Wednesday, February 17, 1982.

The Sixth regular meeting of the Senate of The University of British Columbia for the Session 1981–82 was held on Wednesday, February 17, 1982 at 8.00 p.m. in the Board and Senate Room.

Present: President D. T. Kenny (Chairman), Dr. R. A. Adams, Dr. C. E. Armerding, Dr. G.D. Bellward, Mr. W. H. Birmingham, Mrs. M. F. Bishop, Dr. T. H. Brown, Mr. R. G. Bryan, Rev. P. C. Burns, Mr. G. D. Burnyeat, Dr. K. O. L. Burridge, Dr. J. J. R. Campbell, Dr. D. J. Connor, Mr. B. J. Coulson, Dr. J. D. Dennison, Mrs. S. Dodson, Dr. D. Donaldson, Dr. A. J. Elder, Mr. D. B. Fields, Dean C. V. Finnegan, Mrs. E. D. Fulton, Mr. R. C. Gill, Dr. R. F. Gray, Mr. S. T. Henderson, Dr. A. M. Hickling, Ms. S. J. Holmes, Dr. W. M. Keenlyside, Dr. R. F. Kelly, Dr. R. W. Kennedy, Mr. D. Kirshner, Dr. A. Kozak, Mr. J. Kulich, Dean P. A. Larkin, Dr. D. S. Lirenman, Dr. D. Lupini, Dean P. A. Lusztig, Dean K. M. Lysyk, Ms. C. E. McAndrew, Mr. M. A. McCann, Dr. A. J. McClean, Ms. D. N. McDonnell, Mr. D. McInnes, Mr. J. F. McWilliams, Mr. I. C. Miller, Dr. W. R. Morford, Dr. J. F. Richards, Dean B. E. Riedel, Miss R. E. Robinson, Dr. M. Shaw, Dr. J. G. Silver, Dr. C. E. Slonecker, Mr. G. A. Smith, Dr. R. H. T. Smith, Dr. R. A. Spencer, Miss L. M. Stenger, Dr. R. Stewart, Dr. P. Suedfeld, Dr. N. Sutherland, Dr. P. R. Tennant, Miss C. L. V. Warren, Dean W. A. Webber, Dean R. M. Will, Dr. D. LL. Williams, Dr. M. D. Willman, Dr. J. L. Wisenthal, Ms. D. Wong.

Observer: Mr. J. A. Banham

Messages of regret for their inability to attend were received from Chancellor J. V. Clyne, Dean G. S. Beagrie, Dean D. R. Birch, Dr. J. Dahlie, Dean J. A. F. Gardner, Mr. R. Gyurkovits, Dr. H. E. Hirsch, Dean W. D. Kitts, Dr. J. P. Martin, Dr. G. G. E. Scudder, Dean L. M. Wedepohl, Mr. V. G. Wellburn.

Minutes of previous meeting

Mr. Coulson)
Dr. Adams)

That the minutes of the Fifth regular meeting of Senate for the Session 1981-82, having been circulated, be taken as read and adopted.

Carried

Wednesday, February 17, 1982.

Senate membership

Lieutenant-Governor in Council Appointee

The Chairman welcomed Dr. Denis J. Connor who had been named as a Lieutenant-Governor in Council appointee to Senate.

Declaration of vacancies

As required under section 35 (6) of the University Act, the following vacancies were declared:

Mr. R. L. Mullen - student representative at-large
Mrs. E. M. Thomson - student representative at-large

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) Proposal of the Faculty of Applied Science to control enrolment in Engineering (P.7656-7)

(ii) New courses, course and program changes recommended by the Faculty of Applied Science (P.7696)

(iii) Course and program changes recommended by the Faculty of Agricultural Sciences (P.7658 & 7665-6)

(iv) Course and curriculum changes recommended by the School of Architecture (P.7696-8)

(v) New courses, course and program changes recommended by the Faculty of Arts (P.7667-72 & 7698)

(vi) Course and curriculum changes recommended by the Faculty of Commerce and Business Administration (P.7698-99)

(vii) Establishment of the Bank of Montreal Chair in International Finance recommended by the Faculty of Commerce and Business Administration (P.7689-90)

(viii) New courses and course changes recommended by the Faculty of Dentistry (P.7687-8 & 7699)

(ix) New course, new concentration, course and program changes recommended by the Faculty of Education (P.7700-2)

(x) New courses, course and curriculum changes recommended by the Faculty of Graduate Studies (P.7672, 7688 & 7702-4)

From the Board of Governors (continued)

(xi) New course, course and program changes recommended by the Faculty of Medicine (P.7688 & 7704-5)

(xii) Course changes recommended by the Faculty of Pharmaceutical Sciences (P.7706)

(xiii) New course, course and curriculum changes recommended by the School of Physical Education and Recreation (P.7689 & 7706)

(xiv) New courses, new program, course and program changes recommended by the Faculty of Science (P.7672-83)

Prizes, Scholarships and Bursaries

Mr. McWilliams)
Miss Warren)

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

Election of three members of Senate to serve on the Advisory Committee for the Selection of Presidential Candidates

Senate was informed that Dr. W. M. Keenlyside, Dr. G. G. E. Scudder and Dr. P. Suedfeld had been elected.

Reports of Committees of Senate

Admissions Committee

Faculty of Dentistry - addition to Calendar statement on Advancement

Dr. Smith presented the report. The committee recommended approval of the following Calendar statement on Advancement:

"Although satisfactory academic performance is prerequisite to advancement, it is not the sole criterion in consideration of the suitability of a student for promotion or graduation. The Faculty reserves the right to require a student to withdraw from the Faculty if considered to be unsuited to proceed with the study or enter the practice of dentistry."

Wednesday, February 17, 1982.

Reports of Committees of Senate

Admissions Committee

Faculty of Dentistry - addition to Calendar statement on Advancement (cont'd)

Dr. Smith)
Dr. Silver) That the proposed addition to the Calendar statement on Advancement in the Faculty of Dentistry be approved.

Carried

Budget Committee

In the absence of Dr. Scudder, Dr. Wisenthal presented the following report:

"Introduction

At the December 1981 meeting of Senate, the following resolution was passed:

> That in view of the possible academic implications of the present budgetary situation, the Senate Budget Committee be requested to report to the February meeting of the Senate on the advice it is offering the President to assist him in the preparation of the University budget, and the basis for this advice.

