BCIT 72/73

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

British Columbia Institute of Technology

3700 Willingdon Avenue
Burnaby 2, British Columbia
Telephone: 434-5722

Sponsored jointly by the Government of the Province of British Columbia and the Government of Canada.

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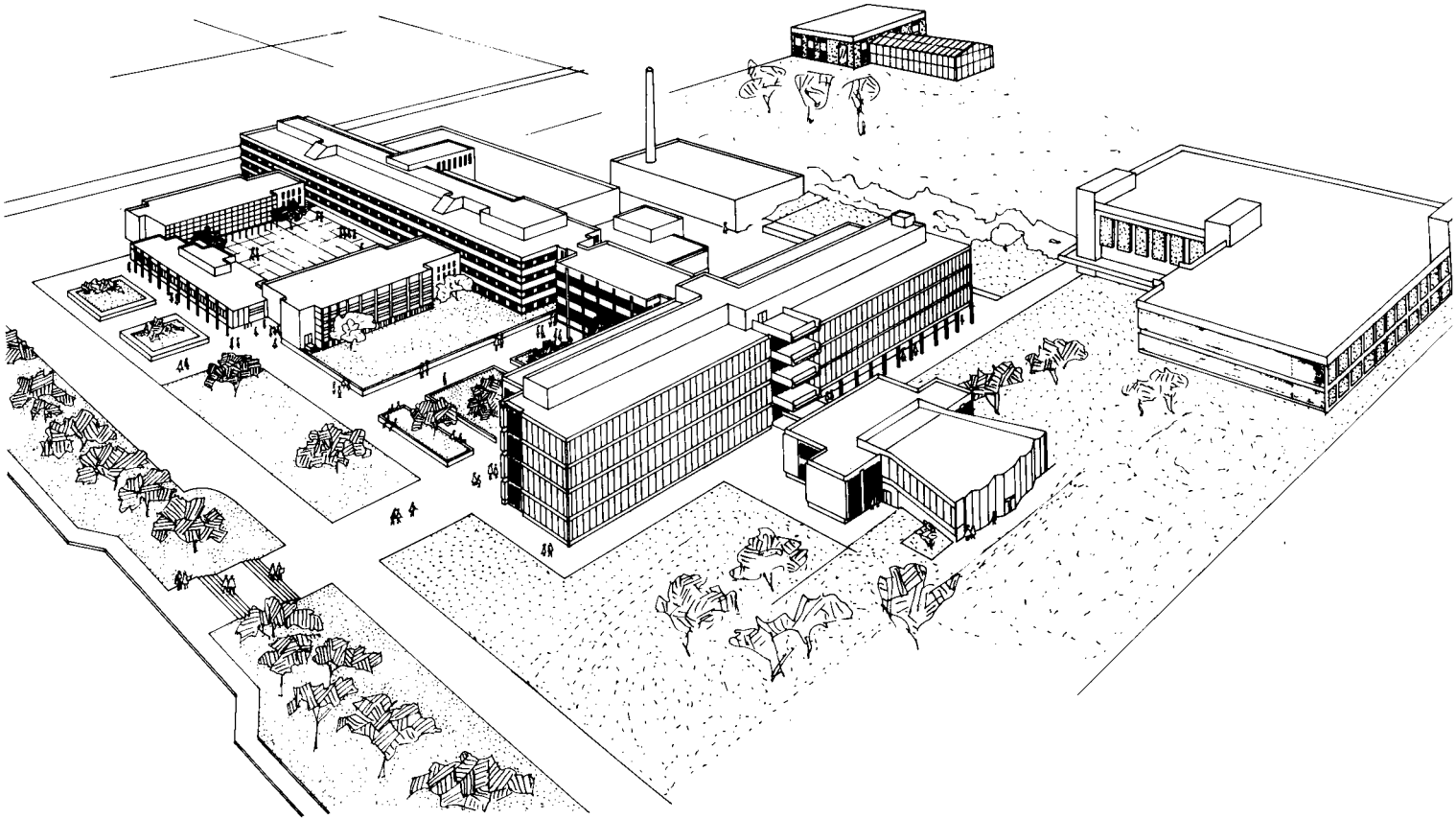

THE HONOURABLE DONALD LESLIE BROTHERS, Q.C., LL.B.
Minister of Education

JOHN S. WHITE
Superintendent of
Technical-Vocational Services

J. PHILLIPSON, B.A., B.ED.
Deputy Minister of Education

Aims and Objectives

The British Columbia Institute of Technology, an institution for advanced technical education, is the first of its kind in British Columbia. Opened in 1964 under its first principal, Mr. E. C. Roper, it has already trained a large number who have established a fine reputation for the school by their work in industry as technicians or technologists.

The Institute offers a broad range of two-year technical programmes, each leading to a group of employment opportunities in the major industries of the Province. These programmes are a judicious blend of English, mathematics, the sciences, and very practical work related to the field of employment chosen by the student.

It is a prime aim of the Institute to serve the students as individuals. Many young graduates come directly from high school and are assisted to find their first jobs in industry. Others who have been out of school in industry for some time take advantage of these programmes to find new and more satisfying careers. It is becoming increasingly difficult for the individual to prepare himself for a career in our modern industrial society, and the Institute provides opportunities for training which open doors to suitable careers as technicians and technologists in the labour force.

The programmes of the Institute are designed to serve the industries of the region as well as the individual student. These programmes are established with the particular needs of the industries of the Province in mind. It is the aim of the Institute to produce graduates who, with additional experience, will fill many of the supervisory positions in business and industry.

BCIT, therefore, helps the individual to prepare himself for a more productive and rewarding future and at the same time helps the industry of the region by supplying well-trained employees. By helping both individual and industry to improve their productivity, the whole community is helped and the standard of living of all its members is improved.

D. H. GOARD, B.A.
Principal, British Columbia Institute of Technology

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Administration
Administrative Staff
Information Resource Centre
Directors of Divisions

ADMINISTRATION

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J. C. MCADAM, B.A.SC., M.B.A., P.ENG. *Vice-Principal.*
G. THOM, B.COM., M.B.A. - - - *Vice-Principal, Extension.*
J. T. FIELD, B.COM. - - - - *Registrar.*
D. M. MACPHERSON, C.A. - - - *Bursar.*
R. S. CAREY, B.A., LL.B. - - - *Chairman, Technological Planning Committee.*

DIVISION DIRECTORS

E. W. H. BROWN, B.A. - - - - *Business.*
D. K. BANNERMAN, B.A.SC., S.M., P.ENG. *Engineering.*
S. T. RICHARDS - - - - - *Health.*

ADMINISTRATIVE STAFF

MRS. K. P. CROLL, B.A. - - - *Canada Manpower Counsellor.*
MRS. O. M. DOWNEY - - - - *Assistant to the Registrar.*
MRS. E. C. FENNER, P.H.N. - - *Nurse.*
J. G. FREBERG - - - - - *Head, Canada Manpower Student Placement Centre.*
MISS M. A. GRAY, B.A. - - - *Counsellor.*
D. I. JONES - - - - - - *Assistant Bursar.*
K. F. KRUEGER - - - - - *Manager, Food Training Centre.*
G. N. LLOYD, B.SC. - - - - *Co-ordinator of Athletic Activities.*
T. B. LYTTLETON - - - - - *Stores Supervisor.*
T. MILLAR - - - - - - *Bookstore Manager.*
C. N. MACKEOWN, B.A.SC., P.ENG. - *Manager, Administrative Systems.*
A. S. MCLEAN, B.A., B.S.W., M.S.W. - *Counsellor.*
W. A. ORR, B.SC. - - - - - *Assistant to the Chairman, Technological Planning Committee.*

INFORMATION RESOURCE CENTRE

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G. WEEKS, B.A., B.L.S. - - - *Assistant Librarian.*
S. RUSSELL, B.A., B.L.S. - - - *Catalogue Librarian.*
MRS. M. L. ALLINGHAM, B.A., B.L.S. - *Reference Librarian.*

Core Departments

Departments

CHEMISTRY

C. BARNETSON, B.SC., *Department Head.*

N. ABDURAHMAN, B.SC., M.SC., PH.D.
G. C. ANDERSON, A.I.S.T.(U.K.).
D. W. CONDER, B.SC., M.SC.
M. LESLIE KAN, B.SC., M.SC., P.DT.
C. J. C. NICHOL, B.A., M.SC., PH.D.
W. D. ROBERTSON, B.ED.
E. E. TANG, B.SC.
L. V. TOLANI, B.SC.
P. W. VAN AMEYDE, H.L.S.(NETH.), IR.N.I.R.I.A.

ENGLISH

K. BRAMBLEBY, B.A.(HONS.), *Acting Department Head*

H. ARTHUR, B.A.(HONS.), *Senior Instructor.*
P. J. BURNS, B.A., M.A.
F. C. H. CHALLANS, B.A.
P. CORLEY-SMITH, B.A., M.F.A.
G. DOUGLAS, B.ED.
D. HELGESEN, B.A., M.B.A., *Senior Instructor.*
D. J. H. HORAN, B.JOURN., B.A.
R. KNOTT, B.A.(HONS.), *Senior Instructor.*
A. PONDER, B.A., M.A.
F. J. SABINE, B.A., M.A.
E. STRONACH, B.A., B.ED., M.A.
K. TAKAGAKI, B.A. (HONS.).
P. H. THOMAS, B.A., B.ED., M.A.
D. VALE, B.A., B.ED., M.ED.
S. WILLIAMS, B.A., F.S.R.

MATHEMATICS

W. S. SIMS, B.SC., *Department Head.*

J. W. BROWN, B.SC.(HONS.).
A. K. CHU, B.A.SC., P.ENG.
C. A. COPPING, B.SC.
M. DEKKER, B.SC.(HONS.), H.T.S.
W. A. ELLINGSEN, B.SC.
P. M. HOBBINS, B.SC.
R. D. LYNN, B.SC.(HONS.).
E. R. MARTIN, B.SC.
E. R. MCGUIRE, B.SC., M.ED., *Senior Instructor.*
A. P. PARIS, B.A.SC., M.A.SC., P.ENG., *Senior Instructor.*
R. A. STERNE, B.A.SC., P.ENG., *Senior Instructor.*
B. L. TURNER, B.SC.
H. E. WALKER, B.A.
J. H. WARDROPER, B.SC.(ENG.), M.SC., M.I.C.E., P.ENG.

PHYSICS

F. READER, B.A.SC., P.ENG., *Department Head.*

N. G. BERRETTA, B.SC., M.SC.
C. BITSAKIS, B.SC.
R. J. ENGLUND, B.SC.
G. R. HARLAND, DIPL.T.
D. E. A. KENYON, B.SC.
A. KSHATRIYA, B.SC., M.SC.
W. MALAKOFF, B.SC., B.ED., M.SC., *Senior Instructor.*
W. V. OLSON, B.SC., *Senior Instructor.*
J. R. SAUNDERS, B.SC., M.SC.
D. E. THOM, B.SC.
K. A. YAKEL, B.SC.(HONS.), M.SC., *Senior Instructor.*

Part-time Instructional Staff, 1972/73

MRS. G. M. GRIFFITHS, B.A.SC., M.A. - - - - - - *Physics.*
MISS S. RICHTER, B.A.(HONS.), P.B. - - - - - - - *English.*
MRS. J. B. WARREN, B.A., M.A. - - - - - - - - *Physics.*

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Vice-Chairman:

J. S. WHITE, Superintendent of Technical-Vocational Services, Department of Education, Victoria.

Principal:

D. H. GOARD, B.A., Principal, British Columbia Institute of Technology, Burnaby.

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W. O. BANFIELD, M.A.SC., Trustee, Vancouver General Hospital, Vancouver.

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G. R. F. ELLIOT, M.D., C.M., D.P.H., C.R.C.P.(C.), Assistant Deputy Minister of Health, Bureau of Special Health Services, Vancouver.

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E. D. B. HAWKSHAW, Manager, Business Development and Marketing Department, Canadian Imperial Bank of Commerce, Vancouver.

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S. A. JENNINGS, B.A., M.A., PH.D., Professor, Mathematics Department, University of Victoria, Victoria.

D. C. LAMBERT, B.A.SC., P.ENG., Professional Engineers Association of British Columbia, Vancouver.

J. C. MCADAM, B.A.SC., M.B.A., P.ENG., Vice-Principal, British Columbia Institute of Technology, Burnaby.

R. C. MACDONALD, B.SC., M.A.SC., Assistant Manager, New Jersey Zinc Exploration Company (Canada) Ltd., Vancouver.

G. R. MCMEEKIN, B.SC., M.E.I.C., Administrative Assistant, Cominco Ltd., Trail.

R. I. NELSON, B.A.SC., M.B.A., President and Chief Executive Officer, British Columbia Packers Limited, Richmond.

R. F. PATTERSON, B.A.SC., M.A.SC., PH.D., General Manager, Long Range Planning and Corporate Development, Canadian Forest Products Ltd., Vancouver.

J. H. STEEDE, B.A.SC., P.ENG., Executive Director, British Columbia Hydro and Power Authority, Vancouver.

G. A. THOM, B.COMM., M.B.A., Vice-Principal, Extension Division, British Columbia Institute of Technology, Burnaby.

D. H. WILLIAMS, M.D., Associate Dean, Office of the Dean, Faculty of Medicine, University of British Columbia, Vancouver.

W. M. YOUNG, B.A.COMM., M.A.SC., President, Finning Tractor and Equipment Company Limited, Vancouver.

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Ex Officio:

ROBERT HARRIS, Campus Librarian, Burnaby Campus.

Members:

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I. F. BELL, Associate Librarian, University of British Columbia.

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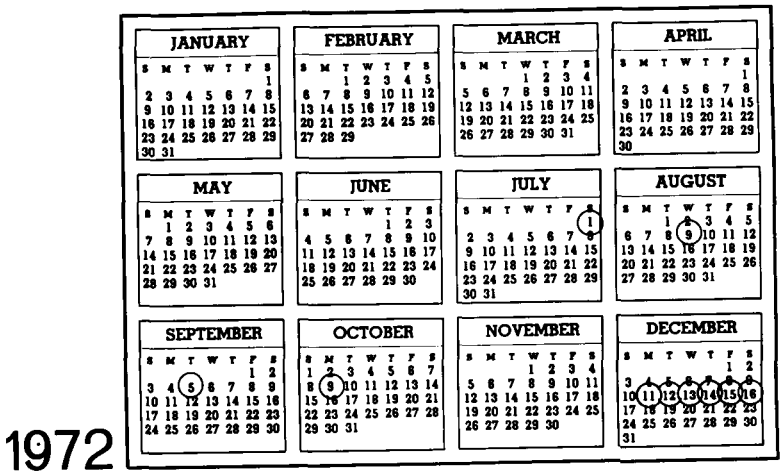
D HALLIWELL, University Librarian, University of Victoria.

W. S. LANNING, College of Education, University of British Columbia.

MISS A. R. LEITH, Bio-Medical Librarian, Woodward Library, University of British Columbia.

MISS A. TUFTS, Head, Business Division, Vancouver Public Library.

Calendar of Events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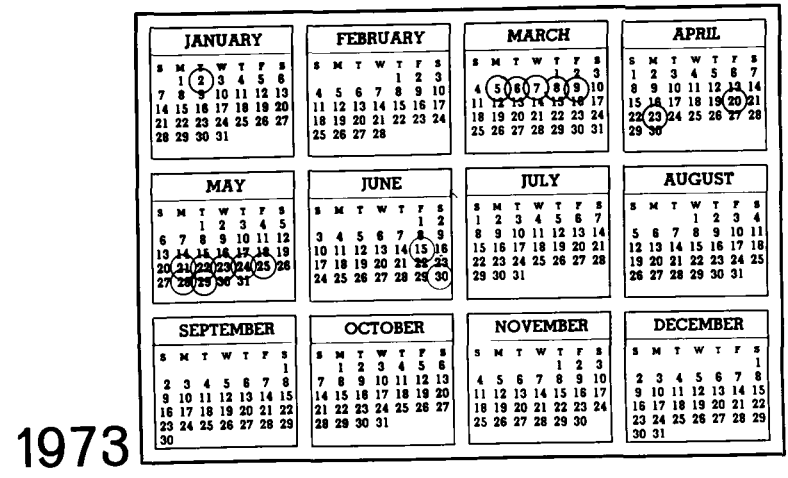
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Calendar of Events, Academic Year 1972/73

For students on four-term (two-year) cycle (all Business and Engineering Technology students except Electrical and Electronics).

1972

July 1	Commencement of academic year.
August 9	Closing date of applications for admission.
September 5	Registration of students.
September 6	First and third term—classes begin.
October 9	Thanksgiving Day holiday.
December 11 to 15	First and third term examinations.

1973

January 2	Second and fourth term—classes begin.
March 5 to 9	Student spring break.
April 20	Good Friday holiday.
April 23	Easter Monday holiday.
May 21	Victoria Day holiday.
May 22 to 28	Second and fourth term examinations.
June 15	Convocation.
June 30	Conclusion of academic year.

For students on quarterly cycle (all Health Division students, Electrical and Electronics Technology students).

Quarters A and E

September 5, 1972	Registration of students.
September 6, 1972	Classes commence.
October 9, 1972	Thanksgiving Day holiday.
November 23, 1972	Quarter terminates.

Quarters B and F

November 29, 1972	Classes commence.
December 23, 1972	Christmas vacation commences.
January 2, 1973	Classes recommence.
February 23, 1973	Quarter terminates.

Quarters C and G

March 5, 1973	Classes commence.
April 20, 1973	Good Friday holiday.
April 23, 1973	Easter Monday holiday.
May 23, 1973	Quarter terminates.

Quarters D and H

June 4, 1973	Classes commence.
June 15, 1973	Convocation for graduating students.
August 6, 1973	Holiday.
August 24, 1973	Quarter terminates.

General Information

THE INSTITUTE PROGRAMME

The objective of the Institute programme is to provide graduate technologists equipped to meet the needs of industry. Changes in the courses are made only after careful consideration and on the advice of members of the Advisory Committee, employers of graduates, and representatives of various professional organizations.

In the first year there is a common programme of study for most technologies. The subjects have been selected to give students the fundamental principles common to all branches of the technologies.

In both years basic principles and their applications are stressed in the lecture room, and these principles are tested and verified in the laboratories. The laboratory work is organized into groups of experiments. These experiments have been developed to permit students to test ideas formulated in the lecture room, to acquire familiarity with testing and designing techniques, and to develop dexterity in handling experimental equipment. The effectiveness of this approach is reflected in the increased number of students seeking admission to the various programmes and in the demand on the part of industry for services of the graduates of institutes of technology.

I. ENROLMENT

A. Conditions of Admission

1. *General prerequisites* — All student applicants must show documentary proof that they have graduated from Grade XII on the Academic and Technical Programme or the equivalent.

Students are referred to page 64 for the additional special prerequisites required for the various technologies.

Because the Institute's requirements for admission are new to the British Columbia school system, and because all secondary schools do not offer all the desirable prerequisites, unavoidable deficiencies in draughting, chemistry, physics, or biology will not necessarily preclude admission to an Institute programme.

2. Applicants educated outside of British Columbia should submit their qualifications to the Registrar's Office of the Institute. Foreign language students must give evidence of reasonable competence in both written and spoken English and must present Immigration Identification Card.

3. All prospective students must be at least 16 years of age. However, there is no upper age limit.

4. A person whose education has been interrupted who, though lacking some of the formal admission requirements, can give evidence of probable success in a course may be admitted as a mature

student. Such applications are dealt with on an individual basis. Persons interested should inquire at the Registrar's Office.

5. All students seeking enrolment or re-enrolment will forward applications to the Registrar's Office.

6. The Board of Admissions is responsible for the final selection of all candidates.

7. The Board reserves the right to accept only those applicants who appear to have the capabilities necessary for success in the programme.

B. PROCEDURE FOR ADMISSION

1. Application forms may be obtained from the Registrar's Office.

2. The following documents and material must accompany the application:

(i) An official transcript of all secondary (British Columbia) or high school *and* university marks, showing necessary credits and grades for admittance to programme desired; or

(ii) A statement from the principal of a senior secondary school stating that applicant is expecting to obtain necessary grades for admittance to the programme desired. *This statement must be substantiated by an official transcript when it becomes available.*

(iii) Academic documents will not be returned whether an applicant is accepted or not accepted for enrolment by the Board of Admissions.

3. A medical questionnaire must be completed, and medical fitness determined prior to final acceptance.

4. All Health Technology students will be required to show evidence of having had a recent chest X-ray and having completed an immunization programme prior to registration. If, due to extenuating circumstances, supporting documentation is not available at the time of registration, students will be required to complete the necessary procedures at the Institute's health service clinic.

5. Registration date is September 5, 1972. Students will be notified as to exact time they are required to register. All enrolling students must appear at the Institute or clarify their intentions by letter or wire before noon of the day of registration, otherwise their position may be forfeited.

C. Student Counselling Services

Counselling services are available to students, prospective students, and parents at no cost. The service will assist students with academic, personal, and financial concerns.

The reception office is located in Room 209, and the offices are open from 9 a.m. to 5 p.m. each week-day. Appointments are not mandatory but may be made personally or by phoning 434-5722 (Local 327). In addition to the counsellors, the department heads and instructional staff are also available to assist the students.

D. Aptitude Tests

Aptitude tests will be written by any or all students at the discretion of the Registrar.

II. FEES

A. Annual Fees for 1972/73 Academic Year

1. The annual fees amount to a total of $188; however, these are subject to change from time to time. The annual fees consist of the following:

General tuition	$150
Student activity	25
Caution account	10
Accident insurance	3
Total	$188

2. Fees for the entire year are payable prior to the commencement of classes; however, students may, at time of registration, apply through the Bursar's Office to defer $90 of the above-mentioned fees until January 1973 (*see* paragraph 4 below).

3. All cheques and money orders must be payable to the British Columbia Institute of Technology.

4. A student whose fees are not paid within 14 days after the commencement of first-term classes will be excluded from classes and his registration cancelled. A student whose deferred fees (as mentioned in paragraph 2 above) are not paid by January 12, 1973, will be excluded from classes and his registration cancelled.

5. If a student, whose registration has been cancelled because of nonpayment of fees, applies for reinstatement and his reinstatement has been approved by the Registrar, he will be required to pay a reinstatement fee of $10, together with all outstanding fees before he is permitted to resume classes.

6. A student withdrawing from the Institute within 14 days of commencement of classes will be charged a $10 registration fee, refer to refund of fees on following page.

B. MISCELLANEOUS FEES

Re-read of final marks	$5.00
Transcript of marks	2.00
Duplicate diploma	3.00
Reinstatement fee	10.00
Registration fee	10.00

C. REFUND OF FEES

(*a*) From the date of commencement of classes until 14 days later, inclusive of both dates:

(1) General tuition—complete refund, minus $10 registration fee.
(2) Caution account—balance of account.
(3) Student activity—complete refund.
(4) Accident insurance—complete refund.

(*b*) From the day following the last day specified in (*a*) above until 14 days later, inclusive of both dates:

(1) General tuition—50 per cent refund.
(2) Caution account—balance of account.

(*c*) From the day following the last day specified in (*b*) above until 14 days later, inclusive of both dates:

(1) General tuition—25 per cent.
(2) Caution account—balance of account.

(*d*) From the day following the last day specified in (*c*) above until the end of the term:

(1) General tuition—no refund.
(2) Caution account—balance of account.

D. WITHDRAWAL

Students must withdraw officially through the Registrar's Office.

Students who are requested to withdraw from a course for reasons of discipline or unsatisfactory progress may forfeit any right to a refund under this section.

E. ADDITIONAL EXPENDITURES

1. *Textbooks, instruments, and supplies* — The cost of textbooks, instruments, and supplies varies according to the programme, from approximately $60 to $125. The Institute bookstore carries a complete line of draughting and writing supplies. Students are advised not to make any purchases until they have received a book list showing the required texts.

2. *Field trips*—Students are advised that, in some technologies, periodic field trips are a part of the programme. These expenses are the responsibility of the student. Accommodation and food costs vary from $30 to $90.

3. *Medical insurance*—Students may obtain medical insurance by arrangement with the British Columbia Medical Plan. By Order in Council of the Provincial Government, all private companies have been prohibited by an Act of the Provincial Legislature from paying for physicians' and surgeons' services effective July 1, 1968. Students are advised to confirm that they are covered under their parents' British Columbia Medical Plan; should this not be the case, students are advised to make their own arrangements with the British Columbia Medical Plan. Pamphlets outlining the details are available from the Registrar's Office.

III. FINANCIAL ASSISTANCE

A. The Government of the Province of British Columbia Scholarships

These awards are available to students who are *residents of British Columbia* and who are *enrolled in GradeXII of a British Columbia secondary school, or in a designated post-secondary educational institution within this Province,* and who are beginning or continuing a programme of studies leading to the first degree or diploma awarded in a particular faculty or technology. Also eligible are students holding an acceptable undergraduate degree who are undertaking full teacher training in this Province, or students in dentistry, library science, law, medicine, and social work at the University of British Columbia. These awards are not available to students who are enrolled in graduate studies, nor to those who are registered as "qualifying" or "unclassified."

The *maximum number* of Provincial scholarships granted in any year is determined by taking 17 per cent of all *full-time Grade XII Academic-Technical* students in British Columbia secondary schools and 17 per cent of the *full-time undergraduate enrolment* in the universities and public colleges of the Province and in the British Columbia Institute of Technology. Grade XII students compete on the basis of Departmental scholarship examinations. Students attending post-secondary institutions compete in accordance with the requirements of the institutions concerned.

Scholarship values are based on the tuition fee for the next session of undergraduate study. Students attending institutions operating on a two-term academic year receive a percentage of the basic tuition fee for that year; students attending a semester-type institution receive a percentage of the basic tuition fee for a single semester, and have the opportunity to compete at the end of each semester.

The maximum number of awards is subdivided as follows:

(*a*) Scholarships of *three-quarters of the basic tuition fee* are awarded to the highest ranking eligible students up to *5 per cent* of the full-time enrolment in Grade XII and in each of the designated institutions;

(*b*) Scholarships of *one-half of the basic tuition fee* are made available to the next highest ranking *6 per cent* of the full-time enrolment; and

(*c*) *One-third basic tuition fee* scholarships are granted to the next following highest ranking *6 per cent* of the full-time enrolment.

It must be noted that no scholarships are awarded to senior secondary school or undergraduate applicants with grade averages of less than 70 per cent or its equivalent.

Full details concerning the Government of British Columbia Scholarships, and the correct *application procedures* may be obtained from their schools by students currently registered in Grade XII, and from the Financial Aid Officer of the institution in the case of students currently registered in a designated post-secondary educational institution.

Students currently enrolled at the British Columbia Institute of Technology must submit forms of application for these awards before May 29, 1972. Late applications will not be considered.

B. Province of British Columbia Bursaries

The Government of the Province of British Columbia annually provides funds to assist British Columbia students resident in the Province to commence or to continue an acceptable full-time programme of post-secondary study at designated post-secondary educational institutions in the Province. Under special circumstances a bursary may be made available to a student from British Columbia who is pursuing a course of acceptable professional study at a designated institution in another Province of Canada when that course is one not provided within British Columbia.

To qualify for the grant of a bursary (money that does not have to be repaid), a student must have achieved an average of 65 per cent or higher on a full course load in the last complete year of secondary or post-secondary undergraduate study without a failure in any subject comprising the full course load. For a student entering the first year of post-secondary studies from Grade XII, the qualifying course load is not less than six subjects. For an undergraduate proceeding to a higher undergraduate year, the qualifying course load consists of 15 units or 30 semester hours, in two consecutive terms or semesters. These bursaries are not

granted to students in graduate studies, nor to those who are registered as "qualifying" or "unclassified."

Provincial Bursaries are available only to those students who demonstrate definite financial need and who are proceeding to an acceptable full programme of post-secondary study comprising two consecutive terms or semesters in a specified university, public college, or the British Columbia Institute of Technology. Separate application for a bursary is not made. The grant of a bursary will be considered on the basis of information provided on the form entitled "Application for Financial Assistance From Public Funds," which will be submitted by every student seeking financial aid, whether by Provincial Bursary, or Canada Student Loan, or both.

Grade XII students may obtain the necessary application form and instructions from the principal or counsellor at their secondary schools. Post-secondary students will obtain the form and instructions from the Financial Aid Officer of the institution they are attending. Applicants must take careful note of the submission dates stated on the application form. Late applications will not be considered for the grant of a bursary, but this does not affect the issue of a loan. Applications for financial assistance must be submitted to the Financial Aid Officer of the institution to be attended by the applicant.

C. The Government of Canada Student Loans Plan

This is a plan introduced by the Federal Government to assist students who, without loan assistance, would be unable to pursue full-time post-secondary studies at a specified educational institution. The maximum loan for an academic year is $1,400. Total loans to any student cannot exceed $9,800. A loan of up to $700 may be authorized for a single semester which is part of a longer programme of study. Borrowers under the plan are required to repay principal and interest by regular monthly instalments. Payments commence six months after the borrower ceases to be a full-time student at a specified educational institution. No payments are made while the borrower is a full-time student nor for six months thereafter. Interest during this period is paid by the Federal Government on behalf of the student. Need for loan assistance is determined by Provincial Loan Authorities in accordance with administrative criteria established for use throughout Canada. A parental contribution table is an integral part of the criteria and it is applied in all cases where the student has not established financial independence by having married, or having completed successfully four full years of post-secondary education, or having reached the age of 21 years and having had at least 12 consecutive months' full-time employment. Students are expected

to save a substantial amount of any income from summer or other employment. Lack of funds due to unessential spending may not be considered as unavoidable need for loan assistance. Students who apply for loans should consider carefully the repayment obligation being undertaken. A student in need of a Canada Student Loan must, as a first step, obtain an application form from the institution he plans to attend. The application must be completed carefully and accurately by the student and, where applicable, by his parents. Applications require declarations by both the student and his parent that all information provided is correct. When the application is completed it must be submitted to the Financial Aid Officer of the British Columbia educational institution to be attended. Students planning to attend institutions outside British Columbia will send applications directly to Student Awards Branch, Division of Post-secondary Services, Department of Education, Parliament Buildings, Victoria, British Columbia.

D. British Columbia Institute of Technology Scholarship and Bursary Fund

The British Columbia Institute of Technology Scholarship and Bursary Fund has been established through private means, whereby awards are made annually by the trustees of the Fund to deserving students of the Institute. Private contributions from commerce and industry and other interested persons are being received and may or may not be designated for use in encouraging study in a particular course of study given by the Institute. Such contributions will be deductible for income tax purposes. Pages 35 to 51 contain the details of the contributions. Inquiries concerning financial aid should be directed to the office of the Registrar.

IV. PLACEMENT SERVICE

The Student Placement Centre, staffed by Canada Manpower personnel, is available to all students of the Institute.

This office, besides providing a counselling and employment service, arranges seminars and interviews with national and local employers of the technologist.

To assist the student in further development of his career plan, a current library of information on careers in many industries is maintained in the Centre.

V. LIVING ACCOMMODATION

There are no dormitories connected with the Institute. Students may obtain room and board in the vicinity of the campus at a reasonable rate (approximately $100 to $110 a month for three meals a day).

A list of accommodations will be available to students at the Counsellors' Offices (209), and a list will be issued to students at registration. An excellent cafeteria provides economical services for students.

VI. ACADEMIC AWARDS

A. Diplomas (Dipl.T.)

Graduates of the British Columbia Institute of Technology will be awarded a nationally recognized diploma of technology. An honours diploma will be awarded to those students who obtain a first-class honours standing (80 per cent average or better) in each of Terms 3 and 4. Duplicate diplomas will be issued on payment of a fee of $3.

B. The British Columbia Institute of Technology Honour Awards

The Academic Award will be presented to the top academic student in his graduating year.

The Citizenship Award will be presented to the graduating student who shows reasonable academic standing, a reputation for mature personal relations with both staff and students, and a record of active participation in student activities.

The Principal's Award will be presented to a student for outstanding personal contribution to BCIT.

C. Convocation Exercises

Convocation exercises take place as announced in the yearly academic calendar, and nationally recognized diplomas of technology are presented at these exercises.

VII. THE CURRICULUM

A. Programme of Studies

Examinations are written and credit is given for the successful completion of each term. Students may interrupt their studies after completion of any term. Permission by the Board of Admissions is required before a student is allowed to change his programme.

B. Determination of Standing

Final standing is determined on the basis of term work and the results of examinations. A minimum of 50 per cent in each subject is required for a credit standing. Standing is computed according to the following schedule:

First class	80% or more
Second class	65% to 79%
Pass	50% to 64%
Failure	Below 50%

The symbol "A" (ægrotat) indicates that the student was absent from the final examination because of medical reasons but was granted standing on the basis of the year's work. "Ægrotat" standing may apply to all subjects or to a single subject. A copy of the final report is mailed to the student's home address as soon as possible after the results are known.

C. Failure and Repetition

A student who fails a term may be permitted to repeat the term only at the discretion of the Principal.

D. Appeals in Regard to Final Marks

Final examinations may be re-read if a written request is submitted to the Registrar within 10 days after the results are mailed to students. A fee of $5 is required for each paper which is appealed. This fee will be refunded in full if, as a result of re-reading, the original mark is favourably adjusted.

E. Transcripts

A fee of $2 is charged for each transcript of an undergraduate's or graduate's marks. Transcripts are available from the Registrar's Office.

VIII. REGULATIONS REGARDING CONDUCT, DISCIPLINE, AND ATTENDANCE

It is assumed that all students enrolled at the British Columbia Institute of Technology come for a serious purpose, and that they will conform cheerfully to all regulations.

(*a*) Students are expected to conduct themselves in an exemplary fashion at all times and pay diligent attention to their studies. If the Principal believes a student's conduct is such that it is detrimental to the interest of the Institute, he may be excluded from further attendance. In assessing a student's capability, the Principal will take into consideration his conduct and attitude, both on and off the campus. A student who has been expelled or suspended will not be admitted to the Institute grounds or buildings.

(*b*) The Institute cannot be held responsible for debts incurred by student organizations.

(*c*) If, through his carelessness or negligence, a student damages the property of the Institute, he shall be held responsible. If the damage is caused by students whose names

are not known, the cost of repairing the damage may be assessed equally among all students enrolled at the Institute.

(*d*) A student will not be permitted to borrow or remove any apparatus or tools except by the written authority of the Principal or his delegate.

(*e*) General supervision over all forms of entertainment given under the auspices of a student organization come under the jurisdiction of the Principal.

(*f*) All students are required to dress in a neat and tidy manner in accordance with normal business standards. For men this means the wearing of the following attire on the campus:

(i) Shirt and tie.

(ii) Business suit, or sports coat or blazer with suitable trousers.

(iii) In laboratory and shops a laboratory coat will be worn in place of the coats or blazers mentioned in item (ii).

Women should dress in a manner acceptable in a business or professional setting, which can include the following:

(i) There are three types of pant suits suitable for campus wear—

pants with matching jacket (on the lines of men's suits);

pants with matching tunics;

sleeveless jacket or vest over blouse or sweater and tailored pants:

(ii) Jeans and slacks with blouses or sweaters are not suitable.

(*g*) Regular attendance in lectures, seminars, and laboratory periods is required of all students. If a student is absent for any cause other than illness for more than 10 per cent of the time prescribed for any subject, he or she may be prohibited from writing the final examination in that subject. In case of illness or other unavoidable cause of absence, the student should communicate immediately with his department head, stating the cause of absence. Special regulations governing attendance in clinical experience areas are prescribed by the Health Division.

IX. CHANGES IN CURRICULA AND REGULATIONS

Although it is proposed to adhere to the programme of study as set forth in the Calendar, the Institute reserves the right to make,

without prior notice, whatever changes are deemed necessary to either the programmes of study or the regulations. The Institute reserves the right to cancel any programme.

X. LOCKER FACILITIES

Full-length locker space is provided for the safe storage of personal effects. Students are warned to have identification marks—preferably names and addresses—on all their books, instruments, and other effects. All personal valuables should be kept on the student's person or secured in his locker. The Institute cannot accept responsibility for any loss of, or damage to, student's personal property.

XI. LIBRARY

The library building, with seating capacity for over 500 students and space for over 100,000 volumes, was opened in the fall of 1968.

The Library collections number over 40,000 volumes, including representative works in all fields in which the Institute, the British Columbia Vocational School—Burnaby, and the University of British Columbia's Division of Industrial Education give instruction. In addition, the Library subscribes to over 1,100 periodicals and a variety of other materials selected to support these curriculums. Free access to the reference and general collections is permitted to all students at all times, with the exception of those materials in heavy demand which have been placed on " reserve " at the circulation desk.

The Library provides study carrells and other special study facilities, such as the student typing room, where typewriters and calculating machines are available; audio-visual carrells equipped for listening to tapes and viewing filmstrips and filmloops and microfilm reading and copying facilities.

A handbook describing the facilities and services of the Library, and regulations governing Library use, will be distributed during the student orientation period. Information regarding Library tours and other Library instruction will be posted in the Library entrance.

Limited media facilities are available to students for use in instructional projects.

XII. STAFF AND STUDENT HEALTH SERVICES

A staff and student health service is available in the East Wing of the Student Activity Centre. Personnel comprises a part-time doctor and a full-time public health nurse.

The aim of the service is to prevent disease. This is done by immunizing students, where necessary, against those diseases for which an efficient agent has been developed. Though not mandatory, all students are encouraged to take advantage of this protection. Through the Department of Tuberculosis Control, a chest survey is offered to all personnel once a year. It is hoped in the future to offer some type of dental programme.

For those diseases for which no recognized prevention is available, the health service offers a first-line defence. This is done by counselling, and treatment of the acute phase of illnesses or injuries.

At all times it is the object of the health service to co-operate with the individual's practising physician, reference being made to them when definite or long-term treatment is necessary.

There is no dentist on staff, but the Health Service can usually arrange a dental appointment for those students who do not have a resident dentist.

The British Columbia Scholarship and Bursary Fund was established by the Minister of Education on May 25, 1964.

The purpose of the Fund is to make scholarship and bursary awards available to as many deserving students of the British Columbia Institute of Technology as the Scholarship and Bursary Committee, in its unfettered discretion, shall determine.

The Scholarship and Bursary Committee is composed of the following:

Trustee	D. H. Goard.
Trustee	E. D. B. Hawkshaw.
Trustee	J. MacD. Lecky.
Trustee	G. R. McMeekin.
Secretary	J. T. Field.
Treasurer	D. M. Macpherson.
Resource	J. C. McAdam.

British Columbia Institute of Technology
Scholarship and Bursary Fund

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY SCHOLARSHIP AND BURSARY FUND

Contributors, 1971

ACRES WESTERN LIMITED ($150)

Acres Western Limited contributed $150 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

AGENCY PRESS LIMITED ($250)

Agency Press Limited contributed $250 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

AKHURST UBJ MACHINERY LIMITED ($100)

Akhurst UBJ Machinery Limited contributed $100 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

AMALGAMATED CONSTRUCTION ASSOCIATION OF B.C. ($150)

Amalgamated Construction Association of B.C. contributed a $150 scholarship to be awarded to a student in the Building Technology.

AMERICAN SMELTING AND REFINING COMPANY ($200)

American Smelting and Refining Company contributed $200 for bursaries to be awarded to students in the Mining Technology.

APLIN & MARTIN ENGINEERING LTD. ($150)

Aplin & Martin Engineering Ltd. contributed a $150 bursary to be awarded to a student in the Engineering Division.

APLIN & MURRAY, B.C. LAND SURVEYORS ($150)

Aplin & Murray, B.C. Land Surveyors, contributed a $150 bursary to be awarded to a student in the Surveying Technology.

ARGUS INSTALLATIONS LTD. ($125)

Argus Installations Ltd. contributed $125 for a deserving student at the Institute of Technology to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

BAY FOREST PRODUCTS LTD. ($100)

Bay Forest Products Ltd. contributed $100 for a bursary to be awarded to a student in the Forest Resource Technology.

BETHLEHEM COPPER CORPORATION LTD. ($500)

Bethlehem Copper Corporation Ltd. contributed two $250 bursaries to be awarded to students in the Chemical and Metallurgical Technology.

THE BIRKS FAMILY FOUNDATION ($100)

The Birks Family Foundation contributed $100 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

BRITISH COLUMBIA ASSOCIATION OF BROADCASTERS ($300)

The British Columbia Association of Broadcasters contributed three $100 bursaries to be awarded to a student in each of the following electives of the Broadcast Communications Technology: Radio, Television, and News.

B.C. COUNCIL OF GARDEN CLUBS ($50)

The B.C. Council of Garden Clubs contributed a $50 scholarship to be awarded to a student in the Biological Sciences Technology.

BRITISH COLUMBIA FOREST PRODUCTS LIMITED ($500)

British Columbia Forest Products Limited contributed two $250 scholarships—one to be awarded to a student in the Forest Resource Technology, and one to be awarded to a student in the Instrumentation and Systems Technology.

BRITISH COLUMBIA HOTELS' ASSOCIATION ($600)

British Columbia Hotels' Association contributed two $300 scholarships to be awarded to students in the Hotel, Motel, and Food Service Management Technology.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY ($750)

British Columbia Hydro and Power Authority contributed four scholarships and one bursary of $150 each to be awarded to students in the Electrical and Electronics and Natural Gas and Petroleum Technologies or students in other Engineering Programmes having a direct interest to a public utility.

B.C.I.T. ENGINEERING SOCIETY ($200)

The B.C.I.T. Engineering Society contributed four $50 bursaries to be awarded to deserving students who are members of the Engineering Society.

BRITISH COLUMBIA MOTELS, RESORTS AND TRAILER PARKS ASSOCIATION ($100)

The British Columbia Motels, Resorts and Trailer Parks Association contributed a $100 bursary to be awarded to a student in the Hotel, Motel, and Food Service Management Technology.

BRITISH COLUMBIA PACKERS LIMITED ($250)

British Columbia Packers Limited contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

BRITISH COLUMBIA SUGAR REFINING COMPANY, LIMITED ($250)

The British Columbia Sugar Refining Company Limited contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADA PACKERS LIMITED ($150)

Canada Packers Limited contributed $150 for a bursary to be awarded to a student in the Biological Sciences Technology.

CANADA SAFEWAY LIMITED ($150)

Canada Safeway Limited contributed $150 for a bursary to be awarded to a student in the Marketing Management Technology.

CANADIAN AUTO CARRIERS LTD. ($100)

Canadian Auto Carriers Ltd. contributed a $100 bursary to be awarded to a student in either of the Administrative Management or Financial Management Technologies.

CANADIAN CAR (PACIFIC) DIVISION OF HAWKER SIDDELEY CANADA LTD. ($250)

Canadian Car (Pacific) contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADIAN FOREST PRODUCTS LTD. ($500)

Canadian Forest Products Ltd. contributed $500 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADIAN INFORMATION PROCESSING SOCIETY, VANCOUVER SECTION ($150)

Canadian Information Processing Society, Vancouver Section, contributed $150 for a bursary to be awarded to a student in the Computer Programming and Systems Technology.

CANADIAN OCCIDENTAL PETROLEUM LTD. ($100)

Canadian Occidental Petroleum Ltd. contributed $100 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADIAN PULP AND PAPER ASSOCIATION ($250)

The Canadian Pulp and Paper Association contributed two $125 bursaries to be awarded to students in the Pulp and Paper Option of the Forest Resource Technology.

CANADIAN RESTAURANT ASSOCIATION FOUNDATION ($200)

The Canadian Restaurant Association Foundation contributed a $200 bursary to be awarded to a student in the Hotel, Motel, and Food Service Management Technology.

CANADIAN TELEPHONES AND SUPPLIES LTD. ($50)

Canadian Telephones and Supplies Ltd. contributed $50 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CASSIAR ASBESTOS CORPORATION LIMITED ($1,500)

Cassiar Asbestos Corporation Limited contributed three $500 scholarships to be awarded to students in technologies closely allied to the mining industry.

CLUB MANAGERS' ASSOCIATION OF AMERICA—
DOGWOOD CHAPTER OF B.C. ($175)

The Club Managers' Association of America—Dogwood Chapter of B.C., contributed a $175 bursary to be awarded to a student in the Hotel, Motel, and Food Service Management Technology.

COMINCO LTD. ($500)

Cominco Ltd. contributed two $250 scholarships—one to be awarded to a student in the Chemical and Metallurgical Technology, and one to be awarded to a student in the Mining Technology.

CRAIGMONT MINES LIMITED ($700)

Craigmont Mines Limited contributed two $350 scholarships to be awarded to students in any of the following technologies: Chemical and Metallurgical, Mining, or Surveying.

DATA PROCESSING MANAGEMENT ASSOCIATION ($150)

Data Processing Management Association contributed a $150 scholarship to be awarded to a student in the Computer Programming and Systems Technology.

DELOITTE, PLENDER, HASKINS & SELLS ($150)

Deloitte, Plender, Haskins & Sells contributed $150 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

DOMINION CONSTRUCTION CO. LTD. ($250)

Dominion Construction Co. Ltd. contributed $250 for a bursary to be awarded to a student in the Building Technology.

DOMTAR CONSTRUCTION MATERIALS LTD. ($250)

Domtar Construction Materials Ltd. contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

THE T. EATON CO. CANADA LIMITED SERVICE AWARDS ($250)

The T. Eaton Co. Canada Limited awarded a $250 scholarship to a student in the Marketing or Retailing Option of the Marketing Management Technology in the Business Management Division.

ELECTRICAL EQUIPMENT ASSOCIATION OF BRITISH COLUMBIA ($100)

The Electrical Equipment Association of British Columbia contributed $100 for a bursary to be awarded to a student in the Electrical and Electronics Technology.

ELWORTHY AND COMPANY LIMITED ($100)

Elworthy and Company Limited contributed $100 for a bursary to be awarded to a student in the Electrical and Electronics Technology.

THE EMPRESS HOTEL ($250)

The Empress Hotel contributed a $250 scholarship to be awarded to a student in the Hotel, Motel, and Food Service Management Technology, in the Food and Beverage Management Option.

ENDAKO MINES LTD. (N.P.L.) ($700)

Endako Mines Ltd. (N.P.L.) contributed two $350 scholarships to be awarded to students in any of the following technologies: Chemical and Metallurgical, Mining, or Surveying.

EUROCAN PULP & PAPER CO. LTD. ($250)

Eurocan Pulp & Paper Co. Ltd. contributed a $250 bursary to be awarded to a student in the Forest Resource Technology, Pulp and Paper Option.

FALCONBRIDGE NICKEL MINES LIMITED ($300)

Falconbridge Nickel Mines Limited contributed $300 for bursaries to be awarded to students in the Mining or Surveying Technologies.

FINNING TRACTOR & EQUIPMENT CO. LTD. ($500)

Finning Tractor & Equipment Co. Ltd. contributed $500 for bursaries to deserving students at the Institute of Technology—$200 to be awarded to a student in the Business Management Division, and the balance of $300 to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

FISHERIES ASSOCIATION OF BRITISH COLUMBIA ($150)

The Fisheries Association of British Columbia contributed $150 for a bursary to be awarded to a student in the Biological Sciences Technology, Food Processing Option.

