics

B Changes Linguistics 300 - divided into two courses; now reads:
Linguistics 300 ($1\frac{1}{2}$) Studies in Grammar I
301 ($1\frac{1}{2}$) Studies in Grammar II

Linguistics 400 - divided into two courses; now reads:
Linguistics 400 ($1\frac{1}{2}$) Studies in Phonology I
401 ($1\frac{1}{2}$) Studies in Phonology II

Linguistics 320, 330, 425, 430, 435, 440, 445 - change in unit value (now $1\frac{1}{2}$-3)

Mathematics

A Change in departmental requirements

(1) It is proposed that Computer Science 302, 402 can be substituted for Mathematics courses. In the past this was true only of Cp.Sc. 402. Both courses have substantial Mathematical content, and are in many universities taught by the Mathematics department.

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APPENDIX 'B'

FACULTY OF ARTS

Mathematics

A Change in departmental requirements (continued)

(2) The third year honours course requirements have been changed. Mathematics 321 will no longer be given. The department proposes to require Math. 300, 320, and choice between 322 and 316/345. This will somewhat restrict freedom of choice in third year, but will substantially increase freedom of choice in fourth year.

Proposed Calendar Entry:

The Department of Mathematics offers programs of study that lead to the degrees of Ph.D., M.A., B.A. For information about the degree of Bachelor of Science, see Faculty of Science. Students should also consult Faculty of Science for information on language requirements.

Requirements for the degree of Bachelor of Arts:

Major

First Year: Mathematics 100 (First Term); Mathematics 101 (Second Term)

Second Year: Mathematics 200, 221 (First Term); Mathematics 220, 315 (Second Term); Students are also advised to take Computer Science 115.

Third and Fourth Years: 16½ additional units to be selected from Mathematics 201, 205, Mathematics courses numbered 300 or above, Computer Science 302, 402.

Honours

First Year: Mathematics 100 (First Term); Mathematics 101 (Second Term)

Second Year: Mathematics 200, 221 (First Term); Mathematics 220, 315 (Second Term); Students are also advised to take Computer Science 115.

Third and Fourth Year:

In the third year: Mathematics 300, 320, and either Mathematics 322 or 316/345.

In the fourth year: 9 units from Mathematics 400, 406, 418, 420-426.

4½ additional units, to be selected from Mathematics 201, 205, Mathematics courses numbered 300 or above, Computer Science 302, 402. (Some of these courses may be taken in second year).

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APPENDIX 'B'

FACULTY OF ARTS

Mathematics

A Change in departmental requirements (continued)

Notes:

Since the program does not give year by year outlines, students are advised to take special care that they are meeting faculty and university requirements. A Mathematics adviser should be consulted each year.

The student is urged to take at least one of Mathematics 205, 201 in second year. Students intending to concentrate in statistics should take 205.

Those students intending to do graduate work in Mathematics should take at least two of 400, 420, 421, 422.

Admission to a Third Year course is contingent on an applicant obtaining more than 50% in the prerequisite Second Year course.

Combined Honours in Mathematics and Another Subject

First Year, Second Year, Third Year: as in Honours Mathematics.

Fourth Year: 6 units from Mathematics 400, 406, 418, 420-426. Other subject: as determined by the other department, but no more than 15 required units in third and fourth years combined.

Music

A New courses Music 149 (1) Keyboard Harmony and Transposition
343 (1) Class Piano III

B Changes Music 326 - change in description
349 - change in number (formerly Music 249)
249 - change in number (formerly Music 149)

Psychology

B Changes Psychology 326 - change in description
311 - change in description and number

Religious Studies

A New courses Religious Studies 305 (1½) The Religious Thought of the Ancient Near East
306 (1½) Archaeology and the Bible
324 (3) Religion in the United States

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FACULTY OF ARTS

Religious Studies (continued)

A Deletion — Religious Studies 353

B Changes — Religious Studies 364 and 420 - change in description
204, 365, 471 - change in description and title

Hebrew 305 - change in description, title, number, unit value and hours

Hebrew 400 ($1\frac{1}{2}$) and 401 ($1\frac{1}{2}$) to become:
Hebrew 405 (3) Intermediate Hebrew (Biblical)