Accordingly, the Senate Budget Committee is reporting now because of the timing of the present Retrenchment exercise, and may wish to present a further report to Senate at a later date.

Previous Budget Reductions

In each of the five preceding fiscal years, the University has had to effect internal reductions in the operating budget (Table I).

Table I. Reductions in operating budget 1976-81.

Fiscal Year	Budget Reduction
1976-77	$ 1,750,430
1977-78	1,364,806
1978-79	689,165
1979-80	826,649
1980-81	2,098,000
Total	$ 6,729,050

Wednesday, February 17, 1982.

Reports of Committees of Senate

Budget Committee

"Previous Budget Reductions (continued)

In 1980–81 reductions involved a 1.7% cut in the salary base in all Faculties and major units. However, the cuts in previous years were not done on a pro rata basis.

Salary Component Adjustments - Budget 1981–82

Permanent Salary Component adjustments in 1980-81 for the 1981–82 budget were made so as to reduce the 1981–82 University budget base by $2.1 million. These cuts (1.7% of the salary base) resulted in a 1.06% to 1.51% reduction in the total budget of each major unit.

Each Faculty was involved in the decision on how the adjustments should be made (in detail, as historically) since the various Faculties run their affairs differently. Further, since the flexibility in Faculties is dissimilar, not all responded in a like manner.

In summary, across the whole University 21.5 authorized faculty positions were deleted, and unallocated faculty salary funds equivalent to a further 15.9 positions (at an average salary of $25,000) were withdrawn. No faculty members were released, but vacant positions were removed.

A total of 22.55 authorized staff positions were deleted, and unallocated funds for a further 13.2 positions (at an average salary of $15,000) were withdrawn.

Some teaching assistance funds were withdrawn.

Since no impact statements were available from the Faculties, it is not possible to assess the way in which these cuts have affected the academic enterprise. Therefore, we are unable to document the detailed effects on courses and programs. However, there is no doubt that all Faculties and departments suffered, but in different ways, with few academic units avoiding serious impact.

Interim Non–recurring Budget Reduction 1981–82

An interim non-recurring budget reduction was required to meet the University's 1981–82 cash flow requirements. The total deficit of $3,446,056 was obtained by withdrawing funds from all Faculties and administrative units in the University, but this was not an across the board pro rata exercise. To a considerable extent, the reductions were based on monies available from residual salaries. The reductions were as shown in Table II.

Reports of Committees of Senate

Budget Committee (continued)

"Table II. Interim Non-recurring Budget Reduction 1981-82

Budget Unit	% reduction of Unit's Net Budget
Agricultural Sciences	3.6
Applied Science	1.6
Arts	2.5
Commerce	2.9
Dentistry	1.2
Education (including Physical Education)	2.6
Forestry	1.7
Graduate Studies	2.1
Health Sciences	4.9
Law	3.4
Medicine	2.3
Pharmaceutical Sciences	1.7
Science	2.5
Vice President Academic	2.9
Vice President University Services	1.8
Vice President & Bursar	2.3

Within each Faculty, it is clear that cuts were also not across the board, as the following Table III indicates:

Reports of Committees of Senate

Budget Committee (continued)

"Table III. Source of interim non-recurring budget reduction in 1981–82

	Faculty Positions	Staff Positions	Contingency Funds	Supplies & Expenses	Teaching Assistance
Agricultural Sciences	x				
Applied Science	x		x		
Arts	x	x			
Commerce	x				
Dentistry	x		x		
Education	x	x		x	
Forestry	x				
Graduate Studies	x	x			
Health Sciences		x			
Law	x			x	
Medicine		Unassigned operating expenses			
Pharmaceutical Sciences	x	x			
Science	x			x	x

Most Faculties met the cuts from residual salaries in unfilled budget positions, or from the salaries of faculty members on leave of absence. The impact statements obtained from Deans indicate a severe restriction on any plans for the improvement and expansion of existing programs and virtual elimination of flexibility owing to the loss of "soft" salary funds. The Faculties of Arts, Education, Graduate Studies and Pharmaceutical Sciences also had to give up support staff monies: Health Sciences did likewise. Applied Science and Dentistry reduced their contingency funds, while Education, Law and Science had to extract funds from their Supplies & Expenses budget. Only Science reduced the budget for teaching assistance.

Wednesday, February 17, 1982.

Reports of Committee of Senate

Budget Committee (continued)

"Retrenchment - Budget 1982–83

It was against the background of the above, that the Senate Budget Committee has over the year given advice to the President on the 1982–83 budget and reviewed the problem of retrenchment. Inspection of the data for the 1981–82 general purposes operating budget indicated an annualized shortfall of $7.483 million: these data were presented to all Faculties by the President in the fall.

The Senate Budget Committee thought it most unlikely that the Government would be willing to provide supplementary funds to meet the shortfall. Indeed, the President received a letter from Dr. W.C. Gibson (Chairman, Universities Council of British Columbia) on December 24, 1981 stating that such funds were not available. This places the University in the position of having to absorb, in part, the impact of inflation on educational costs. Furthermore, it is clear that the $4.1 million released the same date for the Medical Expansion Budget could not be used for any other purpose, since the letter of transmittal to the President clearly identified the funds for this project and this project alone.

In considering the problem of retrenchment, the Senate Budget Committee was kept informed of the activities of the President's Advisory Committee on Fiscal Retrenchment. Not only were the activities discussed at meetings of the Senate Budget Committee, but three members of the latter were members of the Retrenchment Committee.

The Senate Budget Committee received copies of the University 1980-81 and 1981–82 Budget Analyses: these data were later made available to the Retrenchment Committee. In the fall, the Senate Budget Committee considered a number of budget items, and on October 28, 1981 considered the following recommendation, proposed by the Retrenchment Committee on October 15, 1981:

> "Because of the serious financial problems facing the University, the President's Committee on Fiscal Retrenchment strongly recommends that the Board delay a decision on student fees for 1982–83 until the President has had the opportunity to study the report of the Committee, including the Committee's assessment of the academic implications of retrenchment."

After considerable discussion, the Senate Budget Committee unanimously endorsed this recommendation.

Wednesday, February 17, 1982.