FOREST TECHNOLOGIES ASSOCIATION OF BRITISH COLUMBIA ($100)

Forest Technologies Association of British Columbia contributed two $50 bursaries to be awarded to students in the second year of the Forest Resource Technology.

FRASER VALLEY MILK PRODUCERS ASSOCIATION ($150)

The Fraser Valley Milk Producers Association contributed $150 for a bursary to be awarded to a student in the Biological Sciences Technology.

GARLAND COMMERCIAL RANGES LTD. ($100)

Garland Commercial Ranges Ltd. contributed a $100 scholarship for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

GOARD, MR. DEAN H. ($100)

Mr. Dean H. Goard, Principal of the British Columbia Institute of Technology, contributed $100 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

GORDON RUSSELL LIMITED ($100)

Gordon Russell Limited contributed $100 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

HARD CORPS (WESTERN INTERNATIONAL HOTELS) ($250)

Hard Corps contributed $250 to be awarded to a student in the Hotel, Motel, and Food Service Management Technology.

HOFFARS LIMITED ($250)

Hoffars Limited contributed $250 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

HUDSON'S BAY COMPANY ($150)

Hudson's Bay Company contributed $150 for a bursary to be awarded to a student in the Business Management Division.

I.C.L. ENGINEERING LIMITED ($300)

I.C.L. Engineering Limited contributed $300 for a bursary or bursaries to be awarded to a student or students in the Mechanical Technology.

THE HILDA M. INGHAM MEMORIAL SCHOLARSHIP AND BURSARY FUND ($250)

The Hilda M. Ingham Memorial Scholarship and Bursary Fund has been donated by the North Shore Private Hospital and is to be awarded to students in the Nursing Programme of the Health Division.

INTERIOR BREWERIES LIMITED ($200)

Interior Breweries Limited contributed $200 to be awarded to a deserving student in the Hotel, Motel, and Food Service Management Technology, Bar Management Option.

INTERNATIONAL BUSINESS MACHINES COMPANY LIMITED ($200)

International Business Machines Company Limited contributed $200 for a bursary to be awarded to a student in the Computer Programming and Systems Technology.

THE INTERNATIONAL NICKEL COMPANY OF CANADA LIMITED ($300)

The International Nickel Company of Canada Limited contributed $300 for bursaries, with a value from a minimum of $100 to a maximum of $300, to be awarded to students in the Engineering Division.

INTERNATIONAL POWER AND ENGINEERING CONSULTANTS LIMITED ($300)

International Power and Engineering Consultants Limited contributed three $100 bursaries to be awarded to a student in each of the following technologies: Civil and Structural, Electrical and Electronics, and Mechanical.

JOHN DAVIDSON LTD. ($250)

John Davidson Ltd. contributed $250 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

JOHNSTONE FABRICATORS LTD. ($150)

Johnstone Fabricators Ltd. contributed $150 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

KELLY, DOUGLAS & COMPANY LIMITED ($100)

Kelly, Douglas & Company Limited contributed a $100 scholarship to be awarded to a student in the Marketing Management Technology.

KENNCO EXPLORATIONS (WESTERN) LIMITED ($500)

Kennco Explorations (Western) Limited contributed two $250 scholarships to be awarded to students in the Mining Technology.

LAPIDARY ROCK & MINERAL SOCIETY OF BRITISH COLUMBIA ($50)

The Lapidary Rock & Mineral Society of British Columbia contributed two $25 bursaries to be awarded to students in the Mining Technology.

LECKY, MR. JOHN MACD. ($300)

Mr. John MacD. Lecky contributed $300 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

GEORGE MACBRYER SCHOLARSHIP ($200)

The George MacBryer Scholarship was established by the Truck Loggers' Association to honour the memory of the late George MacBryer. An initial donation was made by the Truck Loggers' Association ($1,000), and additional donations have been received from Randall Logging Limited ($100), and Nalos Logging Limited ($200).

MACMILLAN BLOEDEL LIMITED ($500)

MacMillan Bloedel Limited contributed two $250 scholarships to be awarded to a student in each of the Forestry Programme and Forest Products Programme of the Forest Resource Technology.

MCCARTER, NAIRNE & PARTNERS ($150)

McCarter, Nairne & Partners contributed a $150 scholarship to be awarded to a student in the Building Technology.

NELSON BROS. FISHERIES LIMITED ($50)

Nelson Bros. Fisheries Limited contributed $50 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

NEWMONT MINING CORPORATION OF CANADA LIMITED ($1,000)

Newmont Mining Corporation of Canada Limited contributed $1,000 for bursaries for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

NORTHWEST LATH & PLASTER BUREAU ($200)

Northwest Lath & Plaster Bureau contributed a $200 scholarship to be awarded to a student in the Building Technology.

ANONYMOUS ($250)

An anonymous donor contributed $250 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

PACIFIC COAST FISHERMEN'S MUTUAL MARINE INSURANCE COMPANY ($450)

Pacific Coast Fishermen's Mutual Marine Insurance Company contributed a $450 bursary to be awarded to a son or daughter, or legal ward of past or present members of that company.

PACIFIC LOGGING COMPANY LIMITED ($300)

Pacific Logging Company Limited contributed $300 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

E. B. PEERLESS LTD. ($25)

E. B. Peerless Ltd. contributed $25 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

PLACER DEVELOPMENT, LIMITED ($700)

Placer Development, Limited contributed two $350 scholarships to be awarded to students in any of the following technologies: Chemical and Metallurgical, Mining, or Surveying.

RAYONIER CANADA (B.C.) LIMITED ($1,050)

Rayonier Canada (B.C.) Limited contributed three $350 scholarships—one to be awarded to a student in the Wood Option and one to be awarded to a student in the Pulp and Paper Option of the Forest Products Programme, and the third to be awarded to a student in the Forestry Programme, all in the Forest Resource Technology.

READ JONES CHRISTOFFERSON LIMITED ($100)

Read Jones Christofferson Limited contributed $100 for a bursary to be awarded to a student in either the Building Technology or the Civil and Structural Technology.

RESEARCH INDUSTRIES LIMITED ($100)

Research Industries Limited contributed $100 to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

ROYAL CITY FOODS LTD. ($150)

Royal City Foods Ltd. contributed $150 for a scholarship to be awarded to a student in the Biological Sciences Technology.

RUSSELL FOOD EQUIPMENT LIMITED ($300)

Russell Food Equipment Limited contributed two $150 bursaries to be awarded to students in the Hotel, Motel, and Food Service Management Technology.

SANDWELL AND COMPANY LIMITED ($300)

Sandwell and Company Limited contributed $300 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

SCHLAGE LOCK COMPANY OF CANADA LTD. ($100)

Schlage Lock Company of Canada Ltd. contributed $100 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

R. P. SHAFLIK ENGINEERING LIMITED ($25)

R. P. Shaflik Engineering Limited contributed $25 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

SHERWOOD MEDICAL INDUSTRIES INC. ($100)

Sherwood Medical Industries Inc. contributed $100 to be awarded to a student in the Medical Laboratory Technology.

H. A. SIMONS (INTERNATIONAL) LTD. ($1,000)

H. A. Simons (International) Ltd. contributed $1,000 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

THE SOCIETY OF ENGINEERING TECHNOLOGISTS OF THE PROVINCE OF BRITISH COLUMBIA ($200)

The Society of Engineering Technologists of the Province of British Columbia contributed two $50 bursaries to first-term students of the Engineering Technology who are members of the Society and two $50 bursaries to third-term students of the Engineering Technology who are members of the Society.

STANDARD OIL COMPANY OF BRITISH COLUMBIA LIMITED ($500)

Standard Oil Company of British Columbia Limited contributed two $250 bursaries to be awarded to students in the Business Management Division.

SUN-RYPE PRODUCTS LTD. ($150)

Sun-Rype Products Ltd. contributed $150 for a scholarship to be awarded to a student in the Biological Sciences Technology.

TAHSIS COMPANY LTD. ($500)

Tahsis Company Ltd. contributed two $250 scholarships—one to be awarded to a student in the Forest Products Programme, and one to be awarded to a student in the Forestry Programme of the Forest Resource Technology.

THOMPSON, BERWICK, PRATT & PARTNERS ($150)

Thompson, Berwick, Pratt & Partners contributed a $150 scholarship to be awarded to a student in the Building Technology.

TOUCHE ROSS & CO. ($250)

Touche Ross & Co. contributed a $250 scholarship to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

TRANS MOUNTAIN OIL AND PIPE LINE COMPANY ($250)

Trans Mountain Oil and Pipe Line Company contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

VANCOUVER EXECUTIVES' ASSOCIATION ($300)

The Vancouver Executives' Association contributed $300 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

VANCOUVER FANCY SAUSAGE CO. LTD. ($250)

Vancouver Fancy Sausage Co. Ltd. contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

VENICE BAKERY LTD. ($250)

Venice Bakery Ltd. contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

WEISER LOCK CO. LTD. ($150)

Weiser Lock Co. Ltd. contributed $150 to be awarded to a student in the Mechanical Technology.

WELDWOOD OF CANADA LIMITED ($200)

Weldwood of Canada Limited contributed a $200 bursary to be awarded to a student in the Forest Resource Technology.

WESTERN PACIFIC PRODUCTS AND CRUDE OIL PIPELINES LTD. ($250)

Western Pacific Products and Crude Oil Pipelines Ltd. contributed $250 for deserving students at the Institute of Technology,

to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

WESTMINSTER PHYSICIANS LABORATORIES LIMITED ($100)

Westminster Physicians Laboratories Limited contributed $100 for a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

WILKINSON COMPANY LIMITED ($250)

Wilkinson Company Limited contributed $250 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

WILLIAM ROBINSON LIMITED ($150)

William Robinson Limited contributed a $150 bursary to be awarded to a student in the Biological Sciences Technology.

JACK WOODWARD MEMORIAL SCHOLARSHIP AND BURSARY FUND ($200)

The Jack Woodward Memorial Scholarship and Bursary Fund has been established to honour the memory of the late head of the Chemical and Metallurgical Technology. The Fund is supported by an annual contribution of $200 from Eldorado Nuclear Limited.

WOODWARD STORES LTD. ($300)

Woodward Stores Ltd. contributed two $150 bursaries—one to be awarded to a student in the Biological Sciences Technology, and one to be awarded to a student in the Marketing Management Technology.

WRIGHT ENGINEERS LIMITED ($250)

Wright Engineers Limited contributed a $250 scholarship to be awarded to a student in the Mechanical Technology.

XEROX OF CANADA LIMITED ($500)

Xerox of Canada Limited contributed $500 for deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

Business Management Director's Fund

This Fund is available without restrictions to the Director of Business Management Division for special projects and activities. Contributors to this Fund are:

B.C. Association of Broadcasters.
B.C. Television Broadcasting System Ltd.
Canadian Lead and Alloys Ltd.
Canadian Pacific Airlines.
Canadian Pacific Hotels Ltd.

T. Eaton Company Ltd.
The Hotel Vancouver.
Hudson's Bay Company.
Johnstone Terminals Ltd.
Real Estate Council of B.C.
Scott Paper Limited.
Simpsons-Sears Limited.
Society of Industrial Accountants of B.C.
The Institute of Chartered Accountants.

Hudson's Bay Company Service Awards

These awards are available to first-year students proceeding to their second year in one of the Business Management Technologies. The award comprises payment of tuition fees and dues for the second year, summer employment, and part-time employment according to availability during the academic year. Applicants for these awards should have some interest in and aptitude for retailing, but no obligation of any kind devolves on a successful candidate. Applications are invited from first-year students in March of each year. Selections of recipients are from a list recommended by the Institute.

Student Caution Account Donations

Students from the following technology donated the balance of their caution-account money to be used for bursaries to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund, or to be used for emergency loans to students in need: Instrumentation Technology, $386.

Academic Medals

Silver medals are awarded annually to the graduate who has achieved the highest academic standing in his programme of studies. The following medals were awarded at the 1971 Convocation Ceremonies. As indicated, most of the awards include a $100 prize.

OUTSTANDING ACADEMIC ACHIEVEMENT—The Governor General's Silver Medal.

BUSINESS MANAGEMENT DIVISION:

Administrative Management (Administration Option)—The T. Eaton Co. Limited Award ($100).

Administrative Management (Manpower Option)—The Finning Tractor & Equipment Co. Ltd. Award ($100).

Broadcast Communications—The British Columbia Association of Broadcasters' Award ($100).

Computer Programming and Systems—The British Columbia Telephone Company Award ($100).

Financial Management (Accounting Option)—The Society of Industrial Accountants of British Columbia ($100).

Financial Management (Finance Option)—The Faculty Award ($100).

Hotel, Motel, and Food Service Management—The British Columbia Hotels' Association Award ($100).

Marketing—The Vancouver Sun Award ($100).

Marketing—The Retail Council of Canada Gold Medal Award and Western Wholesale Drug Ltd. Prize ($100).

ENGINEERING DIVISION:

Biological Sciences:

Food Production—Agricultural Chemical Industry of Vancouver ($100).

Food Processing—Food Executives Club Award ($100).

Landscape Horticulture—The British Columbia Nursery Trades Association Award ($100).

Building—The Architectural Institute of British Columbia Award ($100).

Chemical and Metallurgical:

Industrial Chemistry—The Chemical Institute of Canada Award.

Physical Metallurgy—The Wire Rope Industries of Canada, Limited Award ($100).

Civil and Structural—The Col. W. G. Swan Award ($100).

Electrical and Electronics:

Electronics—The Lenkurt Electric Co. of Canada, Ltd. Award ($100).

Power—The Federal Pacific Electric of Canada Award ($100).

Forest Resource:

Forestry—The Council of the Forest Industries of British Columbia Award ($100).

Forest Products (Wood Option)—The Council of the Forest Industries of British Columbia Award ($100).

Forest Products (Pulp and Paper Option)—The British Columbia Institute of Technology Award ($100).

Instrumentation and Systems—The Instrument Society of America, the J. J. Garey Memorial Award ($100).

Mechanical — The Canadian Manufacturers' Association Award ($100).

Mining—The British Columbia Section, Canadian Institute of Mining and Metallurgy Award ($100).

Natural Gas and Petroleum—The British Columbia Institute of Technology Award ($100).

HEALTH DIVISION:

Medical Laboratory—The British Columbia Society of Medical Technologists Award ($100).

Medical Radiography — The British Columbia Radiological Society Award ($100).

Nursing—The Nurses' Association of Lions Gate Hospital Award ($100).

Prizes

The following prizes were awarded at the 1971 Convocation Ceremonies to graduates who had gained the highest standing in specific subjects related to the pertinent industry or who had shown the greatest combination of academic ability and leadership to warrant unusual recognition.

BUSINESS MANAGEMENT DIVISION

Administrative Management

BLOCK BROS. REALTY LTD. awarded two prizes of $100 each to two students who had obtained outstanding achievement in Real Estate Management.

Financial Management

CANADA PERMANENT MORTGAGE CORPORATION awarded a prize of $100 to the outstanding graduate in the following course: Finance 16.361 and 16.461.

THE CHARTERED INSTITUTE OF SECRETARIES, BRITISH COLUMBIA BRANCH, awarded a prize of $100 to the outstanding graduate in the following course: Business Law 10.360 and 10.460.

The INSTITUTE OF CHARTERED ACCOUNTANTS OF BRITISH COLUMBIA awarded a prize of $25 to the student who had obtained the highest marks in Auditing 90.346 and 90.446.

THE WALL STREET JOURNAL awarded a prize to the outstanding student in the Finance Option of the Financial Management Technology.

Hotel, Motel, and Food Service Management Technology

THE CANADIAN RESTAURANT ASSOCIATION, B.C. DIVISION, awarded a prize of $100 to the outstanding student in the Hotel, Motel, and Food Service Management Technology.

THE GEORGIA, BAYSHORE WESTERN HOTELS Prize of $125 each was awarded to two students in the Hotel, Motel, and Food Service Management Technology.

THE HARRISON HOTEL awarded a prize to two students in Human Relations.

THE HOTEL VANCOUVER awarded a prize of $250 to an outstanding student in the Hotel, Motel, and Food Service Management Technology.

ENGINEERING DIVISION

Building

THE AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING awarded a prize of $200 to a student who had obtained outstanding achievement in the Building Technology.

THE CANADIAN STRUCTURAL CLAY ASSOCIATION awarded a prize of $100 to the student who had obtained outstanding achievement in the Building Technology.

THE ROYAL INSTITUTION OF CHARTERED SURVEYORS awarded a prize of $50 to an outstanding student in Construction Specifications and Estimating 40.204 and 40.404.

Forest Resource

THE CANADIAN INSTITUTE OF FORESTRY Prize was awarded to the outstanding graduate in the Forestry Programme of the Forest Resource Technology.

THE CANADIAN PULP AND PAPER ASSOCIATION (PACIFIC COAST BRANCH) awarded a prize of $250 and a scroll to the outstanding graduate in the Pulp and Paper Option of the Forest Resource Technology.

THE VANCOUVER HOO HOO CLUB, NO. 48, awarded two prizes of $125 each to outstanding students in the Wood Option of the Forest Resource Technology.

Mechanical

THE INSTITUTION OF MECHANICAL ENGINEERS Book Prize was awarded to the graduate in the Mechanical Technology who gained the highest marks in the other option from that followed by the student who was awarded the Canadian Manufacturers' Association medallion.

Surveying

THE CORPORATION OF BRITISH COLUMBIA LAND SURVEYORS' Prize was awarded to the outstanding graduating student in the Surveying Technology.

HEALTH DIVISION

THE METROPOLITAN BIO-MEDICAL LABORATORIES LTD. awarded three prizes of $100 each to the best student in Bacteriology, Bio-Chemistry, and Radionuclide.

THE ORTHO PHARMACEUTICAL (CANADA) LTD. awarded a prize of $50 to the outstanding graduate in the Medical Laboratory Programme who had gained the highest standing in hæmatology and immuno-hæmatology.

THE WARNER-CHILCOTT LABORATORIES CO. LIMITED awarded a prize of $50 to the graduate in the Health Technology who had gained the highest general proficiency in this programme of studies.

Extension
Division

EXTENSION DIVISION

I. Information

For complete information on the Extension Division, write Vice-Principal, Extension, British Columbia Institute of Technology, 3700 Willingdon Avenue, Burnaby 2, British Columbia, or phone 434-5722.

II. Aims and Objectives

The British Columbia Institute of Technology is an institution for advanced technical education, and will continue to make its excellent facilities available for continuing education in the evening in a variety of technical and commercial fields.

Any of the evening programmes offered demand not only ability, but strong motivation and serious effort on the part of the student.

As the demand grows, the Institute, in co-operation with industry through its advisory committees, will expand the number of subjects offered to satisfy the post-secondary technical training needs of almost every segment of trade, commerce, and industry.

The function of the Extension Division is to determine and, if necessary, attach priorities to the advanced technical training needs of adults in industry and then to design programmes and courses to meet these needs so that adults may quickly and efficiently obtain needed skills and knowledge and at the same time integrate this new knowledge with their respective backgrounds.

Continuing education at an advanced level with high standards of instruction is our goal.

III. What the Extension Division Offers

1. The Extension Division of the British Columbia Institute of Technology will give priority to post-secondary training programmes at the level and generally related to the full-time programmes in engineering, business, or health, provided there is both a demand and need for such training. British Columbia Institute of Technology was designed and equipped and is expected to serve these needs.

2. The Extension Division of the British Columbia Institute of Technology will co-operate with organizations to present advanced technical training to assist students to complete the syllabi of associations. Where possible this education will be offered through regular extension courses available under programmes in 1. The Extension Division also will encourage these associations to accept BCIT examinations as credit for their respective programmes.

3. Some students seek only one course in a subject. They may do so even though a course may be part of a programme. The

Extension Division will also offer some general non-programme courses.

4. The British Columbia Institute of Technology will assist in the design and offer advanced technical courses to a company, but preferably to an industry, provided such training is not already available at a convenient time or in the form needed.

5. A further important function of the Extension Division is to provide a service of continuing education to the graduates of this Institute or of similar programmes.

6. The Extension Division, as a by-product of its regular function, will provide a service to day students who could not be accommodated. Students with advanced credit may require Extension courses to proceed to the next level in the day programme. Similarly, students of the day programme who fail some subjects may wish to repeat these subjects through the Extension Division while working and then return to full-time day studies at the next level.

7. The Extension Division has assumed some responsibility to carry on the work of the British Columbia Work Study Centre.

8. The Extension Division may also provide preparatory courses to entry to the British Columbia Institute of Technology if this need must be met and is not adequately served through other educational institutions in the community.

9. When space permits, the Extension Division will facilitate and encourage meetings and seminars of an educational nature or value. These should be related to the educational scope of the Institute.

Expansion
Programme

BCIT—GROWTH AND DEVELOPMENT

At the 1971 Convocation, which was held in the new Student Activity Building, the Honourable W. A. C. Bennett, Premier of British Columbia, announced that a new classroom laboratory building would be provided to meet the rapidly expanding needs of the British Columbia Institute of Technology.

The new building would accommodate the increased student enrolment expected by the Institute in the next few years. The date set for the completion of the building is September 1975, by which time there will be a greatly increased student enrolment for the Institute.

Since BCIT was first opened in the fall of 1964 with 650 students, there has been a steady and sometimes spectacular growth until 1971, when the enrolment reached the figure of 2,903. The physical plant in buildings and facilities has kept pace with this increase in students and training.

Planning for this new building is well under way. The 1971 student enrolment was 2,903, and it is expected that by 1975/76 the number of students attending the Institute will be about 5,000. Several new technologies and a large number of new training options are planned in order to provide for this substantial increase in students. Industrial expansion in the Province is increasing, more technically oriented jobs are being created, and trained students to match the opportunities available will be needed. This new classroom laboratory building will also provide a small reserve of accommodation which will allow expansion beyond 1975.

Student residences are needed on the campus as a large number of the out-of-town students attending BCIT are finding the greatest difficulty in finding suitable living accommodation close to the Institute. Extensive investigation as to the best type of residence to build on the campus has been made.

The Student Association has investigated to the planning stage a high-rise residence to accommodate 500 students. Their proposal has received approval of the Advisory Council and is now being considered by the British Columbia Government and it is hoped that it will be approved so that an early start can be made in building these badly needed residences on the campus.

In the rapidly expanding Burnaby campus there is bound to be continuous need for more services to serve students and staff. Additional parking areas are required now and by 1975 extensive additions must be made. Additional food services will be needed by 1975, including a new cafeteria. So far, expansion of these student facilities with the exception of parking has kept pace with the need. Before 1975 there must be an accelerated pace for the

development of additional student facilities on the campus. These needs are now under study by the Departments of Education and Public Works and their forecasting indicates that the needs will be met by the addition of the new facilities.

Student Association

STUDENT ASSOCIATION

All students registered in the Institute are members of the Student Association. The governing body of the Association is the Students' Council, composed of officers elected by the student body. The Executive consists of the President, Vice-President Internal, Vice-President External, Treasurer, Sports Chairman, Social Chairman, Clubs Chairman, and Publications Chairman.

The students of each technology are represented on the Council by the respective presidents and vice-presidents of each technology.

The Council represents the student body and administers student funds, as outlined in the Constitution and by-laws of the Student Association.

Athletic Activities

Men and women who enrol at BCIT will find a complete programme of intramural and extramural athletics. As a member of the Totem Conference, institute teams participate in rugby, basketball, volleyball, ice hockey, and cross country. For the women, there is competition in grass hockey, volleyball, basketball, and cross country. The programmes for men and women are co-ordinated and administered by the Athletic Director and the Athletic Council.

Intramural and recreational athletics are offered through the Sports Committee of the Association.

Clubs

There are 13 clubs on the campus at the present time. These clubs provide the student body with a variety of activities and energy outlets. All clubs receive a budget from the Association to alleviate operating costs and to make club activities more attractive to the students.

The clubs include:

- Chinese Students' Society.
- Curling Club.
- CUSO.
- Card Club.
- Motorsport Club.
- Motor-cycle Club.
- Outdoors Club.
- Scuba Club.
- Toastmasters' Club.
- Varsity Christian Fellowship.
- Film Society.
- Band Club.
- Parachute Club.

Any other club may be formed if there is sufficient student interest.

Costs

The following is an estimate of the cost per year while attending BCIT:

Fees	$163.00
Compulsory activity	25.00
Textbooks	120.00
Board and Lodgings	1,000.00
Transportation	200.00
Miscellaneous	400.00
	$1,908.00

Dress Regulations

The dress regulations, as indicated in the Policy Section of this Calendar, are fully supported by the Student Association. The regulations are a contributing factor in the high employment rate of the graduates. The BCIT Traditions Committee, composed of students and staff (as are all the committees in the Institute), are responsible for decisions concerning dress regulations.

Publications

Publications include the student newspaper, *Link*. The Association owns typesetting equipment which allows preparation of the paper from writing to final layout.

Social Activities

A number of social activities, having become traditional, are put on at certain intervals during the year. First-year students are welcomed during Frosh Week, which is finalized by a dance and the crowning of the Frosh Queen.

Following Frosh Week is Shinerama Day. Students are encouraged to participate in this worth-while effort. The Shinerama Day and the dance, plans are made for Campus Queen Week and the dance associated with the week.

Sam Gompers Day is the day for wearing the worst clothes you can find. Just about anything goes.

Business Society and the Engineering Society both sponsor social events during the year, as do the individual technologies.

If the student takes advantage of some of the activities, he will have an enjoyable two years at BCIT.

Clubs

Athletics

Social

Public Service

Schedule of Prerequisites

Schedule of Prerequisites, 1972

GENERAL PREREQUISITE

Graduation from senior secondary school on the Academic-Technical Programme as prescribed by the Department of Education for the Province of British Columbia.

BUSINESS MANAGEMENT DIVISION

SPECIAL PREREQUISITES

Administrative Management.	*Nil.*
Broadcast Communications.	Hist. 12; Eng. Lit. 12.
Computer Programming and Systems—	
Business Systems.	*Nil.*
Management Science.	Math. 12.
Financial Management.	*Nil.*
Hotel, Motel, and Food Service Management.	*Nil.*
Marketing Management.	*Nil.*
Technical Management.	Math. 12.

ENGINEERING DIVISION

SPECIAL PREREQUISITES

Biological Sciences.	Math. 12; Chem. 11.
Building.	Math. 12; Phys. 11.
Chemical and Metallurgical.	Math. 12; Chem. 11; Phys. 11.
Civil and Structural.	Math. 12; Phys. 11.
Electrical and Electronics.	Math. 12; Chem. 11; Phys. 11.
Forest Resource—	
Forestry.	Math. 12.
Fish, Game and Parks.	Math. 12; Biology 11.
Forest Products.	Math. 12; Chem. 11.
Instrumentation and Systems.	Math. 12; Phys. 11; Chem. 11.
Mechanical.	Math. 12; Phys. 11.
Mining.	Math. 12; Phys. 11; Chem. 11.
Natural Gas and Petroleum.	Math. 12; Phys. 11; Chem. 11.
Surveying.	Math. 12; Phys. 11.

HEALTH DIVISION

SPECIAL PREREQUISITES

Biomedical Electronics.	Math. 12; Phys. 11; Chem. 11.
Environmental Technology—Public Health.	Math. 12; two Science 11's; one Science 12 (Chemistry 12 and Physics 11 suggested).
Health Data.	Math. 12; Typ. 11; or equiv.
Medical Laboratory.	Math. 12; Chem. 11; Chem. 12; and one other Science 11.
Medical Radiography.	Math. 12; two Science 11's; one Science 12 (Physics or Chemistry is suggested).
Nuclear Medicine.	Math. 12; two Science 11's; one Science 12 (Chemistry is suggested).
Nursing.	One Science 12.
Respiratory.	Math 12; two Science 11's; one Science 12.

Commencing September, 1971, senior secondary counsellors and students are advised that BCIT Board of Admissions will be pleased to accept applicants who have graduated on the Academic-Technical Programme in any one of the three technical specialties and the Arts (Humanities) Specialty as indicated in the Administrative Bulletin for Secondary Schools (supplement to the 1967 edition), pages 14 and 15.

Interim Prerequisites

During an interim period some senior secondary schools in British Columbia may not have completed the conversion to the revised curriculum.

For this interim period only, the Institute may consider as sufficient prerequisite the appropriate major science programme which has been offered at the school at which the applicant studied.

List of Programmes

LIST OF PROGRAMMES

BUSINESS MANAGEMENT DIVISION

- Administrative Management
- Broadcast Communications
- Computer Programming and Systems
- Financial Management
- Hotel, Motel, and Food Service Management
- Marketing Management
- Technical Management

ENGINEERING DIVISION

- Biological Sciences
- Building
- Chemical and Metallurgical
- Civil and Structural
- Electrical and Electronics
- Forest Resource—
  - Forestry
  - Forest Products
- Instrumentation and Systems
- Mechanical
- Mining
- Natural Gas and Petroleum
- Surveying

HEALTH DIVISION

- Biomedical Electronics
- Environmental Technology—Public Health
- Health Data
- Medical Laboratory
- Medical Radiography
- Nuclear Medicine
- Nursing

Business Division
Instructional Staff

BUSINESS MANAGEMENT DIVISION

E. W. H. BROWN, B.A., *Director.*

ADMINISTRATIVE MANAGEMENT TECHNOLOGY

R. A. CRADOCK, B.COM., M.B.A., R.I.A., *Department Head.*

G. BELL, B.COM., M.A., *Chief Instructor.*
MRS. J. P. DEAN, B.A., M.A.
C. J. DICKHOFF, B.A., M.A., *Senior Instructor.*
G. T. HANRAHAN, LL.B.
L. E. JOHNSON, B.A., M.B.A.
D. A. PEPPER, B.A., DIPL.INTER. ECON.
R. M. SHARP, B.A.SC., M.B.A., P.ENG.
W. D. SPROULE, B.COM., C.A., R.I.(B.C.), F.R.I.
B. VAN DER WOERD, B.A.
J. A. VERNER, B.A.SC., M.B.A.
F. C. WILLIAMS, B.A.(HONS.)

BROADCAST COMMUNICATIONS TECHNOLOGY

L. S. H. IRVINE, *Department Head.*

L. J. DAMER.
K. W. HUGHES.
M. C. HUGHES.
R. N. B. NASON, B.A.
F. L. SANDERSON, *Senior Instructor.*
D. W. SHORT.

COMPUTER PROGRAMMING AND SYSTEMS TECHNOLOGY

D. BRECKNER, B.A.(HONS.), M.A.(HONS.), *Department Head.*

P. ABEL, B.A.(HONS.), C.G.A.
J. W. COOKE, C.G.A., *Senior Instructor.*
A. CZERNIN.
K. E. HOLDEN, R.I.A.
R. B. LONG, C.G.A.
R. MCGOWAN.
E. N. NEWTON, B.VOC.ED.
M. SCRIABIN.
F. SENIOR, B.A.(HONS.), *Senior Instructor.*
A. Y. W. WONG, B.A.SC.

FINANCIAL MANAGEMENT TECHNOLOGY

P. J. WOOLLEY, B.A., M.A., C.A., *Department Head.*

MISS C. M. BRISCALL, B.COM., M.B.A., R.I.A., *Chief Instructor.*
H. DICK, B.COM.
R. J. DOLAN, B.B.A., M.B.A.
G. H. FARRELL, DIPL.T., R.I.A.
R. W. JACKSON, M.C.I.
E. C. MCINTOSH, B.COM., C.G.A.
J. H. NEVISON, B.A., B.COM.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT TECHNOLOGY

M. M. COLTMAN, M.B.A., C.G.A., *Department Head.*

B. J. FERNANDES.
R. J. GRIFFITHS, DIPL.T.
J. G. LINDENLAUB, *Chief Instructor.*
P. F. RENNER, DIPL.T.

MARKETING MANAGEMENT TECHNOLOGY

G. H. ABBOTT, B.COM., M.B.A., *Department Head.*

E. M. IANNACONE, B.COM., M.B.A., *Senior Instructor.*
G. T. JACOB, B.A.(HIST. & ECON.), B.A.(BUS. ADMIN.), M.B.A.
E. Y. MAITLAND.
MRS. D. MICHAELS, B.SC., B.A.(HONS.).
E. T. OSBORN, B.S.A., M.B.A., P.AG.
L. W. PHILLIFANT.
R. W. VANDERMARK, B.A.
WM. A. E. WALLEY, B.A.
D. G. WILSON, B.A.

TECHNICAL MANAGEMENT TECHNOLOGY

R. G. SMYLIE, B.A.SC., P.ENG., *Acting Department Head.*

F. L. GRUEN, B.MGT.ENG.
T. L. HART.
K. C. HARTLEY, B.A.SC.
A. S. LEE, B.ENG., P.ENG.
J. A. I. MILLETTE, B.A.
B. R. M. MORROW, B.COM., *Senior Instructor.*
K. PURCHASE, B.E., B.C.A., G.I. MECH.E.
W. J. SHERIFF, B.A., B.SC.
L. A. SMITH.
E. L. TOTH, B.S.C.

PART-TIME INSTRUCTIONAL STAFF, 1971–72

MRS. K. M. HAMM, B.COM. - - *Financial Management.*
J. D. PETERSON - - - - - *Marketing Management.*
M. PIEROTTI - - - - - *Administrative Management.*
R. A. YATES, LL.B. - - - - *Administrative Management.*

BUSINESS MANAGEMENT DIVISION

GUEST LECTURERS

ADMINISTRATIVE MANAGEMENT TECHNOLOGY

P. T. BURNS, Faculty of Law, University of British Columbia.
D. B. COOMBER, Ron Dawson & Associates Ltd.
L. A. FINGERSON, President, Pacific Northwest Ltd.
J. FRYOR, British Columbia Government Employees' Union.
R. C. HAYNES, Secretary-Treasurer, British Columbia Federation of Labour.
R. G. HERBERT, Faculty of Law, University of British Columbia.
J. E. HOEGG, President, Grouse Mountain Resorts Ltd.
B. HOLST, Block Bros. Realty Ltd.
D. A. KING, Senior Industrial Engineer, Management and Productivity Centre, British Columbia Research Council.
G. MEEHAN, Chief of Counselling Development, Department of Manpower and Immigration, Pacific Region.
R. C. MILLER, G.R.I. Developments.
M. D. SHORTT, Shulman & Co., Barristers & Solicitors.

BROADCAST COMMUNICATIONS TECHNOLOGY

B. CLARKE, Commentator, Radio Station CKWX.
F. FLEMING, President, Co/Ax Graphic Systems Ltd.
J. GREY, Public Relations Director, Fraser Valley Milk Producers Association.
D. HAMILTON, Vice-President, Canadian Association of Broadcasters.
G. HANNEY, CHAN-TV News.
W. HUGHES, Executive Vice-President, Western Broadcasting Co. Ltd.
E. KERN, Recording Engineer, CKWX Radio Ltd.
L. LAUK, Executive Producer, CBC-TV, Vancouver.
D. LIDDELL, Producer, Cable 10, Vancouver Cablevision Ltd.
HON. WM. MURRAY, Speaker, British Columbia Legislative Assembly.
P. NEWMAN, Make-up Artist (freelance).
B. PAUL, Department of Indian Affairs.
P. ROLSTON, Producer, CHAN-TV.
V. WATERS, General Manager, Cable 10, Vancouver Cablevision Ltd.
J. WILLIAMS, Design Director, CBC-TV Vancouver.

COMPUTER PROGRAMMING AND SYSTEMS TECHNOLOGY

A. J. GAITENS, Systems Development Manager, Nissan Automobile Co. (Canada) Ltd.

FINANCIAL MANAGEMENT TECHNOLOGY

R. CROMPTON, Stock Underwriter (freelance).
C. C. EYESTONE, President, Wallclad Products Ltd.
R. G. PARKER, Senior Accountant, Deloitte, Plender, Haskins & Sells, Chartered Accountants.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT TECHNOLOGY

M. BEGIN, Comptroller, Hotel Vancouver.
MISS J. BERGER, Restaurant Manageress, Industrial Catering Ltd.
R. BRETT, Area Supervisor, Caterplan Services, Division of CNIB.

R. Broda, Architect, Hopping, Kovach, Grinnell Design Consultants Ltd.
S. Brown, Statistician, Teamsters' Joint Council.
V. T. Burt, General Manager, Hotel Vancouver.
S. Conkin, General Manager, Royal Towers Hotel.
Dr. I. D. Desia, Division of Human Nutrition, School of Home Economics, University of British Columbia.
P. J. Dineen, Representative, Edible Oil Division, Swift Canadian Co. Ltd.
K. F. Dobell, Research Engineer, City of Vancouver.
J. F. Duncan, General Manager, Point Grey Golf & Country Club.
J. Dye, Manager, Nat Bailey's Villa, Burnaby.
P. Egner, Director, Food and Beverage, Bayshore Inn.
W. Fraser, Personnel Manager, General Foods Ltd.
M. Graham, Vice-President and Creative Director, F. H. Hayhurst Co. Ltd.
J. Hale, Assistant Manager, Bayshore Inn.
R. E. Hurry, Assistant Sales Manager, Dairyland Division, Fraser Valley Milk Producers Association.
B. Jensen, Branch Manager, Flight Kitchen, Cara Operations Ltd.
K. Korentayer, Group Therapist, Gestalt Institute of Canada.
J. Ladicos, Assistant Manager, Royal Towers Hotel.
J. Lance, Personnel Director, Hotel Vancouver.
J. Lawson, Director of Marketing, A & W Food Services Ltd.
J. Levine, President, Townsite Foods Ltd.
I. Lipovsky, West Vancouver.
Miss J. Monk, Front Office Manageress, Wall & Redekop Motor Hotel.
S. Morin, Owner-Manager, Gai Paree Caterers.
K. Oates, President, Culinary Workers' and Beverage Dispensers' Union.
T. Panchuk, Food and Beverage Controller, Hotel Vancouver.
H. E. Polacco, Sales Representative, Sweda Sales Register Systems.
R. Russell, Sales Manager, Hotel Georgia.
K. G. H. Schumann, Director, Food and Beverage, Denman Place Investments Ltd.
R. J. Stout, Vice-President, White Spot Ltd.
J. H. Syrett, Area Food Services Manager, Eaton's Food Services Ltd.
A. Van Citters, Food and Beverage Manager, Empress Hotel, Victoria.
B. Williams, Public Health Inspector, Municipality of Burnaby.

MARKETING MANAGEMENT TECHNOLOGY

A. G. Culver, Store Manager, Hudson's Bay Co., Richmond.
P. Dobson, Manager, Operations Research, McMillan Bloedel Co. Ltd.
R. Graeme, Personnel Director, Dairyland Division, Fraser Valley Milk Producers Association.
R. R. Jackson, Division Manager, Woodward Stores.
A. M. Jukes, Fashion Merchandise Manager, Eaton's.
B. Ketchum, Marketing Research Manager, Scott Paper Ltd.
C. McKee, Mediation Officer, British Columbia Mediation Commission.
W. A. M. Patterson, Vancouver.
J. Peskett, Director of Home Services Division, Nabob Foods.
W. Rawcliffe, Consultant, Rawcliffe Associates.
G. Roberts, Vice-President, Retail Index Division, A. C. Nielsen Company of Canada Ltd.
D. Sharpe, Creative Art Director, James Lovick Advertising Agency.
R. Stewart, Vice-President, Marketing, Scott Paper Ltd.
I. Telmer, Vancouver.
R. H. Thompson, Economist, Seaboard Lumber Sales Co. Ltd.

Business Division
Advisory Committees

TECHNICAL MANAGEMENT TECHNOLOGY

F. W. BARRON, Senior Analyst, Department of Transport.
K. F. DOBELL, Research Engineer, City of Vancouver.
MISS P. JACKSON, Physiotherapist, G. F. Strong Rehabilitation Centre.
M. C. GILLIS, Operations Manager, Hudson's Bay Company.
R. JENS, Methods Analyst, Finning Tractor & Equipment Co. Ltd.

TEACHING ASSOCIATES

BROADCAST COMMUNICATIONS TECHNOLOGY

BY STAFF OF

CBUT.
CHAN-TV.
CKNW.
CKLG.
CKWX.
CHWK, CHILLIWACK.
CKOK, PENTICTON.
CKOV, KELOWNA.
CHBC-TV, KELOWNA.
CFJC, KAMLOOPS.
CKNL, KAMLOOPS.
CFCR-TV, KAMLOOPS.
KEN-TV, KAMLOOPS.
CKXR, SALMON ARM.
KING-TV, SEATTLE.
KIRO-TV, SEATTLE.
KOMO-TV, SEATTLE.
CANAWEST FILM PRODUCTIONS LTD.
SUPERINTENDENT AND STAFF OF SCHOOL DISTRICT NO. 41.
VANCOUVER CABLEVISION LTD.

SPECIAL VISITING LECTURER

JOHN MACD. LECKY, Chairman, Vancouver Town Planning Commission.

ADMINISTRATIVE MANAGEMENT

ADMINISTRATION OPTION ADVISORY COMMITTEE

Chairman:

J. E. HOEGG, President, Grouse Mountain Resorts Ltd., Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
R. A. CRADOCK, Department Head, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

V. P. BONAME, General Manager, Marathon Realty Co. Ltd., Vancouver.
R. H. DOWNEY, Manager, Manpower & Organization Planning, B.C. Hydro & Power Authority, Vancouver.
K. H. GILLESPIE, President, Gillespie Investments, Vancouver (Chairman, Composite Education Committee, Real Estate Institute of B.C.).
H. E. HENDER, Personnel Manager, Finning Tractor & Equipment Co. Ltd., Vancouver.
J. HOWES, Treasurer, Dominion Construction Co. Ltd., Vancouver.
MISS M. H. MCMILLAN, Regional Director of Personnel, Unemployment Insurance Commission, Vancouver.
H. MAIN, General Manager, Greater Vancouver Visitors' and Convention Bureau, Vancouver.
R. J. MEYERS, President, Dillingham Corporation Canada Ltd., North Vancouver.
J. H. PHILLIFANT, Office Supervisor, Customer Records & Billing Department, British Columbia Telephone Company, Vancouver (Administrative Management Association Representative for BCIT).
G. W. POWELL (Alumni Rep.), General Manager, Kerrisdale Cameras, Vancouver.
R. C. STAGG, Director of Education, Block Bros. Realty Ltd., Vancouver.
F. W. VANSTONE, Assistant to the President, Bank of British Columbia, Vancouver.
J. B. WYNN, Personnel Manager, Woodward Stores Ltd., Vancouver.

ECONOMICS AND STATISTICS OPTION ADVISORY COMMITTEE

Chairman:

JOHN NAIRN, Manager, Market Research and Statistics, British Columbia Hydro and Power Authority, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
R. A. CRADOCK, Department Head, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

ALLAN COE, Manager, Sales Development, Finning Tractor & Equipment Co. Ltd., Vancouver.
PETER R. CULOS, Director of Marketing, Nabob Foods Ltd., Vancouver.

DR. ROBERT H. DONNELLY, Manager, Operations Research Department, MacMillan Bloedel Limited, Vancouver.

ALLAN B. EVERS, Research and Development Supervisor, British Columbia Telephone Company, Vancouver.

PETER C. FORWARD, Managing Director, Regional Marketing Surveys Ltd., Vancouver.

ROBERT KINCAID, Regional Director, Dominion Bureau of Statistics, Vancouver Region.

TOIVA LAANEMAE, Forestry Liaison Officer, Statists Canada, Vancouver.

J. R. MEREDITH, Director, Bureau of Economics and Statistics, Department of Industry, Trade, and Commerce, Victoria.

RICHARD ROBERTS, Economist, Fisheries Service, Pacific Region, Department of the Environment, Vancouver.

DAVID W. ROSS, President, Acres Western Ltd., Vancouver.

MANPOWER MANAGEMENT OPTION ADVISORY COMMITTEE

Chairman:

D. CAMPBELL, Assistant Secretary and Treasurer, British Columbia Telephone Company, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.

R. A. CRADOCK, Department Head, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.

G. BELL, Chief Instructor, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

R. M. BIBBS, Vice-President, Industrial Relations, MacMillan Bloedel Ltd., Vancouver.

DR. L. CHECOV, President, Management Development Associates Ltd., Vancouver.

J. S. DON, Director of Personnel Services, City of Vancouver, Vancouver.

W. M. FERRIE, Director of Personnel, Scott Paper Ltd., New Westminster.

M. A. HAMBLY, Chief, Employment Development Section, Department of Manpower and Immigration, Pacific Region, Vancouver.

MRS. J. HAMMOND, P. Lawson Travel Ltd., West Vancouver.

R. C. HAYNES, Secretary-Treasurer, B.C. Federation of Labour, Vancouver.

R. D. HIGGINS, Chief Personnel Officer, Civil Service Commission, Victoria.

E. G. INGLIS, Training Manager, Finning Tractor & Equipment Co. Ltd., Vancouver.

W. ROBERTSON, Personnel Manager, Pacific Press Ltd., Vancouver.

S. J. ROBINSON, Personnel Manager, Kelly, Douglas & Co. Ltd., Burnaby.

K. A. SINCLAIR, Chief, Manpower Planning and Development, Unemployment Insurance Commission, Ottawa, Ont.

B. P. STROMGREN (Alumni Rep.), Assistant Personnel Manager, Finning Tractor & Equipment Co. Ltd., Vancouver.

G. H. TAYLOR, Director of Employee Relations, H. A. Simons Ltd., Consulting Engineers, Vancouver.

G. S. WILSON (Alumni Rep.), Donaldson Securities Ltd., Vancouver.

BROADCAST COMMUNICATIONS ADVISORY COMMITTEE

Chairman:

W. C. ELLIOTT, Vice-President, Production, British Columbia Television Broadcasting System, Ltd., Burnaby.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
L. S. H. IRVINE, Department Head, Broadcast Communications Technology, British Columbia Institute of Technology, Burnaby.
F. L. SANDERSON, Senior Instructor, Broadcast Communications Technology, British Columbia Institute of Technology, Burnaby.

Members:

B. A. ANTONSON, DIPL.T. (Alumni Rep.), Production Assistant, Radio Station CKNW, New Westminster.
D. BARKMAN, President and General Manager, CHWK, Chilliwack.
S. W. DAVIS, President, Broadcast Technical Services Ltd., Vancouver.
J. D. ELTON, General Manager, Radio Station, CKWX, Vancouver.
W. HUGHES, Executive Vice-President, Western Broadcasting Co. Ltd., Vancouver.
K. R. HUTCHESON, President, Radio Station CJAV Ltd., Port Alberni.
H. M. PALMER, Director of Television, Canadian Broadcasting Corporation, Vancouver.
R. W. SERVICE, Television Production Manager, Canadian Broadcasting Corporation, Vancouver.
R. SHARPE, Sales Manager, CHBC-TV, Kelowna.

COMPUTER PROGRAMMING AND SYSTEMS ADVISORY COMMITTEE

Chairman:

J. R. P. POWELL, Manager, Data Processing, MacMillan Bloedel Limited, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
D. BRECKNER, Department Head, Computer Programming and Systems Technology, British Columbia Institute of Technology, Burnaby.
C. N. MACKEOWN, Manager, Administrative Systems, British Columbia Institute of Technology, Burnaby.