Slavonic Studies

A New course — Russian 349 ($1\frac{1}{2}$) Tutorial in Russian Literature

A Change — Russian 432 (3) and 433 (3) to become:
Russian 433 ($1\frac{1}{2}$ or 3) Studies in Twentieth-Century Russian Literature: Pre- and Post-Revolutionary

A Deletion — Russian 432 (3) Studies in Russian Literature from 1880-1917

B Changes — Russian 308 - change in description
Russian 434 - change in number and description:
now 432 (3) Studies in Russian Drama

Slavonic Studies 448 ($1\frac{1}{2}$-3) - divided into two courses; now:
Slavonic Studies 447 ($1\frac{1}{2}$) Seminar in Slavonic Area Studies I
Slavonic Studies 448 ($1\frac{1}{2}$) Seminar in Slavonic Area Studies II

B Change in Honours in Russian requirement:
Admission: First or high Second Class standing in Russian 210 or 200, and Slavonic Studies 105 or 206

B Change in Major in Russian requirement:
Students planning to major in Russian should take, in addition to First and Second Year Russian courses, either Slavonic Studies 105 or Slavonic Studies 206

APPENDIX 'B'

FACULTY OF ARTS (continued)

Change in Faculty requirements

A Under Calendar heading "Satisfactory Standing" delete final paragraph and substitute the following: -

A student may repeat a failed course only once. In the case of courses terminal at Christmas, the course may not be repeated in the same academic year. This restriction does not apply to English 100, Mathematics 100, not to students in the graduating year.

School of Home Economics

A New courses

Home Economics	100	(1½) Introduction to Home Economics II
	312	(1½) Parent-Child Relationship
	322	(1½) Family Analysis
	414	(1½) Aging and the Family
	*422	(1½) Family Research
	456	(1½) Apparel Design II

*Approval of Home Economics 422 withheld (See page 6677)

A Changes

Home Economics 210 - change in number, hours and unit value

Home Economics 342 and 343 to become:
Home Economics 220 (3) The Contemporary Family

A Change in departmental requirements

Delete existing statement in Calendar and substitute the following:

Statement of Purpose

The School of Home Economics has a two-fold function: first, to educate for professional competence and second, to encourage a spirit of intellectual inquiry.

The School through the Division of Family Sciences and the Division of Human Nutrition, offers four undergraduate programs: (1) General Home Economics, (2) Family Sciences, (3) Food and Nutrition (including specialization in nutrition and dietetics), and (4) an honours program in nutrition; and a graduate program in human nutrition. In each area the Home Economics subjects are interrelated with the arts, humanities, social, physical and

APPENDIX 'B'

FACULTY OF ARTS

School of Home Economics

A Change in departmental requirements (continued)

biological sciences. The Food and Nutrition program and the Honours Nutrition program involve concentration in the physical and biological sciences. The General Program involves broad exposure to all areas of Home Economics and the choice of appropriate electives in supporting disciplines. Provision for part-time study may be made by application to the Director.

Professional Opportunities

Home Economics as a profession is concerned with the ways in which it can benefit both the individual and the family. Graduates of the General Program may be employed in teaching. Graduates of the Family Sciences program may be employed in extension services, community agencies and business and industry. Graduates who major in nutrition and dietetics in the Food and Nutrition program may pursue a one-year Graduate Dietetic Internship in any province in Canada following graduation, in order to qualify as a professional dietitian. Graduates of the honours program most often will pursue advanced degrees leading to positions in university teaching, research, nutrition services, consultant dietetics or international food and nutrition organizations.

Academic Regulations - See Faculty of Arts and General Information sections of the calendar.

I. A minimum total of 24 units of Home Economics courses is required.
II. In the third and fourth years a student must earn at least twenty-four units in courses numbered 300 or above.
III. Minimum number of units required for the B.H.E. degree is 60 units.

Division of Family Sciences

Entrance Requirements from Secondary School Program:

Mathematics 11
Chemistry 11
Math 12, suggested
Physics 11, suggested
Biology 11, suggested

As many Home Economics courses at the "11" and "12" level as possible.