Reports of Committees of Senate

Budget Committee (continued)

"During the many meetings held since the fall (9 meetings involving 25 hours), the Committee continued its discussions of the budget. On January 12, 1982 members received copies of the Report of the President's Advisory Committee on Fiscal Retrenchment. At the same time the Committee received copies of all retrenchment target and potential impact statements submitted to the President and then to the Retrenchment Committee. The Senate Budget Committee then started discussions of these on January 19, 1982 and has spent some 18 hours at this task.

After our meeting of January 25, 1982, we informed the President that we found the Report of the Retrenchment Committee to be thorough, well documented and reasonable, and we endorsed its spirit and direction. Then on February 2, 1982 at the conclusion of our discussions, we passed the following motion: "The Senate Budget Committee recommends to the President that he implement the budget reductions in the Report of the President's Advisory Committee on Fiscal Retrenchment, subject to the motions of this Committee already passed with respect to fee revenue, relief to the designated Faculties and reductions in the assessments on the Research Grants Committee (Humanities and Social Sciences), Library and Computing Centre".

It should be made clear that the Senate Budget Committee was responding to a report which had already been prepared. The Committee carefully considered all details of the report itself and the impact statements from the twelve Deans and the Vice-Presidents, but it did not try to re-do the work of the Retrenchment Committee.

The first specific issue that the Committee considered was the division of the assessments between the Faculty and Non-Faculty sides of the University budget (as defined in the Report). We approved the principle of doing the utmost to maintain the academic standards in the Faculties. We therefore looked at the assessments against the Non-Faculty budgets ($3,720,300), and concluded that no further cuts could be made in this area of the University operation. Indeed, we were most concerned about the following proposed reductions:

Research Committee Grants	$1,000,000
Library	564,000
Computing Centre	290,000

Wednesday, February 17, 1982.

Reports of Committees of Senate

Budget Committee (continued)

"Having concluded that there was no more money to be taken from the Faculty budgets or from the Non-Faculty budget, we accepted the need for a substantial increase in fee revenue. And wishing to make some money available to reduce the cuts against the Research Committee Grants, the Library and the Computing Centre, we reluctantly but unanimously recommended to the President the Report's Alternative 2, namely an increase of 32.8% in fee revenue, with an increase of 46.1% in student aid.

Subsequently, the Board of Governors approved such an increase in fee revenue. Therefore, at a meeting on February 2, 1982, we recommended that the resulting $435,100 that Alternative 2 made available be applied in the following way:

Research Committee Grants (Humanities & Social Sciences)	$200,000
Library	185,000
Computing Centre	50,100

Our intention here was to re-instate 50% of the research grant funds previously available in the Humanities and Social Sciences area, on the ground that replacement funds are not available from external granting agencies: we are aware that the funds from the NSERC General Grant to the President were not and could not be touched in the retrenchment. We believe that research grants are basic to the maintenance of a high level of academic achievement in the University. As for the Library, our recommendation would reduce the assessment by about one-third in this vital resource that serves the entire University. We recommend that the balance ($50,100) should go to the Computing Centre.

Wednesday, February 17, 1982.

Reports of Committees of Senate

Budget Committee (continued)

"In reviewing the assessments against the Faculties, we studied details of the specific budget reductions and their academic impact as reported by the Deans to the President. (These were written subsequent to the Retrenchment Report, and are distinct from the retrenchment target and potential impact statements referred to earlier.) We considered Faculties one by one, and attempted to measure the effects of the proposed budget reductions. The Committee spent some time discussing the principles underlying the assessments against the different Faculties. We established that the recommended assessments against Faculty budgets are based on the mixed criteria of academic judgement and the availability of budget items that could be removed within the constraints noted in Section II of the Retrenchment Report. The assessments are distributed in a way that is designed to inflict as little damage as possible on the academic work of the respective Faculties.

There were three areas in which we expressed special concern: Agricultural Sciences, Arts and Education. Agricultural Sciences found it necessary to propose the deletion of the entire faculty travel budget ($4,500); we hope that it will be possible for the President to restore this line item in the 1982-83 budget. We also recommend to the President that in the preparation of the 1982-83 budget consideration be given to providing relief to the Faculty of Arts and in particular to the School of Social Work, which would otherwise be losing a crucial senior position. Similarly, we recommended that the President try to provide relief in next year's budget to the Faculty of Education, and in particular to the School of Physical Education for a position in the developing field of Sports Medicine.

Reports of Committees of Senate

Budget Committee (continued)

"We draw Senate's attention to the following Tables (Tables IV and V).

Table IV. Retrenchment for 1982–83

Budget Unit	% reduction of Unit's 1981–82 Final Net Budget
Agricultural Sciences	2.04
Applied Science	0.95
Arts	1.88
Commerce	0.64
Dentistry	1.04
Education (including Physical Education)	2.70
Forestry	1.01
Graduate Studies	5.09
Health Sciences	1.60
Law	1.18
Medicine	1.94
Pharmaceutical Sciences	0.73
Science	1.26
Associated Academic & Student Services	4.69*
UBC Research Committee Grants	80.00*
University Services	6.15*
President's Office, including Vice President & Bursar	3.62

*These are modified retrenchment figures that are based on the Senate Budget Committee's recommendation to the President.

Reports of Committees of Senate

Budget Committee (continued)

Table V. Table showing source of retrenchment funds

	Faculty Positions	Staff Positions	Contingency Funds	Supplies & Expenses	Teaching Assistance
Agricultural Sciences	x	x	x	x	x
Applied Science	x	x		x	x
Arts	x	x			x
Commerce	x	x			
Dentistry	x	x		x	
Education	x	x			
Forestry		x			
Graduate Studies	x	x			
Health Sciences		x			
Law		x		x	
Medicine	x	x			
Pharmaceutical Sciences		x			
Science	x	x	x	x	x

Reports of Committees of Senate

Budget Committee (continued)

"As in the 1981–82 budget retrenchment, the respective Faculties have proposed to take the money from different parts of their operation as indicated in Table V. Needless to say, there will be serious consequences throughout the University. There will be reductions in support staff (secretaries, technicians, etc.) in all Faculties; there will be the elimination of a significant number of unfilled faculty positions (including vacancies created by retirement and resignation). While there will be reductions in teaching assistance and supplies and expenses, the bulk of the retrenchment will be in the reduction of Faculty and Non-Faculty positions. For example, preliminary indications are that the retrenchment against the following Faculties can be interpreted as being approximately equivalent to: 1.5 faculty and 2 support staff positions in Agricultural Sciences; 14 faculty, 2 support staff and 22 TA positions in Arts; 8 faculty and 2 support staff positions in Education; 4 faculty and 4 support staff positions in Medicine; and 6 faculty, 2.5 support staff and 15 TA positions in Science.