Members:

J. BAIRD, Director of Data Processing and Research, Office of the Prime Minister, Parliament Buildings, Victoria.
MRS. B. BERG, Senior Consultant, Woods Gordon & Co. Management Consultants, Vancouver.
W. R. ELLWOOD, Director, Computer Services, CP Air, Vancouver.
E. S. GARDNER, Manager, Data Processing, British Columbia Hydro and Power Authority, Vancouver.
DR. J. M. KENNEDY, Director of Computing Centre, University of British Columbia, Vancouver.
J. M. LEVY, Controller, Hudson's Bay Co., Vancouver.

J. G. PIKET, Manager, Computer Systems, Block Bros. Realty Ltd., Vancouver.
W. H. SMITH, Manager, Data Processing, Malkin's Division of Westfair Foods Ltd., Vancouver.
J. SHORT, DIPL.T. (Alumni Rep.), Data Centre, IBM Canada Ltd., Vancouver.

FINANCIAL MANAGEMENT ADVISORY COMMITTEE

Chairman:

L. N. DYER, Secretary-Treasurer and Director, The Canadian Fishing Company Limited, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
P. J. WOOLLEY, Department Head, Financial Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

E. L. AFFLECK, Director of Education, Institute of Chartered Accountants of British Columbia, Vancouver.
H. S. BRYANT, Chief Accountant, Pacific National Exhibition, Vancouver.
W. C. EILERS, Vice-President, Pemberton Securities Limited, Vancouver.
J. B. FERGUSON, Vice-President, Gulf of Georgia Towing Co. Ltd., Vancouver.
T. C. HUMPHREYS, Vice-President and Treasurer, Standard Oil Company of B.C. Limited, Vancouver.
R. E. LAPP, Co-ordinator, Institute of Canadian Bankers, Vancouver.
W. C. MCCALPIN, President, McCalpin, Leche & Company Limited, Vancouver.
H. K. NAYLOR, Assistant General Manager, Western Division, Canada Permanent Trust Company, Vancouver.
R. G. SPELLISCY, Vice-President and Controller, Canada Safeway Limited, Vancouver.
L. R. SPRINGALL, DIPL.T. (Alumni Rep.), Assistant Controller, E.D.P. Industries Ltd., Vancouver.
C. J. TRUNKFIELD, Director of Education, General Accountants Association of Canada, Vancouver.
D. G. USHER, Partner, Thorne, Gunn, Helliwell & Christenson, Vancouver.
K. F. WEAVER, Certified General Accountants' Association of British Columbia, Vancouver.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT ADVISORY COMMITTEE

Chairman:

R. J. STOUT, Vice-President, White Spot Ltd., Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
M. M. COLTMAN, Department Head, Hotel, Motel, and Food Service Management Technology, British Columbia Institute of Technology, Burnaby.

J. G. LINDENLAUB, Chief Instructor, Hotel, Motel, and Food Service Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

D. BELLAMY, Managing Director, Canadian Restaurant Association, British Columbia Division, Vancouver.
V. T. BURT, General Manager, Hotel Vancouver, Vancouver.
J. M. BYROM, Secretary-Manager, The University Club of Vancouver, Vancouver.
MRS. J. DANN, Executive Secretary, British Columbia Motels, Resorts, and Trailer Parks Association, Vancouver.
L. FINAMORE, Vice-President/Operations, Mountain & Pacific Region, CP Hotels, Victoria.
B. JENSEN (Alumni Rep.), Branch Manager, Flight Kitchen, Cara Operations Ltd., Richmond.
L. W. MANUEL, Managing Director, British Columbia Hotels' Association, Vancouver.
M. A. NARGIL, Managing Director, The Harrison Hotel, Harrison Hot Springs.
D. M. RICHARDS (Alumni Rep.), Vancouver.
J. ROBSON, Manager, The Arbutus Club, Vancouver.
E. SCHMUTZ, Service Industries Training Co-ordinator, British Columbia Government, Burnaby.
K. H. G. SCHUMANN, Director, Food and Beverage, Denman Place Investments Ltd., Vancouver.
J. H. SYRETT, Area Food Services Manager, Eaton's Food Services Ltd., Vancouver.

MARKETING MANAGEMENT

MARKETING MANAGEMENT ADVISORY COMMITTEE

Chairman:

R. T. STEWART, Vice-President, Marketing, Scott Paper Limited, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
G. H. ABBOTT, Department Head, Marketing Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

A. M. BELL, Bell and Montgomery Advertising Ltd., Vancouver.
P. H. E. BJARNASON, President, Cunningham Drug Stores Ltd., Vancouver.
D. G. BUCKLEY, General Manager, Western Region, Hudson's Bay Company, Vancouver.
J. L. DAMPIER, Vice-President and General Manager, Nabob Foods, Burnaby.
MISS K. DURNIN (Alumni Rep.), Divisional Manager, Infants' Wear Department, Simpsons-Sears Ltd., Richmond.
T. R. FARRELL, President, Woodward Stores Ltd., Vancouver.
J. L. GOURLAY, Fulton, Cumming and Richards, Vancouver.
D. HUDSON, General Manager, Eaton's, Vancouver.

J. VAN DE KAMER, Vice-President, McKim/Benton and Bowles Ltd., Vancouver, and representing The American Marketing Association (British Columbia Chapter).

J. MACD. LECKY, Chairman, Vancouver Town Planning Commission.

R. H. MCLEAN, Manager, Advertising and Sales Promotion, Home Oil Distributors Ltd., Vancouver, and representing The Sales and Marketing Executives of Vancouver.

JOHN NAIRN, Manager, Market Research and Statistics, British Columbia Hydro and Power Authority, Vancouver.

S. M. OBERG, D.B.A., Associate Professor, Faculty of Commerce and Business Administration, University of British Columbia, Vancouver.

BRUCE C. WARD, General Manager, British Columbia, Simpsons-Sears Limited, Burnaby.

W. C. WRIGHT, President and General Manager, Gault Bros. Ltd., Vancouver.

TRAFFIC AND TRANSPORTATION MANAGEMENT ADVISORY COMMITTEE

Chairman:

W. E. MCKINNEY, General Sales Manager, Johnston Terminals Ltd., Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.

G. H. ABBOTT, Department Head, Marketing Management Technology, British Columbia Institute of Technology, Burnaby.

E. M. IANNACONE, Senior Instructor, Traffic and Transportation Option, British Columbia Institute of Technology, Burnaby.

Members:

J. C. BENEDETTI, Administrative Assistant to Vice-President, CP Rail, Vancouver.

S. J. BOGGIS, Traffic Manager, Woodward Stores Ltd., Vancouver.

C. M. DEFIEUX, Marine Editor and Historian, *Vancouver Sun,* Vancouver.

G. S. HOLGATE, President, Western Parcel Service Ltd., Vancouver.

B. C. O'MALLEY, Traffic Manager, Leith & Dyke Ltd., Vancouver.

A. D. RUSSELL, Cargo Sales and Service Regional Manager, Air Canada, Vancouver.

CAPT. N. P. SMITH, Consultant, Foreign Freight Sales, Canadian National Railway, Vancouver.

T. D. HEAVER, Lecturer, Faculty of Commerce and Business Administration, University of British Columbia, Vancouver.

TECHNICAL MANAGEMENT ADVISORY COMMITTEE

Chairman:

W. M. YOUNG, President, Finning Tractor & Equipment Co. Ltd., Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.

R. G. SMYLIE, Acting Department Head, Technical Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

S. F. CROCKER, President, B.C. Equipment Co. Ltd., Vancouver.
G. R. DAWSON, President, Dawson Construction Ltd. and Dawson & Hall Ltd., Vancouver.
A. M. EYRE, President, Dueck on Broadway Limited, Vancouver.
B. G. GINTER, President, Tartan Brewing Ltd., Prince George.
R. JENS, Methods Analyst, Finning Tractor & Equipment Co. Ltd., Vancouver.
L. KELLOGG, Vice-President, Stevenson & Kellogg Ltd., Vancouver.
D. A. KING, Industrial Engineer, British Columbia Research Council, Vancouver.
E. H. MCCAFFERY, Secretary-Manager, British Columbia Branch, Canadian Plumbing and Mechanical Contractors' Association, Vancouver.
J. W. MILLER, Executive Vice-President, Fleck Bros. Ltd., Vancouver.
J. PATTERSON, Vice-President, Peter Kiewit & Sons of Canada Ltd., Vancouver.
A. S. RENDELL, President, Rendell Tractor & Equipment Co. Ltd., Vancouver.
D. S. SMITH, Head, Division of Technical Services, British Columbia Research Council, Vancouver.
E. D. SUTCLIFFE, General Manager, British Columbia Operations, Dominion Construction Co. Ltd., Vancouver.
F. TEMPLETON, President, Wing Machinery Ltd., Vancouver.

Business Management Division

The accelerated development in recent years of scientific knowledge and industrial productivity has increased the complexity of modern business. This has stimulated competition to a very high degree, and in order to maintain its ability to compete, management has had to rely on a more scientific approach to managing. Specialists in many fields are employed to gather, analyse, interpret, and present information for management's use. With the increasingly specialized nature of modern business, young persons about to enter business must not only be eager, intelligent, and hard working, but must have specialized training as well. The programmes within the Business Management Division are established and relevancy is maintained with the assistance of ten Advisory Committees. Consequently graduates from this programme are in high demand by prospective employers. Students will follow a prescribed course in one of the following technologies:

- Administrative Management
  - Administration Option
  - Manpower Management Option
  - Economics and Statistics Option
- Broadcast Communications
- Computer Programming and Systems
  - Business Systems Option
  - Management Science Option
- Financial Management
  - Accounting Option
  - Finance Option
- Hotel, Motel, and Food Services Management
  - Hotel, Motel Option
  - Food Management Option
- Marketing Management
  - Marketing Management Option
  - Traffic and Transportation Management Option
- Technical Management

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ORDE
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Business Management Division

Administrative Management Technology

The Administrative Management Technology is designed to give the student a broad yet thorough understanding of modern business practices, and to fit him for efficient administrative performance.

The first year is utilized for basic groundwork. In the second year of the programme, students may specialize in one of three fields by selecting a particular option. The options available are Administration, Manpower Management, and Economics and Statistics.

Administration Option

This option is broad in scope and gives the student a foundation in a variety of administrative subjects useful in entering a wide selection of business enterprises.

Administrative positions in this area involve such functions as planning, research, finance, and business organization. After appropriate job experience, opportunities would be at the intermediate level, such as office manager, department or branch manager.

Manpower Management Option

It is increasingly recognized that productivity in business and industry depends to a great extent on the development and utilization of human resources.

This option emphasizes those areas which are important to this purpose. The selection and placement of manpower, principles of psychology applied to administration, relations between management and labour, the training and development of manpower on the job are areas of study which are peculiar to the option.

Students electing to enter the Manpower Management Option should have a strong desire to take part in the management of people and should be prepared to examine and evaluate objectively the results of recent research in this field. Positions available in this area will involve the many aspects of manpower management, such as training, development, personnel selection, and industrial relations.

Economics and Statistics Option

The Economics and Statistics Option is designed to train students in the application of statistical techniques in a business setting. The student taking this option will gain a specialized knowledge of the methods of gathering statistics and utilizing statistical analysis to improve the decision-making process. Rewarding opportunties in a number of fields, including research and development, marketing research, production control and governmental statistical agencies, will be available to graduates of this course.

BUSINESS MANAGEMENT DIVISION

ADMINISTRATIVE MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hrs. per Wk. Lec.	Lab.
10.131	Management in Industry	1	2
10.135	Economics	1	2
14.050	Introduction to Data Processing	2	2
14.182	Office Equipment	1	2
16.140	Accounting	2	2
20.191	Marketing	2	1
22.013	Business Mathematics and Statistics I	2	2
31.102	Communications	2	2
	Library and Research	...	7
		13	22

Term 2

10.221	Psychology in Management I	1	2
10.232	Administrative Practices	1	3
10.235	Economics	1	2
14.296*	Office Systems and Procedures	1	2
16.240	Accounting	2	2
20.291	Marketing	2	1
22.023	Business Mathematics and Statistics II	2	2
31.202	Communications	2	2
	Library and Research	...	7
		12	23

YEAR 2 — *Term 3*

No.	Subject	Admin. Option Hrs. per Wk. Lec.	Lab.	Man. Mgt. Option Hrs. per Wk. Lec.	Lab.	Econ. and Stat. Option Hrs. per Wk. Lec.	Lab.
10.307	Mathematics for Economics and Statistics	...	...	...	...	2	4
10.308	Mathematical Statistics and Probability	...	...	...	...	3	2
10.321	Psychology in Management II	...	...	1	2	...	...
10.325	Industrial Relations	2	2	2	2	...	...
10.327	Training and Development	...	...	2	2	...	...
10.332	Real Estate Management	2	1	...	...	...	...
10.345	Managerial Economics	...	...	...	...	2	2
10.360	Business Law	2	1	2	1	...	...
14.052	Data Processing Applications	1	3	1	3	...	...
16.345	Credit and Collections	2	2	...	...	...	...
16.361	Finance	2	2	2	2	...	...
20.381	Human Relations	2	1	2	1	2	1
20.382	Marketing Research	...	...	...	...	2	1
22.037	Management Engineering I	1	2	1	2	1	2
22.332	Applied Programming	...	...	...	...	2	4
31.302	Communications	...	...	...	...	...	1
	Library and Research	...	7	...	7	...	4
		14	21	13	22	14	21

Term 4

10.425	Industrial Relations	...	...	1	3	...	...
10.427	Training and Development	...	...	1	3	...	...
10.432	Real Estate Management	2	1	...	...	...	...
10.434	Managerial Policy	1	2	1	2	1	2
10.445	Managerial Economics	...	...	...	...	2	2
10.451	Forecasting	...	...	...	...	2	2
10.460	Business Law	2	1	2	1	...	...
10.465	Society and Government	...	...	...	...	2	2
14.409	Operations Research Techniques	...	...	...	...	3	4
16.443	Management Accounting	2	2	...	...	...	...
16.461	Finance	2	2	2	2	...	...
20.482	Marketing Research	...	...	...	...	1	3
20.493	Personnel Administration	2	3	2	3	...	...
20.484	Transportation and Materials Handling	2	1	...	...	...	...
22.047	Management Engineering II	1	3	1	3	1	3
31.402	Communications	...	...	...	...	...	1
	Library and Research	...	6	...	8	...	4
		14	21	10	25	12	23

* Economics and Statistics Option take Managerial Economics 10.245 instead of Office Systems and Procedures 14.296 in Term 2.

General Prerequisite: Graduation on the Academic-Technical Programme.

Business Management Division

Broadcast Communications Technology

The Broadcast Communications programme was initiated through the combined efforts of the private sector of the industry and the Canadian Broadcasting Corporation in this Province. The need for trained personnel continues to grow, both in radio and television broadcasting, and particularly since the advent of cablecasting and increased interest in the audio-visual field.

The educational emphasis is on versatility, so that a graduate may find employment in a variety of occupations in the industry. To this end, all students take a common first year, and beginning in the 1973/74 academic year, will have the opportunity of selecting one of four electives in their second year of studies: Radio Production, Television Production, Radio and Television News, and Audio-Visual Technician. Additional studio facilities are being added to accommodate the new elective.

Applicants are reminded that the Institute can accept only a limited number of students in this technology, and they, therefore, should be certain to include full information as to related experience and evidences of aptitude for the field. The prospective student is expected to have a thorough knowledge of English—this is essential. Previous study in the areas of Civics and Current Events is also of value.

The Communications Industry offers graduates interesting, challenging, and rewarding work, with good opportunity for advancement.


BCIT TV
BCIT
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NO SMOKING

BUSINESS MANAGEMENT DIVISION

BROADCAST COMMUNICATIONS TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.161	Law for Broadcasting	2	---
12.101	Introduction to Radio	1	9
12.102	Introduction to Television	1	
12.103	Introduction to News	2	---
12.104	Audio-Visual Techniques	2	---
12.105	Industry Organization	2	---
12.107	Industry Organization Seminars	---	3
20.190	Writing and Sales	2	2
31.105	Writing for Broadcast	2	1
	Library and Research	---	6
		14	21

Term 2

12.201	Introduction to Radio	1	9
12.202	Introduction to Television	1	
12.203	Introduction to News	2	---
12.204	Audio-Visual Techniques	1	1
12.205	Industry Organization	2	---
12.206	History and Current Events	---	2
12.207	Industry Organization Seminars	---	3
20.290	Writing and Sales	2	2
31.205	Writing for Broadcast	2	1
	Library and Research	---	6
		11	24

YEAR 2 — *Term 3*

*12.307	Production Techniques I	---	3
*12.308	Production Techniques II		
12.311	Radio Production		
12.312	Television Production	3	19
12.313	Radio-Television News		
20.381	Human Relations	2	---
31.305	Writing for Broadcast	2	1
	Library and Research	---	5
		7	28

Term 4

12.406	History and Current Events	2	1
12.407	Production Techniques I	---	3
12.408	Production Techniques II		
12.411	Radio Production		
12.412	Television Production	3	18
12.413	Radio-Television News		
31.405	Writing for Broadcast	2	1
	Library and Research	---	5
		7	28

*NOTE—In Terms 3 and 4, students select one of the three electives, 12.311/411, 12.312/412, or 12.313/413. Students in Radio and News Electives will take 12.307/407 Production Techniques I, while students in the Television Elective take 12.308/408 Production Techniques II. All students serve a four-week practicum in Term 4.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: History 12, English Literature 12.

Business Management Division

Computer Programming and Systems Technology

The development in the last few years of the electronic computer has resulted in what has been called a " second industrial revolution." Almost every field of human endeavour has been affected by this development, and computers are now used in such diversified areas as banking, libraries, business accounting, air-line ticket reservations, space flight, controlling railroads, predicting weather, calculating statistics for insurance companies, scientific research, and automatic control of factories, refineries, and power plants.

These applications of the electronic computer cannot be successfully established without an enormous amount of human planning and preparation. The computer is an extremely fast and reliable calculating device, but it must be given completely detailed instructions for every step in the calculation. This involves three main steps in the application of a computer to a problem. First, a complete analysis must be made of the problem, taking into account every conceivable situation that can arise. Next, an approach to the solution must be formulated showing the action to be taken in each different circumstance. Finally, the solution must be expressed in the form of a set of instructions to the computer.

The Computer Programming and Systems Technology is designed to train students to meet the demand for programmers and systems analysts. In the first year, basic business subjects such as accounting, economics, office equipment, etc., are studied, as well as the introductory courses in programming and systems. In the second year, students have the choice of concentrating either on business data processing systems or on the application of mathematical techniques to managerial, engineering, or medical problems.

Also in the second year, students in Business Systems may take an elective programme in R.P.G. Programming and Installation Management. This gives training in the design, operation, and management of data processing installations for small companies, a rapidly growing area of employment opportunity.

Students wishing to enter this programme should have an analytical mind with a strong aptitude for logical reasoning, as well as a capacity for painstaking attention to detail.

Some experience in a business environment is also an asset.

BUSINESS MANAGEMENT DIVISION

COMPUTER PROGRAMMING AND SYSTEMS TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.131	Management in Industry	1	2
14.160	Introduction to Computer Programming	2	2
14.170	Computer Systems I	1	1
14.182	Office Equipment	1	2
16.140	Accounting	2	2
20.090	Marketing	2	2
22.111	Mathematics	2	3
31.102	Communications	2	2
	Common Tutorial	....	1
	Library and Research	....	4
		13	21

Term 2

10.236	Economics	1	2
14.260	Principles of Computer Programming	2	4
14.270	Computer Systems II	3	2
14.296	Office Systems and Procedures	1	2
16.240	Accounting	2	2
22.221	Statistics in Business and Industry	1	2
31.202	Communications	2	2
	Common Tutorial	....	1
	Library and Research	....	4
		12	21

YEAR 2 — *Term 3*

		BUSINESS SYSTEMS Hours per Week		MANAGEMENT SCIENCE Hours per Week	
No.	Subject	Lec.	Lab.	Lec.	Lab.
14.306	Probability and Simulation	....	....	4	4
14.360	IBM S/360 Assembler Programming	3	5	3	5
14.370	Computer Systems III	3	5	3	5
14.380	Operating Systems	1	1	1	1
16.341	Cost and Managerial Accounting	2	2	2	2
20.392	Human Relations	2	1	....	....
22.037	Management Engineering I	1	2	....	....
22.331	Quantitative Methods for Management	1	2	....	....
		13	18	13	17

Term 4

10.434	Managerial Policy	1	2	1	2
14.409	Operations Research Techniques	....	....	3	5
14.460	Advanced Programming (Assembler and PL/I)	3	5	3	5
14.470	Computer Systems IV	3	5	3	5
14.480	Operating Systems	1	1	1	1
16.441	Cost and Managerial Accounting	2	2	....	....
22.047	Management Engineering II	1	3	....	....
		11	18	11	18
14.431	Installation Management (Elective)	2	4	....	....
14.463	Computer Programming—R.P.G. (Electives)	2	2	....	....

These subjects may be taken instead of Assembler Programming and Operating Systems.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisite for Computer Science: Mathematics 12.

Business Management Division

Financial Management Technology

Financial management is a vital aspect of business life and continues to grow in importance as modern management techniques are developed and applied. The Financial Management Technology will enable students to train in this field by taking a general course of studies in their first year followed in the second by specialized training in either Accounting or Finance.

A student wishing to enter either the Accounting Option or the Finance Option should have an inquiring mind and enjoy working with people. A capacity to reason clearly and to work hard is also required. A student who comes with these qualities and a determination to succeed will be assured of employment in a field of absorbing interest and continuing challenge.

Accounting Option

Accounting, which has frequently been called the "language of business," can be broken down into three parts—accounting systems, financial reporting, and auditing. The Accounting Option is concerned with all three aspects of accounting. They are introduced in the first-year courses in accounting, data processing, and systems. More specialization is provided in financial and cost accounting in the second year.

Large organizations maintain departments to perform the accounting functions of financial accounting, cost accounting, internal audit, and budget preparation. Many jobs are open in these departments at the middle management level. That the graduate can enter accounting positions upon leaving the British Columbia Institute of Technology does not mean that his training should be considered at an end. The faculty of the option maintain active and close liaison with the professional accounting associations in British Columbia, and the graduate who wants to undertake the training they offer is in an advantageous position as a result of the courses he has taken at the Institute.

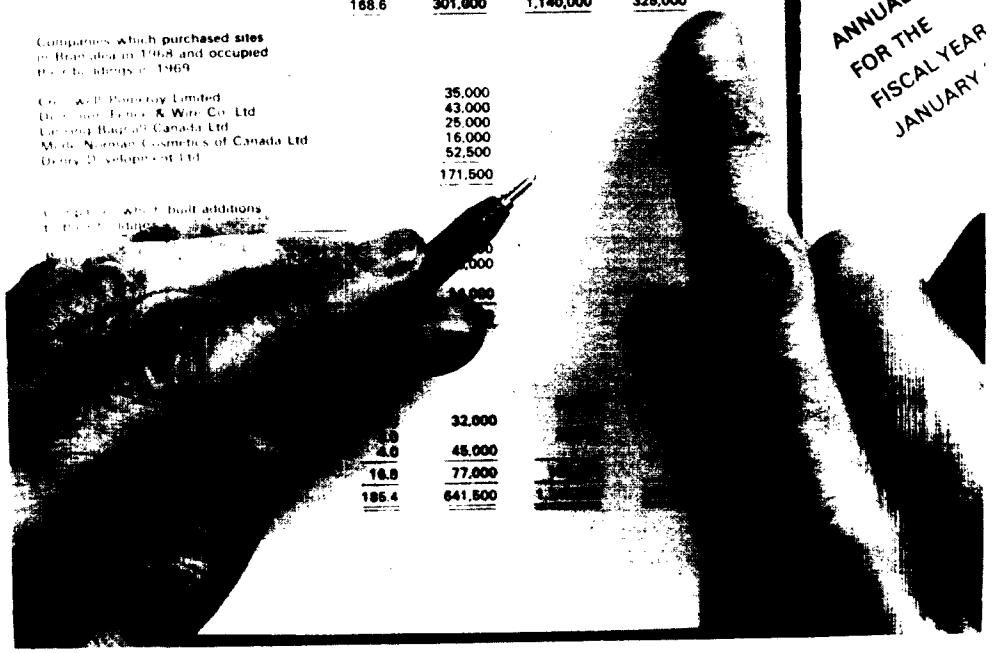
Finance Option

Finance is an essential part of business management. No undertaking can begin or continue unless it has financing. Finance is the concern of business firms as they seek funds for existing and new operations. Finance is the concern of financial institutions, as they provide funds for the business firms. Background for the study of finance is provided in the financial accounting courses. Decision-making in the finance field is dealt with in depth in the specialized second-year courses.

Many job opportunities exist for graduates in this option. Financial institutions such as banks, trust companies, insurance companies, and finance companies offer a wide range of occupations. These institutions are increasingly aware of the need for post-high-school training. Business firms also offer opportunities in their finance departments for option graduates. After appropriate job experience, opportunity for advancement to the intermediate level of branch manager and beyond would exist.

Bramalea Industrial Park

Company	Acres	Square Feet		
		Buildings Occupied	Under Construction	Construction Scheduled for 1970
Companies which purchased sites in Bramalea in 1969				
Aircraft Appliances and Equipment Ltd.	7.0		80,000	
American Standard Products (Canada) Ltd.	2.6		26,000	
Bacardi & Co. of Canada Ltd.	8.3		30,000	
Burlington Carpet Mills Canada Ltd.	20.0			200,000
Canadian Liquid Air Ltd.	9.4		36,000	
Canadian Technical Tape Ltd.	4.0	43,000		
Capitol Record Club	5.9		67,000	
Carlton Cards Ltd.	10.0		115,000	
Crucible Steel Co. Ltd.	2.2		14,000	
Dominion Glass Company Ltd.	53.9		740,000	
Elias Bros. Construction Ltd.	2.0	20,000		
English and Mould Limited	2.2			20,000
Firematch of Canada Ltd.	3.0			15,000
B.F. Goodrich Canada Ltd.	12.2	100,000		
Hydromatic Machines Ltd.	2.4			20,000
John's Frame Shop Ltd.	3.1			30,000
Lorica Enterprises Ltd.	4.0	18,000		
Reardon Company Limited	2.0		20,000	
Ralph Clark Stone Ltd.	6.2	100,000		
Wm. H. Rorer Ltd. (expansion land)	1.8			
Shorn Aircraft Canada Ltd.	2.0	20,000		
Tillotson Plastics Ltd.	4.4			40,000
	168.6	301,000	1,140,000	325,000
Companies which purchased sites in Bramalea in 1968 and occupied [illegible] in 1969				
[illegible] Limited		35,000		
[illegible] & Wire Co. Ltd.		43,000		
[illegible] Canada Ltd.		25,000		
[illegible] of Canada Ltd.		16,000		
[illegible]		52,500		
		171,500		
[illegible] built additions				
[illegible]		[illegible],000		
[illegible]		[illegible],000		
[illegible]		32,000		
[illegible]	[illegible].0	45,000		
	16.8	77,000		
	185.4	641,500		



ANNUAL REPORT FOR THE FISCAL YEAR JANUARY

BUSINESS MANAGEMENT DIVISION

FINANCIAL MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.131	Management in Industry	1	2
10.137	Economics	1	2
14.050	Introduction to Data Processing	2	2
14.182	Office Equipment	1	2
16.140	Accounting	2	2
20.191	Marketing	2	1
22.013	Business Mathematics and Statistics I	2	3
31.102	Communications	2	2
	Common Tutorial	....	1
	Library and Research	....	5
		13	22

Term 2

10.232	Administrative Practices	1	2
10.237	Economics	1	2
14.296	Office Systems and Procedures	1	2
16.240	Accounting	2	2
16.245	Credit and Collections	2	1
20.291	Marketing	2	1
22.023	Business Mathematics and Statistics II	2	3
31.202	Communications	2	2
	Common Tutorial	....	1
	Library and Research	....	6
		13	22

YEAR 2 — *Term 3*

No.	Subject	ACCOUNTING OPTION Hours per Week Lec.	Lab.	FINANCE OPTION Hours per Week Lec.	Lab.
10.332	Real Estate Management*	....	....	2	1
10.360	Business Law	2	1	2	1
14.052	Data Processing Applications	2	3	....	....
16.341	Cost and Managerial Accounting	2	2	....	....
16.346	Auditing	2	2	....	....
16.347	Financial Accounting	2	4	2	4
16.361	Finance	2	2	2	3
16.365	Money and Banking	....	....	2	2
16.366	Security Analysis	....	....	2	3
20.392	Human Relations	2	1	2	1
	Library and Research	....	6	....	6
		14	21	14	21

Term 4

10.432	Real Estate Management*	....	....	2	1
10.434	Managerial Policy	1	2	1	2
10.460	Business Law	2	1	2	1
14.053	Business Computer Programming	2	2	....	....
16.441	Cost and Managerial Accounting	2	2	....	....
16.446	Auditing	2	2	....	....
16.447	Financial Accounting	2	4	2	4
16.461	Finance	2	2	2	3
16.465	Money and Banking	....	....	2	2
16.466	Security Analysis	....	....	2	3
	Library and Research	....	7	....	6
		13	22	13	22

* Elective 16.368, 16.468 Insurance.

General Prerequisite: Graduation on the Academic-Technical Programme.

Business Management Division

Hotel, Motel, and Food Service Management Technology

The " hospitality " industry is in a state of rapid expansion. Receipts from tourists to Canada have more than doubled in the last few years. This rate of growth is expected to continue. Every tourist establishment must be staffed by trained managers and employees to serve the tourist trade and travelling public. At present the demand for qualified administrative personnel exceeds the supply, a situation likely to become even more serious in the next few years. The need is for well-trained managers with the ability to look ahead and plan, with the flexibility of mind to adapt to rapidly changing conditions.

In the two-year programme, students obtain intensive theoretical and practical training not only in general business procedures, but also in every aspect of hotel or restaurant operations: front office and housekeeping; general and departmental controls and accounting; purchasing, receiving, and storing of hotel supplies; preparation and serving of food and beverages; planning and design; advertising and marketing; and human relations. The hotel and restaurant laboratory area at the Institute is outfitted with fully furnished typical hotel and motel rooms, a lobby and lounge, and a front desk equipped with the latest automatic billing and audit machine. Students will train in the school's cafeteria and dining-room, and food production and research laboratory, learning the fundamentals of food operations from the purchase of food through its preparation to the serving of a top-quality meal.

With this training, supplemented by three months of mandatory practical experience in a hotel, motel, or restaurant between the first and second years, graduates should find ample employment opportunities. Although it is unlikely that a graduate will step immediately into a top position, after some experience at the front desk, in the general office, or in the catering department he should, within a few years, assume such positions as front office manager, catering manager, or assistant manager of a smaller hotel. Female graduates could expect to assume executive housekeeping or food management positions. Eventual promotion to full managership is up to the individual. Many opportunities lie in the fields of industrial and air-line catering, and in other businesses associated with the problems of mass feeding and housing, such as hospitals and universities.

Graduates should be prepared to work irregular hours if necessary and be able to associate harmoniously with fellow employees and the public in general. Some practical experience is advisable before applying for this programme.

BUSINESS MANAGEMENT DIVISION

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.138	Economics	1	2
16.140	Accounting	2	2
16.145	Credit and Collection	2	2
18.101	Bar and Rooms Management	2	1
18.102	Food and Beverage Management	3	2
22.013	Business Mathematics and Statistics I	2	2
31.102	Communications	2	2
	Library and Research	....	8
		14	21

Term 2

10.238	Economics	1	2
14.050	Introduction to Data Processing	1	2
16.240	Accounting	2	2
18.202	Food and Beverage Management	3	2
18.203	Front Office Management	2	1
18.211	English-Speech	....	2
22.023	Business Mathematics and Statistics II	2	2
31.202	Communications	2	2
	Library and Research	....	7
		13	22

YEAR 2 — *Term 3*

No.	Subject	HOTEL, MOTEL OPTION Hours per Week Lec.	Lab.	FOOD MGMT. OPTION Hours per Week Lec.	Lab.
10.317	Hospitality Industry Law	2	....	2	....
18.302	Food and Beverage Management	3	6	3	6
18.305	Food Research and Production	....	....	....	6
18.313	Food and Beverage Control	1	2	1	2
18.316	Introduction to Organizational Behaviour	....	2	....	2
18.321	Food Service Marketing	....	....	1	2
20.391	Advertising and Promotion	1	2	....	....
22.036	Basic Management Engineering	1	2	1	2
40.307	Planning and Design	2	2	....	....
44.332	Food Handling and Sanitation	....	....	2	0
	Library and Research	....	9	....	5
		10	25	10	25

Term 4

10.417	Hospitality Industry Law	2	....	....	....
18.402	Food and Beverage Management	3	5	3	5
18.405	Food Research and Production	....	....	....	6
18.413	Hotel Accounting	2	2	....	....
18.416	Introduction to Organizational Behaviour	....	2	....	2
18.418	Front Office Accounting	1	2	....	....
18.419	French Conversation	....	2	....	....
18.420	Food and Beverage Accounting	....	....	1	1
18.422	Menu Planning and Œnology	....	....	2	....
18.424	Food Facilities Planning	....	....	1	2
20.491	Advertising and Promotion	1	2	....	....
31.402	Communications	....	2	....	2
40.407	Planning and Design	2	2	....	....
44.432	Food Handling and Sanitation	....	....	2	....
	Library and Research	....	5	....	8
		11	24	9	26

General Prerequisite: Graduation on the Academic-Technical Programme.

Business Management Division

Marketing Management Technology

The stature of marketing within our society continues to grow.

The tremendous growth of our productive capacity, made possible by the accelerating rate of technological innovation, demands dynamic marketing practices, intense cultivation of markets, and intelligent, resourceful, trained marketing people.

These marketing people must be equipped with an understanding of the objectives, concepts, principles, methods, and problems of marketing. They should have an aptitude and flair for responding to the challenges of a dynamic society where wants and needs are continually changing.

In order to meet this need, the Institute makes extensive use of the most modern methods of instruction, provides for guests from industry to lecture in their respective fields of specialization, and requires active participation of the student in business settings, through field trips, group projects, seminars, and case studies.

As a consequence of growth, both in enrolments and career opportunities, provision has been made for additional specialization within the marketing field. The objective of this change is to bring the student closer to the point where he can make an effective contribution to society in his chosen field.

Two options are available in the Marketing programme following a common first year. Both of these options lead to careers in fields where the rewards for accomplishment are prompt and substantial.

Marketing Management Option

This option prepares students for careers in retailing, which covers a broad spectrum of activities and types of business involved in selling goods to ultimate consumers; in wholesaling where the businesses and activities are concerned with serving industrial customers and retailing firms; in sales and sales management, advertising and sales promotion, product and market development, and marketing research.

Traffic and Transportation Management Option

To achieve marketing objectives, enter new markets, and enjoy increased sales in highly competitive markets and to achieve significant marketing economies, a firm must employ sound marketing logistics. Students electing this option will specialize in storage, traffic, and transportation and will receive a sound grounding in distribution economics, materials handling, movement services, and storage facilities.


SALE
DAYS

BUSINESS MANAGEMENT DIVISION
MARKETING MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hrs. per Wk. Lec.	Lab.
10.131	Management in Industry	1	2
10.139	Economics	1	2
14.050	Introduction to Data Processing	2	1
14.182	Office Equipment	1	2
16.140	Accounting	2	2
20.180	Marketing	2	1
22.013	Business Mathematics and Statistics I	2	2
31.102	Communications	2	2
	Library and Research	—	8
		13	22

Term 2

No.	Subject	MARKET. MGT. OPTION Hrs. per Wk. Lec.	Lab.
10.239	Economics	1	2
14.296	Office Systems and Procedures	1	2
16.240	Accounting	2	2
16.245	Credit and Collections	2	1
20.275	Salesmanship	2	1
20.280	Marketing	2	1
22.023	Business Mathematics and Statistics II	2	2
31.202	Communications	2	2
	Library and Research	—	8
		14	21

YEAR 2 — *Term 3*

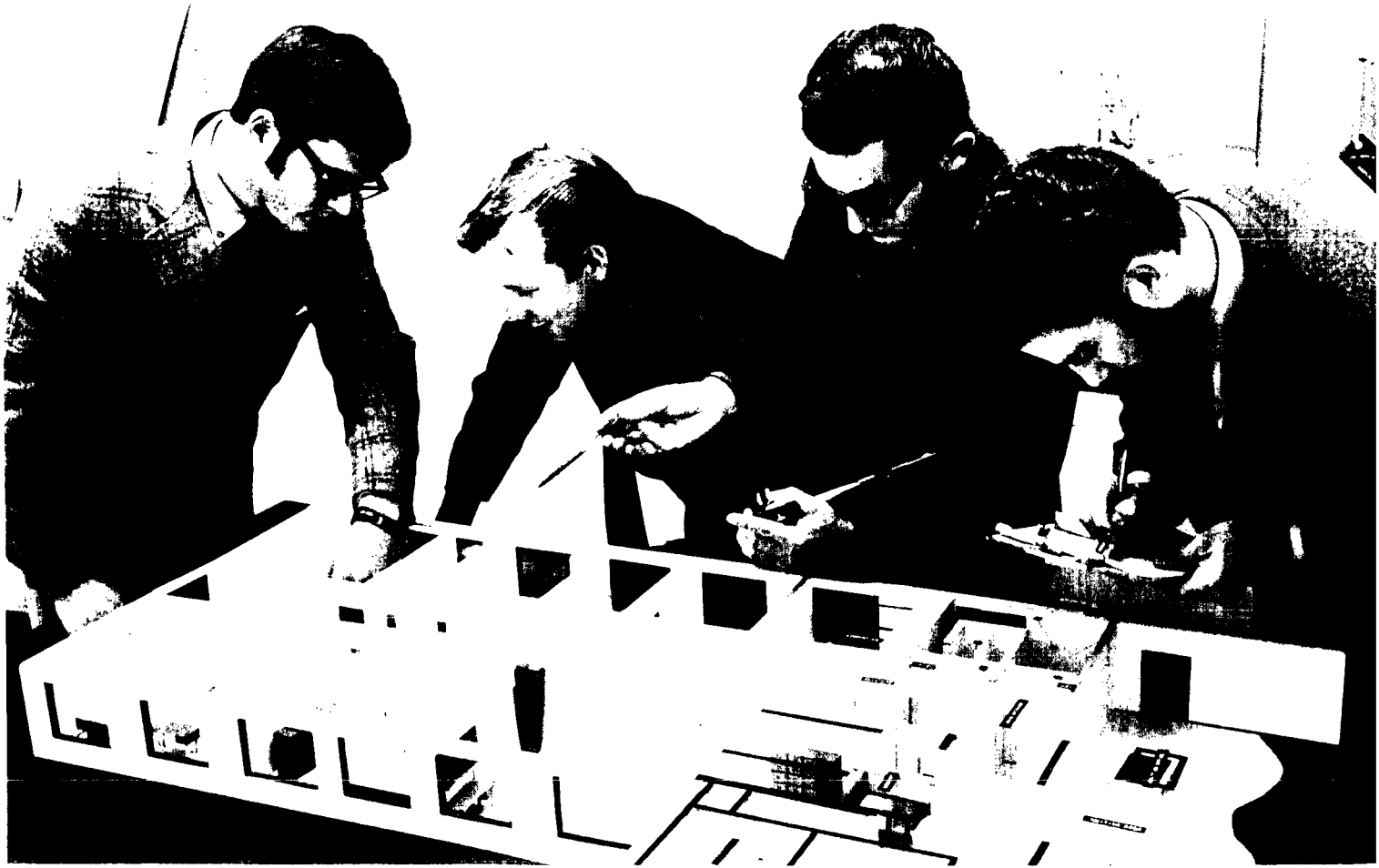
No.	Subject	MARKET MGT. OPTION Hrs. per Wk. Lec.	Lab.	TRAF. AND TRANSP. MGT. OPTION Hrs. per Wk. Lec.	Lab.
10.325	Industrial Relations	—	—	2	2
10.360	Business Law	2	1	2	1
14.052	Data Processing Applications	—	—	2	3
16.342	Merchandise Accounting	2	2	—	—
20.310	Retailing	2	2	—	—
20.323	Sales Management	2	2	—	—
20.331	Modes of Transportation	—	—	2	3
20.332	Transportation Economics	—	—	2	2
20.333	Customs and Documentation	—	—	2	1
20.371	Advertising and Sales Promotion	2	2	—	—
20.372	Consumer Behaviour	2	2	—	—
20.381	Human Relations	2	1	2	1
20.382	Marketing Research—Theory	2	1	—	—
22.037	Management Engineering I	—	—	1	2
	Library and Research	—	6	—	5
		16	19	15	20

Term 4

10.434	Managerial Policy	1	2	—	—
10.460	Business Law	2	1	2	1
16.442	Merchandise Accounting	2	2	—	—
16.443	Management Accounting	—	—	2	2
20.411	Merchandising	2	2	—	—
20.422	Marketing Planning	2	3	—	—
20.432	Transportation Economics	—	—	2	2
20.434	Regulatory Systems in Canadian Transportation	—	—	2	1
20.435	Distribution Centres and Control	—	—	1	2
20.436	Transportation Trends	—	—	2	2
20.437	Marketing Research for Transportation	—	—	2	3
20.482	Marketing Research—Applied	1	3	—	—
20.483	Personnel Administration	2	1	—	—
20.484	Transportation and Materials Handling	2*	1	—	—
22.047	Management Engineering II	—	—	1	3
	Library and Research	—	6	—	5
		14	21	14	21

* Alternative elective: 10.432 Real Estate Management.

General Prerequisite: Graduation on the Academic-Technical Programme.



Business Management Division

Technical Management Technology

Space flights are notable examples of technological advance and man's mastery of science. Air travel, while not as glamorous, also illustrates our mastery of the sciences, as does the automobile, and television. So do less-obvious examples such as modern high-rise buildings or the local supermarket, where half of today's products were not available 16 years ago.

It is not enough to be able to use and understand the physical sciences. Knowing how to build a jet engine or wide oval tires or even an electric knife-sharpener does not mean that we can produce usable quantities. To produce sufficient numbers at a realistic cost requires considerable human effort in many varied jobs, and the nature of these jobs is changing rapidly. Just as new products are developed, new techniques and machines are being developed to produce these products. We use these tools, such as computers, to assist us, but they don't solve problems simply by pushing buttons, anymore than an automatic dishwasher does all the kitchen chores by pushing its buttons.

The essential ingredient is man, and man must be organized, he must have a planned approach to the job, or all the science and technology on the other side of the buttons is useless. The design, development, and directing of these systems of men and machines is the prime substance of Technical Management. This is where the most exciting and interesting challenges occur in modern business, and this is where the greatest potential for change and growth exists.

It is difficult to study in an interdisciplinary environment. Relating business and engineering with human behavioural considerations is challenging, but it is also most rewarding. Each graduate has the potential to work in many areas of business, and is usually required to, because of his education. This means that he is not tied to routine tasks but is involved in many areas, consequently gaining a wide range of experience and knowledge of his employer's business in a relatively short time.

The student who enrols in this programme generally has some business experience and has recognized his need for more education. He usually has interests in technology, as demonstrated by taking science electives in high school and having taken mathematics to the Grade XII level. In addition, he must have considerable empathy for and be capable of relating to, people in a work situation.

For the person who enjoys challenges, this programme leads to work in such areas as systems analysis, method study, plant location and layout analysis, materials handling, and performance measurement and standards in many varied types of business. The wide experience available through working in these areas leads to early promotion to management, creating a continuing need for graduates. It is because of this potential that the Technical Management graduate can be called the technologist with a future.

BUSINESS MANAGEMENT DIVISION

TECHNICAL MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
14.050	Introduction to Data Processing	2	1
16.140	Accounting	2	2
22.110	Problems Laboratory	1	3*
22.111	Mathematics	2	3
31.101	Communications	2	1
33.102	Introductory Physics	3	2
49.101	General Draughting	----	2
49.106	Engineering Concepts I	2	3*
	Common Tutorial	----	1
	Library and Research	----	6
		14	21

Term 2

16.240	Accounting	2	2
22.220	Method Study	1	3
22.221	Statistics in Business and Industry	1	2
31.201	Communications	2	1
33.202	Introductory Physics	3	2
49.206	Engineering Concepts II	2	2
49.267	Introduction to Machine Tools	1	3
	Common Tutorial	----	1
	Library and Research	----	7
		12	23

YEAR 2 — *Term 3*

10.337	Economics	1	2
16.343	Cost Accounting	2	2
20.392	Human Relations	2	1
22.330	Performance Measurement	2	3
22.331	Quantitative Methods for Management	1	2
22.332	Applied Programming	2	3
22.333	Systems and Procedures Analysis	2	1
	Library and Research	----	9
		12	23

Term 4

10.437	Economics	1	2
20.493	Personnel Administration	2	1
22.440	Industrial Engineering Concepts	3	5
22.441	Quantitative Methods for Management	2	2
22.442	Industrial Organization and Operations	4	4
22.443	Materials Handling and Control Equipment	1	1
	Library and Research	----	7
		13	22

* Three hours alternating each week.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisite: Mathematics 12.

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L. G. DOYLE, Constable, RCMP, Migratory Bird Section.
C. E. ESTLIN, Chief Protection Officer, British Columbia Fish and Wildlife Branch, Vancouver.
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B. R. GATES, B.Sc., M.Sc., Regional Biologist, British Columbia Fish and Wildlife Branch, Vancouver.
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DR. J. W. NEILL, Associate Professor of Horticulture, Division of Plant Science, University of British Columbia, Vancouver.

M. POWER, Superintendent, Holland Landscapers Limited, Vancouver.

O. SCHULTZ, Western Regional Manager, York Farms Division of Canada Packers Ltd., Sardis.

FOREST RESOURCE TECHNOLOGY

Forestry Programme Advisory Committee

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G. R. HARRIS, Chief Instructor, Forest Resource Technology, British Columbia Institute of Technology, Burnaby.

D. C. HOLMES, Chief Instructor, Forest Resource Technology, British Columbia Institute of Technology, Burnaby.

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DR. J. HATTER, Director, British Columbia Fish and Wildlife Branch, Department of Recreation and Conservation, Victoria.
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J. W. RAVEN, Manager, Quality Control, Council of the Forest Industries of British Columbia, Vancouver.

E. C. SHERMAN, Resident Manager, Canadian Forest Products, Howe Sound Pulp Division, Port Mellon.

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F. A. TAYELOR, Industrial Development Officer, Forest Products Laboratory, Department of Environment, Vancouver.

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E. N. WALTON.

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K. KIDD, Gas Division, British Columbia Hydro and Power Authority, Burnaby.

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Members:

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D. H. BURNETT, David H. Burnett & Associates, Burnaby.