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FACULTY OF ARTS

School of Home Economics

A Change in departmental requirements

Division of Family Sciences (continued)

First Year	Units
English 100	3
**Biology 101 or 102	3
Chemistry 103	3
+Social Science or *Mathematics 130	3
HMEC 100 - 101	3
	15

Second Year	
Chemistry 230	3
++Economics 100	3
Home Economics 210	3
Home Economics 220	3
*Home Economics 230	1½
Home Economics 240	1½
	15

*Home Economics 230 not yet approved by the Faculty of Arts

Family Science Program

Third and Fourth Year	
Human Development Option	1½
Family Option	1½
Home Economics 400	1½
Chosen from Subject Matter Options***	9
	13½
Free electives	16½

Total Credits: 30 Units Third and Fourth Year

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FACULTY OF ARTS

School of Home Economics

A Change in departmental requirements (continued)

General Home Economics Program

Third and Fourth Year

Home Economics 201 or 207	3
Home Economics 203 or 209	1½
Home Economics 205	1½
Home Economics 340	1½
Home Economics 352 or 204	1½
Home Economics 354	1½
Home Economics 360	1½
Home Economics 400	1½
Home Economics 454 or 456	1½
	15
Free electives	15

Total Credits: 30 Units Third and Fourth Year

Notes:

*Not required if Mathematics 12 has been completed.
** See note under Biology 101 or 102, Faculty of Science section.
***Subject Matter Options include: 1. Family & Human Development; 2. Family Resources; 3. Foods and Nutrition; 4. Housing and Design; 5. Clothing and Textiles.
+Social Science electives may be chosen from the following disciplines: anthropology, political science, psychology, sociology.
++Not required if any equivalent course has been completed elsewhere.

B Changes

Home Economics 203, 305 - change in description
Home Economics 310 - change in number (formerly 341)
342 - change in number (formerly 362)
350 - change in number (formerly 310)
366 - change in number (formerly 322)
450 - change in number (formerly 416)
452 - change in number (formerly 402)

Home Economics 340 - change in description and number (formerly 462)
454 - change in description and number (formerly 312)

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APPENDIX 'B'

FACULTY OF ARTS

School of Home Economics

B Changes (continued)

Home Economics 205 - change in description and title
301 - change in description, title, hours
430 - change in description, number, title and hours (formerly 450)
307 - change in description, number, hours (formerly 405)
401 - change in description and hours
407 - change in description and hours
421 - change in description and hours
100 - change in description, title, unit value
354 - change in unit value and number (formerly 210)
240 - change in description, number and title (formerly 360)
352 - change in number and title (formerly 202)
360 - change in number and hours (formerly 220)

School of Librarianship

A New courses
600 (1½) Advanced Reference Work
647 (1½) Acquisition and Organization of Legal Materials
648 (1½) Law Library Administration
624 (1½) General Subject Analysis

A Deletion
525
535

A Change in requirements:

Replace present Calendar entry with the following:

The following is the usual plan of studies:

The work of the first term comprises a core program of four required courses (7½ units) representing the knowledge that should be common to all librarians and providing a foundation for more specialized studies. These courses must be taken as a unit and must be completed before enrolment in elective courses will be permitted for the MLS program. To satisfy requirements for the First

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APPENDIX 'B'

FACULTY OF ARTS

School of Librarianship

A Change in requirements: (continued)

Year, the student must complete a further 7½ units which will normally be chosen from elective courses offered by the School. In the Second Year of the program, the requirement calls for completion of 15 units offered by the School or by other departments of the University. All courses outside the required core program will be chosen under guidance from the faculty adviser to ensure proper sequencing and a balanced program.

A New Concentration or Program

A concentration of courses in Law Librarianship as part of the Master of Library Science Program.

Proposed Calendar Statement to be inserted on page 85 of the Calendar, following the paragraph headed: "The following is the usual plan of studies":

Law Concentration

As part of the Second Year program, the School, in conjunction with the Faculty of Law, offers a concentration of four courses constituting a specialization in Law Librarianship. Admission to this Concentration requires completion of the First Year or equivalent.