The Report of the Retrenchment Committee is not to be seen as a means of reallocating funds within the University as part of a long-term policy on academic priorities. Indeed, the Report specifically indicates that "there are a number of potential adjustments that could not be studied adequately in the time available," and calls for "a careful evaluation of the appropriate scope of programs offered by UBC" and other matters which "should be studied by an appropriate body." In the light of this need, the Senate Budget Committee proposes the motion that follows. It is to be understood that the motion does not imply any restriction or infringement on the options available to the President, or any encroachment on the intra-faculty judgements that are the prerogative of the Deans.

Present Terms of Reference of the Senate Budget Committee

"to meet with the president and assist him in the preparation of the university budget" (Section 36(e) University Act).

Motion to Senate

- that the following be added to the terms of reference of the Senate Budget Committee: "to make recommendations to the President and to report to Senate concerning academic planning and priorities as they relate to the preparation of the University Budget"; and
- that the Senate Nominating Committee, in consultation with the Senate Budget Committee, propose additional members to enlarge the Senate Budget Committee."

Reports of Committees of Senate

Budget Committee (continued)

In the discussion that followed the presentation of the report, reference was made to the determination of members of both the President's Committee on Fiscal Retrenchment and the Senate Budget Committee to meet the financial target while preserving the essential academic quality of the University. Consequently, the balance in the budgetary allocation among the Faculty, Non-Faculty and tuition fee components was a critical factor in the recommendations to the President.

However, Senate was reminded that the required exercise, coming after several years of serious fiscal restraint, had done great academic harm to the University. Many faculty positions would remain unfilled, a factor which would have the effect of severely limiting the hiring of young, creative teachers and researchers, thus mortgaging the future of the University. Furthermore, the absence of additional financial support would not allow for any strengthening or extension of current programs.

Further comment was made upon the need to establish long term academic planning, which, to be fully effective, would need to be carried on in association with a study of the financial implications. It was this observation that led, in part, to the proposal to extend the terms of reference of the Budget Committee.

Some members felt that the report would have been more useful if it had contained such background information as how much money had been extracted over the years by not filling teaching positions, or how many appointments had been made and how many could be made on the basis of retirements.

Dr. Wisenthal)
Dr. Dennison) That the following be added to the terms of reference of the Senate Budget Committee: "to make recommendations to the President and to report to Senate concerning academic planning and priorities as they relate to the preparation of the University budget"; and that the Senate Nominating Committee, in consultation with the Senate Budget Committee, propose additional members to enlarge the Senate Budget Committee.

Reports of Committees of Senate

Budget Committee (continued)

In amendment:

Dr. Spencer)
Dr. Elder) That the words "...as they relate..." be changed to "... and their relation..."

Lost

In amendment:

Dr. Spencer)
Dr. Gray) That the motion be changed to read: "to report to Senate and to make recommendations to the President..."

In reply to a query it was confirmed that the committee would report to Senate on the recommendations made to the President.

The amendment was put and lost.

In amendment:

Mr. McCann)
Ms. Wong) That the words "in consultation with the Senate Budget Committee" be deleted from the motion.

Carried

The motion, as amended, was put and carried.

Mr. Miller and Ms. Wong gave notice of the following motion:

"That the name of the Senate Budget Committee be changed to the Senate Academic and Budgetary Planning Committee."

Curriculum Committee (see Appendix 'B')

Dr. Richards presented the report.

Faculty of Graduate Studies

The committee recommended approval of the proposal of the Faculty of Graduate Studies to offer a new Master's Program in Pulp and Paper Engineering,
* with the proviso that the Program Coordinator shall be a U.B.C. faculty member (excluding adjunct and honorary appointees) and that the Board of Study shall be constituted so that a majority of its members will be U.B.C. faculty (excluding adjunct and honorary appointees).

Wednesday, February 17, 1982.

Reports of Committees of Senate

Curriculum Committee

Faculty of Graduate Studies (continued)

Dr. Richards)
Dean Larkin) That the proposal of the Faculty of Graduate Studies to offer a Master's Program in Pulp and Paper Engineering be approved, subject to the provisos noted.

Carried

The committee further recommended approval of option A, the thesis option, in connection with the proposal of the Faculty of Graduate Studies to offer a Master of Advanced Studies in Architecture (MASA). It was noted that option B, which is a prescribed course of study leading to a comprehensive examination, had been referred back to the School of Architecture for further consideration. Referring to the courses connected with the proposal, Dr. Richards stated that, at this time, only the proposed changes to the following courses be approved: ARCH 407, 500, 549, and the deletion of ARCH 505, 508, 511 and 512.

The committee also recommended approval of new courses and course changes submitted by the Faculty of Graduate Studies.

Dr. Richards)
Dean Larkin) That option A, the thesis option, of the Master of Advanced Studies in Architecture (MASA) together with new courses and course changes recommended by the Faculty of Graduate Studies be approved.

In reply to a query it was pointed out that option A, the thesis option, was a revision of the existing M.Arch. program and that applicants to this program would be required to hold a professional degree in Architecture.

The motion was put and carried.

Faculty of Dentistry, Faculty of Forestry, Faculty of Medicine, School of Physical Education and Recreation and Faculties of Medicine and Science

At the January 20, 1982 meeting of Senate, objections were raised to the committee's proposed change to the description of ORME 420. Dr. Richards informed Senate that it had since been agreed that instead of listing ORBI 410 and ORME 423 as prerequisites for ORME 420, the statement should read: ORBE 410 and ORME 423 strongly recommended.

Wednesday, February 17, 1982.