R. D. CLENDENNING (Alumni Rep.), Survey Co-ordinator, District of North Vancouver, North Vancouver.

J. CHERRINGTON, Engineer of Special Projects, Canadian Pacific Railway, Vancouver.

DR. S. H. DE JONG, Department of Civil Engineering, University of British Columbia, Vancouver.

R. J. GREGORY, Municipal Surveyor, District of Surrey, Surrey.

T. W. LAURIENTE, Construction Manager, Dominion Bridge, Vancouver.

M. H. MELLE, Supervisor of Surveying, British Columbia Hydro and Power Authority, Vancouver.

W. N. PAPOVE, Partner, McElhanney Associates, Land Surveyors, Vancouver.

W. G. ROBINSON, Partner, Underhill & Underhill, Surveyors and Civil Engineers, Vancouver.

A. G. TRANFIELD, Regional Location Superintendent, Department of Highways, North Vancouver.

R. WILLS, Assistant Regional Hydrographer, Canadian Hydrographic Service, Victoria.

Engineering Division Programmes

Engineering Division

The ever-broadening and increasingly complex technological base of our society creates a large and continuing demand for competent, highly trained specialists in many technical fields. Involved across the spectrum of activities are theoretical scientists, professionals, technologists, and vocational craftsmen. In this team, technologists play an essential role and find challenging, interesting, and rewarding careers. As listed below, the Institute offers technologist training in traditional engineering fields and several other scientific areas. In certain fields, graduation from the Institute enables one to be certified as an Engineering Technologist with the British Columbia Society of Engineering Technologists upon completion of two years of suitable industrial experience. Students will follow a prescribed course in one of the following technologies:

- Biological Sciences Technology
  - Food Processing Option
  - Food Production Option
  - Landscape Horticulture Option
- Building Technology
  - Building Option
  - Environmental Services Option
- Chemical and Metallurgical Technology
  - Industrial Chemistry Option
  - Physical Metallurgy Option
  - Extractive Metallurgy Option
  - Pollution Treatment Option
- Civil and Structural Technology
  - Civil Elective
  - Traffic Elective
  - Structural Elective
- Electrical and Electronics Technology
  - Electrical Option
  - Telecommunications Option
  - Control Electronics Option
- Forest Resource Technology
  - Forestry Programme
    - Forestry Option
    - Fish, Wildlife, and Recreation Option
  - Forest Products Programme
    - Pulp and Paper Option
    - Wood Products Option
- Instrumentation and Systems Technology
- Mechanical Technology
  - Production Option
  - Design Option
- Mining Technology
- Natural Gas and Petroleum Technology
- Surveying Technology
  - Survey Option
  - Photogrammetry Option

Biological Sciences Technology

The programme in Biological Sciences Technology provides instruction in the applied aspects of living phenomena. It includes the production and processing of our vital food supply from plant and animal sources. It includes also the ornamental plants that improve our landscapes. Thus, the technology is divided into three options: Food Processing, Food Production, and Landscape Horticulture. Each will be offered subject to adequate enrolment.

Food Processing Option

The Food Processing Option provides a thorough knowledge of the basic sciences which leads to more advanced technical subjects related to the effective preservation of food. The student learns to apply knowledge of specialties such as microbiology, food chemistry, and food technology to processes such as canning, freezing, dehydrating, and fermenting.

The graduate in the Food Processing Option is well qualified for employment in the food manufacturing industry; for example, trained technologists are required to perform chemical, physical, and bacteriological tests on food materials during processing, and on the finished packaged goods. The graduate is qualified also to supervise processes within the food manufacturing plant itself. Further employment opportunities exist in government laboratories and inspection services.

Food Production Option

This option offers a thorough grounding in the sciences that are of importance in the production of food from agricultural sources. The student learns to apply knowledge of specialties such as botany, zoology, microbiology, genetics, entomology, and biochemistry to the production of food. In addition to studying plant, animal, and soil sciences, the student becomes acquainted with the analytical, mechanical, and business aspects of modern agricultural production.

The graduate in the Food Production Option has many employment avenues open to him; for example, trained technologists are required for the laboratory control and marketing of agricultural chemicals, feeds, and fertilizers, and also in the field operations of food-manufacturing concerns. Additional job opportunities exist in inspection services and in government and industry research laboratories.

Landscape Horticulture Option

An option that deals with the ornamental plantings that are an important part of residential, commercial, industrial, and park developments. The option includes a basic study of the natural sciences that apply to the fields of floriculture, arboriculture, nursery production, turf management, and landscaping.

The graduate in the Landscape Horticulture Option is prepared for challenging employment with landscape contractors, horticultural nurseries, and park systems. Opportunities for advancement are good in the rapidly expanding landscape horticulture industry.

ENGINEERING DIVISION

BIOLOGICAL SCIENCES TECHNOLOGY

Term 1

No.	Year 1 Subject	Hrs. per Wk. Lec.	Lab.
30.101	Applied Chemical Principles	3	3
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.102	Introductory Physics	3	2
44.121	Introductory Microbiology	2	4
44.122	Biology	2	3
	Library and Research	....	5
		15	20

Term 2

	Year 1	Food Processing Option Hrs. per Wk. Lec.	Lab.	Food Production Option Hrs. per Wk. Lec.	Lab.	Landscape Horticulture Option Hrs. per Wk. Lec.	Lab.
30.201	Applied Chemical Principles	3	3	3	3	3	3
31.201	Communications	2	1	2	1	2	1
32.246	Statistics I and II	3	2	3	2	3	2
33.202	Introductory Physics	3	2	3	2	3	2
44.201	Food Processing	3	3	....	....	....	....
44.221	Microbiology for Food Processing	2	3	....	....	....	....
44.223	Microbiology for Food Production	....	....	2	3	....	....
44.251	Food Production	....	....	3	3	....	....
44.253	Introductory Botany and Soils	....	....	....	....	3	3
44.263	Applied Horticulture	....	....	....	....	2	3
	Library and Research	....	5	....	5	....	5
		16	19	16	19	16	19

Term 3

	Year 2						
10.730	Business	2	1	....	....	2	1
30.303	Instrumental Analytical Methods	2	3	2	3	..	..
31.301	Industrial Communications	1	1	1	1	1	1
40.306	Landscape Draughting	....	....	....	....	1	2
44.301	Food Processing	2	3	....	....	....	....
44.311	Quality Control	1	2	....	....	....	....
44.312	Introductory Food Analysis	2	3	2	3	..	..
44.341	Mechanics of Machines	2	2	2	2	2	2
44.352	Genetics	....	....	2	2	....	....
44.361	Plant Technology	....	....	3	3	3	3
44.363	Applied Horticulture	....	....	....	....	3	3
44.364	Nursery Crop Production	....	....	....	....	3	3
44.371	Animal Technology	....	....	2	2	....	....
48.350	Process Instrumentation	2	1	....	....	....	....
	Library and Research	....	5	....	5	....	5
		14	21	14	21	15	20

Term 4

	Year 2						
20.700	Agricultural Products Marketing	....	....	2	1	....	....
22.746	Basic Operations Management	1	1	....	....	....	....
41.401	Industrial Communications	1	1	1	1	1	1
40.406	Landscape Draughting	....	....	....	....	1	2
44.401	Food Processing	2	3	....	....	....	....
44.402	Process Analysis	2	3	....	....	....	....
44.411	Quality Control	1	3	....	....	....	....
44.412	Food Analysis	2	3	....	....	....	....
44.413	Agricultural Analysis	....	....	2	3	....	....
44.414	Experimental Techniques	....	....	2	2	....	....
44.431	Sanitation	1	3	....	....	....	....
44.442	Agricultural Mechanics	....	....	2	3	2	3
44.462	Plant Protection	....	....	3	3	3	3
44.465	Landscape Field Practice	....	....	....	....	3	6
44.481	Soil Technology	....	....	2	3	2	3
48.450	Process Instrumentation	2	1	....	....	....	....
	Library and Research	....	5	....	5	....	5
		12	23	14	21	12	23

General Prerequisite: Graduation on the Academic-Technical Programme
Special Prerequisites: Mathematics 12, Chemistry 11.

Building Technology

Throughout the world, rapidly expanding populations have enormously increased the demand for building operations of all kinds, and the course in Building Technology is designed to give as sound a preparation for this work as time allows.

In addition to continuing such basic high-school subjects as physics, mathematics, and English, which are essential in acquiring any degree of technical proficiency, the course introduces students in the first year to various specialized subjects as listed. All these subjects contain both lecture and draughting-room instruction, so some students find they can further their education through their summer employment, being capable of working as draughtsmen in architects' and engineers' offices, as well as in the offices of various sub-trade and general contracting organizations.

In the second year, students continue with the specialized subjects referred to above, but in addition begin a thorough coverage of such subjects as materials of construction, specification writing, quantity and cost estimating, work study, and similar subjects which further expand the number of possible areas into which they may move successfully on graduation.

Fundamentally, graduate technologists will understand buildings three-dimensionally, with all their architectural, structural, mechanical, and cost implications, and so may enter any area of the building, or related, field to which their individual interests and qualifications lead them.

We envisage graduates, after a suitable period of practical experience, becoming chief draughtsmen in a variety of offices; specification writers; estimators with architectural, engineering, contracting, or other offices; building inspectors; officials in property management departments; appraisers and assessors in private and governmental offices; expediters, senior clerks, office managers in contractors' offices; superintendents of construction; partners in construction organizations, particularly subtrades; agents for building supplies and equipment; teachers and instructors in public schools and colleges, to name the more obvious possibilities.

The Environmental Services Option in second year enables students so inclined to gain additional training in building services.

In general, the course is creating a supply of highly qualified "assistant administrators" who will fill positions in the building world which lie between the professional architect, engineer, and contractor on the one hand and the vocationally trained draughtsman and tradesman on the other.

To students who wish to become registered architects by the apprenticeship system, the Royal Architectural Institute of Canada offers graduates credit for about half the examinations otherwise required.

Similarly, for those wishing to become quantity surveyors, the Canadian Institute of Quantity Surveyors will accept graduates as Probationer Members.

TABLE 3
SCHEDULE SEE PAGE
UTILITY
FURNACE
BEDROOM
BATH
LIVING ROOM
ENTRY
FLOOR PLAN
SCALE
A
10
B
10
DOOR
STYLE
TICAL DOOR JAMBS

ENGINEERING DIVISION

BUILDING TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.104	Physics for Building Technology	3	----
40.101	Draughting and Design	1	2
40.102	Building Construction	2	4
40.103	Building Services	1	2
42.107	Building Structures	2	2
51.104	Introduction to Survey for Building Students	1	2
	Library and Research	----	5
		15	20

Term 2

31.201	Communications	2	1
32.226	Calculus I and Analytic Geometry	3	2
33.204	Physics for Building Technology	3	----
40.201	Draughting and Design	1	2
40.202	Building Construction	5	4
40.203	Building Services	1	2
42.207	Building Structures	2	2
	Library and Research	----	5
		17	18

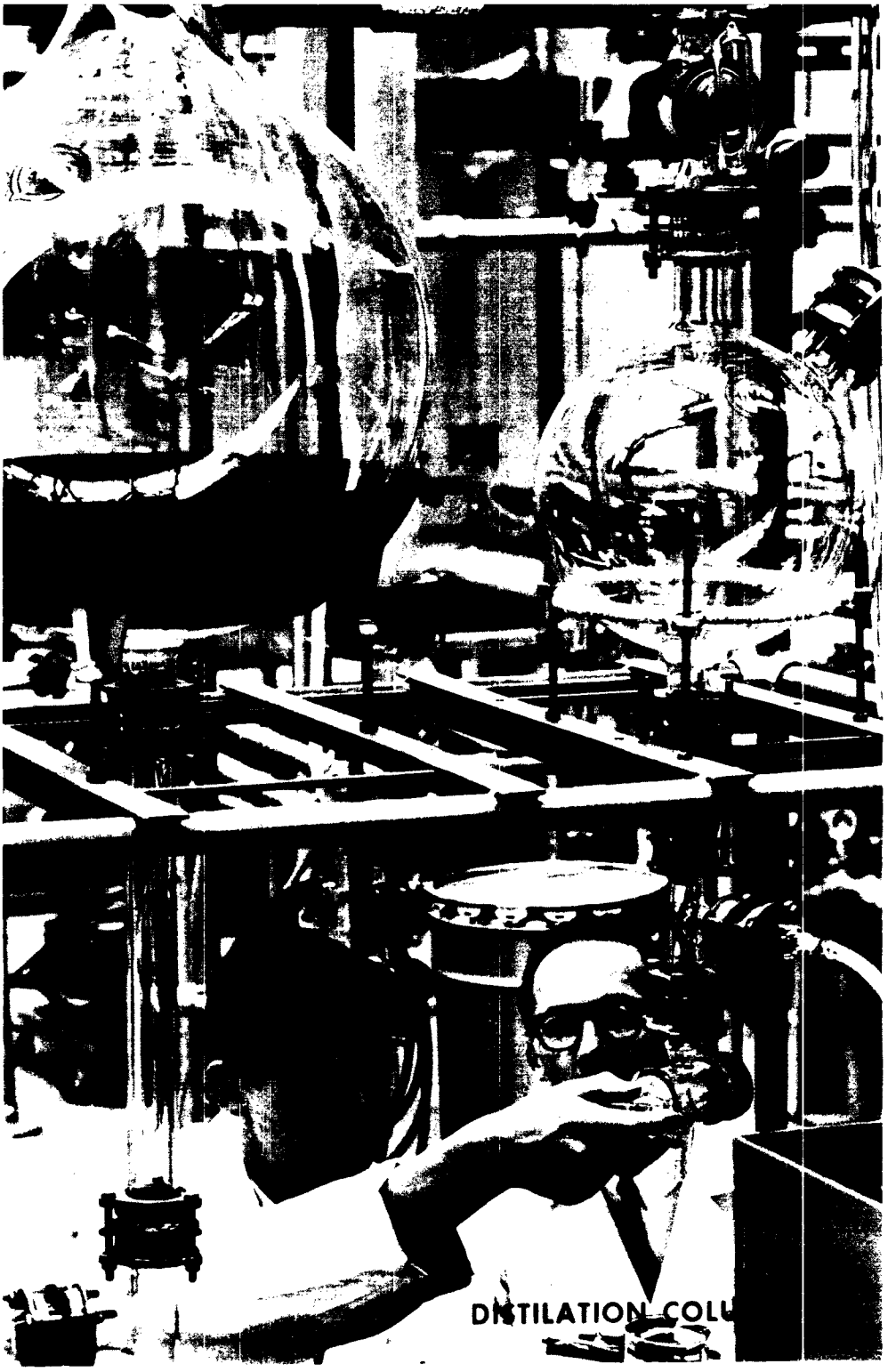
YEAR 2 — *Term 3*

No.	Subject	Hours per Week Lec.	Lab.	ENVIRONMENTAL SERVICES OPTION Hours per Week Lec.	Lab.
10.730	Business	2	1	2	1
40.301	Design	1	3	1	3
40.302	Building Construction	2	5	2	5
40.303	Building Services	2	2	2	2
40.304	Construction Specifications and Estimating	5	1	5	1
40.305	Environmental Services	----	----	1	3
42.307	Building Structures	1	3	----	----
	Tutorials	----	2	----	2
	Library and Research	----	5	----	5
		13	22	13	22

Term 4

22.746	Basic Operations Management	1	1	1	1
40.401	Design	1	3	1	3
40.402	Building Construction	2	5	2	5
40.403	Building Services	3	2	3	2
40.404	Construction Specifications and Estimating	5	1	5	1
40.405	Environmental Services	----	----	1	3
42.407	Building Structures	1	3	----	----
	Tutorials	----	2	----	2
	Library and Research	----	5	----	5
		13	22	13	22

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11.


DISTILATION COLU

Chemical and Metallurgical Technology

The programme in Chemical and Metallurgical Technology provides instruction to those men and women wishing to enter the process industries—either in the laboratory, in the production department, in the engineering department, or in the technical sales department. As the technology encompasses a broad range of industries and sciences, the training emphasizes mathematics, physics, and chemistry, and their application to general problems recurring in the chemical process industries, rather than to specific problems peculiar to a single industry. Consequently, the first year is general, but a Unit Processes course and a workshop course are unique to this programme.

In the second year the curriculum provides considerable analytical laboratory practice, together with such production and engineering training as work study, unit operations, instrumentation, and control. In addition, the student is given the choice of one of the following options: Industrial Chemistry, Physical Metallurgy, Extractive Metallurgy, or Pollution Treatment. Thus, a graduate will be able to enter the industry of his choice in either the sales, production, engineering, laboratory, or waste-management department.

Typical of the chemical process industries that will engage graduates from the programme are oil refineries, chlorine and caustic soda producers, beet and cane sugar refiners, cement producers, lime and gypsum producers, plastic and resin producers; copper, lead, zinc, and other metal smelters; aluminum, iron and steel, magnesium, and bronze smelters; metal fabricators and heat treaters; pulp and paper mills, and cellulose chemical producers; and mining companies engaged in both exploration and production. Typical of the positions graduates would seek upon entering industry would be as chemists and analysts in research, commercial, and industrial laboratories, as engineering assistants in engineering departments of industrial and consulting companies, as production supervisor trainees in production plants, as technical sales trainees in the sales departments of chemical process industries or equipment manufacturers, or as specialists in waste disposal and pollution treatment.

ENGINEERING DIVISION

CHEMICAL AND METALLURGICAL TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.730	Business	2	1
30.101	Applied Chemical Principles	3	3
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.101	General Physics (A)	3	3
41.102	Laboratory Workshop	----	3*
41.103	Engineering Materials	2	3*
49.101	Draughting	----	2
	Library and Research	----	5
		15	20

Term 2

30.201	Applied Chemical Principles	3	3
30.204	Chemical Laboratory Techniques	----	3
31.201	Communications	2	1
32.223	Calculus I and II	3	2
33.201	General Physics (A2)	3	3
41.203	Engineering Materials	2	3*
41.207	Unit Processes (Pollution Treatment excepted)	----	3*
41.210	Environmental Sampling Techniques (Pollution Treatment)	----	3*
49.204	Draughting	----	2
	Library and Research	----	5
		13	22

* Alternate weeks.

INDUSTRIAL CHEMISTRY OPTION

YEAR 2 — *Term 3*

No.	Subject	Hours per Week Lec.	Lab.
30.301	Organic Chemistry	2	4
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	2	4
32.306	Calculus III	3	2
41.320	Unit Project	1	1
41.341	Unit Operations	3	3
	Library and Research	----	5
		13	22

Term 4

22.746	Basic Operations Management	2	----
30.401	Organic Chemistry	2	4
30.406	Analytical Chemistry	2	4
32.454	Numerical Methods I and Statistics I	3	2
41.420	Unit Project	1	1
41.441	Unit Operations	3	3
48.470	Process Instrumentation	----	3
	Library and Research	----	5
		13	22

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11, Physics 11.

ENGINEERING DIVISION

PHYSICAL METALLURGY OPTION

YEAR 2 — *Term 3*

No.	Subject	Hrs. per Wk. Lec.	Lab.
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	2	4
32.306	Calculus III	3	2
41.304	Physical Metallurgy	2	4
41.320	Unit Project	1	1
41.341	Unit Operations	3	3
	Library and Research	....	5
		13	22

Term 4

30.406	Analytical Chemistry	2	4
32.454	Numerical Methods I and Statistics I	3	2
41.404	Physical Metallurgy	2	4
41.420	Unit Project	1	1
41.425	Nondestructive Testing	....	2
41.441	Unit Operations	3	3
48.470	Process Instrumentation	....	3
	Library and Research	....	5
		11	24

EXTRACTIVE METALLURGY OPTION

YEAR 2 — *Term 3*

No.	Subject	Hrs. per Wk. Lec.	Lab.
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	2	4
32.306	Calculus III	3	2
41.307	Extractive Metallurgy	3	3
41.320	Unit Project	1	1
41.341	Unit Operations	3	3
	Library and Research	....	5
		14	21

Term 4

30.406	Analytical Chemistry	2	4
32.454	Numerical Methods I and Statistics I	3	2
41.407	Extractive Metallurgy	3	3
41.408	Assaying	....	3
41.420	Unit Project	1	1
41.441	Unit Operations	3	3
48.470	Process Instrumentation	....	3
	Library and Research	....	4
		12	23

POLLUTION TREATMENT OPTION

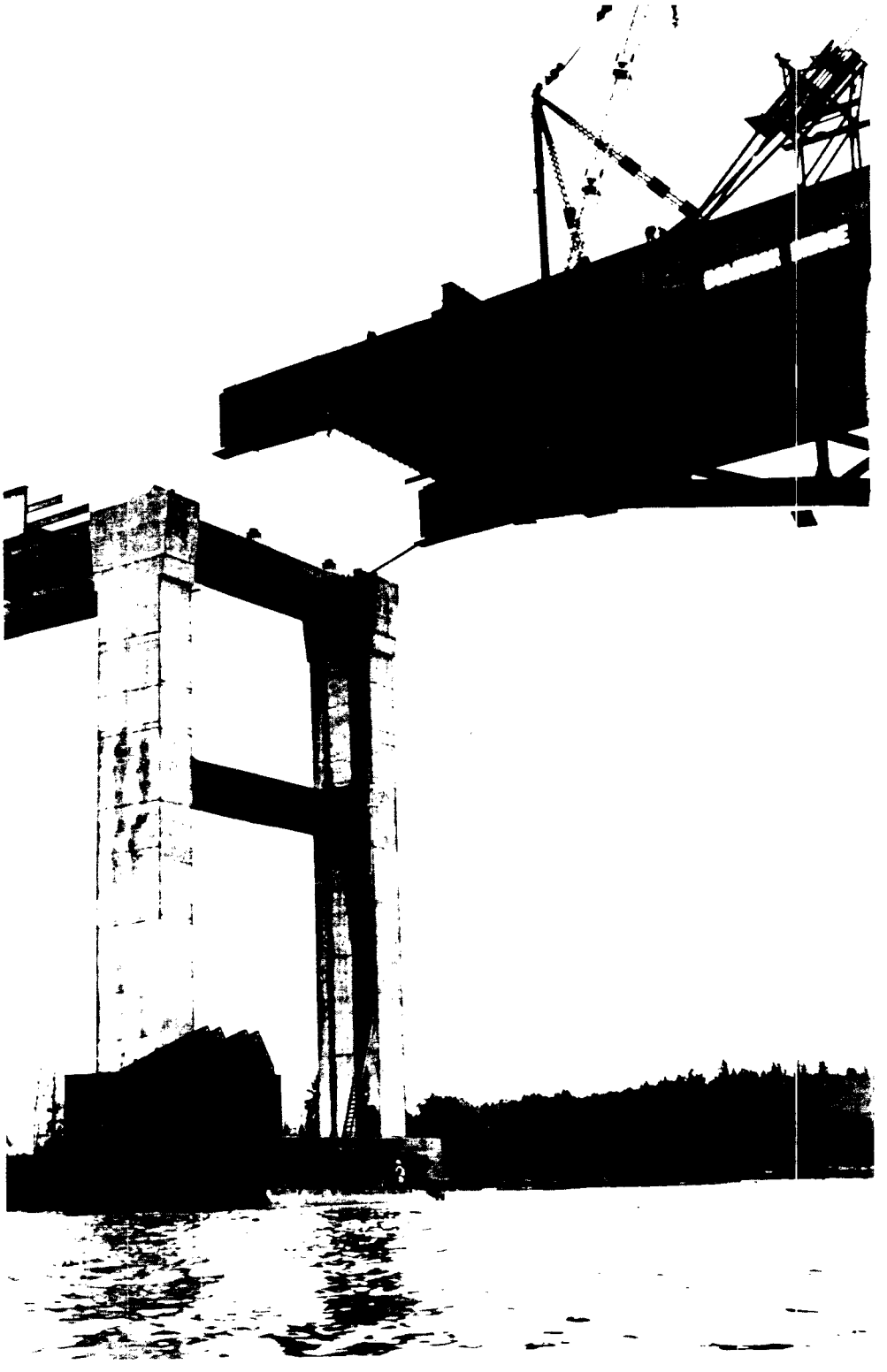
YEAR 2 — *Term 3*

No.	Subject	Hrs. per Wk. Lec.	Lab.
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	3	3
32.306	Calculus III	3	2
41.311	Pollution Science	2	4
41.320	Unit Project	1	1
41.341	Unit Operations	3	3
	Library and Research	....	5
		14	21

Term 4

30.406	Analytical Chemistry	2	4
32.454	Numerical Methods I and Statistics I	3	2
41.411	Pollution Science	2	4
41.412	Waste Disposal Methods	1	3
41.413	Environmental Analytical Methods	....	2
41.420	Unit Project	1	..
41.441	Unit Operations	3	3
	Library and Research	....	5
		12	23

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11, Physics 11.



Civil and Structural Technology

Civil and Structural Technology, which creates the physical facilities for the civilized environment, is concerned with the design and construction of bridges, highways, railways, airports, dams, power developments, canals, docks, harbours, and buildings of all kinds, as well as drainage, irrigation, sewage, and water supply systems.

In Canada, and particularly in British Columbia, with the economy developing rapidly, a great demand exists for trained technicians. Specifically designed to train civil and structural technicians, this programme will provide a man with sufficient specialized knowledge to make him immediately capable of playing a useful role in the economy. In addition, the programme prepares him to adapt to demands of the future.

The programme provides a foundation in mathematics and the applied sciences for continued technical growth, and in English for the ability to set forth, in clear and precise language, descriptions and analyses of projects and engineering activities. The methods of instruction are planned to develop the initiative of the student while training him in habits of accurate analysis and careful work. In addition, frequent field trips will be made to appropriate projects to demonstrate at first hand the technology in operation. A student is encouraged to secure summer work which will give him an insight into various aspects of the career upon which he is about to enter.

A graduate may be employed as an inspector or supervisor in the contracting field, as an investigating or laboratory technician, or as a design or field technician in a consultant's office. He may be employed by municipal, provincial, or federal agencies, by consulting engineers, architects, and contractors, or in technical sales.

Candidates must have a sound knowledge of mathematics, physics, and English, and preferably some training in draughting. An interest in the practical application of scientific principles is essential.

This field frequently involves both indoor and outdoor assignments and requires keenness to take up the challenge offered by a fast-expanding industry demanding initiative and responsibility from its employees.

ENGINEERING DIVISION

CIVIL AND STRUCTURAL TECHNOLOGY

YEAR 1 *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.107	General Physics (C1)	3	2
42.101	Civil Engineering and Tutorials	4	8
49.101	Draughting	---	1
51.109	Surveying	---	3
	Library and Research	---	5
		12	22

Term 2

31.201	Communications	2	1
32.223	Calculus I and II	3	2
33.207	General Physics (C2)	3	2
42.201	Civil Engineering and Tutorials	4	8
49.202	Draughting	---	3
51.209	Surveying	---	3
	Library and Research	---	5
		12	24

YEAR 2 *Term 3*

31.301	Industrial Communications	1	1
32.306	Calculus III	2	2
42.301	Civil Engineering and Tutorials	7	11
51.309	Surveying	---	3
Electives		1	2
	22.737 Operations Management I.		
	22.747 Operations Management II.		
Library and Research		---	5
		11	24

Term 4

31.401	Industrial Communications	1	1
32.454	Numerical Methods I and Statistics I	2	2
51.409	Surveying	---	3
Electives		6	15
	42.401 Civil Engineering (Civil) and Tutorials.		
	42.402 Civil Engineering (Traffic) and Tutorials.		
	42.403 Civil Engineering (Structural) and Tutorials.		
Library and Research		---	5
		9	26

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, Physics 11.

Electrical and Electronics Technology

Society today is dependent upon electrical energy, electronic communications, and electronic controls. The use of electrical and electronic equipment is evident in the factory, office, store, hospital, or home. Travel by airplane or ship could not exist on today's scale without electronic navigational aids.

There is a need for persons trained in the principles and applications of electrical and electronic systems to take their places in the technical team which designs, produces, sells, installs, and maintains these systems. The technologist graduate of the Electrical and Electronics Technology is the anchor-man of this team.

Three options are offered:

1. *Electrical Option*—This is concerned with the generation, transmission, distribution, utilization, and control of electrical energy.

2. *Telecommunications Option*—This deals with the application of electronics to commercial communications and navigational systems.

3. *Control Electronics*—This covers the application of electronics in fields other than telecommunications.

The Electrical and Electronics Programme has six terms, three in each of the two years.

The first-year programme is common for all options. It should be noted by prospective students that they may be required to attend some of their first-year classes in the evening.

The first term of the second year is common for both the Telecommunications and Control Electronics options.

The second-year programme for all three options is practically oriented, the last term being entirely related to industrial practices.

Throughout the entire two-year period, students spend at least one-half of their time in the laboratories and workshops carrying out practical assignments.

Graduates from the Electrical and Electronics Technology are employed in research and development, system design, production, sales, installation, and maintenance in commercial companies, government agencies, and educational institutions.

ENGINEERING DIVISION

ELECTRICAL AND ELECTRONICS TECHNOLOGY

YEAR 1 (common to all three options)

Term 1

		Hours per Week Lec.	Lab.
31.A01	Communications	2	2
32.A90	Basic Mathematics	4	3
33.A06	Basic Electricity and Magnetism	2	2
43.A01	Circuit Devices and Techniques	2	2
43.A02	Electrical Circuits I	3	3
43.A03	Shop Practice I	—	5
	Library and Research	—	5
		13	22

Term 2

31.B01	Communications	2	2
32.B90	Calculus I	4	3
33.B06	Basic Electricity and Magnetism	2	2
43.B01	Electronic Circuits I	3	3
43.B02	Electrical Circuits II	3	3
43.B03	Shop Practice II	—	3
	Library and Research	—	5
		14	21

Term 3

31.C01	Communications	2	2
32.C90	Calculus II	4	3
33.C06	Basic Electricity and Magnetism	2	2
43.C01	Electronic Circuits II	2	3
43.C02	Electrical Circuits III	3	3
43.C03	Measurements	2	2
	Library and Research	—	5
		15	20

YEAR 2 Electrical Option

Term 4

10.E30	Industrial Management	1	2
32.E90	Transform Calculus	2	2
43.E04	Digital Techniques I	3	3
43.E11	Industrial Electronics	2	3
43.E12	Polyphase Circuits	3	3
43.E13	Electrical Equipment I	3	3
	Library and Research	—	5
		14	21

Term 5

43.F11	Industrial Controls	3	3
43.F12	Circuit Analysis	2	3
43.F13	Electrical Equipment II	3	3
43.F14	Protective Systems	3	2
43.F15	Electrical Draughting	1	3
43.F16	Lighting Systems	2	2
	Library and Research	—	5
		14	21

Term 6

		Hours per Week Lec.	Lab.
43.G11	Control Systems	4	4
43.G12	Systems Analysis	3	3
43.G13	Utility Systems	4	4
43.G14	Industrial Systems	4	4
	Library and Research	—	5
		15	20

YEAR 2 Telecommunications Option

Term 4

10.E30	Industrial Management	1	2
32.E90	Transform Calculus	2	2
43.E04	Digital Techniques I	3	3
43.E21	Electronic Circuits III	2	3
43.E22	Pulse Circuits	3	3
43.E23	Telecommunications Principles	3	3
	Library and Research	—	5
		14	21

Term 5

43.F24	Digital Techniques II	3	4
43.F31	Antennas and Transmission Lines	3	3
43.F32	Telecommunication Power Systems	3	3
43.F33	Telephone Systems I	3	3
43.F34	High Frequency Techniques	2	3
	Library and Research	—	5
		14	21

Term 6

43.G31	Navigation Aids	4	3
43.G32	Radio Systems	4	5
43.G33	Telephone Systems II	4	5
43.G34	Electronic Equipment Fabrication	2	3
	Library and Research	—	5
		14	21

YEAR 2 Control Electronics Option

Term 4

10.E30	Industrial Management	1	2
32.E90	Transform Calculus	2	2
43.E04	Digital Techniques I	3	3
43.E21	Electronic Circuits III	2	3
43.E22	Pulse Circuits	3	3
43.E23	Telecommunications Principles	3	3
	Library and Research	—	5
		14	21

Term 5

		Hours per Week Lec.	Lab.
43.F24	Digital Techniques II	3	4
43.F41	Industrial Electronics	3	3
43.F42	Feedback Theory	3	3
43.F43	Electrical Equipment	3	3
43.F44	Electronic Equipment Fabrication	2	3
	Library and Research	----	5
		14	21

Term 6

43.G41	Industrial Television	3	3
43.G42	Industrial Audio Systems	4	2
43.G43	Industrial Machine Control	3	6
43.G44	Digital Systems	4	5
	Library and Research	----	5
		14	21

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11, Physics 11.

DANGER

Forest Resource Technology

The forest lands of British Columbia constitute the most valuable natural resource, and their utilization provides the greatest single source of income to the Province, supporting almost one-half of our population. The tremendous expansion, both in the forest industry and in the Province's population, is creating demands for more integrated land, forest, and water resource management.

The function of the Forest Resource Technology is to provide technical training in the skills and techniques required for a career in resource management, forest harvesting, and forest utilization. With this purpose in mind, the technology has two separate programmes—the Forestry Programme, which contains a Forestry Option and a Fish, Wildlife, and Recreation Option; and the Forest Products Programme, which contains a Pulp and Paper Option and a Wood Products Option.

A candidate for this technology will enter one of the two programmes and can plan to graduate in one of the options offered. The candidate is required to work under conditions that require initiative, efficiency, and good leadership qualities. As a technologist he will be expected to work with a minimum of supervision and ultimately to accept some managerial responsibilities.

Prospective applicants should have completed Grade XII graduation on the Academic-Technical Programme, and industrial experience is also considered. Report writing and computational competence are very important in all options and candidates should make an effort to upgrade their qualifications in these subjects prior to enrolment. For the prerequisite courses required, please see the curriculum outline for each option on the following pages.

FORESTRY PROGRAMME

This programme provides training in the skills and techniques required in the harvesting of the forests and resource management.

Forestry Option

Candidates have the opportunity to study and qualify for several categories of employment. The main emphasis in the courses offered will be on forest engineering, where he will study the organization and supervision of log production, costs, accounting, and logging systems and their applications in British Columbia. The candidate will become knowledgeable in sampling methods for inventory and logging development; in forest protection he will learn the basis of fire protection and suppression and losses due to insects and disease; in forest science he will learn the botanical characteristics of trees and wood and the growth and ecological characteristics of commercial species; in silviculture he will study regeneration surveys, planting or seeding, and nursery programmes. The course of study includes scaling, forest management, and visits to logging and milling operations.

Fish, Wildlife, and Recreation Option

The management of the fish, wildlife, and recreational resources of the Province are closely associated with the forest resources. The integration of these resources and their recreational values into a sound economic managerial programme is becoming increasingly important. Government agencies offer a limited number of excellent employment oportunities. For this reason the number of students registered in this option will be restricted and subject to review on a year-to-year basis.

ENGINEERING DIVISION

FOREST RESOURCE TECHNOLOGY

FORESTRY PROGRAMME

Forestry and Fish, Wildlife, Recreation Options

YEAR 1 — *Term 1*

No.	Subject	FORESTRY OPTION Hrs. per Wk. Lec.	FORESTRY OPTION Hrs. per Wk. Lab.	F.W.R. OPTION Hrs. per Wk. Lec.	F.W.R. OPTION Hrs. per Wk. Lab.
31.101	Communications	2	1	2	1
32.101	Basic Technical Mathematics	3	2	3	2
45.101	Forest Science and Utilization I	4	3	---	---
45.102	Forest Measurement I	---	3/3	---	3/3
45.106	Photo Interpretation and Mapping I	1	3	1	3
45.110	Fire Control I	2	2	---	---
45.120	Forest and Range Botany	---	---	3	3
45.124	Public Administration	---	---	---	3
45.125	Public Information Techniques	---	---	---	2
	Tutorial	---	1	---	1
	Library and Research	---	5	---	5
		12	23	9	26

Term 2

31.201	Communications	2	1	2	1
32.246	Statistics I and II	3	2	3	2
44.324	Zoology	---	---	2	3
45.201	Forest Science and Utilization II	4	3	---	---
45.202	Forest Measurement II	2	3/3	---	---
45.206	Photo Interpretation and Mapping II	1	3	1	3
45.208	Natural Resource Management	2	---	2	2
45.226	Ecology	---	---	2	3
45.227	Geology and Soils	---	---	---	3
	Tutorial	---	1	---	1
	Library and Research	---	5	---	5
		14	21	12	23

YEAR 2 — *Term 3*

10.221	Psychology in Management	---	---	1	2
20.381	Human Relations	2	1	---	---
31.301	Industrial Communications	1	1	1	1
45.302	Forest Measurement III	---	6	---	---
45.305	Logging I	2	3	---	---
45.308	Roads and Transportation I	2	4	---	---
45.313	Forest Pestology I	1	3	---	---
45.316	Forest Management	1	3	---	---
45.321	Park Management	---	---	2	3
45.322	Wildlife Management I	---	---	2	3
45.323	Fish Management I	---	---	2	3
45.326	Habitat Evaluation	---	---	2	3
45.327	Projects	---	---	---	5
	Library and Research	---	5	---	5
		9	26	10	25

Term 4

31.401	Industrial Communications	1	1	1	1
45.402	Forest Measurement IV	1	3	---	---
45.405	Logging II	3	3	---	---
45.408	Roads and Transportation II	2	3	---	---
45.409	Silviculture	---	6	---	---
45.410	Fire Control II	1	3	---	---
45.413	Forest Pestology II	---	3	---	---
45.421	Wildland Recreation Management	---	---	2	5
45.422	Wildlife Management II	---	---	3	4
45.423	Fish Management II	---	---	3	4
45.427	Projects	---	---	---	7
	Library and Research	---	5	---	5
		8	27	9	26

General Prerequisite: For Forestry, graduation on Academic-Technical Programme.

Special Prerequisite: For Forestry, Math 12.

Special Prerequisites: For Fish, Wildlife, and Parks, Math 12, Biology 11.

Forest Resource Technology

FOREST PRODUCTS PROGRAMME

The modern forest industry of British Columbia offers challenging and rewarding employment for conscientious young people of ability and training. The demands of the industry increase yearly as the application of new technology continues in the pulp, newsprint, plywood, sawmill, and particle-board industries.

The objectives of the Forest Products Programme are to qualify technologists for the various manufacturing operations and to prepare them for responsible positions in British Columbia's largest industry. For example, young men with a good knowledge of technological advances and their application are needed in plant process operations, plant management, research and development, technical services, and sales.

In addition to the basic sciences of mathematics, chemistry, and physics, the specialized first-year subjects include an introduction to forest science, wood technology, sawmilling, plywood, and pulp and paper manufacture. This programme will assist the student in selecting, at the start of Term II in first year, one of two distinctly different options offered during the second year.

Wood Products Option

The Wood Products Option includes the techniques and economics involved in harvesting wood and converting it to usable products such as lumber, laminated beams, plywood, and particle-board. Wood seasoning, wood preservation, and fire-retardant treatments are also covered, as well as the integration of the forest industries for maximum utilization.

Wood Products Option students receive training in wood processing, wood properties, wood-products marketing, quality control leading to a certificate in lumber grading, work study, statistics, mechanical and electrical equipment, and kiln-drying. This option is designed to lead to employment in the sawmilling or plywood industry in such areas as management trainee in production, production control, or quality control. Field trips are an essential part of the course.

Pulp and Paper Option

The Pulp and Paper Option students are concerned with the theory and application of technology in mechanical and chemical pulping processes, the bleaching of various pulp types, and the conversion of pulp to end-products such as newsprint, paper, paperboard, and textiles.

The Pulp and Paper Option students receive training in pulp and paper technology and quality control, unit operations, instrumentation, wood chemistry, and chemical laboratory techniques.

Plant operation and process-control procedures are covered extensively by projects in a well-equipped pilot plant and laboratory facility. This facility is recognized by the Technical Section, Canadian Pulp & Paper Association, as a member mill. Field trips to various related industrial operations are undertaken to augment classroom and laboratory instruction.

To graduates, the industry offers interesting, challenging, and rewarding work, with ample opportunity for advancement in such areas as pulp production, process control, pulp and paper quality control, and research.

ENGINEERING DIVISION

FOREST RESOURCE TECHNOLOGY

FOREST PRODUCTS PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
30.101	Applied Chemical Principles	3	3
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.102	Introductory Physics	3	2
41.104	Engineering Materials	1	2*
46.101	Forest Utilization	4	3
49.101	Draughting	---	2
	Library and Research	---	5
		16	19

Term 2

No.	Subject	PULP AND PAPER OPTION Hours per Week Lec.	Lab.	WOOD PRODUCTS OPTION Hours per Week Lec.	Lab.
30.201	Applied Chemical Principles	3	3	---	---
31.201	Communications	1½	1½	1½	1½
32.223	Calculus I and II	3	2	---	---
32.246	Statistics I and II	---	---	3	2
33.202	Introductory Physics	3	2	3	2
41.204	Engineering Materials	1	2*	1	2*
46.211	Pulp and Paper Fundamentals	4	3	---	---
46.214	Lumber Manufacturing and Grading	---	---	3	10
49.204	Draughting	---	2	---	2
	Library and Research	---	5	---	5
		15½	19½	11½	23½

A summer essay will be required for students continuing into second year.

YEAR 2 — *Term 3*

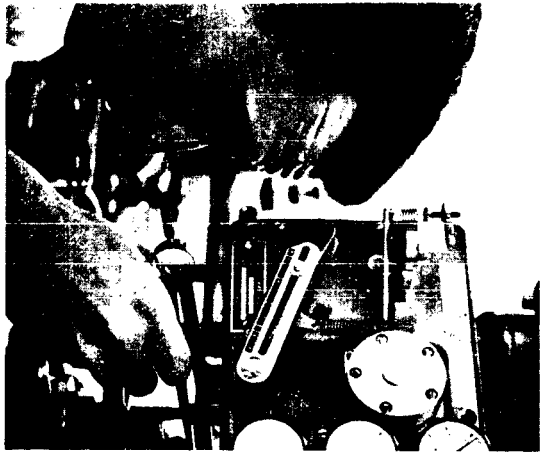
14.351	Computer Applications	---	---	1	2
20.701	Wood Products Marketing	---	---	2	2
22.737	Operations Management I	---	---	---	3
30.303	Instrumental Analytical Methods	2*	2*	---	---
31.301	Industrial Communications	1	1	1	1
32.304	Statistics I	2	2	---	---
41.341	Unit Operations	3	3	---	---
43.373	Electrical Equipment Applications	---	---	2	2
46.301	Pulp and Paper Technology I	3	3	---	---
46.305	Pulp and Paper Testing I	2	3/3	---	---
46.311	Wood Properties	---	---	3	3
46.315	Wood Processing I	---	---	4	4
48.370	Process Instrumentation	2*	2*	---	---
	Library and Research	---	5	---	5
		13	22	13	22

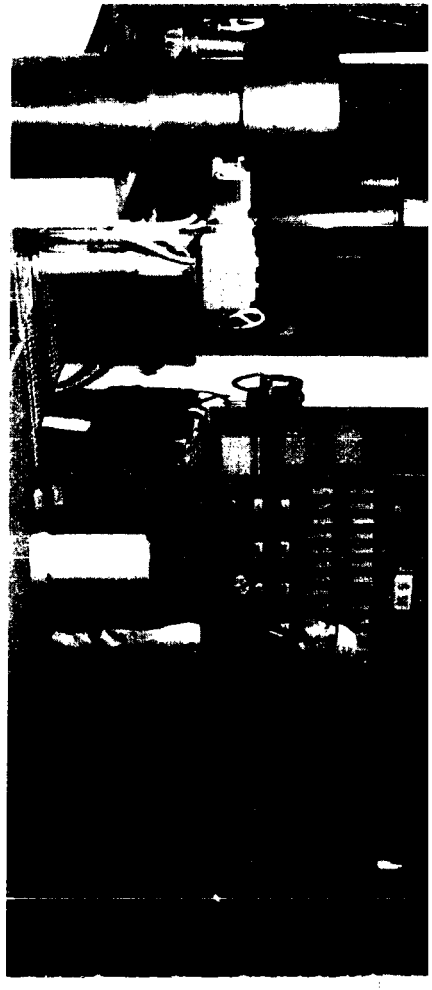
Term 4

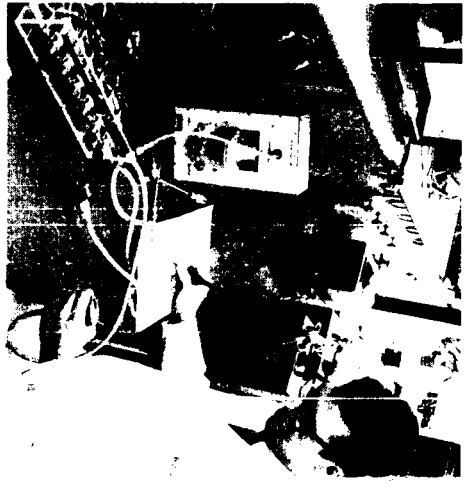
14.408	Linear Programming	---	---	1	2
22.747	Operations Management II	---	---	---	4
30.303	Instrumental Analytical Methods	2*	2*	---	---
31.401	Industrial Communications	1	1	1	1
32.406	Statistics II	2	1	---	---
41.441	Unit Operations	3	3	---	---
46.401	Pulp and Paper Technology II	3	3	---	---
46.405	Pulp and Paper Testing II	3	3	---	---
46.407	Wood Chemistry	2	3	---	---
46.415	Wood Processing II	---	---	3	4/2
46.440	Mill Maintenance and Accident Prevention	---	---	2	3
46.460	Mill Cost Analysis	---	---	2	2
49.471	Mechanical Equipment	---	---	1	2
	Library and Research	---	5	---	5
		15	20	10	25

*Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11.







Instrumentation and Systems Technology

Perhaps the most important single factor in industry today is the mastery of measurement. If reliable measurements are available from all parts of an industrial operation, the remaining steps toward automatic control are relatively straightforward. The sciences of measurement and control are thus closely related and both fall within the domain of *instrumentation*.

Process measurement may involve simple parameters such as temperature, pressure, flow, weight, or it may involve the complex analysis of a chemical composition. In a typical process there are hundreds of different measurements being continually relayed to a central control room. Measurement, therefore, covers the areas of sensing, signal transmission, and signal display. So the subject of *process measurement* is very much a part of modern automation. It should be noted that in this regard the term " process " may also include a freight yard, bottling-plant, automatic container-handling, and so on, as well as all the chemical processes.

In order to automate a process, certain process measurements must be selected for *control*. These measurements are compared with their desired control points to see whether errors exist; if errors do exist, signals are sent back to the process to correct the setting of a valve, damper, conveyor, etc. In its simplest form each control " loop " is handled by a separate controller. Today, however, there is a fast-growing trend toward handling all loops on a central computer so that it now becomes possible to optimize the complete plant operation rather than merely maintain control levels. There is currently much industrial activity centred around the adaptation of computers to plants, and vice versa.

The space race is responsible for much of the rapid growth in instrumentation over the last decade. Advances in electronics and fluidics are adding a whole new dimension to the scope of automatic control.