Courses in the Concentration are:

Law 107 (1)	Legal Institutions (taken in the Faculty of Law)
Librarianship 608 (1½)	Legal Bibliography and Information Services
Librarianship 647 (1½)	Acquisition and Organization of Legal Materials
Librarianship 648 (2)	Law Library Administration

B Changes

500, 654, 623, 622, 621, 510 - change in description and title
505, 626, 632 - change in description
515 - change in description, title and unit value
620 - change in description, title and number (formerly 520)
630 - change in description and number (formerly 530)

APPENDIX 'B' (continued)

FACULTY OF EDUCATION

A New Program

Collaborative Program for Professional Development:

The CPPD is a school-based pre-service and in-service program. The pre-service CPPD is a professional year program for elementary and secondary teacher education students. Students in this program will enrol in the following three courses:

EDUC 396 (6) Curriculum Development and Evaluation
EDUC 407 (6) The Social Foundations of Education
EDUC 492 (6) Critical Analysis of Teaching

The in-service aspect of the CPPD consists of a weekly in-service seminar which provides an opportunity for teachers and faculty to work collaboratively on the development and evaluation of school curricula.

A	New courses	Education 396 (3-6)	Curriculum Development and Evaluation
		407 (3-6)	The Social Foundations of Education
		492 (3-6)	Critical Analysis of Teaching
A	Deletion	Secondary Division - delete Latin Concentration	
B	Changes	Education 420 - change in title	
		429 - change in title and prerequisite	

The English Department's complete renumbering of English courses necessitates a revision of the Education Faculty's requirements for the English major and concentration. The designation of the four required groups of courses will facilitate the evaluation of students' transcripts from other universities: -

First Year: English 100 (3 units)

Second Year: English 201 (3 units) or: Students with credit in Literature 12 (B.C.) may choose three units (or more) from English 202, 203, 204 (1½), 205 (1½), 206 (1½), and 207 (1½).

Concentration:

Third and Fourth Years: A minimum of twelve units, with at least three units from each section.

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APPENDIX 'B'

FACULTY OF EDUCATION

B Changes (continued)

Major:

	Third and Fourth Years:	A minimum of eighteen units, with at least three units from each section.
a)	Studies in the English Language:	English 320, 322 (1½), 323 (1½), 326 (1½), 329
b)	Studies in Style, Composition, and Criticism:	English 304, 310, 311, 312 (1½-3), 313 (1½-3), 314 (1½-3), 315 (1½-3), 316 (1½), 317 (1½), 318 (1½), 319 (1½-3), 330 (1½-3), 331, 332, 335 (1½-3), 336 (1½)
c)	Studies in Early Literary Periods:	English 340 (1½-3), 350, 351 (1½), 353 (1½), 355 (1½-3), 360, 361 (1½), 363, 365, 366 (1½), 370, 371 (1½), 373 (1½), 375 (1½-3)
d)	Studies in Later Literary Periods:	English 380, 381 (1½), 382 (1½), 384 (1½), 389 (1½-3), 390, 391, 392, 394 (1½), 400, 403 (1½), 404 (1½), 410, 411 (1½), 413 (1½), 414 (1½), 420, 421, 424, 426 (1½), 429 (1½-3), 430, 431 (1½), 432 (1½), 433 (1½), 434 (1½), 435 (1½), 436 (1½-3), 440, 446 (1½), 450
	Recommended Electives (for both Concentration and Major):	Women's Studies 226, Theatre 301, Creative Writing 202, Creative Writing 301, Education 472/474, Education 489, Education 478, Education 340, Education 341.

Notes: 1) Students are advised to include both Shakespeare and Canadian Literature in their programs.
2) English 303 is not required for students taking an English major or concentration.

A	Changes	Education 298 and 397 - change in description	
A	New courses	Education 415 (1½)	Optacon Reading for Teachers of the Visually Impaired
		455 (1½)	Introduction to Orientation and Mobility for the Blind

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APPENDIX 'B'

FACULTY OF EDUCATION (continued)

B Changes Education 475 and 476 - change in description

Academic Regulations - change in calendar description Section 7 Requirements for Graduation a and b to become b and c respectively and the following to be inserted as "a"

(a) Normally, students working toward an undergraduate degree in Education must complete the equivalent of two years of full time study in the Faculty of Education before the degree will be granted. These years must comprise the basic professional education courses including student teaching. For those who enter the Faculty of Education after completing an acceptable basic teacher education program, the two years of full time study will normally include senior courses of the student's concentration or major.