Reports of Committees of Senate

Curriculum Committee

Faculty of Dentistry, Faculty of Forestry, Faculty of Medicine, School of Physical Education and Recreation, and Faculties of Medicine and Science (continued)

The committee recommended approval of a course change proposed by the Faculty of Forestry; a new course and course changes submitted by the Faculty of Medicine (approval of these proposals had been withheld at the January 20, 1982 meeting pending further consultation); an Aquatic Specialization and new courses and course changes submitted by the School of Physical Education and Recreation; and new courses, program change and course deletions in Physiology submitted by the Faculties of Medicine and Science which had been withheld at the April 22, 1981 meeting of Senate pending approval by the Faculty of Medicine.

Dr. Richards)
Dean Finnegan) That the proposals of the Faculties of Dentistry, Forestry, Medicine, and School of Physical Education and Recreation, and the Faculties of Medicine and Science, be approved.

Carried

Student Awards

Mr. McWilliams, Chairman of the committee, presented the following report:

"The Senate Committee on Student Awards was established to advise the Director of Awards and Financial Aid on matters of policy relating to fellowships, scholarships, exhibitions, bursaries, and prizes.

In addition to developing recommendations for consideration of Senate and providing advice to the Director of Awards and Financial Aid, the Committee has, on occasion, reviewed student grievances and has screened award descriptions that contained restrictions which may be considered discriminatory. On a number of occasions it has reviewed Calendar descriptions referred to it by Senate.

Since the Committee last reported to Senate in December of 1980 a number of issues on Awards and Scholarships have been resolved as follows:

1. The Awards Office is frequently asked by students for a statement of their awards and a number of other institutions include awards on the academic transcript. The Committee has recommended to the Director of Awards and Financial Aid that academic transcripts include a listing of academic awards arranged in sessional order. The Registrar's Office has advised that the additional information will appear on transcripts commencing in the fall of 1982.

Wednesday, February 17, 1982.

Reports of Committees of Senate

Student Awards (continued)

"2. The Committee reviewed the existing terminology and recommended to the Director of Awards and Financial Aid guidelines and definitions.

3. The Committee had previously recommended to the Director of Awards and Financial Aid that the University Scholarship program should provide for three scholarship levels with the top level approximately the value of tuition fees. (Prior to the current session, the program ensured a minimum $500 scholarship for qualified undergraduate students in the top 5% of their respective classes and $250 for students in the next 2%). In November 1981, the Board of Governors provided additional funds to upgrade the value of scholarships in recognition of the impact of inflation. As a result of this funding, the 1981–82 University Scholarship program has provided awards as follows: top 3% - $750, next 2% - $600, next 2% - $300.

The Committee wishes to present for the approval of Senate the following plan to increase the number of students eligible for scholarships.

Rationale:

Under the present Senate regulations, scholarships are generally limited to undergraduate students carrying a full program as defined by the Calendar. Under this policy, substantial numbers of students are disqualified from scholarship recognition. (In some program years, as many as 30% are ineligible by virtue of insufficient program load.) The number of non-full-program students is increasing and it appears likely that a substantial part of any student population growth will be carrying less than a full load. As a result, the committee has agreed in principle to the establishment of a scholarship program for part-time students. To date, the mechanics of implementation have not been finalized. As an initial step, however, the Committee has recommended that undergraduate students registered between 80% and 100% of a full load be eligible for consideration for scholarships on a pro-rated basis. It was agreed that such candidates would be required to successfully complete all of the courses for which they are registered. Implementation of this program is subject to Senate approval and available funding. If successful, subject to further Senate approval, the pro-rated approach could be extended to students carrying less than 80% of a full load. The Committee will continue to explore this option.

Recommendation:

The Committee recommends that Senate approve the following:

That effective in the 1982–83 academic year and subject to funding, the existing University Scholarship program be extended to include undergraduate students carrying between 80% and 100% of a full program. The scholarships will be set at 80% of the full value."

Mr. McWilliams) That the report be adopted.
Dr. Burridge)

Carried

Wednesday, February 17, 1982.

Reports of Committees of Senate

Student Awards (continued)

Mr. McWilliams)
Miss Warren)

That, effective in the 1982–83 academic year and subject to funding, the existing University Scholarship program be extended to include undergraduate students carrying between 80% and 100% of a full program. The scholarships will be set at 80% of the full value.

Carried

Proposal to change the name of the International Research Centre for Music Periodical Literature to Centre for Studies in 19th Century Music

It was stated in the material circulated that the International Research Centre for Music Periodical Literature/Centre international de recherche sur la presse musicale was established by action of the Faculty of Graduate Studies and the University Senate in 1981. Functioning under the auspices of the International Association of Music Libraries, Archives and Documentation Centres (IAML) - an association representing more than 2,000 institutions throughout the world - the Centre's principal research activity focuses on the study, cataloguing and indexing of writings on music and musical iconography in 19th century periodical literature.

During the past year it has become increasingly clear that numerous scholars and performers on the faculty of the University of British Columbia pursue active research and performing interests in 19th century music which extend beyond the boundaries of periodical literature. In the interest of recognizing the desire of faculty members to pursue interdepartmental and interdisciplinary research under the auspices of the Centre, and allowing the title of the Centre to reflect this enlarged view of its activities, we propose that the Centre's English title be amended to read Centre for Studies in 19th Century Music. The Centre's secondary French title, formally approved by IAML, would remain unchanged.

This appellation will allow the Centre to pursue its principal research activity under the auspices of IAML, while at the same time permitting a far larger inventory of research projects and activities including the organization of colloquia, lectures and concerts.

Dean Larkin)
Dean Will)

That the name of the International Research Centre for Music Periodical Literature be changed to Centre for Studies in 19th Century Music.

Carried

Wednesday, February 17, 1982.

Other business

Last day of classes - Calendar entry

Attention was drawn to a notice sent out by the Registrar's Office informing faculty members that the April 2, 1982 date in the Calendar for last day of classes should have read April 7. It was confirmed that the intention was that members of faculty would inform students.

Report of the Tributes Committee (in camera)

Honorary Degrees

Senate was informed that the following persons had accepted invitations to receive honorary degrees at the 1981 Congregation:

George F. Curtis
Vladimir Krajina
Ray G. Williston
Robert S. Blair
Robert G. Robertson

It was noted that Michael F. Belanger was unable to attend.