From the above description you will see why instrumentation today is often referred to as *systems* engineering. Persons considering a career in this field should show strength and interest in mathematics, physics, and chemistry (*see* prerequisites). The record shows that with a normal economy about half the graduates can expect to be placed in engineering or research departments, while the remainder may find their way into plant work or sales.

Perusal of the Subject Summaries at the end of this booklet will give details of the course. Concentration on some basic " academics " is needed in the early stages to equip students with the proper depth of understanding. Primary areas of specialization are to be found in the subjects Process Measurement, Process Control, and Computer Techniques.

ENGINEERING DIVISION

INSTRUMENTATION AND SYSTEMS TECHNOLOGY

YEAR 1 *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
30.102	General Chemistry	2	3*
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2*
33.107	General Physics (C1)	3	2
41.103	Engineering Materials	2	3*
43.172	Electrical Fundamentals	3	3*
48.100	Process Measurements	3	3
	Tutorial	---	2*
	Reading	---	4½
		18	17

Term 2

30.202	General Chemistry	2	3*
31.201	Communications	2	1
32.223	Calculus I and II	3	2*
33.207	General Physics (C2)	3	2
41.203	Engineering Materials	2	3*
43.272	Electronic Fundamentals	3	3*
48.200	Process Measurements	3	3
	Tutorial and Shop Practice	---	2†
	Reading	---	3½
		18	17

YEAR 2 *Term 3*

32.306	Calculus III	3	2*
41.341	Unit Operations	3	3*
48.300	Process Measurements	3	3
48.310	Process Control	3	3
48.320	Computer Techniques	3	3*
48.330	Instrument Techniques	3	3*
	Reading	---	5½
		18	17

Term 4

32.454	Numerical Methods I and Statistics I	3	2*
41.441	Unit Operations	3	3*
48.400	Process Measurements	3	3
48.410	Process Control	3	3
48.420	Computer Techniques	3	3*
48.430	Instrument Techniques	3	3*
	Reading	---	5½
		18	17

* Alternate weeks.
† Three hours of shop every three weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, plus Physics 11 and Chemistry 11.

Mechanical Technology

Mechanical Technology encompasses an extremely broad range of industrial activities involving design, construction, installation, and use of machines and mechanical devices of all types, as well as the manufacture of goods in general. It follows that persons qualified in this field can expect challenging and rewarding employment in a wide range of interesting occupations.

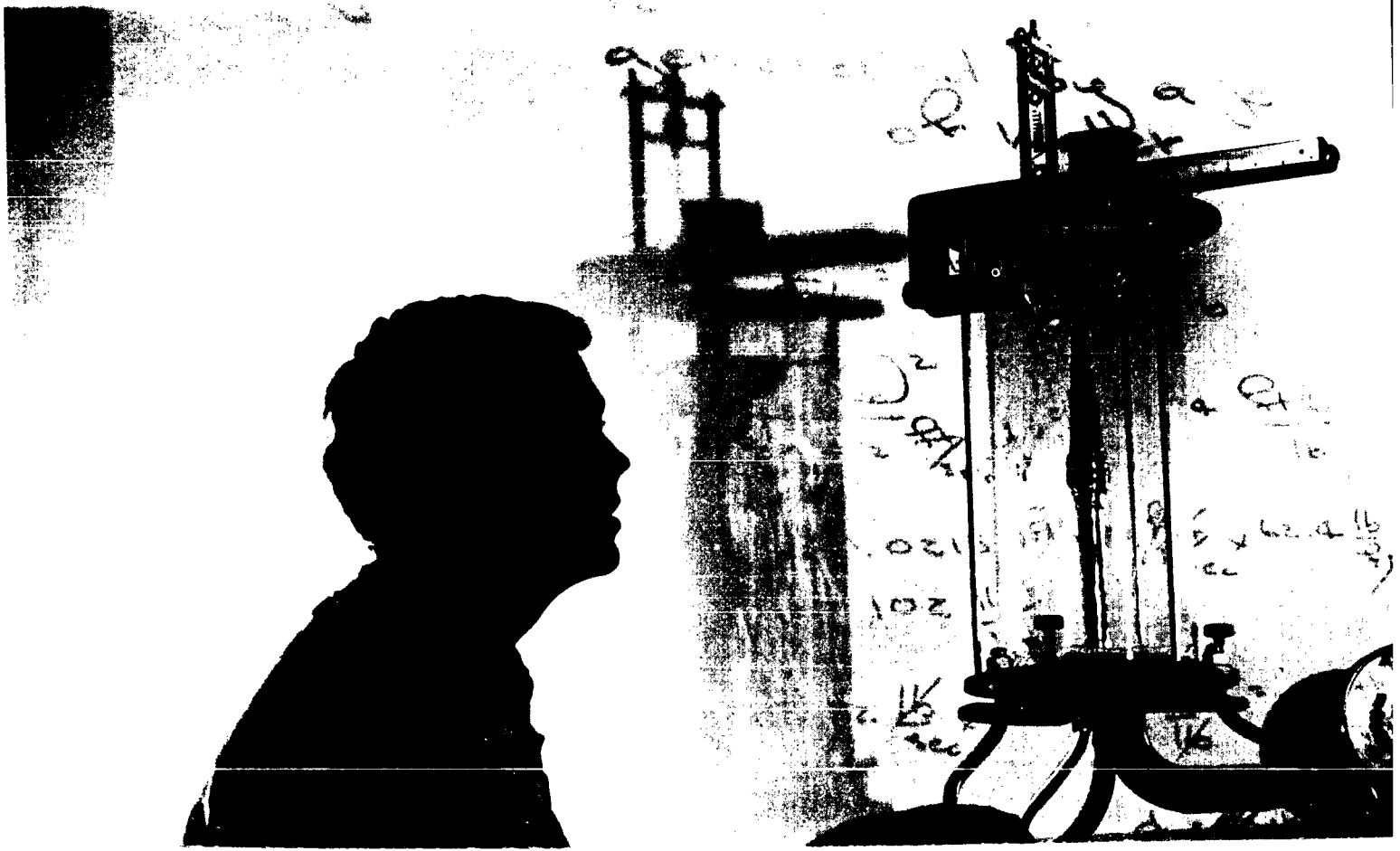
The two-year Mechanical Technology programme offers intensive training leading to graduation as a mechanical technologist. Job possibilities include work in consulting engineering offices as mechanical design draughtsmen on machinery, steelwork, piping, power plants, and installation; in plant engineering offices, production departments, and estimating departments; in testing and inspection establishments; in field installation and service; and in machinery sales.

The programme includes studies in mathematics and physics plus specialized subjects such as engineering materials, draughting, strength of materials, machine design, fluid mechanics, fluid power, thermal engineering, electricity, and machine tools. Theory presented in lectures is directly applied in problem periods, design drawing sessions, and laboratory assignments utilizing excellently equipped laboratories and shops. In the thermodynamics laboratory, for example, students operate and test steam boilers, air compressors, a steam turbine, gas turbine, dual-fuel engine, and other equipment, while in the machine shop they use engine lathes, milling machines, a turret lathe, jig borer, boring mill, precision grinders, punch press, and other modern equipment. In the fluid mechanics laboratory, students use sets of miniaturized equipments to perform many standard hydraulics experiments. In the fluid power laboratory, industrial and training circuits are designed, constructed, and operated, utilizing standard industrial components.

To augment these studies, field trips are made to industrial plants to observe practical installations and operations. Close liaison with industry ensures that graduates are trained to meet the exacting and varying requirements of industry. Coincidentally, this liaison acquaints students with the range of opportunities available and assists them in selecting their individual areas of greatest interest.

To span the broad field of Mechanical Technology, two options are provided, subject to adequate enrolment in each—(1) Production, (2) Design. Choice of option will be made at the end of the first year.

Those best suited to take advantage of this training will be students interested in applying scientific knowledge to practical use in the mechanical field. The aspiring technologist must have a sound grounding in mathematics and physics, and should be able to apply ideas in practical situations. Because the mechanical technologist normally functions as a key member of a closely knit team of engineers, production supervisors, craftsmen, and others, his ability to work with people effectively and congenially is essential. Working conditions generally are attractive, and physical requirements are not demanding.



ENGINEERING DIVISION

MECHANICAL TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
41.103	Engineering Materials	2	3*
49.100	Mechanical Draughting I	1	2
49.107	Applied Mechanics	5	2/5*
49.150	Production Engineering	2	2
49.165	Shopwork	---	3
	Library and Research	---	5
		15	20

Term 2

31.201	Communications	1	1
32.223	Calculus I and II	2	2
33.211	General Physics D	3	2
41.203	Engineering Materials	2	3*
49.200	Mechanical Draughting II	1	2
49.210	Strength of Materials	3	3*
49.225	Applied Heat	1	1
49.250	Production Engineering	1	2
49.265	Shopwork	---	3
	Library and Research	---	5
		14	21

YEAR 2 — *Term 3*

No.	Subject	Production Option Hours per Week Lec.	Lab.	Design Option Hours per Week Lec.	Lab.
22.731	Operations Management I	1	2	---	---
31.301	Industrial Communications	1	1	1	1
32.306	Calculus III	3	2	3	2
43.373	Electrical Equipment Applications	2	1	2	1
48.350	Process Instrumentation	---	---	1	2
49.300	Engineering Graphics	1	2	1	2
49.312	Machine Design	---	---	3	2
49.313	Production Mechanical Design	2	2	---	---
49.315	Fluid Mechanics	2	2	2	2
49.325	Thermal Engineering	---	---	2	3
49.350	Production Engineering	2	4	---	---
	Library and Research	---	5	---	5
		14	21	15	20

Term 4

22.746	Basic Operations Management	---	---	---	2
22.747	Operations Management II	1	3	---	---
31.401	Industrial Communications	1	1	1	1
32.454	Numerical Methods I and Statistics I	3	2	3	2
48.450	Process Instrumentation	---	---	1	2
49.412	Machine Design	---	---	3	2
49.425	Thermal Engineering	---	---	2	3
49.435	Fluid Power	2	3	2	3
49.445	Manufacturing Processes	2	4*	---	---
49.450	Production Engineering	2	2	---	---
49.455	Tool Design	1	2	---	---
49.465	Shopwork	---	3	---	3
	Library and Research	---	5	---	5
		12	23	12	23

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, Physics 11.

Mining Technology

During the past decade as a supplier of metals to the entire world, Canada has been increasing its share of the market and has now become a major producer of such metals as iron, asbestos, lead, nickel, silver, and zinc. Western Canada is now about to experience an unprecedented expansion of the mining industry. Exploration in British Columbia and the Yukon is more active than anywhere in North America, and the area is considered to be the most promising mineral-bearing region on the continent. Coupled with this is the great interest shown in the nonmetallic mineral deposits now being developed on the Prairies. Several major discoveries, currently being examined, offer reasonable assurance of production and consequent demand for engineers and technicians.

Because of strong international competition, the higher costs of operation in our rugged terrain, and the increasingly complex ores now being sought, the industry is becoming much more reliant upon engineering imagination and technological skill.

The programme of Mining Technology is designed to serve this major industry by preparing technicians to help search for new mineral deposits, develop and operate new mines, and design and operate new mineral-processing plants. Most students who complete this programme can expect to enter the industry as exploration assistants mapping structure, logging drill core, or performing geophysical and geochemical tests in the field; as engineering assistants sampling developed rock, surveying in pits or underground, or doing production control work in mines; or as test laboratory technicians, assayers, or junior operating staff in mineral-processing plants.

Opportunities for advancement in this industry are good for a person of ability and initiative, and, possibly within five years of graduation, he might well achieve a supervisory rank as party chief, shiftboss, or foreman.

Men entering the mining industry should be able to get along with people, be able to enjoy life in smaller communities, and be willing to travel. They should also have good health and be able to pass a medical examination and chest X-ray if they wish to work in or around a mine.

ENGINEERING DIVISION

MINING TECHNOLOGY

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
30.101	Applied Chemical Principles	3	3
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.101	General Physics (A1)	3	3
49.101	Draughting	---	2
50.101	Geology	2	2*
50.102	Mining	2	---
51.110	Surveying	---	3
	Library and Research	---	6/4
		15	20
	Term 2		
30.201	Applied Chemical Principles	3	3
31.201	Communications	2	1
32.223	Calculus I and II	3	2
33.201	General Physics (A2)	3	3
49.203	Draughting	---	2
50.201	Geology	2	2*
50.202	Mining	2	---
51.210	Surveying	---	3
	Library and Research	---	6/4
		15	20
	YEAR 2 *Term 3*		
31.301	Industrial Communications	1	1
32.306	Calculus III	3	2
33.304	Geophysical Prospecting Methods	---	3*
41.305	Assaying	1	3
41.314	Mineral Processing	2	3*
42.103	Statics	2	2
50.301	Geology—Structural	2	3*
50.302	Mining—Operation and Equipment	2	3*
51.310	Surveying	---	3
	Library and Research	---	5
		13	22
	Term 4		
31.401	Industrial Communications	1	1
32.454	Numerical Methods I and Statistics I	3	2
41.405	Assaying	1	3
41.414	Mineral Processing	2	3*
42.202	Hydraulics	2	2*
42.205	Strength of Materials	---	2
50.401	Geology—Mineral Deposits	2	3*
50.402	Mining—Operation and Equipment	2	2
51.410	Surveying	---	3
	Library and Research	---	6/4
		13	22

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11, Chemistry 11.

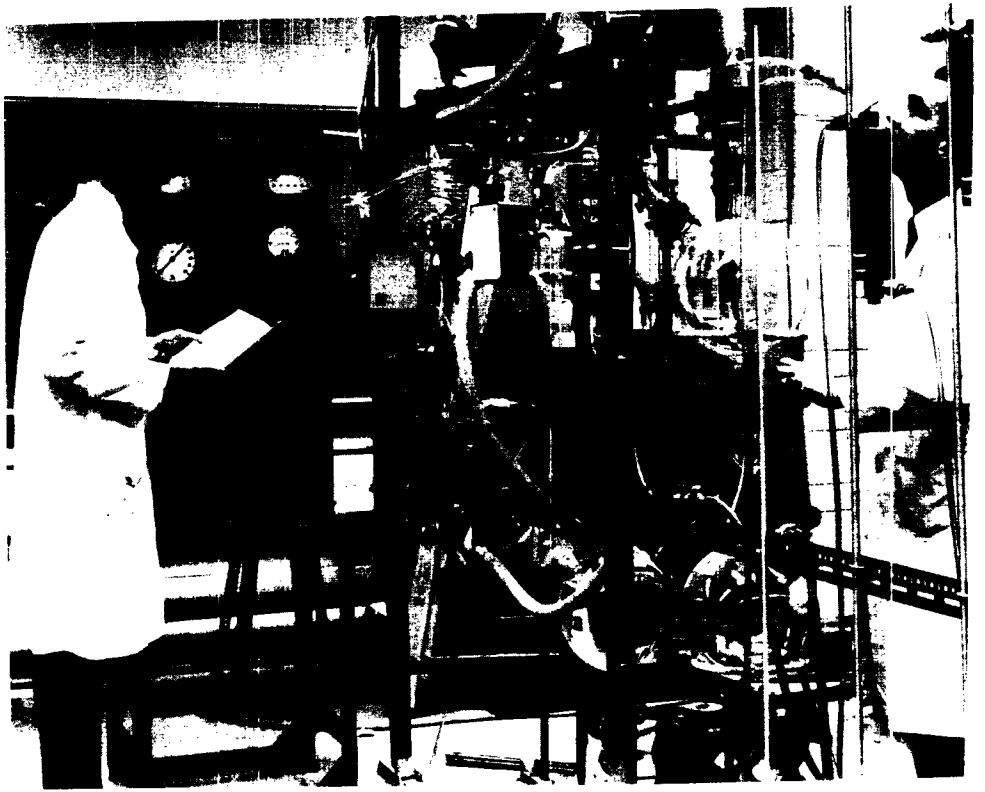
Natural Gas and Petroleum Technology

The gas and oil industry offers a wide variety of employment opportunities for a qualified technician. The transmission branch of the industry, involving the operation of pumping stations and maintenance of pipe-lines over vast areas, offers graduates opportunity for outdoor work in remote regions. On the other hand, the refining branch of the industry, usually located in more populous areas, offers a stable source of interesting work if this is preferred. Moreover, the industry as a whole is one of the most modern and up to date and is constantly introducing the latest technological improvements. Thus, there is every opportunity for a keen technician to advance in an interesting and profitable vocation.

The first year of the programme offered at the Institute primarily covers basic scientific and engineering principles as a foundation for the subsequent specialized petrochemical training. Training will be provided in the distribution and utilization of gas in both industrial and domestic fields, and there will be considerable emphasis on measurement and automatic control since the trend is toward completely unmanned automatic installations. Tuition will be given in the transmission of oil and its utilization in modern automatically controlled refineries, and there will be emphasis on the chemistry of petroleum products. The course will include a brief orientation course in business practices, computer programming, and frequent opportunities for field trips to local installations.

Students desiring to enter this field should have a keen interest in the operation of large-scale equipment, as distinct from its maintenance and repair, and should have a good academic standing in chemistry and physics. Although in modern refineries most of the time may be spent indoors, technicians should be prepared to work outdoors for lengthy periods. They must be prepared, in the plant operations, to take great responsibility for the satisfactory and safe operation of highly complex plant equipment.

Employment opportunities for technicians include laboratory work, studies of corrosion of above-ground and buried structures, analysis of oils, gases, and petroleum products, right-of-way land work, and plant operation in pumping stations and refineries. With such a variety of opportunities, a qualified technician should have no difficulty in establishing himself in a profitable and interesting career.



ENGINEERING DIVISION

NATURAL GAS AND PETROLEUM TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.730	Business	2	1
30.101	Applied Chemical Principles	3	3
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.101	General Physics (A1)	3	3
41.103	Engineering Materials	2	3*
50.101	Geology	2	2*
	Library and Research	---	5/6
		17	18

Term 2

22.746	Basic Operations Management	2	---
30.201	Applied Chemical Principles	3	3
31.201	Communications	2	1
32.223	Calculus I and II	3	2
33.201	General Physics (A2)	3	3
49.266	Introduction to Machine Tools	1	1
50.201	Geology	2	2*
51.204	Introduction to Surveying	---	3
	Library and Research	---	6/4
		16	19

YEAR 2 — *Term 3*

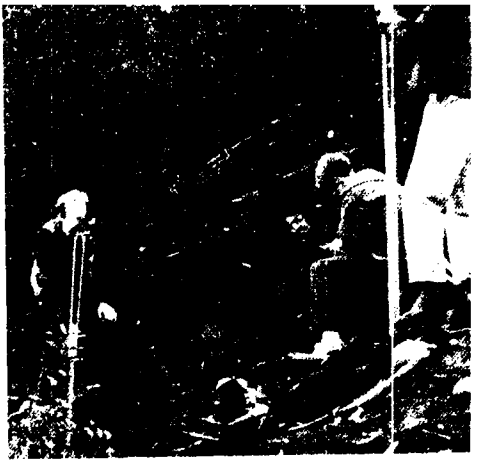
30.302	Physical Chemistry	2	3
32.306	Calculus III	3	2
41.341	Unit Operations	3	3
47.221	Gas Distribution and Utilization	3	3
47.311	Gas and Oil Production and Transmission	3	3
48.350	Process Instrumentation	---	3
	Library and Research	---	4
		14	21

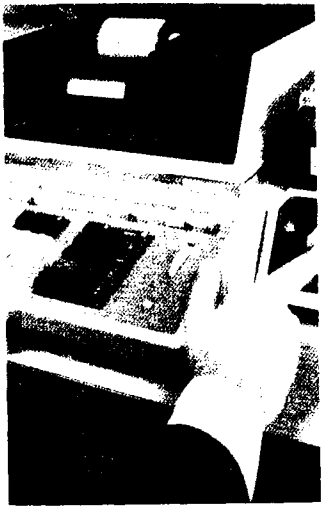
Term 4

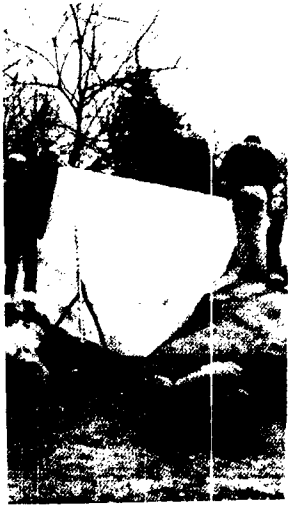
14.351	Computer Applications	2	---
30.404	Organic Chemistry	2	3
32.454	Numerical Methods I and Statistics I	3	2
33.406	Petroleum Geophysics	1	---
41.441	Unit Operations	3	3
47.431	Oil Refining and Utilization	4	4
48.450	Process Instrumentation	---	3
	Library and Research	---	5
		15	20

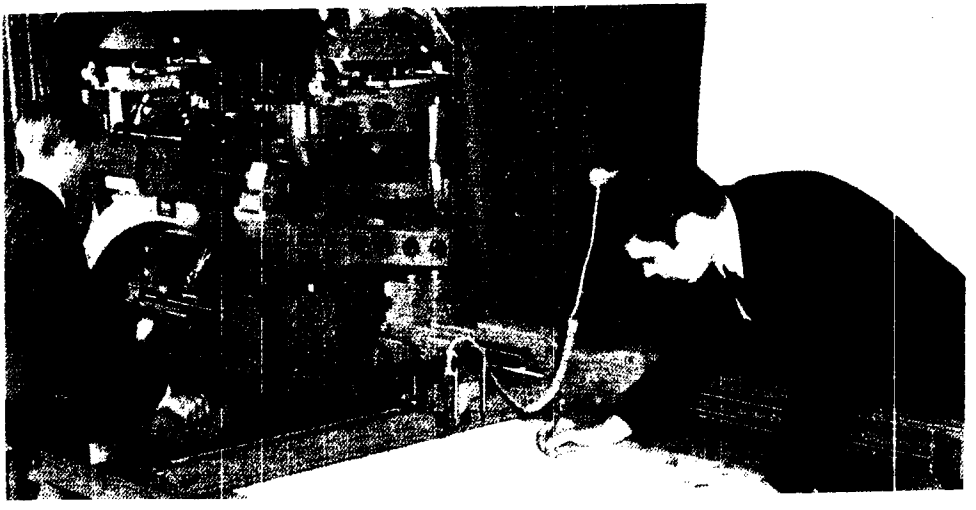
* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11, Chemistry 11.









Surveying Technology

Survey techniques have undergone radical changes during the last two decades, due largely to advances in the development of electronic devices which are capable of measuring distance up to 40 miles with an accuracy of three parts per million, and significant refinements which have been made in photographic equipment and their applications to aerial photogrammetry.

The two-year programme in the Surveying Technology has two main objectives. The first is to equip the student with the required knowledge of mathematics, physics, astronomy, photogrammetry, and theory of surveying, together with the practical skills in note-keeping, draughting, field operations, and calculating so that he may be employed as a surveying or engineering assistant in the various fields where survey techniques are used. The second objective is to provide those students with the knowledge and skills which, with experience, will eventually qualify them as members of the Corporation of Land Surveyors of British Columbia.

Intensive courses will be given in mathematics, physics, photogrammetry, astronomy, natural science, and descriptions for deeds, in which the standards are those required by the Corporation of Land Surveyors of British Columbia.

Employment opportunities in survey fields are widely varied. Surveyors, consulting engineers, the oil and gas industry, government mapping departments, government highway departments, utility companies and civic planning and engineering departments are among those that offer employment to graduates. Areas of employment in Canada range from the southern border to the Arctic regions and from the Pacific to the Atlantic Ocean and many Canadian surveyors are employed on large mapping projects throughout the world.

The student requires a good basic understanding of mathematics and physics to the University Entrance level and should also be physically and mentally suited to outdoor and office work.

In the second year the students may study in the Survey or Photogrammetry Option.

ENGINEERING DIVISION

SURVEYING TECHNOLOGY

No.	Year 1 — *Term 1* — Subject	Hours per Week Lec.	Lab.
31.101	Communications	2	1
32.101	Basic Technical Mathematics	3	2
33.107	General Physics (C1)	3	2
42.102	Hydrology	1	2
49.101	Draughting	—	2
51.101	Surveying	3	8
	Tutorials	—	1
	Library and Research	—	5
		12	23
	Term 2		
31.201	Communications	2	1
32.246	Statistics I and Spherical Trigonometry	3	2
33.207	General Physics (C2)	3	2
49.203	Draughting	—	2
51.201	Surveying	3	8
51.203	Natural Sciences	1	2
	Tutorials	—	1
	Library and Research	—	5
		12	23
	Survey Option		
	Year 2 — *Term 3*		
14.351	Computer Applications	1	1
32.302	Calculus I	3	2
51.301	Plane Surveying II	1	—
51.302	Geodetic Surveying II	1	—
51.303	Computations II, A and B	1	2
51.304	Field Surveying II	1	6
51.305	Draughting	—	4
51.306	Astronomy	2	—
51.307	Photogrammetry	2	—
51.308	Description for Deeds	2	—
	Tutorials	—	1
	Library and Research	—	5
		14	21
	Term 4		
32.436	Calculus II and Statistics II	3	2
51.401	Plane Surveying A II	1	—
51.402	Geodetic Surveying B II	1	—
51.403	Computations II, A and B	1	2
51.404	Field Surveying II	—	9
51.406	Astronomy	2	2
51.407	Photogrammetry	2	2
	Tutorials	—	3
	Library and Research	—	5
		10	25

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11.

ENGINEERING DIVISION

SURVEYING TECHNOLOGY

PHOTOGRAMMETRY OPTION

YEAR 2 — *Term 3*

No.	Subject	Hours per Week Lec.	Lab.
14.351	Computer Applications	1	1
32.302	Calculus I	3	2
51.306	Astronomy	2	----
51.311	Surveying	1	3
51.315	Draughting	1	3
51.317	Photogrammetry	3	9
	Tutorials	----	1
	Library and Research	----	5
		11	24

Term 4

32.456	Numerical Methods I and II	3	2
51.406	Astronomy	2	2
51.411	Surveying	1	3
51.417	Photogrammetry	3	12
	Tutorials	----	2
	Library and Research	----	5
		9	26

Health Division
Instructional Staff

HEALTH DIVISION

S. T. RICHARDS, *Director.*

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D. W. MARTIN, B.Sc.(HONS.), M.S.R. (on leave of absence, 1972).
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MRS. J. M. SPENCE, B.A.
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R. J. SMITH, M.S.R., R.T.
MRS. R. SUTCLIFFE, R.T.

Part-time Instructional Staff, 1972/73

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MRS. L. MACDONALD, R.T.	*Medical Laboratory*
MRS. E. M. S. SINCLAIR, A.I.M.L.T.	*Medical Laboratory*
MRS. S. L. DAINES, B.S.N., R.N.	*Nursing*

Health Division
Guest Lecturers

HEALTH DIVISION

GUEST LECTURERS

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

BIOMEDICAL ELECTRONICS

MISS A. CRAIB, Chief Technician, EEG Department, Vancouver General Hospital.

M. D. LOW, M.D., PH.D., Director, Electroencephalography Department, Vancouver General Hospital.

H. V. RICE, M.D., PH.D., Director, Development and Technical Services Department, St. Paul's Hospital.

ENVIRONMENTAL TECHNOLOGY—PUBLIC HEALTH

G. H. ARMSON, C.P.H.I.(C), Chief Public Health Inspector, Burnaby Health Department.

B. BIDDLECOMBE, Public Relations, British Columbia Telephone Co.

B. CAINE, B.SC., M.A.SC., P.ENG., Assistant Director, British Columbia Division of Environmental Engineering.

K. E. COWLEY, M.P.H., Health Educator, British Columbia Division of Public Health Education.

J. DAVIDSON, DIPL.T., Biological Technician, Fisheries Services.

W. HAMILTON, P.ENG., Districts Manager of New Westminster Branch of Pollution Control Board.

R. HERBISON, C.S.I.(C.), Public Health Inspector, Vancouver Health Department.

L. HIEBERT, C.S.I.(C.), Senior Public Health Inspector, Simon Fraser Health Unit.

A. HINDLEY, C.S.I.(C.), Consultant Public Health Inspector, British Columbia Division of Public Health Inspection.

D. HOWALD, Sales Representative, Carl Zeiss Canada Ltd.

E. JENSTAD, B.S.A., Dairy Specialist, Dairy Branch, British Columbia Department of Agriculture.

M. A. KIRK, B.A., Health Educator, British Columbia Division of Public Health Education.

L. KORNDER, M.D., D.P.H., Director, Boundary Health Unit.

A. J. LYNCH, B.SC., M.P.H., Chief Chemist, Division of Laboratories, British Columbia Health Branch.

J. MAYNARD, C.P.H.I.(C), Senior Public Health Inspector, Burnaby Health Department.

D. MORGAN, C.S.I.(C.), Acting Director, Division of Environmental Health, Vancouver.

J. D. MUNROE, M.D., D.P.H., C.R.C.P.(C.), Director, Simon Fraser Health Unit.

D. MCNAB, C.S.I.(C.), Public Health Inspector, Vancouver Health Department.

D. PETERS, Effluent Engineer, Shellburn Refinery.

E. RIDEOUT, City Analyst, City of Vancouver.

J. M. ROBINSON, M.D., D.P.H., C.R.C.P.(C.), Director, Central Fraser Valley Health Unit.

R. G. SCOTT, C.S.I.(C.), Director, British Columbia Division of Public Health Inspection.

F. SMITH, Supervisor of Swimming Pools, Parks and Recreation Department, Burnaby.
J. H. SMITH, M.B., CH.B., B.A.O., D.P.H., D.I.H., Director, British Columbia Division of Occupational Health.
W. SMITH, Chief Chemist, Reichhold Chemicals of Canada Ltd.
D. SOUTH, B.A., M.T.P.I.C., Senior Planning Officer, British Columbia Department of Municipal Affairs.
A. STRINGER, C.S.I.(C.), Sanitation Control Officer, Vancouver Health Department.
P. THOMAS, PH.D., Research Chemist, Columbia Cellulose.
R. D. THOMPSON, M.D., D.P.H., Former Regional Director, Pacific Region Medical Services, Federal Department of Health and Welfare.
B. F. VANCE, Pesticide Officer, British Columbia Department of Agriculture.
G. WEBSTER, P.ENG., Department of Environment of Fisheries Services.

HEALTH DATA PROCESSING

MRS. M. TAGGART, R.N., R.R.L., Chief Medical Record Librarian, Health Sciences Centre, University of British Columbia.
MRS. J. TAYLOR, R.R.L., Chief Medical Record Librarian, Vancouver General Hospital.

DEPARTMENT OF MEDICAL LABORATORY SERVICES

C. F. A. CULLING, F.I.M.L.T., F.R.M.S., Instructor, Department of Pathology, Faculty of Medicine, University of British Columbia.
J. W. IBBOTT, B.A., M.D., C.M., F.R.C.P.(C.), Head, Department of Hæmatology, Department of Pathology, St. Paul's Hospital.
S. ISRAELS, B.SC., M.D., F.R.C.P.(C.), Head, Department of Pædiatrics, Faculty of Medicine, University of British Columbia.
S. NAIMAN, M.D., F.R.C.P.(C.), Internist, Vancouver General Hospital.
F. J. ROBERTS, Associate Microbiologist, Department of Bacteriology, Department of Pathology, Vancouver General Hospital.
S. N. STORDY, B.A., M.D., C.M., F.R.C.P.(C.), Internist, private practice.
J. H. STURDY, M.D., C.R.C.P.(C.), M.C.PATH., Director of Regional Laboratories, Lower Mainland, Royal Columbian Hospital.
M. B. WALTERS, M.D., F.R.C.P.(C.), F.A.C.P., F.A.C.C., Cardiologist, Faculty of Medicine, U.B.C.
ANN J. WORTH, M.D., F.R.C.P.(C.), Pathologist, British Columbia Cancer Institute.

DEPARTMENT OF PATIENT CARE SERVICES

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G. SZASZ, M.D., physician, Assistant Professor, Director of the Office of Interprofessional Education, Health Sciences Centre, University of British Columbia.

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES (NUCLEAR MEDICINE TECHNOLOGY)

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E. MINCEY, PH.D., Division of Nuclear Medicine, Department of Radiology, Vancouver General Hospital.
R. T. MORRISON, M.D., PH.D., Chief of Division of Nuclear Medicine, Department of Radiology, Vancouver General Hospital.

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DR. E. W. SHEPHERD, Pathologist, Royal Inland Hospital, Kamloops, Representative of the British Columbia Association of Pathologists.

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J. LOGAN, Chief Technician, Department of Radiology, Lions Gate Hospital, North Vancouver.

SISTER M. MACDONALD, British Columbia Hospitals' Association.

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Dr. R. G. Pitman, Director, Department of Radiology, St. Paul's Hospital, Vancouver.
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Dr. J. D. Stevenson, President, British Columbia Radiological Society.
Dr. F. G. Stuart, Director, Department of Radiology, St. Joseph's Hospital, Victoria.
E. Wylie, Chief Technician, Department of Radiology, Vancouver General Hospital, Vancouver.

NUCLEAR MEDICINE TECHNOLOGY ADVISORY COMMITTEE

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W. E. Noel, Head, Department of Radiological Technical Services, British Columbia Institute of Technology, Burnaby.

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Dr. J. A. Birkbeck, Assistant Professor, Department of Pædiatrics, Faculty of Medicine, University of British Columbia.
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Dr. B. Schober, Head, Department of Nuclear Medicine, Lions Gate Hospital, North Vancouver.
Dr. P. F. Solvonuk, Biochemist, Department of Clinical Chemistry, Vancouver General Hospital.
Dr. A. E. W. Trites, Chief of Service, Department of Pathology, Shaughnessy Hospital, Vancouver.

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Mrs. B. B. Kozier, Head, Department of Patient Care Services, British Columbia Institute of Technology, Burnaby.

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MRS. W. REID, Director of Nursing, Burnaby General Hospital, Burnaby.

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MRS. N. STEVENS, Registered Nurses' Association of British Columbia, Director of Nursing, Royal Columbian Hospital, New Westminster.

MISS C. TISSINGTON, Director of Education Services, RNABC.

MISS F. TROUT, Head, Nursing Programme, Vancouver City College, Langara, Vancouver.

MISS M. UPRICHARD, Director of Nursing, University of British Columbia, Vancouver.

MISS E. WILLIAMS, Director of Nursing, Metropolitan Health Services of Greater Vancouver.

ENVIRONMENTAL TECHNOLOGY—PUBLIC HEALTH

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M. EWAN, Chief Health Inspector, City of New Westminster Health Department, Representative of Board of Examiners.

A. J. LYNCH, Chief Chemist, Chemistry Laboratory, Water Resources Service, Department of Lands, Forests, and Water Resources, Province of British Columbia.

D. D. MCNAB, Senior Public Health Inspector, Vancouver City Health Department, Representative of Canadian Institute of Public Health Inspectors.

R. G. SCOTT, Divisional Director, Public Health Inspection Branch, Parliament Buildings, Victoria, Representative of Board of Certification, CPHA.

J. A. STRINGER, Sanitation Control Officer, City of Vancouver Health Department, Representative of Canadian Institute of Public Health Inspectors.

Respiratory Technology Advisory Committee

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T. FISHWICK, Chief Technician, Inhalation Therapy Department, Vancouver General Hospital, Vancouver.

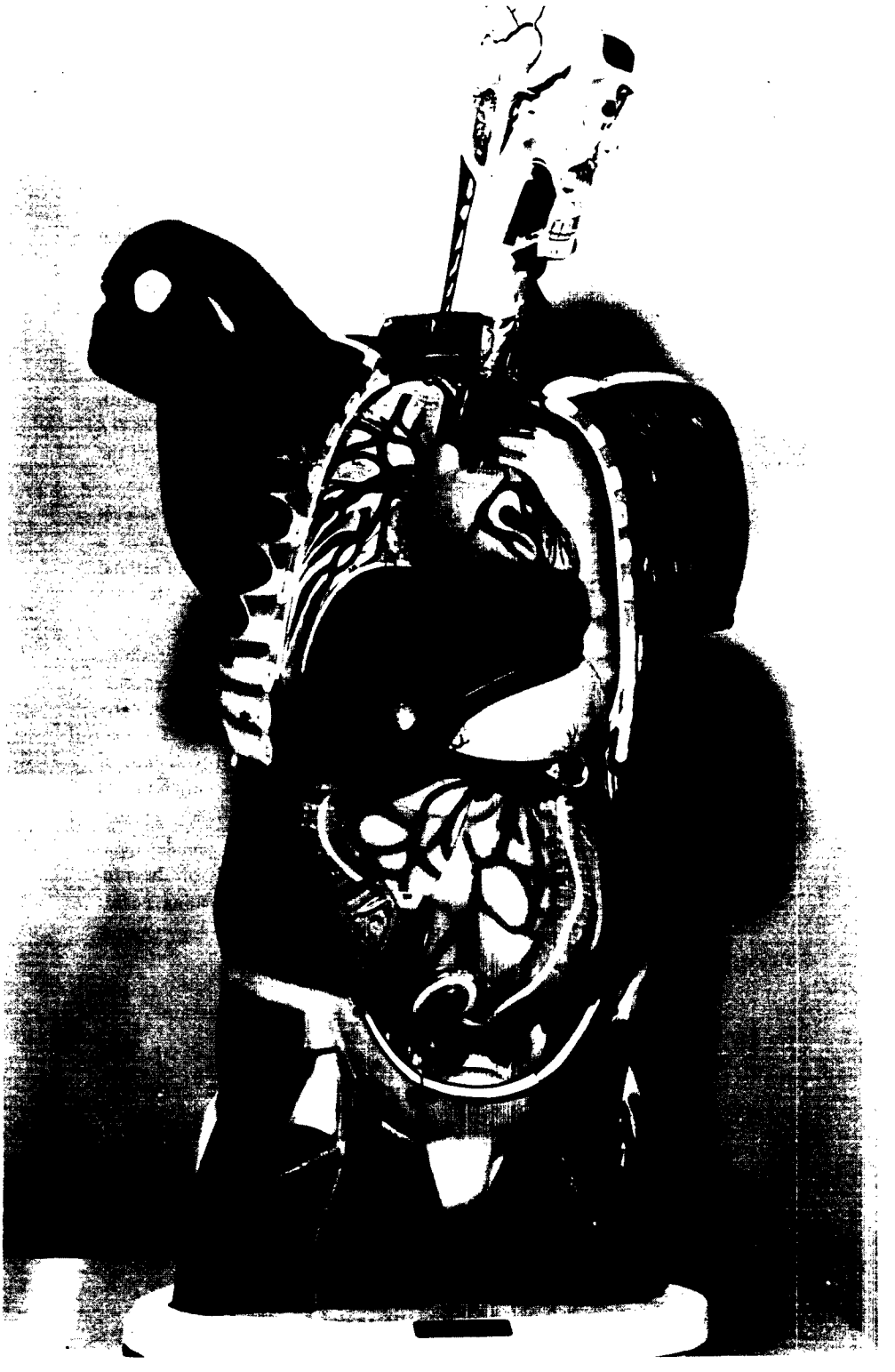
DR. H. B. GRAVES, Director, Department of Anæsthesiology, Vancouver General Hospital, Vancouver.

DR. S. GRZYBOWSKI, Associate Professor, Department of Medicine, University of British Columbia, Vancouver.

J. ROBERTS, Director of Administrative and Personnel Services, Vancouver General Hospital, Vancouver.

DR. W. A. YOUNG, Director, Pulmonary Function Laboratory, St. Paul's Hospital, Vancouver.

Health Division
Programmes



Health Division

The rising demand for health services, together with the increasingly complex scientific and social aspects of such services, is opening up new and challenging employment opportunities for a wide range of specialist health technologists.

The Health Technology training programmes, developed with the advice and counsel of leaders in the health sciences, and operated in conjunction with health facilities within the community, aim to produce technologists at a level of education and training suited to the need in the health field.

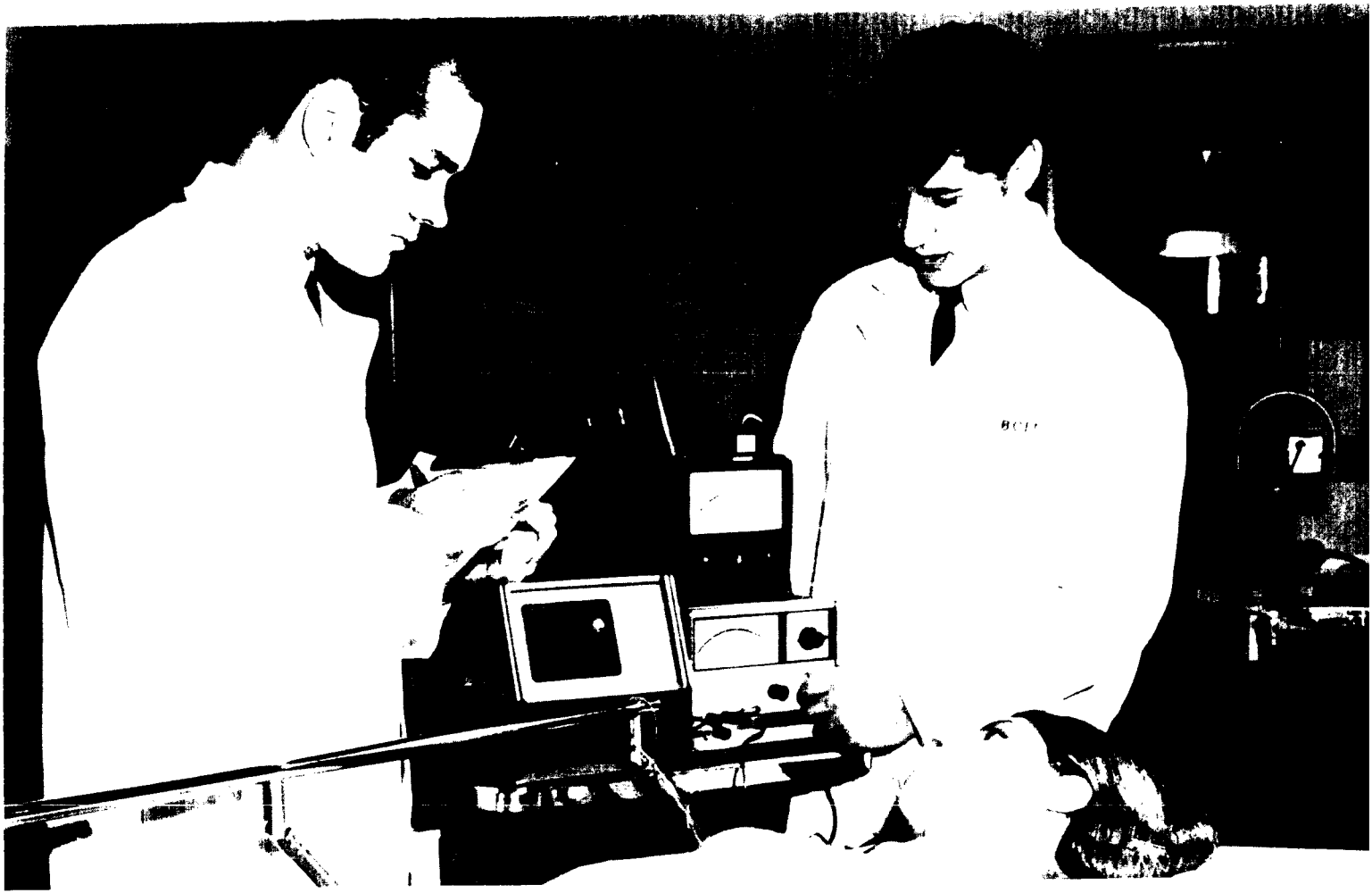
It is intended that the education provided will develop in the graduate a general understanding of the cultural and health environment in which he or she is to work. The training in the specific areas of choice will be sufficiently detailed to provide the skills necessary to the specialty.

It is expected that the health technologist will work at a level between the professional and vocational worker, acting as a junior colleague or in immediate support of the professional whose responsibilities in the field of health have to do with prevention, diagnosis and treatment, or research.

Wherever possible, students in the Health Technology training programmes will receive common instruction in order to encourage mutual understanding and foster an atmosphere of harmony between them and other workers in the health field. Further, where practicable, this training will be integrated with that of students in other technological programmes, thus enriching the training of both.

Seven training programmes, open to male or female applicants, are offered in Health Technology. Details of the programmes listed below will be found in the succeeding pages:

Biomedical Electronics and Electroneurophysiology Option.
Environmental Technology—Public Health.
Health Data Technology.
Medical Laboratory Technology.
Medical Radiography.
Nuclear Medicine Technology.
Nursing.



DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

Biomedical Electronics Technology

In recent years there has been a growing demand for skilled professionals who have been trained in both medicine and engineering. The development of artificial kidneys, hearts, blood vessels, and many other complicated structures for service in the human body has called for a unique combination of interests and aptitudes on the part of those responsible for their design. The widespread use of medical electronic apparatus for the measurement of blood flow, pulse rate, respiration, nerve activity, and other bodily functions has further increased this demand. This trend will accelerate in the future.

In order to meet the need for technologists in this field, the British Columbia Institute of Technology has developed the Biomedical Electronics Programme and its second-year option, Electroneurophysiology. The Biomedical Electronics Programme, a course of two years' duration, provides the education and training required for the technologist who works in close association with the medical engineers and physicians engaged in operating, maintaining, and designing scientific medical equipment. The Electroneurophysiology Option trains students specifically for that area of biomedical electronics which is concerned with the investigation of the nervous system and the treatment of its disorders. Only a limited number of students may select this option after completing the first year of the Biomedical Electronics Programme.

In both years of study the student will learn the fundamentals necessary to the understanding of the medical and technical aspects of the specialty. Mathematics and electronics play a large part in the training, as does detailed study of the processes which take place in the human body.

Many opportunities are open to the graduate with a Diploma of Technology in Biomedical Electronics. Employment will be found in the fields of research, development and production, sales, installation, operation, and servicing. The technologist may work in a hospital, a university, or in a factory. His work and studies bring him into close contact with a wide range of workers in the health field.

Persons wishing to enter this new field of dramatic growth should be interested in the welfare of people and have an aptitude for things mechanical and electrical.