FACULTY OF MEDICINE

A New course Pathology 401 Principles of Pathology

B Change General Medicine 445 - change in number and title, now: Oral Medicine 448 General Medicine

FACULTY OF SCIENCE

Botany

A Change Botany 311 - change in hours and description

B Change Botany 410 - change in description

Biology

B Changes Biology 422, Marine Science 420 - change in description

Geological Sciences

A New program

Combined Honours, Geology and Another Subject

First Year		Second Year	
Mathematics 100 and 101	(3)	Mathematics (200 level)	(3)
Chemistry 120 or 110	(3)	Geology 210, 216 and 226	(6)
Physics 120, 115, or 110	(3)	Additional units in consultation with other department	(6)
Geology 105*	(3)		
English 100	(3)		
	(15)		(15)

*Geology 105 may be waived in certain circumstances

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APPENDIX 'B'

FACULTY OF SCIENCE

Geological Sciences

A New program (continued)

Third Year		Fourth Year	
Geology units numbered 300 and above	(6)	Geology 449 or Other Department 449	(3)
Additional units in other department	(6)	Geology 435	(1½)
Additional units in consultation with other department	(3)	Geology courses numbered 300 and above	(4½)
Arts elective	(3)	Additional units in other department	(6)
	(18)	Arts elective	(3)
			(18)

Note: Timetabling and other problems may not permit programs in Geology and certain other departments.

A Change Geology 312 - change in description

A New course Geology 405 (1½) Geomathematical Models and Computer Applications in Geology

B Changes Geology 210 - change in description
317 - change in prerequisites
428 - change in term offered

Geophysics and Astronomy

B Change GEOP/ASTR 310 - change in description

Mathematics

A Changes Mathematics 130 - change in title and description
311, 320, 322 - change in description
421, 424, 425 - change in hours and prerequisites
420, 422, 423 - change in hours

A New courses Mathematics 314 (1½) Real Variables
407 (1½) Applied Matrix Analysis

A Deletions Mathematics 222, 321

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APPENDIX 'B'

FACULTY OF SCIENCE

Mathematics (continued)

A Changes in Mathematics Programs

The Department of Mathematics wishes to make changes of format in its Calendar statement regarding programs in Mathematics. The proposed format is very much like that used by other science departments. In addition, the programs are changed somewhat and a fourth area of concentration in Applied Mathematics, namely numerical analysis, is introduced.

The revised Calendar statement is given in full below followed by a summary of the more substantive changes involved in the revision.

Calendar Statement

The department offers opportunities for study leading to doctor's, master's, and bachelor's degrees. For information on the B.A. degree programs, see the Arts section of the Calendar. For information on the Ph.D., M.A., and M.Sc. degree programs, see the Graduate Studies section of the Calendar.

Requirements for the B.Sc. degree:

Language requirements (for all students doing honours in mathematics, including applied mathematics, or honours in mathematics combined with another subject): B.C. Grade 12 level French or German, or one year of university level French, German, or Russian. For students who plan graduate work in mathematics, further work in one of French, German, or Russian is recommended.

All mathematics students should consult an adviser in the Mathematics Department each year.

The student should note that the first digit in the number of a course is intended to convey the level of mathematical maturity at which the course is conducted rather than the year in which it must be taken.

A student will be denied entry into a third year course should only 50% be obtained in a prerequisite second year course.

APPENDIX 'B'

FACULTY OF SCIENCE

Mathematics

A Changes in Mathematics Programs (continued)

Major

First Year		Second Year	
Mathematics 100 (First Term)	(1½)	Mathematics 200 (First Term)	(1½)
Mathematics 101 (Second Term)	(1½)	Mathematics 221 (First Term)	(1½)
Physics 120, 115, or 110	(3)	Mathematics 220 (Second Term)	(1½)
Chemistry 120 or 110	(3)	Mathematics 315 (Second Term)	(1½)
English 100	(3)	Computer Science 115	(3)
Electives	(3)	Electives (see note #1)	(6)
	(15)		(15)

Third and Fourth Years

Courses to be selected from Mathematics 201, 205, Computer Science 302, 402, and Mathematics courses numbered 300 or above	(16½)
Electives	(13½)
	(30)

#1 Students are advised to take at this point at least one of Mathematics 205 or 201. This will increase flexibility and ease the Mathematics load in 3rd and 4th years.