Criteria for selection of Honorary Degree Recipients

In reply to a query, Dean Larkin confirmed that the committee was preparing a statement on criteria for the selection of Honorary Degree recipients and in addition hoped to establish procedures which would enable the committee to begin the selection process earlier than in the past.

The meeting adjourned at 10.30 p.m.

The next regular meeting of Senate will be held on Wednesday, March 17, 1982.

Secretary

Confirmed,

Chairman

APPENDIX 'A'

New awards recommended to Senate

Norman P. Hager Memorial Scholarship – A scholarship in the amount of $750 has been made available by the Alumni of Delta Kappa Epsilon Fraternity to recognize the contribution of Norman P. Hager to the community and the Fraternity. The scholarship will be awarded annually to an undergraduate member of Delta Kappa Epsilon Fraternity who demonstrates to the Selection Committee appropriate standards of scholarship, student activity and service within the Fraternity. (Please note that this award will be made available in the 1981–82 Winter Session.)

Lornex Mining Corporation - Dr. E. B. Gillanders Memorial Scholarship – An annual scholarship in the amount of $1,000 has been provided by Lornex Mining Corporation Ltd., in memory of Dr. Earl B. Gillanders, B.A. (Geology) 1925, M.A. (1926), Ph.D. Princeton (1930) and his many contributions to the mining industry. The award will be made to a student proceeding to a B.A.Sc. degree or higher degree in Mining and Mineral Process Engineering. The student must be planning to work in the mining industry following graduation. This award will be made on the recommendation of the Head of the Department of Mining and Mineral Process Engineering. (Please note that this award will be made available in the 1982–83 Winter Session.)

Ernest Wesley Cubitt Sharpe Memorial Scholarship - An annual scholarship in the amount of approximately $200 has been made available by C. Jane DeVitt in memory of Ernest Wesley Cubitt Sharpe. The award will be made on the recommendation of the Department of Music, to the top ranking student in Music History or Composition. (Please note that this award will be made available in the 1982–83 Winter Session.)

Mr. Justice Walter Kirke Smith Memorial Scholarship - An annual scholarship in the amount of approximately $1,500, from the income of a fund established under the auspices of the Vancouver Bar Association from contributions by members of the bench and bar, has been established to honour the memory of Walter Kirke Smith, late Justice of the Supreme Court of British Columbia. Mr. Justice Kirke Smith was a 1949 graduate of the Faculty of Law who was noted for his scholarship, humour, and particularly his sympathetic but fair response to the problems of those who appeared before him, both litigants and counsel. The award will be made on the recommendation of the Faculty, to a student entering second or third year in the Faculty of Law, who has demonstrated excellence in his/her application to the work and life of the Faculty. (Please note that this award will be made available in the 1982–83 Winter Session.)

B. & B. Sivertz Bursary - One or more bursaries to a total of $1,000 have been made available by Mr. & Mrs. B. Sivertz of Nanoose Bay, B. C. The awards will be made to students demonstrating financial need with preference given to those who reside outside the Lower Mainland. (Please note that this award will be made available in the 1981–82 Winter Session.)

Westmin Resources Limited - Dr. G. M. Furnival Scholarship - An annual scholarship in the amount of $1,500 is offered to students in the second or higher year of Mining and Mineral Process Engineering or Geological Engineering by Westmin Resources Limited, to honour the contributions of Dr. G. M. Furnival to the development of the mineral industry. Candidates must be proceeding to a degree in either Mining and Mineral Process Engineering with specialization in Mining Engineering, or in Geological Engineering with specialization in Mining Geology. This award will be made on the basis of both scholarship and demonstrated interest in the mining industry, on the recommendation of the Head of the Department of Mining and Mineral Process Engineering or the Director of Geological Engineering. The award will normally alternate annually between the two departments. (Please note that this award will be made available for the 1982/83 Winter Session.)

Wednesday, February 17, 1982.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF DENTISTRY

Change ORME 420 - change in description, units and hours

FACULTY OF FORESTRY

Change FRST 270 - change in units and hours

FACULTY OF GRADUATE STUDIES

Master's Program in Pulp and Paper Engineering

Entrance Requirements

The entrance requirements will be those of the Faculty of Graduate Studies for the M.Eng. program. While it is expected that the program will appeal most to graduates in Chemical and Mechanical Engineering, candidates with a suitable background from other accredited Engineering programs may also be admitted.

An additional requirement for admission would be that the candidate have had some previous exposure to the Industry. While students with several years work experience would be most desirable, it is felt that students about to enter the Industry, and having one or more summer's experience in it, or at least one introductory course to its technology (e.g. CHML 470, 471) should also be admissible.

Structure and Timing

The program will have the following components:

- course work including laboratories 15 units
- project (including field trip) 3 units

The program is designed to be completed in 12 months, beginning in September. However, the program may be completed over a longer period. Subject to demand, a selected number of courses could be given on a rotating basis during the evening hours to allow students working in the Vancouver area to complete the course requirements during the evenings. Also, subject to demand, courses could be presented as intensive one- or two-week courses during the spring or summer.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES

Master's Program in Pulp and Paper Engineering (continued)

Course Work

There will be four blocks of courses in the program:

- pulp and paper courses	6 units
- laboratory courses	2 units
- advanced engineering courses	4 units
- elective courses	3 units

At least 12 units of the above must be numbered 500 or above.

Pulp and Paper Courses

This block will be comprised of six mandatory 1-unit lecture courses covering the full spectrum of topics in pulp and paper technology. At present, only one postgraduate course, CHML 570 Advanced Paper Technology is given in the Faculty. This is a 1- to 3-unit course covering a wide range of topics in paper technology. It is proposed to replace this course with three separate 1-unit courses, each dealing in greater depth with a sector of papermaking;

(new)	CHML 583	Pulp Properties and Processing	)
(new)	CHML 584	Papermaking Operations	) - Papermaking
(new)	CHML 585	Rheology of Pulp and Paper	)

There will also be a block of lectures on pulping and bleaching technology. No such courses are now given in the University. The proposed new courses are listed below:

(new)	CHML 580	Pulping Processes	)
(new)	CHML 581	Pulping Recovery Engineering	) - Pulping
(new)	CHML 582	Bleaching Process Engineering	)

Further details of these courses are given in Appendix.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES

Master's Program in Pulp and Paper Engineering (continued)

The teaching of the above courses will be shared by U.B.C. and PAPRICAN staff, including new PAPRICAN educational staff to be located in the Centre. The supervision of laboratories and projects will also be borne by the U.B.C. and PAPRICAN staff.