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

BIOMEDICAL ELECTRONICS TECHNOLOGY

YEAR 1 — *Quarter A*

No.	Subject	Hours per Week Lec.	Lab.
30.A03	General Chemistry for Health Technologists	3	3
31.A01	Communications	2	1
32.A78	Mathematics (Biomedical Electronics)	4	4
43.A71	Electronics Principles and Practice	5	4
98.A03	Human Anatomy and Physiology for Biomedical Electronics Students	2	2
	Library and Research	—	5
		16	19

Quarter B

30.B03	General Chemistry for Health Technologists	3	3
31.B01	Communications	2	1
32.B78	Mathematics (Biomedical Electronics)	2	2
32.B79	Numerical Methods and Computing	3	2
43.B71	Electronics Principles and Practice	5	4
98.B03	Human Anatomy and Physiology for Biomedical Electronics Students	2	2
	Library and Research	—	4
		17	19

Quarter C

30.C03	General Chemistry for Health Technologists	3	3
31.C01	Communications	2	1
32.C78	Mathematics (Biomedical Electronics)	5	4
43.C71	Electronics Principles and Practice	4	4
98.C46	Introduction to Microbiology for Biomedical Electronics	2	—
	Tutorial	—	2
	Library and Research	—	5
		16	19

Quarter D

(No classes)

YEAR 2 — *Quarter E*

No.	Subject	Biomedical Electronics Option Lec.	Lab.	Electroneurophysiology Option Lec.	Lab.
32.E78	Mathematics (Biomedical Electronics)	3	2	3	2
33.E30	Biophysics	1*	2*	1*	2*
43.E71	Electronics Principles and Practice	3	3	3	3
78.E01	Biomedical Electronics	6	10	—	—
78.E02	Biomedical Electronics for ENP Students	—	—	6	10
98.E02	Physiology for Biomedical Electronics Students	1*	2*	1*	2*
	Library and Research	—	5	—	5
		13	22	13	22

Quarter F

33.F30	Biophysics	1*	2*	1*	2*
41.F91	Medical Materials	2	2	—	—
43.F71	Electronics Principles and Practice	3	1	3	1
48.F60	Medical Instrumentation	3	2	—	—
78.F02	Biomedical Electronics	2	7	—	—
78.F04	Clinical Experience in Biomedical Electronics	—	5	—	—
78.F06	Clinical Experience in ENP	—	—	—	17
78.F12	Biomedical Electronics	—	—	3	3
98.F02	Physiology for Biomedical Electronics Students	1*	2*	1*	2*
	Library and Research	—	5	—	5
		11	24	4	31

Quarter G

No.	Subject	Biomedical Electronics Option Lec.	Biomedical Electronics Option Lab.	Electroneurophysiology Option Lec.	Electroneurophysiology Option Lab.
33.G30	Biophysics	1*	2*	1*	2*
48.G60	Medical Instrumentation	3	2	....	....
78.G03	Biomedical Electronics	5	10	....	....
78.G05	Clinical Experience in Biomedical Electronics	....	5	....	....
78.G07	Clinical Experience in ENP	....	....	....	20
78.G13	Biomedical Electronics	....	....	3	4
98.G02	Physiology for Biomedical Electronics Students	1*	2*	1*	2*
	Tutorial	....	2	....	....
	Library and Research	....	5	....	5
		9	26	4	31

Quarter H

(No classes)

Subject to change.

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11, Chemistry 11.

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

Environmental Technology—Public Health

PUBLIC HEALTH INSPECTOR TRAINING

Our modern technological society presents many problems which influence the health of its members. With a complex team of public health workers, the graduate is expected to be the specialist in measuring, evaluating, and recommending controls for these environmental problems in the community which effect the health of the individual.

In the past, control of infectious disease and the more common environmental hazards were the chief concerns of the Public Health Inspector. Today's concerns require him to measure and evaluate the complex environment of the community. He is then concerned with effecting improvement through education, consultation, persuasion, and, if necessary, the enforcement of health legislation. In addition to coping with immediate problems, he is also legitimately concerned with the future environment of the community. He must, therefore, assume some leadership in guiding the community toward those long-range plans and developments which assures an environment which permits optimum health.

To meet the changes in this field and the demand for highly skilled personnel, the Environmental Technology — Public Health offers a balanced curriculum of lecture, laboratory, and field experience. Students will examine the hazards of pollution of air, land, water, and the many health and safety hazards which arise in industrial, agricultural, and urban society. In addition, they will study public accommodation and communicable disease control, insect and rodent control, recreation, community planning, and food processing and control.

Candidates who enter this programme require a sound understanding of mathematics, chemistry, and physics at the university-entrance level. They should be mature, practical people, who communicate effectively.

The successful student will receive a diploma of technology. To become a Public Health Inspector the candidate must complete three months' field work in a recognized health unit, which may be done between first and second year and then, if the candidate meets the requirements of the regulations of the Board of Certification, Canadian Public Health Association, be eligible to write the national examinations to qualify for a certificate in Public Health Inspection (Canada). This certificate is recognized by all health organizations in Canada.

Employment may be found in municipal, Provincial, and national health departments, in industry, and with agencies interested in pollution control, food sanitation, etc.

HEALTH DIVISION

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

ENVIRONMENTAL TECHNOLOGY—PUBLIC HEALTH

Quarter A

No.	Subject	Hours per Week Lec.	Lab.
30.A03	Chemistry for Health Technologists	3	3
31.A06	Communications (Public Health)	4	---
32.A82	Basic Mathematics (Health)	3	2
33.A12	Physics for Environmental Technology	3	2
82.A01	Public Health Inspection	3	2
98.A42	Public Health and Pollution Control Microbiology	5	---
	Library and Research	---	5
		21	14

Quarter B

30.B03	Chemistry for Health Technologists	3	3
31.B06	Communications (Public Health)	5	---
32.B82	Mathematics (Health)	3	2
33.B12	Physics for Environmental Technology	3	2
82.B02	Food Sanitation	3	2
98.B42	Public Health and Pollution Control Microbiology	2	2
	Library and Research	---	5
		19	16

Quarter C

30.C03	Chemistry for Health Technologists	3	3
32.C82	Statistics (Health)	3	2
33.C12	Physics for Environmental Technology	3	2
82.C01	Public Health Inspection	3	2
82.C10	Draughting and Blueprint Reading	2	2
82.C11	Private Water Supplies and Waste Disposal Systems	3	2
	Library and Research	---	5
		17	18

Quarter D

(No classes)

Quarter E

30.303	Instrumental Analytical Methods	1	3
32.E82	Introduction to Computers	5	---
82.E04	Public Health Administration	5	---
82.E08	Communicable Disease Control	5	---
82.E11	Hydraulics, Hydrology, Municipal Waste Treatment	5	---
82.E15	Occupational Health	3	3
	Library and Research	---	5
		24	11

Quarter F

10.F62	Public Health Law	6	---
30.303	Instrumental Analytical Methods	1	3
31.F06	Communications (Public Health)	3	2
82.F05	Human Relations	5	---
82.F11	Municipal Water and Sewage-treatment Systems	5	---
82.F15	Industrial Hygiene and Toxicology	5	---
	Library and Research	---	5
		25	10

Quarter G

No.	Subject	Hours per Week Lec.	Lab.
31.G06	Communications (Public Health)	5	----
41.413	Environmental Analytical Methods	----	3
82.G02	Food Sanitation	5	----
82.G06	Personnel Administration	5	----
82.G14	Environmental Health and Engineering	4	3
82.G15	Industrial Hygiene and Toxicology	5	----
	Library and Research	----	5
		24	11

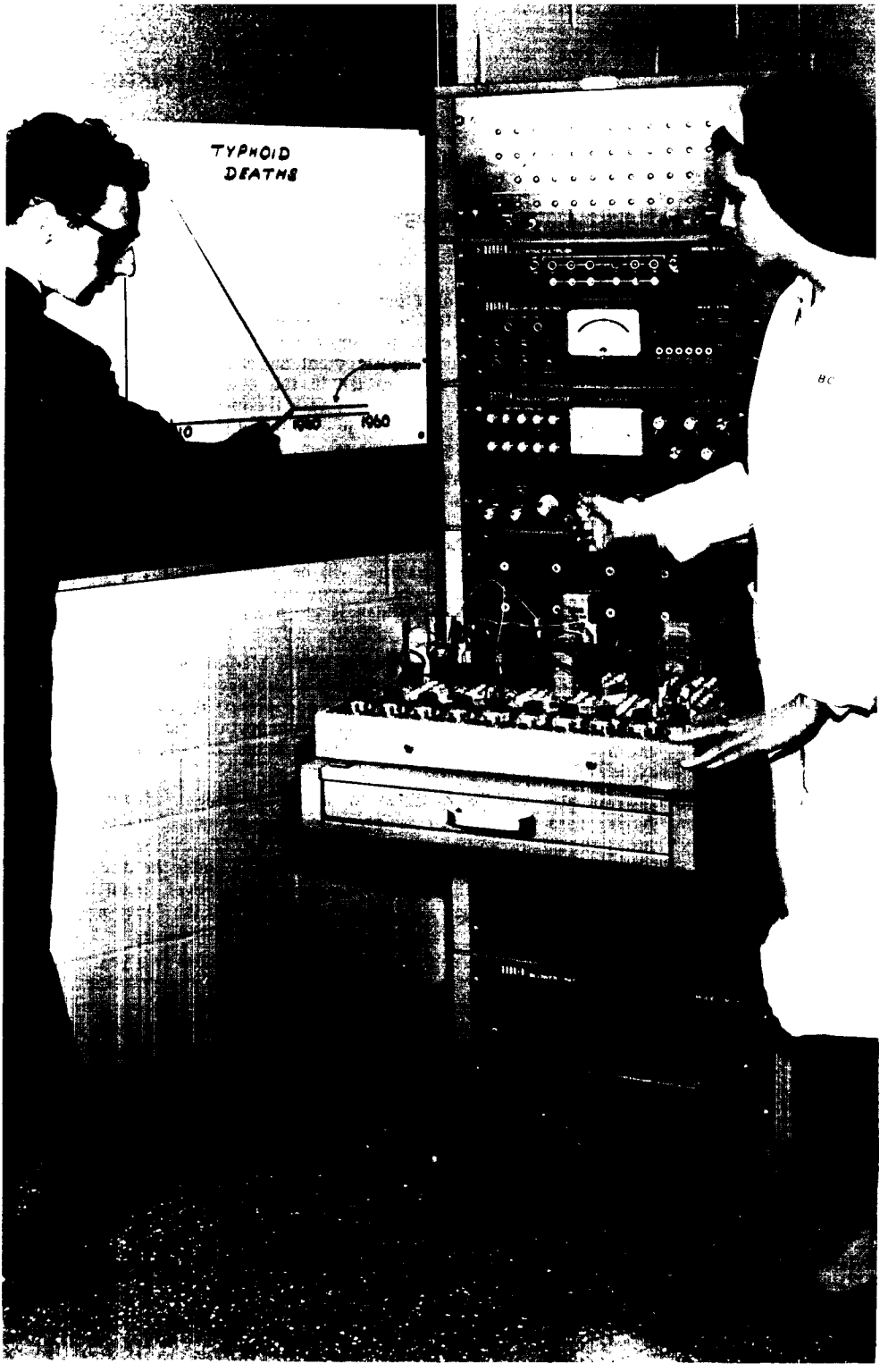
Quarter H

(No classes)

Subject to change.

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, two Science 11's, one Science 12 (Chemistry 12 and Physics 11 suggested).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DEATHS

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

Health Data Technology

(Medical Records)

The application of data processing methods to the field of health records has resulted in many changes. Now data can be processed in greater depth and more information can be extracted from them. This development has brought about the demand for a technologist trained in the new procedures of health data processing. At the same time, the increasing amount of health data and the practice of manipulating them more fully has produced a demand for more technologists.

To meet these demands, the British Columbia Institute of Technology, in collaboration with the British Columbia Association of Medical Record Librarians and several affiliated hospitals, has designed the Health Data Technology Programme.

Graduates of this programme will be granted a diploma of technology and will be eligible to write the appropriate national accreditation examination, which is given once a year by the Canadian Association of Medical Record Librarians.

Health Data Technologists work in the Medical Record Department of a hospital, clinic, or other health agency. They are responsible for preparing, analysing, and preserving the health information required by the hospital or agency, the patient, and the public. In addition, they may be expected to carry out the typing of medical reports.

Graduates will be qualified to seek employment wherever health data is produced or processed. Such places include hospitals, health and welfare agencies, private clinics, and universities. In large hospitals, technologists work under the direction of the Chief Medical Record Librarian. However, in small hospitals, they may be called upon to perform all the functions of the department.

The Health Data Technology Programme provides two years of instruction in the form of lectures, laboratory, and practical experience. In the first year, the student concentrates on the basic health sciences and will become acquainted with a fundamental knowledge of health record science. In the second year, the classroom and laboratory instruction at the Institute will be supplemented by experience in the Medical Record Departments of local hospitals.

A mature personality and a strong sense of responsibility are prerequisites to a successful career in this field. The work involved demands attention to detail and accuracy.

The demand for technologists in this rapidly expanding field exceeds the supply throughout Canada and the United States.

HEALTH DIVISION

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

HEALTH DATA TECHNOLOGY

YEAR 1 — *Quarter A*

No.	Subject	Hours per Week Lec.	Lab.
31.A02	Communications	2	1
32.A74	Basic Mathematics (Health)	3	2
80.A01	Introduction to Health Record Science	4	8
98.A07	Human Anatomy and Physiology	2	2
98.A23	Organizational Psychology	1	2
	Office Equipment	1	2
	Library and Research	—	5
		13	22

Quarter B

31.B02	Communications	2	1
32.B74	Calculus and Statistics (Health)	3	2
80.B01	Health Record Science	6	7
98.B07	Human Anatomy and Physiology	2	2
98.B23	Organizational Psychology	1	2
98.B45	Medical Microbiology and Epidemiology	2	—
	Library and Research	—	5
		16	19

Quarter C

31.C02	Communications	2	1
32.C74	Further Statistics (Health)	3	2
80.C01	Health Record Science	6	7
98.C07	Human Anatomy and Physiology	2	2
98.C45	Medical Microbiology and Epidemiology	2	—
	Pharmacology	3	—
	Library and Research	—	5
		18	17

Quarter D

(No classes)

YEAR 2 — *Quarter E*

10.E30	Industrial Management	1	2
80.E01	Health Record Science	2	2
80.E02	Health Statistics	2	2
80.E03	Health Data Practicum	—	16
14.E50	Introduction to Data Processing	3	—
	Library and Research	—	5
		8	27

Quarter F

32.F80	Computer Application I	3	—
80.F01	Health Record Science	3	4
80.F03	Health Data Practicum	—	16
80.F04	Medical and Surgical Transcription	—	4
	Library and Research	—	5
		6	29

Quarter G

No.	Subject	Hours per Week Lec.	Lab.
32.G80	Computer Application II	3	----
80.G01	Health Record Science	2	5
80.G03	Health Data Practicum	----	16
80.G04	Medical and Surgical Transcription	----	4
	Library and Research	----	5
		5	30

Quarter H

(No classes)

Subject to change.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Typing 11, or equivalent.

DEPARTMENT OF MEDICAL LABORATORY SERVICES

Medical Laboratory Technology

The medical laboratory technologist, as a member of the health team, performs the many and varied laboratory procedures, the results of which are used by physicians as important aids to the diagnosis and treatment of the patient.

Laboratory screening programmes are being developed to alert the physician to disease processes which, though not yet clinically evident, are nevertheless present in the patient. Automation, instead of decreasing the need for the medical laboratory technologist, has created a demand for more highly trained technologists. The increasing use of sophisticated laboratory procedures and the rising demand generally for health services assure a wide range of opportunities for employment.

Medical Laboratory Technology offers a variety of scientific pursuits within the modern hospital, the private clinical laboratory, and the research laboratory. These fields include histopathology, clinical chemistry, hæmatology, microbiology, and immuno-hæmatology. The trained technologist may pursue any one or a combination of these fields after completion of training.

Applicants should have a strong interest in science and be meticulous in their work and habits.

There are two avenues of approach for the first year of training, both of which allow entry into second year BCIT.

Approach I

Students spend two years at the Institute. Applicants must have graduated on the Academic and Technical Programme or the equivalent with the special prerequisites shown on page 64.

Approach II

A limited number of applicants may be accepted into the second year of the Institute programme if they hold the following prerequisites: Senior Matriculation, or first year University, or first year Community College, or the equivalent, with acceptable credits in Mathematics, English, Chemistry, a second science, and one other subject. Applicants accepted may be required to attend a special two-week course at the Institute prior to the start of the academic year. Applicants may obtain further information regarding Approach II from the Registrar's office.

Those applying for Approach II must have their official transcripts and application forms in to the Institute no later than July 1.

After successful completion of the second year at BCIT, a diploma of technology is granted. The third and final year of training is spent in a hospital laboratory approved by the Canadian Medical Association. At the end of the hospital year the student is eligible to sit the Canadian Society of Laboratory Technologists Examination which leads to the Registered Technologist (the recognized qualification for working as a technologist in a medical laboratory).

HEALTH DIVISION

DEPARTMENT OF MEDICAL LABORATORY SERVICES

MEDICAL LABORATORY TECHNOLOGY

Quarter A

YEAR 1

No.	Subject	Hours per Week Lec.	Lab.
30.A03	General Chemistry for Health Technologists	3	3
31.A04	Communications in Change	3	1
32.A70	Basic Mathematics (Health)	3	2
33.A10	Physics for Medical Laboratory Technologists	3	2
70.A01	Medical Laboratory Orientation	2	1
98.A01	Human Anatomy and Physiology	2	2
98.A21	Introduction to Behavioural Sciences	....	3
	Library and Research	....	5
		16	19

Quarter B

30.B03	General Chemistry for Health Technologists	3	3
31.B04	Communications in Change	3	1
32.B70	Calculus (Health)	3	2
33.B10	Physics for Medical Laboratory Technologists	3	2
70.B01	Medical Laboratory Orientation	1	2
98.B01	Human Anatomy and Physiology	2	2
98.B21	Introduction to Behavioural Sciences	....	3
	Library and Research	....	5
		15	20

Quarter C

14.C50	Introduction to Data Processing	2	3
30.C03	General Chemistry for Health Technologists	3	3
32.C70	Statistics (Health)	3	2
33.C10	Physics for Medical Laboratory Technology	3	2
70.C01	Medical Laboratory Orientation	1	2
98.C01	Human Anatomy and Physiology	2	2
	Tutorial	....	2
	Library and Research	....	5
		14	21

Quarter D

(No classes)

Quarter E

70.E02	Instrumentation in Clinical Chemistry	3	6
70.E03	Hæmatology	2	2
70.E04	Histology	2	6
70.E05	Microbiology and Parasitology	3	6
98.E43	Introductory Principles of Immunology	1	....
	Library and Research	....	4
		11	24

Quarter F

70.F03	Hæmatology	2	3
70.F05	Microbiology and Mycology	3	6
70.F06	Biochemistry and Physiology for Medical Laboratory Technologists	1	....
70.F07	Blood Banking	2	5
70.F12	Clinical Chemistry	3	6
	Library and Research	....	4
		11	24

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Quarter G

No.	Subject	Hours per Week Lec.	Lab.
70.G03	Hæmatology	2	3
70.G05	Clinical Bacteriology	3	6
70.G06	Biochemistry and Physiology for Medical Laboratory Technologists	1	----
70.G07	Blood Banking	2	6
70.G12	Clinical Chemistry	3	5
	Library and Research	----	4
		11	24

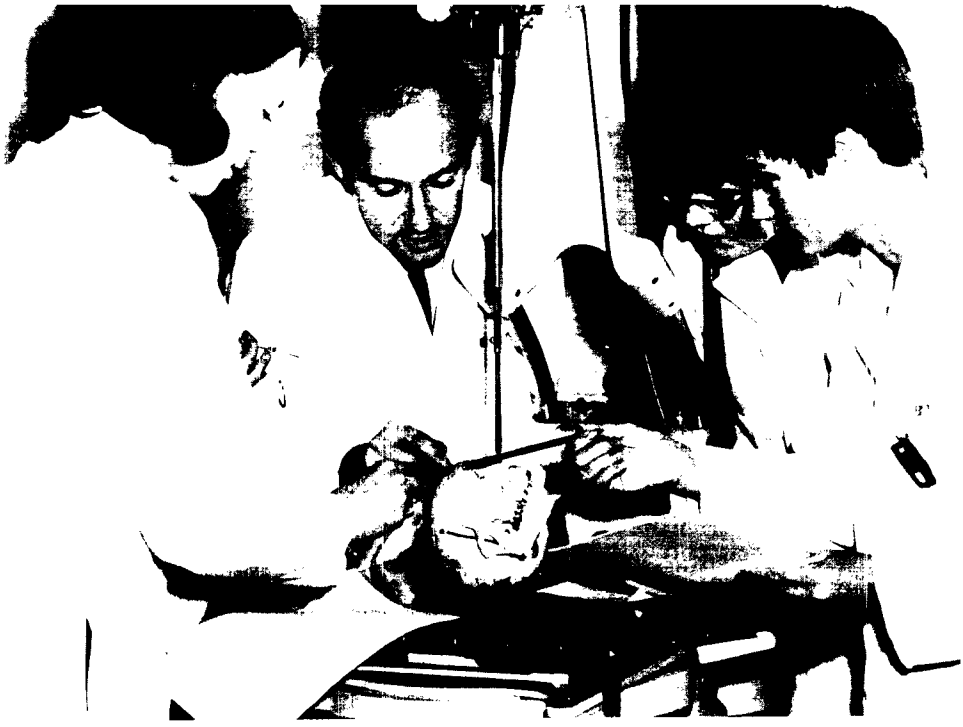
Quarter H

(No classes)

Subject to change.

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, Chemistry 11, Chemistry 12, and one other Science 11.



DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

Medical Radiography (X-ray)

Medical Radiography has been defined as " the art of recording on a sensitized film an image of the inner structures of the human organism." The chief concerns of the X-ray technician are the taking of X-rays and providing assistance to the radiologist during the various X-ray procedures. Workers in this field must be interested in the welfare of others and possess a strong sense of responsibility.

Advances in science and technology are greatly influencing medical radiography. The course offered is intended to qualify radiographers who will be in step with the latest developments in patient care. Medical radiographers are essential members of the health team.

It is emphasized that this occupation is not considered to present any hazard to health. The dangers of radiation are well recognized and rigidly controlled.

The Canadian Medical Association requires that the student undergo a two-week period of "orientation" in a hospital X-ray department prior to the commencement of classes at the Institute.

Arrangements for this orientation will be made with the participating hospitals and the students by the Institute.

During the first year, general studies chosen and organized with reference to their usefulness to the student as a health technologist are presented. At the same time there are included several courses which relate directly to the study of Medical Radiography. Further time is spent on student orientation in the affiliated hospital X-ray departments.

In the second year, emphasis is placed solely on the subjects related to the specialty. During this time, students gain experience in the clinical application of medical radiography in hospitals affiliated with the Institute. While at the hospital the student is under the supervision of the Institute instructional staff. Considerable laboratory work is a feature of both years.

The Canadian Society of Radiological Technicians requires graduates to complete a further year of clinical experience in a hospital X-ray department, approved by the Canadian Medical Association, to be eligible to sit the society's certification examination. During this year the graduate receives a stipend.

Certification resulting from this programme is recognized and accepted in all Provinces, the United States, Great Britain, Australasia, and many other countries.

Registered technicians may expect to be employed in hospitals and private X-ray clinics. There are also opportunities for men in the sales division of X-ray equipment and film companies.

HEALTH DIVISION

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

MEDICAL RADIOGRAPHY TECHNOLOGY

YEAR 1

Quarter A

No.	Subject	Hours per Week Lec.	Lab.
31.A08	Communications	3	1
33.A09	Physics for Medical Radiography	3	2
72.A01	Introduction to Medical Radiography and Hospital Orientation	3	4
72.A02	Apparatus and Image Recording	2	3
98.A05	Basic Anatomy and Physiology for Radiographers	3	2
	Tutorial	—	4
	Library and Research	—	5
		14	21

Quarter B

31.B08	Communications	3	1
32.B72	Basic Mathematics (Health)	3	2
33.B09	Physics for Medical Radiography	3	2
72.B01	Basic Medical Radiography	4	3*
72.B02	Apparatus and Image Recording	—	3*
72.B03	Anatomy and Physiology for Radiographers	2	2
98.B05	Basic Anatomy and Physiology for Radiographers	2	2
	Tutorial	—	1
	Library and Research	—	5
		17	18

Quarter C

33.C09	Physics for Medical Radiography	3	2
72.C01	Basic Medical Radiography	4	3*
72.C02	Apparatus and Image Recording	3	3*
72.C03	Anatomy and Physiology for Radiographers	3	2
98.A21	Introduction to Behavioural Science	3	3
	Tutorial	—	4
	Library and Research	—	5
		16	19

Quarter D

(No classes)

YEAR 2

Quarter E

72.E01	Radiographic Technique	4*	4*
72.E02	Apparatus and Image Recording	4*	4*
72.E05	Radiobiology and Protection	4*	—
72.E06	Clinical Experience in Medical Radiography (Hospital)	—	36*
76.E01	Fundamentals of Patient Care	6*	—
	Library and Research	—	4
		9	26

Quarter F

72.F01	Radiographic Technique	4*	4*
72.F02	Apparatus and Image Recording	4*	4*
72.F05	Radiobiology and Protection	4*	—
72.F06	Clinical Experience in Medical Radiography (Hospital)	—	36*
72.F07	Pathology for Medical Radiographers	4*	—
	Library and Research	—	5
		8	27

Quarter G

No.	Subject	Hours per Week Lec.	Lab.
72.G01	Radiographic Technique	4*	4*
72.G02	Apparatus and Image Recording	---	4*
72.G06	Clinical Experience in Medical Radiography (Hospital)	---	36*
72.G07	Pathology for Medical Radiographers	4*	---
98.F41	Basic Medical Microbiology and Epidemiology	6*	---
	Tutorial	---	1
	Library and Research	---	5
		7	28

Quarter H

(No classes)

Subject to change.

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, two Science 11's, one Science 12 (Physics or Chemistry is suggested).

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

Nuclear Medicine Technology

The advent of the nuclear reactor, with its ability to produce artificial radioactive isotopes in quantity, has made possible a widely increased use of these materials in medical research, diagnosis, and therapy. This field of medicine, relatively unknown a decade ago, is developing rapidly. A demand exists for well-educated and properly trained technologists. To meet this demand the British Columbia Institute of Technology offers a two-year course in the techniques associated with nuclear medicine.

Isotopes are the various forms in which a chemical element may occur. They have the same atomic number, but have important physical differences. Some of them are radioactive and emit radiation. This characteristic permits them to be detected and measured by utilizing equipment especially designed for the purpose. They may be introduced into the chemical structure of a large variety of compounds, including biological materials, and investigation of normal and abnormal functions is undertaken by following the isotope through chemical and physical processes in the human body or the laboratory. Radioactive materials are handled in such a way that they constitute no health hazard.

In the first year, the student studies subjects to broaden his general cultural and technological background. These studies prepare him for the specialization to follow. Because of the wide variety of radionuclide applications and the need for a diversity of capabilities, the programme of studies provides a thorough knowledge of the theoretical principles involved, as well as training in the required skills.

During the second year, special subjects relevant to Nuclear Medicine Technology are dealt with. The Institute is equipped with an up-to-date nuclear medicine laboratory. Clinical applications are studied in appropriate facilities in the Lower Mainland hospitals affiliated with the Institute.

On completion of the course, the graduate is granted a diploma of technology. Graduates are eligible to sit the certification examination of the Canadian Society of Radiological Technicians in Nuclear Medicine Technology. This certification is recognized in all Provinces. Employment will be found in hospitals, private laboratories, and institutions involved in research.

Nuclear medicine technologists should have a liking for work of a technical nature. They must be meticulous in habits and possess a strong sense of responsibility. A desire to be of service to others is essential.

NUCLEAR MEDICINE TECHNOLOGY

YEAR 1 — *Quarter A*

No.	Subject	Hours per Week Lec.	Lab.
14.A51	Computer Applications	3	—
30.A03	General Chemistry for Health Technologists	3	3
31.A08	Communications	3	1
32.A74	Basic Mathematics (Health)	3	2
33.A05	Basic Physics for Nuclear Medicine	3	2
70.A01	Medical Laboratory Orientation	2	1
98.A01	Human Anatomy and Physiology	2	2
	Library and Research	—	5
		19	16

Quarter B

30.B03	General Chemistry for Health Technologists	3	3
31.B08	Communications	3	1
32.B74	Calculus and Statistics (Health)	3	2
33.B05	Radioactivity	3	2
70.B01	Medical Laboratory Orientation	2	1
74.B07	Introduction to Nuclear Medicine	2	—
98.B01	Human Anatomy and Physiology	2	2
	Library and Research	—	5
	Tutorial	—	1
		18	17

Quarter C

30.C03	General Chemistry for Health Technologists	3	3
32.C74	Further Statistics (Health)	3	2
33.C05	Measurement of Radioactivity	3	2
70.C01	Medical Laboratory Orientation	2	1
74.C07	Introduction to Nuclear Medicine	2	—
76.C02	Fundamentals of Patient Care	4	—
98.C01	Human Anatomy and Physiology	2	2
	Tutorial	—	1
	Library and Research	—	5
		19	16

Quarter D

(No classes)

YEAR 2 — *Quarter E*

33.E05	Measurement of Radioactivity	4*	6*
74.E04	Applied Physiology in Diagnosis and Therapy	6*	6*
74.E05	Clinical Experience in Diagnostic and Therapeutic Procedures	—	36*
74.E06	Pathology for Nuclear Medicine Technologists	6*	—
	Library and Research	—	3
		8	27

Quarter F

74.F02	Radiobiology and Protection	4*	—
74.F04	Applied Physiology in Diagnosis and Therapy	6*	6*
74.F05	Clinical Experience in Diagnostic and Therapeutic Procedures	—	36*
98.A21	Introduction to Behavioural Science	6*	—
98.F41	Basic Medical Microbiology and Epidemiology	6*	—
	Library and Research	—	3
		11	24

Quarter G

No.	Subject	Hours per Week Lec.	Lab.
74.G02	Radiobiology and Protection	4*	—
74.G04	Applied Physiology in Diagnosis and Therapy	6*	6*
74.G05	Clinical Experience in Diagnostic and Therapeutic Procedures	—	36*
98.B21	Introduction to Behavioural Science	6*	—
	Tutorial	—	1
	Library and Research	—	5
		8	27

Quarter H

(No classes)

Subject to change.

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, two Science 11's, one Science 12 (Chemistry is suggested).

DEPARTMENT OF PATIENT CARE SERVICES

Nursing

The Nursing Programme offers a student a two-year course of studies and hospital experience which leads to graduation as a qualified nurse and the eligibility to write the professional nursing examinations in order to obtain an R.N. The programme is open to men and women, and neither age nor marital status are primary factors in the selection of candidates. It is preferred that the nursing student has had biology and some chemistry in high school. A physical examination and interview are required prior to entry in the Nursing Programme.

The curriculum for nursing students includes biological, social, and applied sciences. Nursing is taught throughout the two years, and clinical experience, with the guidance of Institute instructors, is provided concurrently at nearby hospitals and health agencies. During the two calendar years the students receive two periods of vacation as well as eight quarters of instruction.

The nursing courses include study and experience in basic nursing, mental health nursing, family care nursing, and medical-surgical nursing. Specific knowledge and skills in areas such as pharmacology, dietetics, and rehabilitation are integrated throughout the curriculum. Modern trends in the nursing of both children and adults in acute care settings and in extended care facilities are reflected throughout the curriculum.

Successful candidates in the Nursing Programme will be well equipped to work as beginning practitioners in hospitals and analogous situations in the community.

HEALTH DIVISION

DEPARTMENT OF PATIENT CARE SERVICES

NURSING

YEAR 1 — *Quarter A*

No.	Subject	Hrs. per Wk. Lec.	Lab.	GROUP I Students	GROUP II Students	GROUP III Students
31.A04	Communications in Change	3	1	×		
76.A07	Physical Fitness	....	2	×		
76.A20	Nursing	6	8	×		
98.A26	Psychology for Nurses	3	2	×		
98.A27	Sociology and the Family	4	1	×		
	Library and Research	....	5	×		
		16	19			
31.A04	Communications in Change	3	1		×	
76.A04	Nursing	5	2		×	
76.A05	Nursing	....	10		×	
98.A06	Physiology for Nurses	4	1		×	
98.A28	Sociology of Health and Illness	3	1		×	
	Library and Research	....	5		×	
		15	20			

Quarter B

31.B04	Communications in Change	3	1	×		
76.A04	Nursing	5	2	×		
76.A05	Nursing	....	10	×		
98.A06	Physiology for Nurses	4	1	×		
98.A28	Sociology of Health and Illness	3	1	×		
	Library and Research	....	5			
		15	20			
31.B04	Communications in Change	3	1		×	
76.A07	Physical Fitness	....	2		×	
76.A20	Nursing	6	8		×	
98.A26	Psychology for Nurses	3	2		×	
98.A27	Sociology and the Family	4	1		×	
	Library and Research	....	5			
		16	19			

Quarter C

76.C30	Nursing	6	2	×	×
76.C35	Nursing	....	10	×	×
98.C06	Physiology and Pathology for Nurses	4	1	×	×
98.C44	Microbiology for Nurses	4	....	×	×
	Elective (to be developed)	2	1	×	×
	Library and Research	....	5	×	×
		16	19		

Quarter D

No.	Subject	Hrs. per Wk. Lec.	Lab.	Group I Students	Group II Students	Group III Students
76.D30	Family Care Nursing	10	....	×		
76.D35	Clinical Experience for Family Care Nursing	....	16	×		
	Elective (to be developed)	2	2	×		
	Library and Research	....	5	×		
		12	23			
76.D40	Community and Mental Health Nursing	10	....		×	
76.D45	Clinical Experience for Community and Mental Health Nursing	....	16		×	
	Elective (to be developed)	2	2		×	
	Library and Research	....	5		×	
		12	23			
76.D50	Medical Surgical Nursing	10	....			×
76.D55	Clinical Experience for Medical Surgical Nursing	....	16			×
	Elective (to be developed)	2	2			×
	Library and Research	....	5			×
		12	23			

Quarter E

No.	Subject	Hrs. per Wk. Lec.	Lab.	Group I Students	Group II Students	Group III Students
76.D40	Community Care and Mental Health Nursing	10	....	×		
76.D45	Clinical Experience in Community Care and Mental Health Nursing	....	16	×		
	Elective (to be developed)	2	2	×		
	Library and Research	....	5	×		
		12	23			
76.D50	Medical Surgical Nursing	10	....		×	
76.D55	Clinical Experience in Medical Surgical Nursing	....	16		×	
	Elective (to be developed)	2	2		×	
	Library and Research	....	5		×	
		12	23			
76.D30	Family Care Nursing	10	....			×
76.D35	Clinical Experience in Family Care Nursing	....	16			×
	Elective (to be developed)	2	2			×
	Library and Research	....	5			×
		12	23			

Quarter F

No.	Subject	Hrs. per Wk. Lec.	Lab.	Group I Students	Group II Students	Group III Students
76.D50	Medical Surgical Nursing	10	—	×		
76.D55	Clinical Experience in Medical Surgical Nursing	—	16	×		
76.F60	Seminar	2	2	×		
	Library and Research	—	5	×		
		12	23			
76.D30	Family Care Nursing	10	—		×	
76.D35	Clinical Experience in Family Care Nursing	—	16		×	
76.F60	Seminar	2	2		×	
	Library and Research	—	5			
		12	23			
76.D40	Community Care and Mental Health Nursing	10	—			×
76.D45	Clinical Experience in Community Care and Mental Health Nursing	—	16			×
76.F60	Seminar	2	2			×
	Library and Research	—	5			×
		12	23			

Quarter G

76.G70	Nursing	5	—	×	×	×
76.G75	Clinical Experience	—	25	×	×	×
	Library and Research	—	5	×	×	×
		5	30			

Quarter H

76.H85	Nursing	—	30	×	×	×
	Library and Research	—	5	×	×	×
		—	35			

Subject to change.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisite: One Science 12.

ACKNOWLEDGMENTS

Greatful acknowledgment is made to the following persons and organizations for photographs used in this publication:

George Allen Aerial Photos Ltd.

British Columbia Hydro and Power Auhtority.

British Columbia Department of Highways.

Craigmont Mines Ltd.

Division of Technical and Vocational Curriculum, Technical Branch, Department of Education.

Greater Vancouver Water Board.

Visual Education Department, Vancouver School Board.

SUBJECT SUMMARIES

SUBJECT NUMBERING SYSTEM

Subjects are numbered to indicate the technology or department under which instruction is given, the term, and the subject material. The first two figures indicate the parent technology or department, the third figure indicates the term in which a subject is normally taught, the last two figures indicate the subject description. In the example 31.201, the "31" shows that the subject is offered by the English Department, the "2" shows that the subject is normally taught in the second term, the "01" stands for the subject description. The departments and technologies with their corresponding numbers are as follows:

10—Administrative Management.
12—Broadcast Communications.
14—Computer Programming and Systems.
16—Financial Management.
18—Hotel, Motel, and Food Service Management.
20—Marketing Management.
22—Technical Management.
30—Chemistry.
31—English.
32—Mathematics.
33—Physics.
40—Building.
41—Chemical and Metallurgical.
42—Civil and Structural.
43—Electrical and Electronics.
44—Biological Sciences.
45—Forestry.
46—Forest Products.
47—Natural Gas and Petroleum.
48—Instrumentation and Systems.
49—Mechanical.
50—Mining.
51—Surveying.
70—Medical Laboratory Technology.
72—Medical Radiography.
74—Nuclear Medicine Technology.
76—Nursing.
78—Biomedical Electronics Technology.
80—Health Data Technology.
82—Environmental Technology—Public Health.
98—Basic Health Sciences.

ADMINISTRATIVE MANAGEMENT

10.131, 10.231 Management in Industry

An orientation in the nature of business in the private enterprise system, embracing forms of business ownership, organization, leadership, management techniques, and business elements of production. Typical cases taken from industry are studied to encourage students to think and decide for themselves. Leads into Administrative Practices.

10.135, 10.235 Economics

The aim is to further an understanding of the organization and operation of our economic environment. Students analyse demand and supply, and costs of the business firm (microeconomics). The determinants of the level of employment and national income are examined (macroeconomics).

10.137, 10.237 Economics (for Financial students). *See* 10.135.

10.138, 10.238 Economics (for Hotel, Motel students). *See* 10.135.

10.139, 10.239 Economics (for Marketing students). *See* 10.135.

10.161 Law for Broadcasting

An examination of the legal system with special reference to contemporary problems followed by an in-depth study of defamation as an example of substantive law.

10.221 Psychology in Management I

This course introduces the student to a psychological approach to administration through a study of the determinants of human behaviour, personality, motivation, attitudes, perceptions, learning, and leadership, and their application to the administrative process.

10.231 *See* 10.131.

10.232 Administrative Practices

An insight into the basic nature of business problems and the administrative process involved to handle them. Problems in typical business settings will be examined, with emphasis on the personnel management function. Study and discussion will be undertaken of actual business situations illustrating problems frequently met in industry requiring managerial analysis, decision, and action. A sequel course to Management in Industry.

10.235 *See* 10.135.

10.236 Economics

This one-term course aims to give the student a sound understanding of the economic environment, its structure and operations. The theoretical tools of the economists are used to explore the concepts of national income, employment, inflation, growth, and various topics associated with the Canadian economy.

10.237 *See* 10.135.

10.238 *See* 10.135.

10.239 *See* 10.135.

10.245, 10.345, 10.445 Managerial Economics

The study of the application of the analytical tools of economics to practical business problems in production inventory, sales, and investment planning.

10.307 Mathematics for Economics and Statistics

Calculus, with emphasis on its practical use as an extension of other branches of mathematics in business and technical problems. Basic concepts, derivatives with applications, maximum-minimum problems and optimization, differentials, integrals with applications, partial derivatives, curve-fitting with applications in statistics, series, differential equations.

10.308 Mathematical Statistics and Probability

A study of the theoretical underpinnings of modern statistics. Topics include probability theory, central limit theorem, sampling, hypothesis testing, regression, correlation.

10.317, 10.417 Hospitality Industry Law

A summary of Canadian law applicable to the hospitality industry; the sources of law; constitutional law; the legislative, executive, and judicial functions.

The common law of contract, tort, bailment, employment, and agency; property (real and personal); partnerships and corporations. Statutory enactments dealing with sale of goods, human rights, methods of securing debts, working conditions, crime, labour relations, liquor, health, and licensing.

10.321 Psychology in Management II

This course examines the determinants of employee job performance and productivity within the organization; the effect of different patterns of formal organization on motivation; the effect of the different forms of informal organizations and leadership styles on organizational performance; and the satisfaction of individual needs within the organization.

10.325 Industrial Relations

An introductory analysis of the fundamental issues and facts of labour-management relations. Special emphasis is given to collective agreement content and interpretation, bargaining, and basic labour economics.

10.327 Training and Development

This subject provides the student with the capability of designing and implementing a training programme. This is achieved through a combination of classes and an in-industry project. Emphasis is given to practical problems of training in industry.

10.332, 10.432 Real Estate Management

The real estate function—land law, estates, and interests in land and the personal and business management decision process. The economic characteristics of urban real estate and the market; city growth and development—locational factors in influencing the determination of land use and ownership. Institutional lenders, the mortgage market, the functions of the real estate agent, salesman and appraiser.

10.337, 10.437 Economics (for Technical students). *See* 10.135.

10.345 *See* 10.245.

10.360, 10.460 Business Law

A study of legal rules and principles which guide decisions involving the law of contracts, including the sale of goods and negotiable instruments, as well as the business associations of agency, partnership, and companies.

10.417 *See* 10.317.

10.425 Industrial Relations

A detailed analysis of selected labour-management problem areas with emphasis on the solution of practical existing problems in industrial relations.

10.427 *See* 10.327.

10.432 *See* 10.332.

10.434 Managerial Policy

An analysis of business policy formulation designed to give the student practice, experience, and confidence in handling business situations, including those of a complex nature where basic policy decisions are necessary to assist in problem-solving. Typical business cases will be selected from the fields of finance and control, personnel, production, marketing, and general management for study and discussion. Determination of an acceptable course of action will be followed by the development of a proposed scheme of implementation.

10.437 *See* 10.135.

10.445 *See* 10.245.

10.451 Forecasting

The application and limitation of statistical, econometric, and other quantitative techniques to forecasting problems. The sources, availability, usefulness, and limitations of data will also be examined.

10.460 *See* 10.360.

10.465 Society and Government

The study of the structure of Canadian society and Government, examining the processes, problems, and issues which exist.

10.E30 Industrial Management (for Electrical and Electronics students).

Designed to give students an understanding of business management and an opportunity to apply principles and techniques through analysis of business case-problems.

10.F62 Public Health Law

An examination of the legal system which serves our society, followed by a detailed look at certain areas of substantive law which the public health technologist is likely to come in contact with in carrying out his duties. Special attention will be given to selected public health legislation.

10.730 Industrial Management (for Building, Chemical and Metallurgical, and Biological Science students). *See* 10.E30.

BROADCAST COMMUNICATIONS

12.101, 12.201 Introduction to Radio

An introduction to the equipment and techniques used in radio broadcasting. Starting with station organization, the student continues with a study of microphones, turntables, radio control boards, tape machines, and all broadcast accessories, and develops the manual dexterities needed in such operation.

12.102, 12.202 Introduction to Television

An introduction to the processes of television-picture transmission and the equipment used in broadcast television. Cameras, lighting equipment, film and slide projectors, video switches, video-tape recording, and colour television. Manual dexterity in the operation of this equipment in a studio and control situation.

12.103, 12.203 Introduction to News

The student is given his first look at the world of " electronic journalism." The subject covers the history of news, newsroom organization, and operations in radio and television; news writing and editing, news sources and coverage; the production of newscasts and special interests features for both radio and television.

12.104, 12.204 Audio-visual Techniques

An introduction in the use of mass media in the classrooms of today's educational institutions. The objective is the introduction of the differences that exist between usages of audio-visual material in education and commerce.

12.105, 12.205 Industry Organization

A first-term study is made of the history of broadcasting from first steps through to present-day usages, and of the rules and regulations under which broadcasting in Canada is governed. The student is introduced to the development of programming. Copyright, Broadcast Traffic Systems, and Libraries are a part of this study.

12.107, 12.207 Industry Organization Seminars

During first year, a three-hour period each week is set aside for a direct exposure to the industry in which the student will be involved after graduation. The time is devoted to guest lecturers from broadcast and associated industries, and to field trips, visiting station operations throughout British Columbia.

12.201 *See* 12.101.

12.202 *See* 12.102.

12.203 *See* 12.103.

12.204 *See* 12.104.

12.205 *See* 12.105.

12,206, 12.406 History and Current Events

It is essential that people in broadcasting have as broad as base of external knowledge as possible. This subject, designed on a seminar basis, combines

lectures and practical exercises, deals with present-day happenings on the local, regional, national, and international level.

12.207 *See* 12.107.

12.307, 12.407 Production Techniques I

This course is mandatory for students in the Radio Production and the Radio-Television News electives. In third term, the students are given an introductory course in photography. This is supplementary to other material already covered in the electives, and in first year. In fourth term, the focus is on radio and television announcing, where individual instruction is given in announcing techniques.

12.308, 12.408 Production Techniques II

This course is mandatory for students in the Television Production elective. In the third term, students are instructed in stagecraft, set design, construction, model-building. In fourth term, supplementary instruction is given in the practical uses of film for television today.

12.311, 12.411 Radio Production

Students in this elective spend most of their time in the operation of a simulated broadcast facility. They are given the opportunity to expand and experiment with the techniques learned earlier with the object of developing the ability to function successfully in today's radio industry.

12.312, 12.412 Television Production

Students engage in the production of television broadcasts, making use of full studio facilities in the production of television commercials, special events coverage, the taking and editing of film material, and the carrying-out of on-the-job training projects. A complete studio facility with five cameras and three switchers, and full video recording, is available to the student.

12.313, 12.413 News—Radio and Television

News follows the first-year Introduction to News course, in which fundamentals are expanded to give full professional atmosphere to the training of neophyte "electronic journalists." Students spend much time refining techniques, and actually covering and reporting the news.

12.406 *See* 12.206.

12.407 *See* 12.307.

12.408 *See* 12.308.

12.411 *See* 12.311.

12.412 *See* 12.312.

12.413 *See* 12.313.

COMPUTER PROGRAMMING AND SYSTEMS

14.050 Introduction to Data Processing

Training in basic data processing principles to develop recognition of the possible application of these principles in industry. The principal functions of data processing will be illustrated and practised with unit record equipment. Elementary computer programmes will be written and tested on the 1620 computer. Use of flow-charting and elementary data processing systems degin will illustrate the achieving of data processing objectives.

14.052 Data Processing Applications

A study of the application of data processing principles to accounting and statistical functions, including accounts receivable, billing sales analysis, inventory control, accounts payable, and payroll.

14.053 Business Computer Programming

An introduction to problem-oriented computer programming using Cobol programming language. Standard accounting applications will be flow-charted, programmed, and tested by the student on an IBM System /360 computer.

14.A51 *See* 14.351.

14.160 Introduction to Computer Programming

An introduction to the principles of programming using the IBM 1620 computer. Emphasis is on the understanding of the mode of operation of a programme through the media of machine language and assembler language, on the acquirement of " hands on " experience, and practice in the flow-charting, coding, debugging, and documenting of simple business applications.

14.170 Computer Systems I

A brief introduction to punched card systems, using unit record equipment for laboratory demonstration of the principles involved.

14.182 Office Equipment

An introduction to the capabilities of the commonly used machines—adding and calculating machines, cash registers, copiers and duplicating equipment, microfilming, dictating equipment, etc. Operating skill with the adding and calculating machines only is included.