Honours

First Year		Second Year	
Mathematics 100 (First Term)	(1½)	Mathematics 200 (First Term)	(1½)
Mathematics 101 (Second Term)	(1½)	Mathematics 221 (First Term)	(1½)
Physics 120, 115, or 110	(3)	Mathematics 220 (Second Term)	(1½)
Chemistry 120 or 110	(3)	Mathematics 315 (Second Term)	(1½)
English 100	(3)	Computer Science 115	(3)
Electives	(3)	Electives (see note #2)	(6 to 9)
	(15)		(15 to 18)

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APPENDIX 'B'

FACULTY OF SCIENCE

Mathematics

A Changes in Mathematics Programs (continued)

Third and Fourth Years

In the third year: Mathematics 300, 320, and either Mathematics 322 or 316/345	(9)
In the fourth year: 9 units chosen from Mathematics 400, 406, 418, 420, 421, 422, 423, 424, 425, 426 (see note #3)	(9)
Additional courses, to be chosen from Mathematics 201, 205, Computer Science 302, 402, and Mathematics courses numbered 300 or above (see note #4)	($4\frac{1}{2}$)
Electives	($16\frac{1}{2}$ to $13\frac{1}{2}$)
	36 to 33

#2 Students are strongly urged at this point to take both Mathematics 205 and 201.

#3 Students planning to do graduate work in mathematics should take at least two of 400, 420, 421, 422.

#4 Some of these courses may be taken in second year.

Combined Honours in Mathematics and Another Subject

Mathematics:	First and Second Years - the same as Mathematics Honours.
Third Year:	Mathematics 300, 320, and one of Mathematics 322 or 316/345.
Fourth Year:	6 units from Mathematics 400, 406, 418, 420-426.
Other subject:	As determined by the other department, but no more than 15 required units in third and fourth years combined.

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APPENDIX 'B'

FACULTY OF SCIENCE

Mathematics

A Changes in Mathematics Programs (continued)

Major - Applied Mathematics Option

First Year		Second Year	
Mathematics 100 (First Term)	(1½)	Mathematics 200 (First Term)	(1½)
Mathematics 101 (Second Term)	(1½)	Mathematics 221 (First Term)	(1½)
Physics 120, 115, or 110	(3)	Mathematics 220 (Second Term)	(1½)
Chemistry 120 or 110	(3)	Mathematics 315 (Second Term)	(1½)
English 100	(3)	Computer Science 115	(3)
Electives	(3)	Electives (see note #5)	(6)
	(15)		(15)

Third and Fourth Years

Mathematics 316	(1½)
Mathematics 205 or 305 (see note #6)	(1½)
Mathematics 344, 307	(3)
Courses in Mathematical area of concentration (see note #7)	(3)
Other Mathematics courses numbered 300 or above	(4½)
Courses in area of application, numbered 300 or above (see note #8)	(3)
Other electives	(10½)

#5 Students wishing to concentrate in Statistics should take Mathematics 205 during their second year, and Mathematics 305 during their third year.

#6 Students who have taken Mathematics 205 in second year and do not wish to take 305 should substitute 201 for 305.

#7 Four areas of concentration in applied mathematics are considered by this program.

Applied Analysis, requiring Mathematics 300 and one of Mathematics 318, 320, 400 or Computer Science 302.
Statistics, requiring Mathematics 405 and either Mathematics 318 or Computer Science 405 and 406.
Operations Research, requiring Mathematics 318 and 3 additional units selected from Mathematics 340, 480 or Computer Science 405, 406.
Numerical Analysis, requiring Computer Science 302 and 3 additional units selected from Computer Science 402, 406, Mathematics 407.

#8 These courses must be taken in one area of application.