It is also expected that a number of graduate and undergraduate students not in the M.Eng. program will elect to take one or more of the above courses as part of their degree requirements. Prerequisites for taking the technology courses would be CHML 470 and CHML 471, or appropriate work experience, or equivalent courses at other institutions.

There will be two required laboratory courses to complement the technology courses of this program, one in pulping and the other in papermaking. Normally, these will be completed during the fall and winter terms as the corresponding lecture courses are being taken.

At present there are no suitable laboratories on campus, nor is there suitable space to house such laboratories. However, space has been allocated for the above laboratories in the proposed Pulp and Paper Centre. The equipment required for the laboratory courses is part of this proposal. It is expected that the laboratories will service not only the present program, but also undergraduate courses CHML 470 and CHML 471, as well as providing equipment for various student projects.

Advanced Engineering Courses

These courses are designed to impart specialized advanced engineering training in topics of importance to the pulp and paper industry. It is expected that these courses will be taken from regular postgraduate courses now offered in the various departments in the Faculty of Applied Science.

The advanced engineering courses will be taken as a block to be determined by the major fields of interest of the student. It is desirable to maintain flexibility in establishing these major fields in order to meet changing circumstances in the future. At present, three principal major fields have been identified as ones suitable to initiate the program:

A) Pulping

B) Papermaking

C) Systems and Control

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES

Master's Program in Pulp and Paper Engineering (continued)

A) Pulping

It is anticipated that this major will appeal primarily to chemical engineers. One course in each of the following areas must be taken:

- Advanced Reactor Design
- Advanced Heat Transfer
- Process Control (beyond first level)

B) Papermaking

It is anticipated that this major will appeal primarily to chemical and mechanical engineers. One course in each of the following areas must be taken:

- Advanced Fluid Mechanics
- Advanced Heat Transfer
- Process Control (beyond first level)

C) Systems and Control

It is anticipated that this major will appeal to electrical, mechanical and chemical engineers. One course in each of the following areas must be taken:

- Advanced Process Control
- Digital Systems
- Simulation and Modelling

Electives

Electives must be chosen from a list of approved courses.

Project

A project in the major field chosen by the student must be undertaken and completed. A detailed essay on the work must be prepared and submitted for evaluation. A comprehensive exam will be taken after the project report has been submitted.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES

Master's Program in Pulp and Paper Engineering (continued)

As part of the above project work, students will be required to spend some time in the pulp mill or a paper mill gathering data relevant to the project. They will be required to fill in a data book from operator logs, mill drawings, etc. It is anticipated that funding for travel for such trips can be raised from the Industry. In return, the mill will receive copies of the prepared data books.

Administration

The courses offered in this program will be listed as regular graduate courses of existing engineering departments, and therefore they must meet the criteria of the departments concerned, as well as the Faculty of Graduate Studies. Students enrolled in the program will be registered as graduate students in a regular engineering department. Laboratories and office space for the students in the program will be located in the Pulp and Paper Centre.

The program will be administered by a Program Coordinator to be appointed by the University. *The Program Coordinator may be a U.B.C. faculty member or a PAPRICAN educational staff member. His duty shall be to administer the program in accordance with the academic policies of the University and the objectives set forth in this proposal. He will achieve this principally by coordinating the contributions of the various engineering departments and PAPRICAN.

To assist and advise the Program Coordinator, a *Board of Study will be established from among the teaching staff of the program representing the various engineering departments and PAPRICAN. This Board will assist in establishing the curriculum, evaluating courses, and recommending changes when necessary. Because the program will use the facilities of the proposed Pulp and Paper Centre, and will draw heavily on PAPRICAN staff, the Director of the Pulp and Paper Centre will be a member of the Board ex officio. In addition, because most of the courses in the program are under the control of the Chemical Engineering Department, the Graduate Advisor of this Department will also be a member of the Board ex officio. The other members will be:

- Two U.B.C. Faculty members appointed by the Dean of Applied Science
- One other PAPRICAN educational staff member involved in the program to be appointed by the Director of the Pulp and Paper Centre
- Two student representatives, one elected by the students enrolled in the program and the other appointed from graduate students in research programs working on topics related to pulp and paper engineering.

*See page 7722.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES

Master's Program in Pulp and Paper Engineering (continued)

New courses	CHML	583 (1)	Pulp Properties and Processing
		584 (1)	Papermaking Operations
		585 (1)	Rheology of Pulp and Paper
		587 (1)	Paper Technology Lab
		580 (1)	Pulping Processes
		581 (1)	Pulping Recovery Engineering
		582 (1)	Bleaching Process Engineering
		586 (1)	Pulping Technology Lab
	CHML) MECH) ELEC)	597 (3)	Project
Deletion	CHML	570	

Master of Advanced Studies in Architecture (MASA)

The School of Architecture Council proposes to develop a new post-professional Master's degree program. The credential offered will be a Master of Advanced Studies in Architecture (MASA).

The new program will meet Senate criteria for Master's degree programs in that the admission requirements, program requirements, required standing and performance level will all fall within the requirements of and be under the supervision of the Faculty of Graduate Studies.

The current B.Arch. program is being revised and will pre-empt the present M.Arch degree credential effective in the 1982-83 session as approved by Senate in January 1981. The new MASA degree will thus subsume the present M.Arch program in a revised form.

The Program

The graduate program leading to a Master of Advanced Studies in Architecture has been designed to facilitate advanced study in Architecture including defined courses of study in Building Science and Technology, Facilities Programming and Urban Design. This program will be phased-in as resources and facilities become available, commencing in September 1982.

The objective of the program is to educate architects and suitably qualified non-architects to the point where they are able to provide certain specialized services which are needed by the profession to help solve some of the complex architectural and planning problems which arise in the urban environment today. Besides extending architectural education into specialized areas, the program intends to contribute to and build upon the body of knowledge in the general field of architecture.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES

Master of Advanced Studies in Architecture (MASA) (continued)

This degree program is strongly oriented toward those who have a professional degree in Architecture and who are now engaged in architectural practice. However, candidates with relevant qualifications and experience in fields closely relevant to Architecture may be admitted in certain circumstances. All candidates will be advised that particular aptitudes and experience will be required for each of these specialized programs, and admission will be based on faculty judgment over and above the general admission requirement of the Faculty of Graduate Studies. The program is post-professional and is therefore not intended to fulfill the requirements for certification by the RAIC Certification Board as a step toward licensing as an architect in British Columbia or the other provinces of Canada.