14.260 Principles of Computer Programming

A detailed study of the fundamental principles and techniques common to the programming of electronic computers. The student will programme numerous business problems using an IBM /360 computer. Included will be basic assembler language, flow-charting, file updating, indexing, table look-up, subroutines. The student will be expected to analyse problems, organize solutions, design the report output, then code, assemble, test, debug, and document his programme according to acceptable standards and control.

14.270 Computer Systems II

Introduction to computer systems design and basic systems analysis techniques. Emphasis is on punched-card computer applications to payroll, billing, and other accounting and statistical functions. Techniques of systems flow-charting, forms design, and card design will be practised.

14.296 Office Systems and Procedures

An introduction to manual, one-write, keysort, and machine systems covering such applications as billing, sales analysis, accounts receivable, accounts payable and expense distribution, inventory, payroll distribution, and payroll writing. A practice set in one-write form is to be completed by all students. The course also provides a brief introduction to the interrelationships of the basic functions such as purchasing, receiving, stock-keeping, production, selling, disbursing.

14.306 Probability and Simulation

Probability rules, expectation, repeated trials, Bayes' Theorem with applications; probability distribution, Poisson distribution, and queueing theory; simulation; probability and Monte Carlo simulation, with Fortran applications.

14.C50 *See* 14.050.

14.351 Computer Applications

Applications of the computer in engineering and medical technologies; how a computer works, recognizing problems suitable for computer solution, flow-charting and communicating with computer personnel; emphasis is on the use of computers to solve problems related to the technology concerned. Where available, "package" programmes will be demonstrated and used by students.

14.360 IBM S/360 Assembler Programming

Continuation of 14.250. A detailed study of computer programming capabilities, using the full instruction set of the System/360 Assembler language, establishing detailed programming, label, flow-chart, report layout, and documentation standards; introduction to input/output control system and to the operating system. The student will write numerous programmes employing card, printer, tape, and disk files. System/360 Macro language.

14.370 Computer Systems III

Introduction to the principles and techniques of systems analysis: gathering data, systems design, flow charting, documentation, procedures, card and form design, controls, audit trails. The use of a high-level language (PL/I) in solving business and statistical problems involving internal sorting, table look-up and binary search.

14.380, 14.480 Operating Systems

A thorough study of the IBM S/360 Disk Operating System will be undertaken to permit the student to perform the Operating Systems Programmers tasks of: (*a*) implementing the computer manufacturer's operating systems, utilities, and programming languages; (*b*) developing standard programming routines and procedures; and (*c*) providing technical advice and assistance to application programmers and operations staff. Students will be able to perform systems generation and maintenance.

14.408 Linear Programming

Graphical method; algebraic method; simplex method; analysis of simplex results; LP problem formulation; use of computer to solve problems; analysis of computer solution; use of reduced costs and shadow prices; sensitivity analysis; practical applications and limitations of LP; implementation of results.

14.E50 *See* 14.050.

14.409 Operations Research Techniques

Linear programming theory, problem formulation, analysis of results, sensitivity analysis, practical applications and limitations; linear programming, simulation, and dynamic programming; choosing the appropriate technique. Inventory models; CPM and PERT, uses and limitations.

14.431 Installation Management

This course is designed to expose the individual to the skills which are necessary for installing, managing, and operating a small computer in a business environment. Topics covered will include review of existing systems and conversion to computerized systems, physical-site preparation, manufacturer-supplied conversion aids, systems documentation, and production scheduling.

14.460 Advanced Programming (Assembler and PL/I)

Continuation of 14.360. Disk and tape programming for sequential, index sequential and direct file organization, as well as advanced and efficient coding techniques in both PL/I and assembler language. Considerable time will be devoted to a rigorous study of the job-control statements, sort and utility programmes.

14.463 Computer Programming—RPG

Programming of business applications using Report Programme Generator (RPG) and RPG II language. Disk and tape programming for sequential, index-sequential and direct-file organization. Comparison of RPG differences between System/360, System/3, and other RPG users. Study of job-control statements, sort and utility programmes.

14.470 Computer Systems IV

Methods used in the development of business data processing systems for punched cards, disk storage, and magnetic tape. System specification; equipment appraisal, acquisition, and utilization; implementation and control. These techniques will be applied to the solution of advanced management problems. Compiler language: Cobol will be included in this course.

14.480 *See* 14.380.

FINANCIAL MANAGEMENT

16.140, 16.240 Accounting

Basic accounting procedures; closing the books; adjustments; working papers; merchandise operations; statement and ledger organization; special journals; forms of business organization; accounting principles; introduction to cost accounting; analysis of financial data; working capital; departmental and branch operations; consolidations.

16.145, 16.245, 16.345 Credit and Collections

Study of various types of credit and their use by retail businesses, commercial enterprises, and consumers. Includes sources of information, credit policy and control, and collection techniques.

16.240 *See* 16.140.

16.245 *See* 16.145.

16.341, 16.441 Cost and Managerial Accounting

The accountant's role in the organization; major purposes of cost accounting; cost-volume-profit analysis; job order costing; process costing; standard costs; budgeting, responsibility accounting; direct costing; capital budgeting; joint and by-product costs; nonmanufacturing costs; inventory; accounting systems; payroll.

16.342, 16.442 Merchandise Accounting

Departmental, branch, and agency accounting systems. Consumer credit, instalment sales, and consignment sales procedures. The mathematical problems of retail merchandising, i.e., profit calculation, mark-up, retail prices, price policies and lines, mark-downs, inventory, expenses, and budgeting. The role of accounting in retail merchandise management.

16.343 Cost Accounting

Direct costing and the contribution approach; cost-volume-profit analysis; cost analysis for managerial planning and decisions; process job-order, joint, and by-product costing; inventory planning, control, and valuation; budgeting and profit planning; standard costs; cost and price variance analysis; capital budgeting.

16.345 *See* 16.145.

16.346, 16.446 Auditing

Basic auditing procedures. Features of the internal control system. The audit programme. Statutory audits, government audits, internal audits. The audit routine as applied to cash, inventory, accounts receivable and sales, fixed and other assets, accounts payable and purchases, income and other taxes and expenses. Specialized audit routines.

16.347, 16.447 Financial Accounting

Review of accounting procedures, the accounting cycle, and the preparation of financial statements. Net income concepts, capital stock, surplus and dividends, accounting principles, assets, liabilities and reserves, analysis of working capital, application of funds. Statements from incomplete records, reorganizations, the price level problem.

16.361, 16.461 Finance

An investigation of different methods of raising funds for new and existing businesses, corporate and noncorporate. Business risk and uncertainty. Analysis of the importance of financial institutions. Business promotion. Security analysis. Capital budgeting. Decision-making analysis. Surplus, dividend, and reserve policy. Business failure.

16.365, 16.465 Money and Banking

The study of money and money substitutes, supply of currency, creation of credit; functions and uses of money; practices, policies, functions, and services of commercial banks; central banking and monetary control; objectives and techniques of monetary policy and debt management; financial assets and financial markets; money and the international economy.

16.366, 16.466 Security Analysis

Techniques and principles of security analysis; valuation of securities; analysis of risks inherent in all types of security investments. Emphasis

will be placed on: the investment setting, the securities market, financial statement analysis, investment timing, and portfolio analysis of both individual investors and institutional investors.

16.368, 16.468 Insurance

A survey course of all aspects of insurance, including life, fire, accident, and general insurance, coverage and risk. Principles of indemnity. Review of basic actuarial techniques. Agency operations. Investment policy.

16.441 *See* 16.341.

16.442 *See* 16.342.

16.443 Management Accounting

The management accountant's role; income determination; decision-making; profit planning; budget; forecasting; profit margin variance analysis; corporate financial analysis; income tax; internal control; annual report; accounting aids for sales and production management; measuring managerial performance; direct costing and the contribution approach.

16.446 *See* 16.346.

16.447 *See* 16.347.

16.461 *See* 16.361.

16.465 *See* 16.365.

16.466 *See* 16.366.

16.468 *See* 16.368.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT

18.101 Bar and Rooms Management

Housekeeping organization and duties; control forms used; supplies and equipment used; specifications for purchasing equipment and linen; laundry operations; beer-parlour organization and control; cocktail-lounge organization, glassware, types of beverages, dispensing devices, and control systems.

18.102, 18.202 Food and Beverage Management

Background of industry; sanitation; meal planning and menu preparation; selection of foods; purchasing methods; principles of food preparation; equipment layout and specifications; service of foods; menu writing; administrative requirements; organization of the catering department.

18.202 *See* 18.102.

18.203 Front Office Management

Front office organization and psychology. Materials, equipment, and supplies used; rooms salesmanship; reservations, registrations, and front office "accounting" for various-size hotels; handling of cash and credit transactions; the night hand-transcript, and the processing of accounts and the night audit on billing-audit equipment.

18.211 English—Speech

Speech construction; types of speeches; speaking before groups; introducing and thanking speakers, chairing meetings, and interviewing; practice in preparation and delivery of talks to groups.

18.302, 18.402 Food and Beverage Management

Volume feeding management; menu pricing; pre-cost and control; budgeting; standards measurement; function catering; food service layout; food processing; organization of the department and staff scheduling; calculation of work loads; staff training and human relations; institution and hospital food services; environment and atmosphere; tomorrow's nutrition.

18.305, 18.405 Food Research and Production

Research in food preparation to balance quality preparation with cost of production; testing of new products to evaluate the possibility of their uses in a practical production situation; menu planning; development of certain manipulative skills to permit students to be in a position to eventually train and supervise others; use of equipment, with particular reference to comparison of engineering features with cost.

18.313 Food and Beverage Control

Food and beverage purchasing, receiving, storing, production, and sales controls; payroll (labour costing) control techniques.

18.316, 18.416 Introduction to Organizational Behaviour

Systematic approach to the personnel problems in today's business organizations, including human needs and wants, motivation process, social systems, leadership, unions, management techniques, communication problems, staff hiring and appraisal, training, incentives. Lab discussions based on real-life cases help develop ability to make decisions upon critical analysis of facts available.

18.321 Food Service Marketing

Examination of marketing tools available to the caterer, including market research, competition analysis, media advertising (print, radio, and TV.), personal selling, direct mail, publicity, public relations. Students will conduct surveys concerning local catering markets.

18.402 *See* 18.302.

18.405 *See* 18.305.

18.413 Hotel Accounting

Rooms sales control; cash reports; control of accounts receivable; interpretation and analysis of hotel balance sheets and profit and loss statements; budgeting and forecasting; feasibility studies; financing and cash flow; valuation; insurance; income tax.

18.416 *See* 18.316.

18.418 Front Office Accounting

Review of front office guest accounts, using both manual and machine systems; preparation of the night transcript for smaller hotels and motels; completion of night audit for large hotels, using equipment such as the "NCR 42." This course will involve as much practical use of the equipment as is possible.

18.419 French Conversation

Familiarization with basic French conversation as it applies to the hospitality industry. Course includes basic grammar and sentence structure.

French only will prevail during most of the class hours. Language laboratory equipment will be used, giving those participating the opportunity to study at their own speed.

18.420 Food and Beverage Accounting

Interpretation and analysis of balance sheets and profit and loss statements for food service operations; budgeting; leasing; franchising; financing; insurance; income tax.

18.422 Menu Planning and Oenology

Study of the complexities of menu planning. Menu writing and terminology. Merchandising in menu presentation. Art work preparation. Wine manufacturing. Terminology used in differentiating wines and their region of origin. The are of sampling and tasting wines. Association of wine and food.

18.424 Food Facilities Planning

Discussion of significant points in the planning process for a new or remodelled food service operation, including creation of image; critical path analysis; technical drawings; blue-print reading; three-dimensional models; selection of furnishings and materials; communicating with architect, builder, and owner.

MARKETING MANAGEMENT

20.090 Marketing (for Computer students)

A marketing course designed for Computer Programming and Systems Programme students covering the essential areas of the two-term marketing course in one term. *See* 20.180, 20.280.

20.180, 20.280 Marketing

An introduction to the marketing environment and marketing institutions; detailed study of the basic marketing functions, marketing research, product planning, selection of trade channels, merchandising, advertising and sales promotion, salesmanship. Embraces marketing of industrial as well as consumer goods.

20.190, 20.290 Writing and Sales

The course familiarizes the students with advertising techniques, particularly in the broadcast media. Lectures and workshop sessions relate to the writing and evaluation of radio and television commercials. Basic marketing concepts, the function of advertising in society, and the economics of broadcast are related. Commercials are studied in detail. Special emphasis is placed on developing student's ability to work within a group situation. While students may not become writers, the course may lead to a position in broadcast sales, sales promotion, or advertising generally.

20.191, 20.291 Marketing (Administration and Finance)

This course is designed to give the Administration and Finance students a good understanding of the role of marketing in a firm. Marketing plays a critical role in any firm dealing in product or service; the decisions made by the marketing manager are reflected in the administrative and financial functions of a firm. The lab sessions will deal with typical marketing problems and students are exposed to the decision-making process in Marketing Management.

20.275 Salesmanship

Introduction to professional selling. Emphasis on practical problems of locating and qualifying prospects, use of the depth approach, and improving sales preparation and organization. Some examination also given to improving interpersonal communications in nonselling situations.

20.280 *See* 20.180.

20.290 *See* 20.190.

20.291 *See* 20.191.

20.310 Retailing

This course is designed to acquaint the student with the retailer's role in the distribution process, the types of retail establishments and their relative strengths and weaknesses, the analysis of a trading area, site location, store layout, the influence of changing life styles on consumer demand patterns, techniques for determining customer demand, policy formulation, store image, the organization and "four walls" operation of a retail establishment.

20.323 Sales Management

General principles of sales management. Emphasis is given to the human resource, with stress placed on selection, assimilation, training, and supervision; also examination of sales research, planning, organization, and analysis is made. The course finishes with a discussion of sales management ethics.

20.331 Modes of Transportation

A study of the various ways of moving commodities, including services offered by air, highway, pipe-line, rail and water carriers (private and public), and the problems encountered by carriers, shippers, and consignees.

20.332, 20.432 Transportation Economics

An analysis of the economic principles of transportation, including transport policies, prices and rate structures, costs, intermodal competition, and planning for effective utilization and allocation of transport resources for public service, yet obtaining a fair return on investment.

20.333 Customs and Documentation

A comprehensive coverage of the procedures, rules, and regulations necessary for the movement of goods, both domestic and foreign. A study of information systems and techniques for forwarding freight. Emphasis will be placed on international traffic, the export/import of commodities.

20.371 Advertising and Sales Promotion

Advertising philosophy and purpose. Organization of the advertising function. Relationship of advertising to other business divisions. Advertising planning. The business management of advertising. The creative process. Research. Media—newspaper, radio, TV, magazines, direct mail, outdoor, public relations. Copy, layout, art. Strategies and campaigns. Production and communications. Controls. Evaluating results. The course is designed to make the student a competent advertising critic.

20.372 Consumer Behaviour

An examination of consumer purchase decisions. Special emphasis will be placed on areas such as motivation and arousal, perception, attitude and attitude change, and consumer decision processes.

20.381 Human Relations

Study of human elements in organizations, with emphasis on group behaviour. Basic concepts and applications are examined in human relations, leadership, power, authority, group dynamics, formal and informal organization, communications, conflict, and introducing change.

20.382, 20.482 Marketing Research

The purpose is to relate how to make the most effective use of marketing research in business. The course examines how research can help in decision-making and outlines the company activities undertaken in Canada. Detailed analyses are made of the marketing research procedure and the special application of marketing research.

20.391, 20.491 Advertising and Promotion

This course prepares the Hotel, Motel, and Food Service Management student for the planning and evaluation of profitable sales promotion. Advertising techniques, costs, and effectiveness are studied. The organization and function of an internal sales department is discussed, together with the economics and benefits of using outside services such as advertising agencies and public relations consultants.

20.392 Human Relations

Organizational behaviour is the study of man's behaviour and attitudes in an organizational setting; the organization's effect on his perceptions, feelings, and actions; and his effect on the organization, particularly how his behaviour affects the achievement of the organization's purposes. It is the study of the organizers, who they are, what they do, with whom they communicate and how; in short, its focus is the interactional field between organization men, but it is also a study of the organized—how they organize to organize the organizers. Within this context such concepts as leadership, communications, power, authority, change, and conflict will be examined.

20.411 *Merchandising*

This course is a natural continuation of Retailing. In it the student is introduced to the considerations relating to the establishment, procurement, maintenance, periodic appraisal, and promotion of the merchandise assortment.

20.422 Marketing Planning

This course augments the knowledge obtained in introductory marketing by applying marketing principles to the problem of setting up a marketing programme. Problems related to planning product development and competitive strategies in the Canadian market are dealt with through case studies and assignments.

20.423 Sales Management

General principles of sales management. Emphasis is given to the human resource, with stress placed on selection, assimilation, training, and supervision; also examination of sales research, planning, organization, and analysis is made. The course finishes with a discussion of sales management ethics.

20.432 *See* 20.332.

20.434 Regulatory Systems in Canadian Transportation

The evolution and foundation of governmental regulatory agencies—Canadian Transport Commission, provincial and municipal legislation and controls. An analysis of common and statutory law in relation to transportation duties and liabilities of carriers will be included.

20.435 Distribution Centres and Control

This course will cover storage and warehousing and will include diverse matters, such as inventory control, palletization, unitization, containerization, packaging, and general materials handling.

20.436 Transportation Trends

From here to ——, pipe-lines under the ocean, robot trains, automated terminals, conveyors under the city, SST's on the horizon, ice-free waterways, hydroplanes and hydrofoils, etc.—an analysis of what's going on now in transportation and what is likely to occur.

20.437 Marketing Research for Transportation

The purposes of the course are to provide the student with a knowledge of the procedures and applications of marketing research within the context of the business firm involved in the transportation field. Case studies and problems will be used to incorporate the practical aspects.

20.471 *See* 20.371.

20.482 *See* 20.382.

20.483 Personnel Administration

Personnel Administration involves the study of recruitment, selection, and placement; job analysis, job descriptions, and job evaluations; compensation and appraisal plans; employee benefit programmes; training and educational programmes; labour relations and personnel planning and evaluation.

20.484 Transportation and Materials Handling

The field of transportation, storage, and materials handling is an integral part of the distribution system. This course will investigate the Canadian transportation systems, warehousing and other storage, and the materials-handling techniques associated with transportation and storage in our complex distribution system.

20.491, 20.492 *See* 20.391.

20.493 Personnel Administration

An introduction to the fundamentals of personnel management, including organization of the personnel function; recruiting, testing, interviewing, selection; job descriptions and evaluation, salary administration, fringe benefits; training, management development and performance appraisal; constructive discipline, grievances, and morale.

20.700 Agricultural Products Marketing

The course objective is to introduce the application of business skills to agribusiness and to study in particular the marketing functions as related to the marketing of agricultural products and services. Case studies and readings are used to relate to the practical problems of agribusiness.

20.701 Wood Product Marketing

An introduction to the marketing environment and marketing institutions in the wood products industry. Study of the basic marketing functions: marketing research, product planning, selection of trade channels, merchandising, advertising and sales promotion. Case studies and readings used to relate to the practical problems of the wood products industry.

TECHNICAL MANAGEMENT

22.013 Business Mathematics and Statistics I

Review of basic mathematics pertinent to business and industry; and mathematics of finance which covers retail operations, simple interest, discounts, compound interest, annuities, financial papers, and depreciation methods. Emphasis is on practical applications to business rather than theoretical derivations.

22.023 Business Mathematics and Statistics II

Major emphasis on descriptive statistics, covering such topics as numerical and graphical presentation of data, measures of central tendency and dispersion, elementary probability, index numbers, and time series.

Inferential statistics will be introduced through selected topics as sampling, confidence limits of the mean, hypothesis testing, and simple linear regression.

22.036 Basic Management Engineering

Approaches to problem-solving and simplification of work, with particular application to hotel and restaurant operations. Includes method study, some measurement techniques, layout, and systems concepts.

22.037 Management Engineering I

Scientific approach to problem-solving, with particular application to business enterprises. Includes method study, systems, and procedures, charting and analysis, forms design and control, work distribution, layout, planning and scheduling, measurement and costing.

22.047 Management Engineering II

A continuation of 22.037 involving the practical application of techniques in business organizations. These are " live " projects requiring research and detailed analysis plus the preparation and presentation of technical reports to management and instructors.

22.110 Problems Laboratory

A series of visits to local industries in conjunction with related class problems.

22.111 Mathematics

Review of basic algebra, graphs, and logarithms, with business applications. Mathematics of finance, simple and compound interest, loan payment plans, annuities, and methods of evaluating investments. Descriptive statistics.

22.220 Method Study

A comprehensive approach to problem-solving by defining, recording, and analysing work situations. Applied sampling techniques to work environments as well as study of principles of work simplification.

22.221 Statistics in Business and Industry

A comprehensive study of the use of statistical inference. Topics include probability theory and distributions, sampling, hypothesis testing, chi-square, rank correlation, economic time series, and indexes.

22.330 Performance Measurement

Introduction to the various systems of work measurement—time study, predetermined systems, and sampling techniques. The general systems of production control, with emphasis on applied network systems.

22.331, 22.441 Quantitative Methods for Management

Study of the applications of mathematics in decision-making in business. Break-even analysis, some additional probability, decision-making, scientific inventory management including EOQ, recorder points, and statistical forecasting. An introduction will also be given to vectors, matrix-algebra, linear programming, and queueing theory.

22.332 Applied Programming

Instruction will be given in Fortran programming, which will then be used by the student in solving problems in engineering and business.

22.333 Systems and Procedures Analysis

Method study in the office environment. The total system concept. Selection of problem area, techniques of fact gathering and display. Information control, including design and implementation within the total system. Office manuals. Reports for readers. Office layout. Application of appropriate techniques to a major case problem. A prelude to a Term 4 project in the field.

22.440 Industrial Engineering Concepts

This course will require the application of knowledge gained in other courses to the solution of business problems. The lecture series will familiarize the student with systems used in industry in such areas as scheduling, materials handling and plant layout, inventory management, estimating, and transportation. Students will be required to do basic research to collect information for project assignments as well as to solve case studies.

22.441 *See* 22.331.

22.442 Industrial Organization and Operations

The study of major functional sections of business enterprises in a systems concept. Emphasis of organization theory, marketing, and finance. All areas supported through use of case material and direct contact with industry.

22.443 Materials Handling and Control Equipment

An introduction to the common types of industrial equipment. The student will examine the basic principles of operation, their characteristics and usage.

22.726, 22.746 Basic Operations Management

Management problem-solving and simplification of work with particular application to engineering and industrial organizations. Includes method study, some measurement techniques, layout, and scheduling techniques.

22.737 Operations Management I

The study of problem-solving in industry, with particular emphasis placed on operations-type problems. The course includes method study, process charting, activity sampling, work measurement, motion economy, and productivity studies. Consideration is also given to the worker-management relationships in the industrial scene.

22.746 *See* 22.726.

22.747 Operations Management II

Planning, scheduling, job loading and levelling, and network diagrams are considered and used in industrial-type projects. In some cases the student works on a term project in an industrial plant. The course is completed when the student submits a term project which encompasses much of the material studied in class. Considerable emphasis is placed on cost and justification analysis.

CHEMISTRY

30.101 Applied Chemical Principles

An applied course of basic inorganic chemistry, including simple stoichiometry, solubility product, selective precipitation, solution preparation, pH, buffer solutions, oxidation-reduction, acid-base theory, and titration calculations. Laboratory work consists of simple qualitative and quantitative analysis. Good laboratory techniques are emphasized.

30.102 General Chemistry

A basic chemistry course, including equation-balancing, solubility product, precipitate formation, molecular and ionic equilibria, oxidation-reduction, pH, neutralization, buffer solutions, applied gas laws, and titration calculations. Laboratory work emphasizes basic concepts and a variety of measurement techniques.

30.A03, 30.B03, 30.C03 General Chemistry for Health Technologists

This course includes basic inorganic and physical chemical principles, an introduction to organic chemistry, the properties and reactions of the major classes of organic compounds as well as a selection of biochemical materials such as carbohydrate and fat metabolism, amino acid metabolism, properties of proteins and their synthesis, enzyme action, hormones, pesticides, and herbicides.

Laboratory work consists of quantitative analysis, with emphasis on gravimetric and volumetric techniques, organic techniques and synthesis, properties of biological materials, enzyme reactions, and physical methods of analysis.

30.201 Applied Chemical Principles

A continuation of 30.101 that includes theory of gravimetric and volumetric analysis, titration curves, chemical kinetics, simple physical chemistry, atomic structure, ionic and covalent bonding, periodicity, and descriptive

organic chemistry of selected groups. Laboratory work consists of qualitative and quantitative analysis, and physical separations.

30.202 General Chemistry

A continuation of 30.102 that includes bonding theory; physical behaviour of gases, liquids, and solids; electrochemistry; periodic trends in chemical propetries of inorganic materials; and preparation and uses of some common industrial materials. Laboratory work consists of simple volumetric and instrumental chemical analysis.

30.B03 *See* 30.A03.

30.204 Chemical Laboratory Techniques

This course teaches basic techniques in sampling, weighing, moisture determination, ashing, extractions, filtration gravimetric methods, volumetric methods. Instrumental analysis and separation methods will be described, demonstrated, and, whenever possible, practised.

30.301, 30.401 Organic Chemistry

A general course covering properties, preparations, and reactions of all major classes of organic compounds—aliphatic and aromatic hydrocarbons, halides, alcohols, ethers, carboxylic acids and derivatives of carboxylic acids, aldehyes ketone, amines, amino acids, carbohydrates, heterocyclics, dyes, and polymers.

Laboratory work emphasises organic techniques, qualitative chemical analysis, and instrumental methods, infra-red, ultra-violet, and gas chromatography.

30.302 Physical Chemistry

This course presents the kinetic theory of gases, the first and second laws of thermodynamics, phase equilibria, chemical kinetics, and catalysis.

Laboratory work consolidates lecture material and gives experience in practical physical chemical measurements.

30.303 Instrumental Analytical Methods

This course introduces basic theoretical concepts, instrument construction and operation, and general application of the following methods: potentiometry, polarography, refractometry, polarimetry, visible, ultra-violet, and infra-red, and includes absorption and emission flame photometry and gas chromatography.

30.C03 *See* 30.A03.

30.306, 30.406 Analytical Chemistry

Conventional inorganic methods of analysis for the determination of the common metals in ores and alloys. Basic methods of fire assaying for gold and silver. Advanced analytical techniques using various instruments such as the polargraph, spectrophotometer, colorimeter, gas chromatograph, refractometer, spectograph, X-ray scintillometer, X-ray diffractometer, etc.

30.401 *See* 30.301.

30.404 Organic Chemistry

This course presents a survey of the properties and common reactions of the classes of organic compounds which are found in petroleum, or are of importance in the petrochemical industry. The chemistry of the refining processes, instrumental laboratory analysis, and synthesis of some petrochemicals are presented.

30.405 Chemical Instrumentation

This course presents the basic instrument componets, their characteristics, and their modular construction in analytical instrumentation. The emphasis is on signal flow and the information represented by the same. Basic design patterns, as well as practical aspects of servicing, are presented with references to pH meters, polarographs, titrators, spectrophotometers, gas chromatographs, rate meters and scalers, chemical signal sources, electrical components, operational amplifiers as multipliers, subtractors, function generators, and servo-systems.

30.406 *See* 30.306.

ENGLISH

31.101, 31.201 *Communication (primarily for the Engineering* Division)

Introduction to general principles in written and oral communications and their application to business and industry.

31.A01, 31.B01, 31.C01 Communication

Introduction to general principles in written and oral communications and their application to business and industry.

31.102, 31.202 Communication (primarily for the Business Management Technologies)

Introduction to general principles in written and oral communications and their application to business.

31.A02, 31.B02, 31.C02 Communication (*primarily for* Health Data Technology)

Introduction to general principles in written and oral communications and their application to business.

31.A04, 31.B04, 31.C04 Communications in Change (primarily for Patient Care students)

Survey of some contemporary approaches to communications, concepts, and social context. Emphasis will be on relationships between these three factors and on the dynamics of change in personal relationships and social institutions. Certain social issues will be selected for special study. Basic materials will include fiction, nonfiction, poetry, drama, film, and recordings. Opportunity will be provided for practice in basic writing.

31.105, 31.205 Writing for Broadcast

An introduction to general principles of written, oral, and visual communications and their application to the broadcast industry.

31.A06, 31.B06, 31.C06 Communication (primarily for Environment and Public Health students)

Introduction to general principles of written and oral communications, with considerable emphasis on all phases of public speaking.

31.107, 31.207 Reading Improvement (noncredit course)

Emphasis will be placed on purposeful and flexible reading techniques related to speed of comprehension. This will involve skill development in the following areas: reading rate, comprehension, vocabulary, prereading, notetaking, study habits, and skills.

31.A08, 31.B08 Communication (primarily for Medical Radiography and Nuclear Medicine Technologies)

Introduction to general principles in written and oral communications and their application to industry and the Health field.

31.201 *See* 31.101.

31.B01 *See* 31.A01.

31.202 *See* 31.102.

31.205 *See* 31.105.

31.207 *See* 31.107.

31.301, 31.401 Industrial Communication (primarily for the Engineering Division)

This course continues the work of the first year with emphasis on three levels of communication—interpersonal, small group, and large organizational. The student explores these areas through assignments in various kinds of technical writing, public speaking, and presentation of information in visual and aural media. Practical examples are selected from the local governmental and industrial environment.

31.C01 *See* 31.A01.

31.302, 31.402 Communication (primarily for the Business Management Technologies)

Students will continue the work of the first year with emphasis on communication theory and on practical problems in the interpretation, evaluation, organization, and presentation of data in both written and oral form.

31.C02 *See* 31.A02.

31.305, 31.405 Writing for Broadcast

This course continues the work of the first year at a higher level.

31.401 *See* 31.301.

31.402 *See* 31.302.

31.405 *See* 31.305.

31.E06, 31.F06, 31.G06 Communication (primarily for Environmental and Public Health students)

The work of the first year is carried on at a higher level.

MATHEMATICS

32.ABC Mathematics for the Engineering Technologies (Except Electrical and Electronics Technologies)

(NOTE—The order in which the following units of study are scheduled in a particular technology programme is indicated by the subject number 32.ABC, where A is the term number and B and C are the unit numbers associated with that term (e.g., 32.436 indicates a mathematics course running in Term 4 and consisting of Units 3 and 6).)

Unit 1. Basic Technical Mathematics

Topics in algebra, trigonometry, and analytic geometry, with emphasis on technical applications; prerequisite for the courses described in Units 2 to 6.

Unit 2. Calculus I

An introductory course in calculus and its applications, involving the differentiation and integration of algebraic, trigonometric, logarithmic, and exponential functions.

Unit 3. Calculus II

Further calculus topics and applications; conics and calculus problems associated with these; power series; partial differentiation; differential equations.

Unit 4. Statistics I

An introduction to statistics. Organization and presentation of data; measures of central tendency and dispersion; frequency distributions; sampling; estimation; hypothesis testing; regression.

Unit 5. Numerical Methods I

Elementary numerical methods in theory and practice; iterative methods in the solution of algebraic and transcendental equations; finite differences; interpolation; numerical differentiation and integration; numerical solution of simple differential equations.

Unit 6. Special Topics—Calculus III, or Statistics II, or Analytic Geometry, or Spherical Trigonometry, or Numerical Methods II.

Further applied mathematics topics of special importance in the student's chosen technology, within one of the categories shown above.

32.A70, 32.B70, 32.C70 Mathematics for Medical Laboratory Technology

32.A70 Basic Mathematics (Health)

Logarithms; base ten, general base, natural logarithms. Logarithmic and exponential functions with applications. Use of logarithmic graph paper. Functions and graphs.

32.B70 Calculus (Health)

The derivative. Differentiation of algebraic functions. Maximum and minimum problems; curve sketching. Differentiation of logarithmic and exponential functions. Rate of change; related rates of change. Small change and error calculations. Integration; area as integral. Simple differential equations.

32.C70 Statistics (Health)

Descriptive statistics. Measures of central tendency and spread. Probability. The binomial and normal distributions. Sampling; estimation; hypothesis testing.

32.B72 Mathematics for Medical Radiography Technology

32.B72 Basic Mathematics (Health)

Exponents and logarithms, common and natural; logarithmic and exponential equations; log-log and semi-log graphs. Plane geometry and its applications. Special topics; applications to specific branches of Health Technology.

32.A74, 32.B74, 32.C74 Mathematics for Nuclear Medicine and Health Data Technologies

32.A74 Basic Mathematics (Health)

Exponents and logarithms (common and natural); logarithmic and exponential equations; log-log and semi-log graphs; graphs of functions; limits; slopes of curves; special topics (applications especially suited to Health Technology).

32.B74 Calculus and Statistics (Health)

The derivative and its applications; the integral and its applications.

Descriptive statistics; organization and graphical presentation of data; measures of location, variation, skewness, and kurtoses.

32.C74 Further Statistics (Health)

Probability; theoretical frequency distributions; sampling and sampling distributions; estimation; hypothesis testing; correlation and regression.

32.A78, 32.B78, 32.C78, 32.E78 Mathematics for Biomedical Electronics Technology

These courses are similar to 32.A90, 32.B90, 32.C90, and 32.E90 respectively, with applications throughout appropriate to the Biomedical Electronics field.

32.B79 Numerical Methods and Computing

An introduction to numerical methods. Solution of systems of equations, roots of polynomials, interpolation, numerical solution of differential equations. The formation of algorithms, flowchartery. Students will write programmes for the IBM360, using the Fortran language.

32.F80 Computer Application I

An introductory course in computing involving the use of the IBM360 systems, and with applications in the health data field. Emphasis will be on data storage and retrieval for statistical processing.

32.G80 Computer Application II

A continuation of 32.F80, including a major project to be carried out by students.

32.A82, 32.B82, 32.C82, 32.E82, 32.F82, 32.G82 Mathematics for Environmental Technology-Public Health

32.A82 Basic Mathematics (Health)

Exponents and logarithms, common and natural; logarithmic and exponential equations; log-log and semi-log graphs. Elementary trigonometry; ssine and cosine rules for any triangle. Binomial theorem.

32.B82 Statistics (Health)

Introduction to statistics; measurement of central tendency and dispersion. Probability. Frequency distributions; sampling, estimation, tests of significance.

32.C82 Introduction to Computing (Health)

Basic computer concepts. The elements of PL/1. Organization and presentation of data; flow-charting. Involvement of statistical topics.

32.E82 Calculus and Further Statistics (Health)

Introduction to calculus; the derivative and its applications; integration of simple functions. The chi-square distribution. Correlation and regression.

32.F82 Computer Applications I

An extension of course 32.C82, with emphasis on the use of the computer for statistical analysis of data.

32.G82 Computer Applications II

A continuation of course 32.F82, including an introduction to data-based systems and information retrieval.

32.A90, 32.B90, 32.C90, 32.E90 Mathematics for Electrical and Electronics Technologies

32.A90 Basic Mathematics (Electrical)

Linear equations, matrices, and determinants, with applications to mesh circuits analysis. Logarithmic and exponential functions, with applications to transient and power problems. Trigonometry, with emphasis on wave-forms, vectors, and use of identities. Complex numbers and their use in a.c. circuit calculations.

32.B90 Calculus I (Electrical)

An introductory calculus course dealing with the following topics, with applications throughout in the electrical and electronic fields: The differentiation and integration of algebraic, trigonometric, exponential, logarithmic, and hyperbolic functions.

32.C90 Calculus II (Electrical)

A further calculus course with appropriate applications in the field, dealing with techniques of integration, first and second order differential equations, partial differentiation, infinite series, elementary numerical methods.

32.E90 Transform Calculus (Electrical)

Laplace transforms; transform pairs of functions and operations, inverse transforms, applications to circuits involving integro-differential equations, the transfer function, pole-zero configurations. Analysis in the s-domain.

PHYSICS

33.101, 33.201 General Physics (A)

This course covers the background knowledge required in the Chemical and Metallurgical, Natural Gas and Petroleum, and Mining Technologies. Topics covered are kinematics, dynamics, friction, statics, angular motion, energy, momentum, simple machines, structures and properties of matter, fluid mechanics, temperature and heat, thermal properties of matter, thermodynamics, basic electricity and magnetism, wave motion and sound, electromagnetic waves, optics, relativity and quantum mechanics, atomic and nuclear phenomena. The laboratory programme stresses the subjects of measurement, data analysis, technical-report writing, and the experimental method, and includes technology-oriented topics. Mathematical treatment requires only algebra and trigonometry.

33.102, 33.202 Introductory Physics

This course covers, at a lower level, somewhat the same material as Physics 33.101, 33.201, but with applications and emphasis relevant to the Biological Sciences, Forest Products, and Technical Management Technologies.

33.104, 33.204 Physics for Building Technology

This course covers somewhat the same material as Physics 33.101, 33.201, but with applications and emphasis relevant to the Building Technology. This course has no laboratory programme. Problem-solving is stressed.

33.A05 Basic Physics for Nuclear Medicine

An introductory course covering topics of force and motion, energy, d.c. electricity, electromagnetism, a.c. electricity, and some basic electronics related to nuclear instrumentation.

33.A06, 33.B06, 33.C06 Basic Electricity and Magnetism

This course covers the background knowledge required in the Electrical and Electronic Technology. Topics covered are electric charge, electric fields, the physics of semiconductors, fundamentals of magnetism, magnetic forces and devices, and a survey of physics fundamentals in kinematics, fluid dynamics, heat and wave motion relevant to the technology.

33.107, 33.207 General Physics (C)

This course covers somewhat the same material as Physics 33.101, 33.201, but with applications and emphasis relevant to the Civil and Structural, and Surveying Technologies.

33.A09, 33.B09, 33.C09 Phpsics for Medical Radiography

This course emphasizes the application of physical phenomena in Medical Radiography. It includes the structure and physical properties of matter, static electricity, direct and alternating current, magnetism, mechanics, energy, wave motion, thermodynamics, optics, quantum concepts, production of X-rays, interaction of X-rays with matter, radioactivity, X-ray tubes, and photomultipliers and other detectors of radiation.

33.A10, 33.B10, 33.C10 Physics for Medical Laboratory Technology

This course is similar in content to Physics 33.102, 33.202, but with applications and emphasis relevant to the Medical Laboratory Technology.

33.111, 33.211 General Physics (D)

Course 33.111 is given to Instrumentation Technology, while both Instrumentation and Mechanical Technologies take 33.211. The whole course covers much the same material as 33.101, 33.201, but with application and emphasis relevant to the technologies concerned.

33.A12, 33.B12, 33.C12 Physics for Environmental Technology

This course is similar in content to 33.102, 33.202, but with applications and emphasis relevant to the Environmental Technology—Public Health.

33.201 *See* 33.101.

33.202 *See* 33.102.

33.204 *See* 33.104.

33.B05 Radioactivity

This course, for the Nuclear Medicine Technology, provides details of the elements of physics related to radioactivity and radiation phenomena. Major topics are the nucleus, isotopes, X-rays, radioactivity, modes of radioactive

decay, nuclear reactions, fission, interaction of radiation with matter, and the production of radioisotopes.

33.B06 *See* 33.A06.

33.207 *See* 33.107.

33.B09 *See* 33.A09.

33.B10 *See* 33.A10.

33.211 *See* 33.111.

33.B12 *See* 33.A12.

33.304 Geophysical Prospecting Methods

This course, given to the Mining Technology, includes lectures and laboratory work related to radioactive, magnetic, and electrical prospecting methods of mineral exploration and development, with particular emphasis on induced polarization and electromagnetic techniques.

33.C05, 33.E05 The Measurement of Radioactivity

This course, for the Nuclear Medicine Technology, covers the theory of instrumentation used for detecting and analysing alpha, beta, gamma, and neutron radiation in a modern nuclear medicine laboratory. Topics include detectors (crystal and liquid scintillation, ionization chamber, semiconductor, solid state), counters (Geiger-Muller, proportional), instrument corrections for environment and geometry, collimators, coincidence counting, and data accumulation and presentation systems.

33.C06 *See* 33.A06.

33.C09 *See* 33.A09.

33.C10 *See* 33.A10.

33.C12 *See* 33.A12.

33.406 Petroleum Geophysics

An introduction to geophysical prospecting methods as applied in natural gas and petroleum exploration. Emphasis is on seismic methods.

33.E05 *See* 33.C05.

33.E30, 33.F30, 33.G30 Biophysics

A study of biophysics for the Biomedical Electronics Technology which covers mechanics, electricity, magnetism, waves, and heat. The emphasis in lectures, seminars, and projects is on the application of the physics to biological systems.

33.F30 *See* 33.E30.

33.G30 *See* 33.E30.

BUILDING

40.101, 40.201 Draughting and Design

Advanced draughting; lettering, isometric; perspective; presentation techniques, sketching; colour; model building.

Fundamentals of design, æsthetic and functional; design of utilitarian objects; architectural design principles; architectural design problems.

40.102, 40.202 Building Construction

Principles of building construction in terms of the assembly of materials; examination of typical systems of wood and masonry construction; study of architectural detailing.

Introduction to construction contracts, estimating, specifications. Characteristics of building materials used in light construction.

Origins and purposes of building regulations; typical zoning and building by-laws; National Building Code; other Acts, codes, by-laws.

Aspects of common law and law of contract related to building premises.

Application of the above to the preparation of working drawings, in co-ordination with courses in Building Structures and Building Services. Trips to building sites and plants.

40.103, 40.203 Building Services

Introduction to building services complex; water supply; waste disposal; heating; electrical illumination. Emphasis on fundamentals and interrelation of services.

Preparation of working drawings for mechanical and electrical systems. Field trips.

40.201 *See* 40.101.

40.202 *See* 40.102.

40.203 *See* 40.103.

40.301, 40.401 Design

Short history of architecture and building, particularly since the Industrial Revolution; contemporary architectural masterpieces, with analysis of their planning, structure, services, æsthetic quality, landscaping.

Draughting-room exercises in architectural design, integrated with other courses; sketching and rendering; model-making.

40.302, 40.402 Building Construction

Principles of construction as applied to concrete and steel framed buildings; site fabrication and assembly; prefabrication.

Theory of selection and location of materials in the building fabric, especially roof and exterior walls. Interior finishing, detailing.

Preparation of working drawings, in co-ordination with the courses in Building Structures and Services. Trips to building sites and plants.

40.303, 40.403 Building Services

Ventilation; air conditioning; electrical illumination and power supply; mechanical equipment; transportation; communication; acoustics.

Preparation of working drawings related to above, and to projects in Design and Building Construction. Field trips.

40.304, 40.404 Construction Specifications and Estimating

Construction contracts and management procedures. Specifications of materials and methods of construction. Practical specification writing and communications. Fundamentals of estimating and cost accounting. Measurement of work. Analysis of unit prices. Construction accounting and financial management. Cost budgeting and control.

40.305, 40.405 Environmental Services

Gas supply systems; hot-water space-heating system design; practical fan laws; air-cleaning; steam-coil air-heating; hot-water coil-heating; combined direct radiation and coil-heated air-heating and ventilating systems; temperature control for space-heating and air-conditioning processes and design; air-conditioning controls.

40.306, 40.406 Landscape Draughting (Biological Science Technology)

Elements of surveying; elements of building; landscape construction; draughting related to the above; specifications; estimating; field trips.

40.307, 40.407 Planning and Design (Hotel, Motel, and Food Service Management Technology)

Fundamental introduction to blueprint reading; contracts; principles of design for hotels and restaurants; department layouts, floor plans, and traffic flows; selection of equipment and furnishings; principles of decoration and colour theory; lighting; sources, specifications, and qualities of furnishings, materials, and fabrics. Trips to plants, shops, hotels.

40.401 *See* 40.301.

40.402 *See* 40.302.

40.403 *See* 40.303.

40.404. *See* 40.304.

40.405 *See* 40.305.

40.406 *See* 40.306.

40.407 *See* 40.307.

CHEMICAL AND METALLURGICAL

41.102 Laboratory Workshop

Use of hand and bench tools; soldering, brazing, and gas welding. Glass-blowing techniques; repair of chemical glassware and construction of simple apparatus. Basic electrical circuitry, electrical fittings, switches, and safety precautions. Organization and control of chemical laboratory, record-keeping, ordering and inventory.

41.103, 41.203 Engineering Materials

Comparative properties of all classes of engineering materials, including polymers, concrete, wood, metals, alloys, and ceramics. Common causes of failure in service, including fatigue, embrittlement, weathering, and corrosion.

41.104, 41.204 Engineering Materials

Comparison of materials of importance in forest products technology, including wood and wood products, concrete, metals, alloys, polymers, and ceramics. Common causes of failure in service, including weathering, corrosion, fatigue, and embrittlement.

41.203 *See* 41.103.

41.204 *See* 41.104.

41.207 Unit Processes

Use of flow charts for representing unit sequences and unit operations; instrumentation flow plan symbols, material balances, heat balances, stoichiometry. Production of sulphuric acid, caustic soda, and chlorine, phenol, synthetic resins. The pulping processes, petroleum refining, sugar refining. Smelting and metal refining.

41.208 Properties of Materials

Comparative properties of engineering materials with emphasis on applications to Electrical and Electronics Technology; plastics, ceramics, metals, and alloys; mechanical properties, electrical properties, corrosion properties, and factors leading to service failures in operating environments.

41.210 Environmental Sampling Techniques

The course will outline the recognized methods of obtaining samples for physical and chemical pollution analysis with emphasis on collection procedures and sampling frequency. Techniques studied: solid sampling, liquid sampling, gaseous sampling, bacteria and micro-organism sampling, sampling apparatus.

41.304, 41.404 Physical Metallurgy

Solidification of metals, casting methods and defects, metal-forming operations, phase diagrams, alloying of metals, heat-treatment. Laboratory sessions emphasize physical testing of materials, metallography, and nondestructive testing.

41.305, 41.405 Assaying

Analytical chemistry applied to the ore minerals, with special attention to fire assaying for gold and silver. Gravimitsic, volumetric, and instrumental methods are developed for the more common metals. Students are encouraged to attempt the examinations for the Provincial Government licence to practise assaying in British Columbia after at least one year's experience following graduation.

41.307, 41.407 Extractive Metallurgy

Fundamental unit operations of mineral-processing technology—comminution, sizing, classification, gravity separation, flotation, materials transport and storage. Fundamentals of extractive metallurgy—pyrometallurgy, hydrometallurgy, electrometallurgy studied from a unit process viewpoint and applied to metal production from processing nonferrous ores and concentrates. Statistics of sampling methods; numerical solution of design and operating problems.

41.311, 41.411 Pollution Science

An introduction to organic chemistry, biochemistry, microbiology, pollution law, and basic meteorology. This course complements the courses in Environmental Sampling Techniques, Waste Disposal Methods, and Environmental Analytical Methods.

41.314, 41.414 Mineral Processing

The essential unit operations making up mineral-processing techniques for mining students. Crushing, grinding, gravity separation, flotation, cyclone classification, materials handling and storage, statistics applied to sampling problems. An introduction to chemical and bacterial backing as applied to

precious metal and nonferrous metal ores. The course emphasizes the numerical solution of operating-type problems.