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APPENDIX 'B'

FACULTY OF SCIENCE

Mathematics

A Changes in Mathematics Programs (continued)

Honours - Applied Mathematics Option

First Year		Second Year	
Mathematics 100 (First Term)	(1½)	Mathematics 200 (First Term)	(1½)
Mathematics 101 (Second Term)	(1½)	Mathematics 221 (First Term)	(1½)
Physics 120, 115, or 110	(3)	Mathematics 220 (Second Term)	(1½)
Chemistry 120 or 110	(3)	Mathematics 315 (Second Term)	(1½)
English 100	(3)	Computer Science 115	(3)
Electives (see note #9)	(3)	Electives (see note #10)	(6 to 9)
	(15)		(15 to 18)

Third Year		Fourth Year	
Mathematics 300, 320	(6)	Mathematics courses in area of concentration (see note #11)	(6)
Mathematics 307, 316	(3)	Restricted electives (see note #11)	(6)
Mathematics course in area of concentration (see note #11)	(1½)	Other electives or courses in area of application (see note #12)	(6)
Electives or courses in area of application (see note #12)	(4½ to 7½)		
	(15 to 18)		(18)

#9 Computer Science may be taken as the elective in first year. An approved elective can then be substituted for Computer Science 115 in second year.

#10 Students in this option are strongly urged to include at least one of Mathematics 201, 205, 340, among their second year electives.

#11 At present this program recognizes four areas of concentration: Applied Analysis, Statistics, Operations Research and Numerical Analysis. The appropriate concentration courses and restricted fourth year electives for these areas are as follows:

	3rd Year	4th Year	Restricted Electives
App. Anal.	MATH 345	MATH 400, 426	3 units from MATH 407, 423, CPSC 302, 402. 3 units from MATH 305/306, 406, 318, 418.

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APPENDIX 'B'

FACULTY OF SCIENCE

Mathematics

A Changes in Mathematics Programs (continued)

	3rd Year	4th Year	Restricted Electives
Statistics	MATH 344	MATH 406, 418	6 units from MATH 305/306, 318, 400, 405, 420, 423, 426.
Oper. Res.	MATH 344	MATH 406, 426	3 units from 318, 418. 3 units from MATH 407, 420, CPSC 302.
Num. Anal.	MATH 345 CPSC 302	CPSC 402, 406 MATH 407	3 units from MATH 400, 426, 423. 3 units from 305/306, 406, 318, 418.

Special choices of concentration courses and electives may be arranged subject to the approval of the Director of the Institute for Applied Mathematics and Statistics.

#12 All students in this option are required to include in their electives at least 6 units of courses numbered 300 or above in one area of application.

Rationale and Summary of Changes:

1. Computer Science 115 will be required of all students. It would be useful in our third and fourth year courses to be able to assume all students have some knowledge of Computer Science.

2. It is proposed that Computer Science 302, 402 can be freely substituted for mathematics electives. In the past this was true only of Computer Science 402. Both courses have substantial mathematical content and are in many universities given by Mathematics departments.

3. The third year honours requirements have been changed. We are proposing to make 300 mandatory along with the usual 320. The dropping of 321 made some change necessary.

4. The most important change is the introduction of a fourth area of concentration in Applied Mathematics, namely numerical analysis. This is an important branch of Applied Mathematics. A degree in this would be useful to students.

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APPENDIX 'B'

FACULTY OF SCIENCE (continued)

Microbiology

A Change in Honours Program

At present, in the fourth year of the Honours Microbiology program, students are required to take Microbiology 430 (3), 449 (3), nine units chosen from Microbiology 302, 307, 308, 402, 403, 408, 409, 411, 418 and 422 and three units of electives. The proposed change would require students to take the 430 and 449 courses as before but would require only 6 units chosen from the other Microbiology courses and would permit 6 units of electives.

A Change Microbiology 448 - change in units and description

B Changes Microbiology 325, 409 - change in prerequisites
403 - change in title

Oceanography

A New course *Oceanography 310 (3) Man and the Oceans
*Approval withheld (See page 6679)

Physics

B Change Physics 308 - change in title and description

Zoology

B Change in program description:

The statement regarding the Zoology Major program:

"At least 15 units of Zoology or Biology courses must be taken in these two years. It is recommended that 9 of these be chosen from Biology 300, 321, 334, Zoology 304, 307, 308, 323, 402",

is replaced by:

"At least 15 units of Zoology or Biology courses must be taken at the 300 or 400 level, to include 9 units chosen from Biology 300, 321, 322, 334, Zoology 304, 305, 306, 307, 308, 323, 402".

B Changes Zoology 403, 415 - change in prerequisite requirements