A student may select his/her course of study from two OPTIONS:

A. A research-oriented individualized course of study leading to a written thesis or a design development and Report:

The areas of study available may include HISTORY AND THEORY OR ARCHITECTURE AND URBAN FORM, HOUSING, ENERGY-CONSCIOUS DESIGN, REGIONAL PROBLEMS IN ARCHITECTURE.

**N.B. See page 7723.

or B. A prescribed course of study leading to a comprehensive examination. The areas of study are:

1. BUILDING SCIENCE AND TECHNOLOGY (details to be submitted to the Faculty of Graduate Studies and Senate, fall 1982).

2. FACILITIES PROGRAMMING AND PLANNING.

3. URBAN DESIGN.

In order to fulfill the requirements for the degree of Master of Advanced Studies in Architecture the student must complete one of the courses of study for a total of 24 units, and all students are required to put in no less than 3 terms of full-time attendance in the program. Part-time study will be allowed only under rare circumstances, and then only with the approval of the Graduate Program Committee.

The Urban Design option within the MASA degree program is intended to meet criteria set out by the Canadian Institute of Planners. On Senate approval, application will be made jointly with the School of Community and Regional Planning for "recognition" of this option within the MASA degree.

Wednesday, February 17, 1982.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES

Master of Advanced Studies in Architecture (MASA) (continued)

Changes	ARCH 407 - change in description 500 - change in description and units, now (1½/3)c 549 - change in title and description	
Deletions	ARCH 505, 508, 511, 512	

Anthropology and Sociology

New course	ANTH 510 (1½/3)c	Comparative and Developmental Studies in Archaeology

Chemical Engineering

New course	CHML 578 (1/2)c	Coal Utilization

Commerce

Change	COMM 599 - change in unit value

Education

Change	EDUC 567 - change in title, description and units

Electrical Engineering

New course	ELEC 567	(i)	Privacy and Security in Data Communication Networks
Change	ELEC 593 - change in description		

Geological Sciences

	GEOL 564	(1½)	Transport Processes in Porous Media
	565	(1½)	Theory of Flow in Porous Media
	566	(1)	Topics in Groundwater Hydrology
Change	GEOL 562 - change in description		

Mechanical Engineering

Change in Calendar entry: The M.A.Sc. program includes a minimum of 9 units for study courses, at least 6 units of which are chosen from graduate courses in the department, together with a thesis which is assigned 3 to 6 units.

APPENDIX 'B'

Course and curriculum proposals

FACULTY OF GRADUATE STUDIES (continued)

Music

New courses	MUSC 503	(1½/3)d	Tonal Analysis in the Twentieth Century
	505	(1½/3)d	Instructional Goals & Methods in Basic Music Theory
	538	(1½/3)d	Staging and Directing Opera
Change	MUSC 550-564 inclusive to be given a one-unit value		

Nursing

New course	NURS 590	(3)	Directed Studies in Nursing

Pharmaceutical Sciences

New course	PHAR 503	(1-6)c	Graduate Clinical Clerkship

Plant Science

New course	PLNT 521	(1½/3)c	Biometrical Techniques

Poultry Science

Change	POUL 513 - change in description
Deletion	POUL 523

Soil Science

New course	SOIL 517	(1½/3)c	Soil and Land Evaluation
Change	SOIL 513 - change in description		
Deletion	SOIL 526		

Zoology

Change	ZOOL 503 - change in title and description
Deletion	ZOOL 508

APPENDIX 'B'

Course and curriculum proposals (continued)

FACULTY OF MEDICINE

Health Care and Epidemiology

New course	HCEP 717 Introduction to Occupational Medicine Practice
Change	HCEP 710 - Change in title and description

Medical Genetics

Change	MEDG 430 - change in prerequisite

SCHOOL OF PHYSICAL EDUCATION AND RECREATION

Aquatic Specialization

The specialization in aquatics requires that students be enrolled in the School of Physical Education and Recreation, and that they complete a minimum of 12.5 units as prescribed below. Prerequisite to the specialization is PHED 231 or Bronze Medallion Award (R.L.S.S.C.).

REQUIRED AQUATIC COURSES

Performance and Performance Analysis:

PHED 233 (1.0)	1.0 unit
Two of: PHED 330 (1.0), 331 (1.0) PHED 332 (1.0), 333 (1.0)	2.0 units
PHED 430 (1/3)d	1.0 unit

Theory:

PHED 234 (1.5)	1.5 units
One of: PHED 455 (1.5), 499 (1.5)	1.5 units
PHED 363, 368 and 369	4.5 units

Electives:

One of: PHED 232 (1.0), 330 (1.0), 331 (1.0), 332 (1.0), 333 (1.0), 430 (1.0)	1.0 unit
Total:	12.5 units

APPENDIX 'B'

Course and curriculum proposals

SCHOOL OF PHYSICAL EDUCATION AND RECREATION (continued)

Changes	PHED 230	- change in title and description
	430	- change in title, description and units
	330	- change in title, description and prerequisite
	234	- change in number (formerly 332), title, description, units and prerequisite
	455	- change in description and addition of prerequisites
	499	- change in title, description and addition of prerequisites
New courses	PHED 231 (1)	Basic Lifesaving Skills
	232 (1)	Skin and Scuba Diving
	233 (1)	Aquatic Supervision
	331 (1)	Synchronized Swimming
	332 (1)	Competitive Diving
	333 (1)	Water Polo

FACULTIES OF MEDICINE AND SCIENCE

Physiology

New courses	PHYL 422 (1½)	Mammalian Cardiovascular and Respiratory Physiology
	423 (1½)	Mammalian Renal and Gastrointestinal Physiology
	424 (1½)	Mammalian Endocrinology
Deletions	PHYL 401, 440	
Program change:	Honours Physiology - change Fourth Year to:	
	Physiology 422, 423, 424	(4½)
	Electives	(3)