41.320, 41.420 Unit Project

Projects relating to the student's chosen option are assigned in each term. Regular progress reports and a final term report are required.

41.341, 41.441 Unit Operations

First and second law of thermodynamics; enthalpy, entropy, phase rule, thermodynamic diagrams and tables; fluid flow and measurement in pipes and channels, piping, pipe fittings, and valves; solid handling, grinding, crushing, screening, mixing, settling, sedimentation, filtration, flotation; flow of heat, conduction, convection, radiation, film and over-all transfer coefficients, heat exchangers; principles and application of equipment for evaporation, distillation, absorption, extraction; humidification and dehumidification; drying; crystallization; ion exchange.

41.404 *See* 41.304.

41.405 *See* 41.305.

41.407 *See* 41.307.

41.408 Assaying (Extractive Metallurgy Option)

The identification of economically important minerals, general principles of quantitative analysis of ore samples, including representative volumetric determinations such as acid-base, oxidation-reduction, and volumetric precipitation. Fire assaying, stressing fusion and combination wet-fire methods. Practical applications in instrumental and physiochemical analysis, including the latest analytical aids, polarography, spectrophotometry, atomic absorption, and emission spectroscopy.

41.411 *See* 41.311.

41.412 Waste Disposal Methods

The unit processes and unit operations of solid, liquid, and gaseous treatment systems. Incineration, land fill, screening, sedimentation, flotation, neutralization, oxidation reduction, precipitation coagulation, aerobic systems, activated sludge, trickling filtration, aerobic digestion, anærobic methods, stripping, ion-exchange, electrodialysis, adsorption, sorption, reverse osmosis, distillation, defoaming, foam-separation cooling towers, centrifuges, bag filters, cyclones, settling chambers, scrubbers, electrostatic precipitators, fume incineration, tall chimneys.

41.413 Environmental Analytical Methods

Physical, chemical, and biological methods of analysis of solid, liquid, and gaseous streams; BOD, carbon in water, nitrogen and phosporus in water, chlorides, sulphates, alkalinity, surfactants, pesticides. Use of Orsat midget impinger, X-ray, photofluorimeter.

41.414 *See* 41.314.

41.420 *See* 40.320.

41.425 Nondestructive Testing

This couse is given to students in the Physical Metallurgy Option. The course covers all the major methods of nondestructive testing, including

radiography, ultrasonic testing, magnetic particle testing, eddy current testing, use of dye penetrants, leak testing. Emphasis is on actual use of equipment and interpretation of results.

41.441 *See* 41.341.

41.F91 Medical Materials

Comparative properties of all classes of engineering materials with emphasis on biomedical applications, including metals, plastic materials, adhesives, and composite materials; bonding forces in solids, microstructures, plastic deformation and annealing, alloying, heat treatment of steels, and nonferrous metals; polymers, elastomers, and organic adhesives; corrosion and ageing of materials; interaction of materials with biological tissues, toxicity; reference sources and materials selection.

CIVIL AND STRUCTURAL

42.101 Civil Engineering

This course includes the subjects Elementary Hydrology, Concrete Technology, Statics of Structures. In addition, an array of typical civil engineering problems are examined for solution. These solutions may be structural, analytical, geometric, communicative, or economic. Visiting lecturers, movies, slides, and field trips make the student familiar with civil-engineered structures, their uses and their methods of construction.

Elementary Hydrology (42.102)—The application of precipitation data to various run-off areas is learned in order to predict run-off yield and flood magnitude. Measurement of storages and flows in the field is studied together with characteristics of open channel flows.

Concrete Technology—Cement—types, chemistry, manufacture, and testing. Aggregates—sources, types, production, and testing. Concrete properties—strength, durability, permeability, workability, and testing. Concrete mix design. Production—mixing, transporting, placing, finishing, and curing. Formwork—design, construction, and stripping. Concrete products—precast, lock, pipe, etc. Special topics—cold-weather concreting, colouring, finishing, additives. Laboratory experiments and a field trip.

Statics (42.103)—Vectors, force systems, graphical analysis, resultants, components, moments, equilibrium laws, force polygons, funicular polygons, frames and trusses, stress diagrams, Bowes' notation, flexible tension members, load, shear and bending moment curves. Closely supervised problem sessions are used to provide the student with practice in common analytical and graphical solutions to problems of static load on simply determinate structures.

42.107 Building Structures

Historical development and relation to structural design; vectors and force systems; graphical representation; resultants and components; moments and couples; conditions of equilibrium; force polygon; funicular polygon; co-planar systems; three-dimensional systems; frames and trusses; stress diagram and Bowes notation; chains and cables; vertical shear force and bending moment diagrams; related problems and experiments with emphasis on building structures, retaining walls.

42.201 Civil Engineering

This course includes the subjects Elementary Hydraulics, Elementary Structural Design, Strength of Materials. An array of problems especially

from the realms of transport and distribution are presented and solutions examined. Consequently the course introduces highways, airports, wharves, harbours, breakwaters, conveyors, pipe-lines, and irrigation works.

Elementary Hydraulics (42.202)—Hydrostatics, properties of fluids, pressure, centre of pressure; flow of fluids, equation of continuity, velocity head, venturi, jets; orifices; notch and weir, friction and pipe flow; Reynold's experiments, water hammer; flow, laminar and turbulent; open channel flow, regular channels, hydraulic jump, irregular channels; meters, valves, pumps. Laboratory experiments form a part of this course.

Elementary Structural Design—Historical development of contemporary structural systems; loading, types and assumptions; principles of working stress design and ultimate load design; tension members in steel and timber; connections in steel and timber; compression members under axial loading; trusses and frames; theory of flexure and distribution of bending and shear stresses; deflection and design of beams in steel and timber; combined bending and compression; eccentrically loaded columns; principles of bending in reinforced concrete; design of simple beam and slab with tensile reinforcement only; related problems and model experiments.

Strength of Materials (42.205)—Simple stresses; stress, strain elasticity; compound bars and columns; temperature stress; elastic limit; limit of proportionality; yield; ultimate; factor of safety; load factor; ductility; resilience; fatigue; shock. Properties of sections; bending moments; shear forces; theory of flexure; slope and deflection of beams; restrained and continuous beams. Strut theories; eccentric loading, lateral loading. Compound stress and strain; ellipse of stress; Poisson's ratio; principal stresses and strains; Mohr's circle. Testing techniques; machines; extensometers; strain gauges; brittle lacquers; photo elasticity; evaluation of results.

42.207 Building Structures

Historical development of structural systems; contemporary structures; principles of structural design; discussion of structural materials and their properties.

Assumptions of loading and types of loading; stress, strain, and elasticity; simple stresses; temperature stresses; composite material and resultant stresses; yield; factors of safety and load factors.

Properties of sections, bending moments, and shear forces; theory of flexure; slope and deflection of beams; restrained and continuous beams.

Axially loaded columns; tension and compression members; connections.

Introduction to soils, foundations, piling, and retaining walls.

42.301 Civil Engineering

This course includes the subjects Introductory Soils Mechanics and Geology, Highway Engineering, Structural Design, Municipal Services. Applications of hydraulic theory in the fields of water supply, wastes disposal, and energy production are given, with guest lecturing on pollution and pollution control. Civil Engineering Graphics 49.302 will be included as needed.

Soils Mechanics and Geology—Fundamentals of geology; rocks and minerals; formation of soils, site exploration; sampling methods; field testing; classification of soils; soil particles; structure of soils; porosity; void ratio; moisture content; permeability; ground-water movement; frost action; consolidation theory; settlement; shear strengths; deformation; slope stability; bearing capacities; excavations; types of foundations; earth retaining structures.

Highway Engineering — Highway geometry: curves, spirals, superelevation, widths, sight distances, surfaces, grades, safety, signs, and lighting. Highway performance: foundation material, sub-bases, base courses, pavements, behaviour of these materials under varying conditions of load, weather and temperature, drainage, maintenance. The evaluation and design of roadways using deflection data; the Benkelman Beam use and subsequent evaluation of materials; field procedures, compaction specification. Streets: classification, street geometry, widths, sections, drainage; service trench effects, street equipment, lighting, street use, and public relations. Subdivision patterns, the street as dictated by land-use planning.

Structural Design—Plate web girder; built-up sections in steel and timber; beam column connections; steel and timber detailing and fabrication. Restrained and continuous beams; strain energy; column analogy; moment distribution; tapered beams. Reinforced concrete beams; tee beams, compressive reinforcement; one-way and two-way slabs; footings; retaining walls; reinforcement detailing; scheduling; concrete placement and formwork design.

Municipal Services — The placement, specification, and recording of all below-grade services in community development; design and draughting of sanitary sewers, storm sewers, water-main systems, and streets. Students gather data in the field and, against a land-use proposal, design needed services for a specific area. Field trips are taken to observe existing installations and works in construction.

42.307 Building Structures

Reinforced-concrete beams; tension steel only; one-way and two-way slabs; compressive reinforcements; tee beams; axially and eccentrically loaded columns; simple footings and retaining walls; reinforcing detailing, schedule, and placement; design of forms.

42.401 Civil Engineering

This course includes the subjects of Work Study, Soils Mechanics and Foundations, Municipal Services, Costing and Specifications, Bridge and Building Practice and Scientific Computer Use.

Work Study—See 22.747 of the Business Courses.

Soils Mechanics and Foundations—More intensive study of specifically civil engineering applications; compaction and stabilization of soils; caisson foundations; sheet piling; cofferdams; tunnels and conduits; dams, foundation failures; earth dams; design of cuttings and embankments; highway pavements, airport pavements. Laboratory tests, model experiments, and field trips to exploration and construction sites.

Municipal Services—The considerations and procedures connected with the layout, design, and construction of city streets. Wherever possible the learning will take place in a design project of some local street and student work may be compared with professional design. Construction may follow.

Costing and Specifications—Fundamentals of contracts; study of contract documents; specifications as contract documents and as technical directives: contract procedures—the estimating and cost-accounting cycle; measurement and pricing of engineering work; cost records and analysis; unit prices.

Bridge and Building Practice—Visiting lecturers, movies, and field trips will present practical construction problems and their solutions. This will cover the fields of investigation, design, fabrication, and erection of bridges and buildings, and job layout, job organization, and project financing.

42.402 Civil Engineering

This course is similar to 42.401 but is designed to include Traffic Engineering. To permit this the subjects of Costing and Specifications, Bridge and Building Practice are omitted for students choosing this elective.

Traffic Engineering — Modes, volumes, trends; accident diagrams and analysis; intersections; signs and markings; signals; parking; street capacities; geometrics; street classification; pavement widths; regulations; urban traffic planning; traffic inventory; travel characteristics; forecasts.

42.403 Civil Engineering

This course is similar to 42.401 but permits extended studies in Structural Design. Bridge and Building Practice is also more extensive. To permit these extensions the subjects of Work Study and Municipal Services are omitted, and Soils Mechanics is reduced for students choosing this elective.

Structural Design — Portal and multistory frames; wind analysis; shear and moment in arches; 3-pin, 2-pin, and fixed arch; suspension bridge. Shear flow; shear centre; torsion in beams; curved beams. Tension coefficients; space frames. Flat slabs; prestressed beams; ultimate load design of reinforced concrete. Experimental stress analysis, computer analysis, and discussion of advanced structural forms. Problems and experiments in application of principles to structures.

42.407 Building Structures

Combined bending and axial loads; eccentric columns in steel and timber; built-up sections in steel and timber; beam-column connections.

Restrained and continuous beams; strain energy; moment-area; moment distribution; portal and multistory frames; steel and timber detailing and fabrication.

Discussion of ultimate load design, prestressed concrete, advanced structural forms, and experimental stress analysis.

ELECTRICAL AND ELECTRONICS

43.A01 Circuit Devices and Techniques

Familiarizes the students with electrical and electronic components and develops an orderly approach to equipment packaging and fabrication.

Topics include resistors, capacitors, inductors, relays, switches, fuses, and circuit-breakers; conductors, cables, and harnesses; soldering; semiconductors and tubes; printed circuits; engineering standards.

43.A02, B02, C02 Electrical Circuits I, II, and III

Teaches the principles and methods of analysis related to d.c. and single-phase a.c. circuits.

Topics include electrical quantities such as energy, power, voltage, current, resistance, inductance, capacitance, impedance; MKSA units; relationships between quantities; single-port network configurations (series, parallel, series-parallel); two-port networks; circuit laws and theorems; network analysis methods (loop, nodal, superposition, equivalent circuit); maximum power transfer; quality and dissipation factors; transients; differentiation and integration; resonance; power-factor correction; transformer.

43.A03, B03 Shop Practice I and II

Provides practical training for the development of manipulative skills.

Topics include materials and their selection; welding (ferrous and non-ferrous metals); sheet-metal fabrication; cable splicing and termination; wiring methods; conduit bending and mounting; installation equipment (distribution boxes, switch boxes); electrical code; draughting and drawing interpretation.

43.A71, B71, C71, E71 Electronics Principles and Practices

Teaches the Biomedical Electronics students the principles and practices current in the electrical and electronics fields.

Topics include electrical quantities and units; relationships between quantities; network configurations; network analysis; components, hardware and materials; wiring methods; equipment fabrication; semiconductors and tubes; characteristic curves; amplifier circuits and their analysis; transistor bias; oscillators; power supplies; heatsinking.

43.172, 272 Electrical and Electronics Fundamentals

Gives Instrumentation and Systems students a knowledge of electrical and electronics principles and hardware.

Topics include electrical quantities and units, theorems and laws; components; impedance transformation; filters; measurements; semiconductors; integrated circuits; amplifiers and oscillators; power supplies.

43.B01, C01 Electronic Circuits I and II

Teaches how electronic circuits work, how to analyse them numerically and how to design, modify, and combine them to perform complex functions. The circuits are about 80 per cent semiconductor and 20 per cent vacuum tube.

Topics include interpretation of transistor and tube characteristic curves; voltage and current amplifying circuits; loadline analysis; choice of Q-point; bias circuits; stability; a.c. equivalent circuits; interstage coupling and frequency response; feedback; oscillation and oscillator circuits; power supplies, including voltage and current regulating circuits in discrete and integrated form; low-frequency power amplifiers of various types; heatsink calculations; characteristics and application of other devices such as unijunction transistors, thyristors, field-effect transistors, and tunnel diodes.

43.B02 *See* 43.A02.

43.B03 *See* 43.A03.

43.B71 *See* 43.A71.

43.272 *See* 43.172.

43.C01 *See* 43.B01.

43.C02 *See* 43.A02

43.C03 Measurements

Makes the student familiar with the practical application of equipment and techniques for measuring electrical quantities.

Topics include electrical quantities, units, and symbols; measurement of current, voltage, power, resistance, inductance, capacitance, phase angle, time, frequency, distortion.

43.C71 *See* 43.A71.

43.373 Electrical Equipment Applications

Gives Mechanical Technology students an introduction to industrial electrical equipment.

Topics include a.c. and d.c. motors and their application to electro-mechanical drive systems; protecting and controlling motors; industrial electrical power systems and related equipment; sources of energy; utility rate structures, transformation into primary and secondary voltage levels, distribution of power throughout the plant; switching; voltage control; power-factor correction.

43.E04 Digital Techniques I

Teaches the techniques basic to digital equipment and their application in communications, instrumentation, and industrial control systems.

Topics include switch and relay control; number systems; Boolean algebra; codes and coding; solid state logic (TTL, DTL, HTL); noise and loading; encoders, decoders, display generators, relay drivers, and delay devices; counters, shift registers, and arithmetic systems; digital to analog and analog to digital converters.

43.E11 Industrial Electronics

Applies electronic circuit principles to industrial controls and utility systems. Measurement techniques and the correct use of test equipment are stressed.

Topics include integrated circuits; operational amplifiers; thyristors (static switching, phase control, application considerations, protection); d.c.-a.c. and d.c.-d.c. power conversion (transistor and SCR inverters).

43.E12 Polyphase Circuits

Teaches the application of phasor notation to three-phase power circuits. Includes related measurement procedures.

Topics include load determination; power-factor correction; single-phase, three-wire distribution; balanced three-phase systems; phase-sequence determination; transformer polarity, three-phase transformer configurations.

43.E13, F13 Electrical Equipment I and II

Gives an understanding of the theory, characteristics, and operation of equipment used in the electrical industry. Deals with items individually and their application to complete electrical systems and drives.

Topics include d.c. and a.c. motors and generators (types, losses, efficiencies, load requirements, running characteristics), transformers (construction, losses, efficiencies); industry ratings, standards, temperature classifications.

43.E21 Electronic Circuits III

Provides a knowledge of electronic circuits specifically needed for the electronics options (Control and Telecommunications).

Topics include tuned amplifiers (discrete and integrated); stability of tuned amplifiers; wide-band amplifiers; operational amplifiers; parameter systems and their application to small-signal linear circuit analysis.

43.E22 Pulse Circuits

Teaches the analysis and synthesis of circuits for the generation and shaping of nonsinusoidal waveforms.

Topics include clippers, clamps and d.c. restoration; multivibrators (monostable, bistable, and astable); large-signal transistor circuits; blocking oscillators; d.c.-d.c. converters; Schmitt trigger; ramp and staircase generators; line-pulse generators.

43.E23 Telecommunications Principles

Teaches some of the communications principles common to telecommunications and electronic control systems.

Topics include history of communication; modulation and modulators; demodulators; frequency multipliers; single-side band techniques; frequency converters; transmitters and receivers.

43.E71 *See* 43.A71.

43.F11 Industrial Controls

Teaches a systematic approach to the design, operation, and troubleshooting of industrial controls.

Topics include mechanical, electromagnetic, and static control devices (characteristics, relative merits, and application to industrial control); control circuit design, static logic; motor control (d.c., induction, and synchronous motors).

43.F12 Circuit Analysis

Deals with the analysis of three-phase power circuits.

Topics include equivalent circuit technique; per unit and per cent systems; unbalanced three-phase loads; two and three wattmeter methods; short-circuit studies.

43.F13 *See* 43.E13.

43.F14 Protective Systems

Deals with protection principles and equipment as applied in electrical power systems.

Topics include purpose of protection; fuses; circuit-breakers; protective relays; current and potential transformers; lightning arrestors; co-ordination studies.

43.F15 Electrical Draughting

Gives an appreciation of the preparation and interpretation of electrical drawings.

Topics include standard symbology; schematic, connection, and block diagrams; single- and three-line diagrams; building layouts.

43.F16 Lighting Systems

Introduces the commonly used electrical light sources and the calculations pertaining to lighting systems.

Topics include incandescent and gaseous discharge light sources; lighting equipment, calculations, and layouts; branch circuit wiring; wiring types.

43.F24 Digital Techniques II

Applies the principles of digital techniques to the subsystems of industrial control, instrumentation, and communication systems.

Topics include analog-digital interfacing; digital instruments; phase-locked loops; analog multiplexing; data acquisition; error detection and correction;

data transmission; supervisory and control systems; introduction to digital computer.

43.F31 Antennas and Transmission-lines

Provides a practical knowledge of the methods and devices used for the transmission of radio frequency energy.

Topics include electromagnetic fields and their propagation; dipole and simulated dipole antennas; loop antennas; antenna arrays; microwave antennas (horns, slotted, parabolic); coaxial lines; wave guides.

43.F32 Telecommunication Power Systems

Provides a knowledge of electrical power systems used in the telecommunications industry.

Topics include rotating electrical equipment; phase control; prime and standby a.c. power systems; rectifier power supplies; batteries; power distribution; signalling sources.

43.F33, G33 Telephone Systems I and II

Deals with some common carrier telecommunication principles, techniques, and system operation.

Topics include evolution of telephone switching; subscriber's loop; telephone instrument; electronic, step-by-step, and cross-bar switching; exchange trunks; signalling; telegraph and data links; battery plant and distribution; office practices; outside plant; multiplexing; telephone network theory; operating performance (includes forms of distortion and losses).

43.F34 High Frequency Techniques

Teaches the principles and techniques involved in the generation and transmission of high radio frequencies.

Topics include generation of microwaves; klystrons, solid state generators, and travelling-wave tubes; wave guide hardware (principles and measurements); spot and swept frequency measurements of microwave systems.

43.F41 Industrial Electronics

Investigates the application of electronics to industrial control.

Topics include thyristors in static switching; SCR phase control (single and polyphase); SCR application considerations; time ratio control; electronic relays and transducers.

43.F42 Feedback Theory

Creates capability in the analysis of various feedback systems and the solution of typical problems.

Topics include transfer functions; stability criteria and the correction of instability; analysis techniques; typical electronic and electro-mechanical systems (position servo, motor-speed control, temperature control); analog modeling.

43.F43 Electrical Equipment

Deals with the electrical equipment associated with electronic control systems.

Topics include industrial plant power distribution; three-phase synchronous generators (machines, controls, loads, power factor); single- and three-phase induction motors (industrial types, starting, overload protection); three-phase synchronous motors and their control; electromagnetic control circuits; d.c. generator and motor.

43.F44, G34 Electronic Equipment Fabrication

Deals with manufacturing techniques used in the electronics industry.

Topics include printed circuits (planning, components, component mounting, artwork, production processes); encapsulation; interconnection of units; materials (insulating, conducting, draughting).

43.G11 Control Systems

Teaches the application of electronic control principles to typical industrial systems.

Topics include schematic diagram interpretation; photo-electronic controls; electronic sensors; utility system applications; feedback applied to machine control; calculations on machine regulators (performance and stability, steady-state and transient); process control.

43.G12 Systems Analysis

Teaches the analysis methods for predicting power system behaviour under normal and abnormal conditions.

Topics include voltage regulation; power transfer; load flow; transmission-line capability; power circle and angle diagrams; symmetrical components.

43.G13 Utility Systems

Deals with the organization of an electrical utility and the characteristics of its equipment.

Topics include utility system organization; generating sources, hydro and thermal; synchronizing; load sharing; transmission systems; substations; protective relaying; rate structures; system operation (load dispatch, wheeling, tie systems).

43.G14 Industrial Systems

Teaches the design of electrical systems for industrial plants and commercial buildings.

Topics include electrical system organization; feeder calculations and ratings; demand factors; motor control centres; switchboards; voltage levels; grounding.

43.G31 Navigation Aids

Applies the principles of telecommunications to electronic navigation systems.

Topics include RHO-THETA navigation aids (VOR, TACAN, DME); instrument landing systems; radar systems (marine doppler, surveillance); moving-target indicators; bright display; video mapping.

43.G32 Radio Systems

Provides an insight into the problems of radio systems and their solutions.

Topics include space-wave propagation; microwaves paths; environmental factors; site considerations; noise performance (types of noise, objectives, and calculations); supervisory and control equipment; satellite communications; point-to-point and mobile radio systems.

43.G33 *See* 43.F33.

43.G34 *See* 43.F44.

43.G41 Industrial Television

Covers the principles and applications of industrial and educational television systems.

Topics include television systems (industrial closed-circuit and multi-camera educational); interconnection problems; television cameras and monitors; video tape recorders; maintenance techniques; industrial installation problems and their solutions.

43.G42 Industrial Audio Systems

Relates the application of audio systems to industrial needs.

Topics include microphones; speakers; amplifiers; distribution systems; environmental factors; typical systems.

43.G43 Industrial Machine Control

Studies the regulated control of industrial machine drives.

Topics include machine load characteristics; geared and variable speed drives; open and closed loop regulation; solid state regulators; numerical control.

43.G44 Digital Systems

Teaches the use of the digital computer for supervision and control of industrial processes.

Topics include assembler language programming; computer interfacing (device selection, programme interrupt, buffer registers, real-time clocks, level changing, pulse duration changing); display generators and systems; magnetic tape; closed-loop control.

BIOLOGICAL SCIENCES

44.121 Introductory Microbiology

The course is designed to train students in the basic microbiological procedures employed in a laboratory: the use and care of the microscope; staining methods; aseptic techniques; methods of identifying micro-organisms.

44.122 Biology

A study of the principles underlying living phenomena, including the organizational attributes of living matter. Evolutionary development is traced from one-celled organisms to higher plants and animals. The economic importance of various classes of plants and animals is included.

44.201 Food Processing

The composition of foods. Nutritional aspects. An introduction to the processes of canning, freezing, pasteurizing, dehydrating, salting, smoking, fermenting, and treating food with ionizing radiations. Experimental lots of food will be preserved by these methods during laboratory periods.

44.221 Microbiology for Food Processing

The application of microbiology to food-manufacturing. The isolation of micro-organisms of significance to food-processing for purposes of differentiation and classification. Maintaining high bacteriological standards in processed foods. Shelf-life studies. Spoilage control. Food fermentations. Assessing microbiological test results and report writing to management.

44.223 Microbiology for Food Production

The application of microbiology to agricultural food production. An introduction to plant and animal pathology and to immunology. Seminar project. Assessing and reporting microbiological test results.

44.251 Food Production

A general introduction to the study of soils, plants, and animals as related to the production of food.

44.253 Introductory Botany and Soils

A general introduction to the study of plants and soils.

44.263, 44.363 Applied Horticulture

The classification, morphology, and growth of horticultural plants, with emphasis on those used in landscaping. Climate and hardiness. Plant propagation and growth control. Basic greenhouse techniques. Turf grasses. Floriculture and arboriculture.

44.301, 44.401 Food Processing

Detailed studies of specific food-manufacturing processes, including dairy-products manufacture, fruit and vegetable processing, jams and jellies, fish and meat products, edible fats and oils, food emulsions, processed potato products, dehydrated and freeze-dried foods, tea and coffee, spices, confections and products of milling and baking. Characteristics of packaging materials, including flexible films, and how they meet the package requirements of various foods.

44.311, 44.411 Quality Control

Responsibilities and organization of a quality-control department in the food industry. Equipping a control laboratory. Methods of measuring and controlling quality factors, such as colour, texure, flavour, and consistency in foods. Principles of statistical quality control. Federal and Provincial Government standards. Laboratory periods will provide practical experience in the scoring and grading of processed foods and in the use of various control instruments.

44.312 Introductory Food Analysis

Chemistry of the principal components of the major representative classes of foods and feeds. Moisture in foods. Proximate composition and energy values. Standard methods of analysis for common constituents. Techniques and procedures in general use in food and agricultural products laboratories.

44.324 Zoology

General classification of the animal kingdom. Basic vertebrate zoology. The development of the vertebrate from embryo to adult. The study of the vertebrate body, including the skeletal, muscular, digestive, circulatory, urogenital, and endocrine systems. Laboratories consist of comparative vertebrate anatomy.

44.332, 44.432 Food Handling and Sanitation

Food technology in quantity food preparation; new processes and products. Training employees in food sanitation practices. Maintaining high bacteriological standards during the preparation and serving of foods for

public consumption. The study of undesirable micro-organisms and their possible pathogenic effects to public health. Assessing test results and preparing reports.

44.341 Mechanics of Machines

Basic mechanical principles of food processing and agricultural equipment. Force and motion, work, energy and power. Thermodynamics. Fluid mechanics as applied to pumps and pumping systems. Electrical power equipment. Materials of construction. Maintenance and lubrication of equipment.

44.352 Genetics

Principles of genetics, including heredity and environment, Mendel's law of segregation, expression and interaction of genes, and multiple factor inheritance. Applied plant breeding and animal breeding with particular reference to British Columbia.

44.361 Plant Technology

Plant nutrition, including photosynthesis, mineral nutrition, permeability and adsorption of nutrients, water economy, translocation. Plant metabolism. The dynamics of growth and development, integration growth, physiology of reproduction, dormancy and arrested development, differentiation, plant environment.

44.363 *See* 44.263.

44.364 Nursery Crop Production

Culture and management of plant materials in a nursery. Propagation of nursery stock. Plant growing structures; cold frames and greenhouses. Field culture of nursery crops. Storage, inventory control, and marketing.

44.371 Animal Technology

A general familiarization with the live-stock and poultry industries as they relate to food production. Animal physiology. Role of basic nutrients in metabolism. Nutritive requirements of live stock during growth, reproduction, and lactation. Feed ration formulation. Feed additives.

44.401 *See* 44.301.

44.402 Process Analysis

This course is designed to acquaint the student with the basic engineering aspects of the unit operations encountered in food processing. The engineering principles of raw-material operations, conversion and preservation operations, together with materials handling and plant design. Laboratory sessions will involve experimentation, demonstration, and problem-solving.

44.411 *See* 44.311.

44.412 Food Analysis

Detailed chemistry of the products of the food industry: fat and oil, sugar, cereal, fruit and vegetable, dairy, fishery, meat, and poultry products. Vitamins and nutritional supplements. Chemistry of various types of food deterioration and its prevention. Food additives—preservatives, colouring, flavouring, and sweetening agents. Physiochemical and instrumental methods used in food analysis.

44.413 Agricultural Analysis

Chemistry and standard methods of analysis of agricultural products. Determination of major and minor nutrients in feeds and fertilizers. Elemental analysis of plant materials and soils. Analysis of cereal grains and animal products. Chemistry of pesticides and fungicides. Instrumental and chromatographic procedures for determination of pesticide and other potentially hazardous residues in feeds.

44.414 Experimental Techniques

Design of experiments with crops and animals. Statistical methods, including sampling, tests of significance, regression and correlation, block diagrams, factorial experiments, split-plot, lattice designs, and transformation of experimental data. Layout of actual experiments.

44.431 Sanitation

Organization of a sanitation programme in the food industry. The chemistry of cleaning. Properties of a good detergent. Types of cleaning compounds and formulation. Methods of disinfection and sterilization. Sanitary aspects of buildings and equipment. Safe water supply. Waste treatment and disposal. Effective insect and rodent control. Employee training in sanitary practices. Inspection techniques and laboratory tests.

44.432 *See* 44.332.

44.442 Agricultural Mechanics

A study of basic engineering principles as applied to agricultural and landscaping operations. Hydraulic systems. Agricultural spraying systems. Irrigation and drainage. Tillage and harvesting equipment. Introductory environmental control. Care of equipment.

44.462 Plant Protection

A study of the destructive forces of diseases, insects, and weeds on our ornamental plants and food crops, and means of control. Cultural control. Chemical control—insecticides, fungicides, herbicides. Systems of application—dusting, spraying, concentrate spraying, operating and maintaining equipment. Measures of efficiency. Seed treatment. Turf protection. Protection of stored crops.

44.465 Landscape Field Practice

Landscape specifications, plan reading, estimating. Landscape construction, levels, grades, irrigation, drainage. Landscape materials. Seeding and sodding of grasses. Planting procedures. Cost control. Equipment operation.

44.481 Soil Technology

The origin, formation, and classification of soils, use of survey reports, map interpretation. Components of soils, soil colloids, cation exchange

reactions, soil acidity, phosphorus, nitrogen, the crop as an indicator of fertility, soil organic matter, fertilizers. Soil-sampling procedures, extraction methods used in soil analysis.

FORESTRY

45.101 Forest Science and Utilization I

Fundamental concepts related to the forest and forestry. Brief outline indicating the importance of forests and the forest industry in British Columbia. Botany of the seed plants with specific reference to trees. Identification of commercially important conifers. Gross structure of wood. Introduction to forest utilization. A survey of harvesting methods. The manufacture of lumber and allied products. An introduction to forest management and administration.

45.102 Forest Measurement I

Fundamental concepts of Forest Engineering—measurement of distances, direction, and elevation. Traverse calculations, obtaining, recording, and plotting topographic detail. Care, maintenance and adjustment of equipment. This course will familiarize the student with forest surveying methods used in logging layout, and forest measurements.

45.106, 45.206 Photo Interpretation and Mapping I, II

Practical use and application of aerial photography in forestry. Classification, reconnaissance, planning and inventory, using aerial photos. Practice in the use of photo-interpretation aids, including the use of stereometers. Construction of forest maps and plans. Transfer of detail from aerial photos, using Sketchmasters, Map-O-Graph, Kail plotters, and pantographs. Draughting and map reproduction techniques.

45.110, 45.410 Fire Control I, II

Historical review, fire behaviour with simulation through effect of topography, fuel, weather, including weather observation. Pre-suppression, including fire danger ratings, detection, reporting and general pre-organization of industrial and government agencies. *Forest Act*, Part XI. Fire-suppression techniques through fire simulation training in initial action and problem-solving.

45.120 Forest and Range Botany

Introduction to structure, physiology, and taxonomy of plants, with particular reference to the plants of the Biotic Zones of British Columbia.

45.124 Public Administration

This course deals with the fundamentals of public administration, including Government of Canada; fiscal and accounting procedures in Government departments and agencies; personnel administration; administrative law; statute interpretation; jurisdiction and functions of administrative tribunals.

45.125 Public Information Techniques

The course objective is to introduce the student to the practical techniques of effective communication in his chosen field. The preparation, design, and use of audio, visual, and other communication media will be emphasized and

encouraged in the development of all written and oral presentations. The oral presentation of topics prepared from related courses in the option, supplemented by library research and literature survey, will be required of the student in a variety of speaking practicums.

45.201 Forest Science and Utilization II

The microscopic structure of wood. Physical properties of wood. Identification and uses of commercial woods in British Columbia. Wood deterioration and preservation. Manufacture of plywood, laminated beams, pulp and paper, composition boards. An introduction to the reproduction of conifers and genetics. References to ecology, soils, plant geography, and forest regions of Canada and British Columbia.

45.202 Forest Measurement II

Methods of measurement of standing and felled timber. Direct measurement of tree diameters, heights, and ages. Characteristics and use of standard volume tables. Construction of local volume tables. Stand and stock tables. Measurement of site index. Forest inventory and operational cruising techniques, with elementary statistical analysis. Types of sampling, and design. Application of aerial sampling and point sampling. Compilation methods for sample data. Report writing.

45.206 *See* 45.106.

45.208 Natural Resource Management

A generalized study of British Columbia's natural resources and resource-based industries, to broaden the forest resource technician's appreciation of forest land use. Topics included are people, soil, water, forestry, agriculture, fisheries, wildlife, recreation, mining, gas and oil, transportation, grazing, power, regional planning, and pollution.

45.226 Ecology

Introduction to basic concepts of forest ecology.

45.227 Geology and Soils

A study of the geology, land forms, and development of soils in British Columbia. Physical and chemical nature of soils. Soil erosion and preventive measures. Soil surveys and land-use studies.

45.302, 45.402 Forest Measurement III, IV

Instruction in log scaling for Coast and Interior operations. Scaling for woods, records and inventory. Cubic- and board-foot log scales. Conversion factors and volume calculations. Field application of cruising techniques. Office compilation and cruise report preparation. Cruising for inventory and logging development. Preparation of forest maps. Familiarization with British Columbia Forest Service cruising systems. Project planning and implementation. Use of computers for mensuration data.

45.305, 45.405 Logging I, II

Description and analysis of systems most commonly used on the British Columbia Coast and Interior. Layout and construction of settings, roads, and landings. Pre-logging, salvage, and thinning. Equipment developments. Logging plans. Woods safety, logging organization, and contracts. Budgets, records, and accounting for a logging camp.

45.308, 45.408 Roads and Transportation I, II

Design of transportation plans to fit timber and terrain. Road specifications to suit production plans. Truck-road location, construction, and maintenance. Earth and rock work. Drainage, culverts, run-off control. Snow removal and winter roads. Small bridges, log dumps, booming-grounds. River improvements, rafting and barging. Road costs.

45.313, 45.413 Forest Pestology I, II

An integrated study of forest insect and disease problems. Basic life-histories. The interactions of damage agencies in the forest. Improved cruise techniques related to insect and disease damage. Use of subject literature. Co-operation with authoritative government agencies. Prevention and control of damage. Measuring and reporting of insect and disease damage. Recognition of the currently important insects and diseases.

45.316 Forest Management

Principles of sustained yield, regulation of the cut, rotation, allowable cut. Administration of Crown and private timber via timber sales, tree-farm licences, pulp harvesting areas, farm wood-lots. Inspections and supervision. Sloan Report. *Forest Act*. Stumpage appraisal—principles, methods, and application of estimations of value of standing merchantable timber. Forest land valuation.

45.321 Park Management

An introductory course in Park Management. Development and recreational use of areas designated as natural parks. Survey of outdoor recreation, history, and organization of agencies providing recreational activities in parks. Park development, planning, and design. Practical exercises in site analysis, planning, and design for specific uses. Park and natural-history interpretation. Park operation and administration.

45.322, 45.422 Wildlife Management I, II

The principles and practice of wildlife management, with particular reference to problems and procedures in British Columbia wildlife environments. The dynamics of wildlife populations. Methods of study. Harvesting. Regulations. Natural and artificial regulation of animal numbers. Diseases and parasites. The economics of wildlife, particularly in forest habitats. Extensive field study to support and extend lecture and laboratory material.

45.323, 45.423 Fish Management I, II

The biology of fish, including anatomy, taxonomy, physiology, behaviour, and ecology. Management aspect of fisheries, and including population dynamics, habitat evaluation, and improvement, harvesting, pollution, processing, and regulations. Laboratories will deal with methodology as it applies to the above, and much of the training in this regard will be done in the field. Emphasis throughout on the British Columbia situation.

45.326 Habitat Evaluation

Recognition and evaluation of major habitat types in British Columbia.

45.327, 45.427 Projects

Special study seminars or projects designed to introduce students to current problems and solutions in resource management. Partial or complete involvement with potential employers will be encouraged.

45.402 *See* 45.302.

45.405 *See* 45.305.

45.408 *See* 45.308.

45.409 Silviculture

Introduction to elementary silvics, silvicultural principles and systems. Natural and artificial regeneration, including site preparation, brush control, planting, seeding, and nursery practices. Planting surveys and crew supervision. Pesticides and their use. Silvical characteristics of major British Columbia species. Forest soils. Forest-stand types and relations to logging planning. Introduction to genetics and ecology. Project planning and report writing.

45.410 *See* 45.110.

45.413 *See* 45.313.

45.421 Wildland Recreation Management

Assessment and development of wildland recreational areas outside of established parks. Recognition of recreational sites by aerial-photo interpretation of land forms. Private and public programmes in forest recreation. Land tenures and land acquisition for recreation. Wildland landscaping. Summer and winter sports area developments.

Water-oriented activities, wildland access problems and trail design, mountaineering, search and rescue.

45.422 *See* 45.322.

45.423 *See* 45.323.

45.427 *See* 45.327.

FOREST PRODUCTS

46.101 Forest Utilization

Topics include an introductory survey of the major aspects of forest products manufacture and marketing. Also included are elementary botany, dendrology, and wood structure. Designed to prepare Forest Products students for the proper selection of Term 2 options (Pulp and Paper or Wood Products).

Counselling sessions are included to provide direction for option selection.

46.211 Pulp and Paper Fundamentals

An introduction to the commercially important pulping processes. Further topics include wood preparation, wood macro and microstructure, fibre morphology and identification, process control testing and the preparation of process flow diagrams. Major items of process equipment will be examined. The course is designed to qualify students to undertake summer employment in a routine mill-testing function.

46.214 Lumber Manufacturing and Grading

Students will attend lumber-grading classes and write the industrial examinations. Practical grading and lumber manufacturing as it relates to grade recovery. Lumber tallying. Processing of wood in preparation for lumber manufacturing—debarking; chipping, screening. Wood anatomy and wood growth. Natural wood defects and agents of deterioration.

46.301, 46.401 Pulp and Paper Technology I, II

Historical review. The industry in British Columbia. Raw materials—wood, fibre, chemicals, water; principles of pulping, with emphasis on the kraft process; chemical and heat recovery; mechanical processes; brightening and bleaching; pulp-drying; paper manufacture; mill instrumentation; pollution abatement.

46.305, 46.405 Pulp and Paper Testing I, II

Standard laboratory techniques. Process control and product testing, including pulp viscosity, bleachability, screening and cleaning efficiency, and dirt count, utilizing electronic test equipment. The study and application of advanced techniques in the physical, optical, and chemical evaluation of paper pulps and manufactured papers. Projects are undertaken in conjunction with the laboratory section of the Pulp and Paper Technology course. A large portion of this course will be devoted to pollution control testing.

46.311 Wood Properties

Chemical, physical, and mechanical properties of wood; strength tests; wood adhesives and surface coatings.

46.315, 46.415 Wood Processing I, II

Lumber manufacturing and quality control; lumber-manufacturing machines and operating procedures; saws and alignment; log conversion and secondary manufacturing.

Wood seasoning, plywood manufacture, and quality control; lumber seasoning; preservation and fire retardants; laminated woods; edge and end gluing; composition boards; round timbers and modified wood products; millwork.

46.401 *See* 46.301.

46.405 *See* 46.305.

46.407 Wood Chemistry

Basic organic chemistry; chemical composition of wood; structure of the major wood components—extractives, lignin, hemicelluloses, and cellulose; chemistry of the wood components, particularly as related to commercial pulping processes; the chemistry of cellulose derivatives.

46.415 *See* 46.315.

46.440 Mill Maintenance and Accident Prevention

Training in all aspects of accident prevention. Instructional training in communication, personnel administration, and supervision. Introduction to welding and millwrighting. Mill maintenance planning and co-ordination.

46.460 Mill Cost Analysis

Basic cost accounting; cost-volume-profit analysis; job order costing; inventory; budgeting; operating and maintenance costing; standard costs. Managerial analysis of costs relating to lumber manufacturing and converting plants.

NATURAL GAS AND PETROLEUM

47.221 Distribution and Utilization (Gas)

City gate stations; regulation and odourization; high, medium, and low pressure distribution systems; network analysis; services; service regulators; meters; combustion stoichiometry; furnaces, boilers; installation codes; industrial and power utilization; corrosion control; peak shaving; storage.

47.311 Gas and Oil, Production and Transmission

Petroleum geology; reservoirs; exploration; well drilling; field production and treatment; conservation; gathering and transmission systems; pipeline construction and maintenance; corrosion protection; compressor and pumping stations; flow computations; economics of design; measurement; laws and regulations.

47.431 Oil Refining and Utilization

Crude oil, distillation; cracking, thermal and catylitic; reforming; hydrogenation; oil products, product testing, storage, loading, combustion stoichiometry; oil and gas engines, oil burners.

INSTRUMENTATION AND SYSTEMS

48.100, 48.200 Process Measurements

Introduction, symbols, static characteristics, applications, dimensional analysis.

Weight—Units and standards, beams, spring balances.

Density—The hydrometer, Westphal balance, bubble-tube.

Level—Float, electrode, sonic, hydrostatic, and capacitance systems.

Pressure—Manometer, Bourdon gauge, bellows, diaphragm, Pirani and ionization gauges.

Dynamic response of instruments—First-order systems with step and linear inputs.

Flow—The venturi, nozzles, orifices, pitot tubes, rotameters, weirs, magnetic flow meters, turbine flow meters, volumetric flow meters.

Fluidics—Introduction; fluid dynamics; proportional devices; digital devices.

Temperature—Expansion thermometers, thermocouples, resistance thermometers, thermistors.

Shop practice — Precision machining and measurement of small items. Heat treatment, welding and soldering. Tube-bending and pipe-fitting.

48.200 *See* 48.100.

48.300, 48.400 Process Measurements

This course is essentially a continuation of 48.100, 48.200.

Force, torque, and strain—Mechanical, optical, electrical strain gauges, and load cells.

Humidity and dewpoint—Psychrometry, hygrometry, vapour equilibrium systems.

Viscosity—Rheology. Falling ball, variable area, capillary, rotating cylinder, and vibrating probe.

Gas analysis—Chemical absorption, thermal conductivity, paramagnetic, heat of combustion, and polargraphic methods.

Electrolytic conductivity—Electrode and electrodeless.

pH—Dye and electrometric methods.

Spectrometry—Light sources, filters, dispersive elements, and detectors.

Chromatography—Separation and detection methods.

48.310, 48.410 Process Control

History of development. Concept of the process control loop.

Final control elements—Regulators and control valves, actuators, feedback concept, positioners.

Process response—Static and dynamic response, self-regulation, process time-constants, controllability.

Simple controllers—Two-position, single-speed floating and high-gain controllers, proportional control offset, speed of response.

Three-mode control—Proportional, reset, and rate actions in various combinations. Typical pneumatic and electronic controllers. Controller tuning and calibration.

Computer analysis—Process and controller analogues, special functions, typical control loop analogues, modelling and scaling.

Frequency response analysis—Gain and phase-shift characteristics in a control loop.

Special applications—Cascade, feedforward, and ratio control. Practical process layouts.

48.320, 48.420 Computer Techniques

Basic concepts—Types of computer. Hybridization. Use of components in instrumentation.

Analog components—Potentiometers, loading error, operational amplifiers.

Analog computer functions—Summation, integration, exponentials, multiplication, arbitrary functions, track-store, transportation lag.

Analog programming—Process analog, formula and modelling methods, scaling, repetitive operation, iteration techniques.

Digital systems—Number systems; coding systems; concept of OR, AND, NOT; gating methods.

Symbolic logic—Boolean equations, NOR and NAND logic, truth tables, algebraic and graphical methods of minimization.

Digital computer components—Flip flops, counters, shift registers, adders, multivibrators, memory, D/A and A/D conversion.

Digital programming—Computer organization, input-output systems, simple machine-language exercises.

48.330, 48.430 Instrument Techniques

Further detailed study of standard electrical and electronic circuits used in instrumentation; measuring circuits, d.c. and a.c. power supplies; amplifiers; safety-control circuits and process plant flow sheets. Light and sound, nature, sources, filters, optical properties of materials, reflection, diffraction, refraction, and detectors.

48.350, 48.450 Process Instrumentation

An orientation course for students of other technologies. A comparative study of devices used to measure pressure, temperature, level, and flow. Flow sheets and symbols. Demonstration of static and dynamic responses. Applications to processing industries. Principles of process control, process reactions, and loop time-constants. Regulators, ON-OFF; proportional, reset and rate action. Multi-control loops, flow ratio and feedforward control. Applications, flow sheets, control problems. Introduction to digital techniques.

48.370, 48.470 Process Instrumentation

A one-term orientation course for students of other technologies. A study of measuring devices, related to pressure, temperature, level, flow, and density. Basic concepts of feedback control, from regulators to control loops. Flow sheets, symbols, and typical applications. 48.370 has about half the hours of 48.470.

48.400 *See* 48.300.

48.410 *See* 48.310.

48.420 *See* 48.320.

48.430 *See* 48.330.

48.450 *See* 48.350.

48.460 See 48.360.

48.470 *See* 48.370.

48.F60, 48.G60 Medical Instrumentation

An orientation course for students from biomedical technology. Basic devices for measuring pressure, temperature, density, and flow. Concept of regulation and feedback control. A study of the principles of analysis instruments, using potentiometric, amperometric, and polaragraphic techniques; ultraviolet, visible, and infra-red spectroscopy; flame photometry; paper and column chromatography; electrophoresis and refractometric methods.

48.G60 *See* 48.F60.

MECHANICAL

49.100 Mechanical Draughting I

Techniques of producing and reading mechanical drawings using standard format and the development of basic skills in applying these techniques. Use of instruments, line work, lettering, geometric costructions, with emphasis placed on orthographic projection, auxiliary views, sections, dimensions, and working drawings.

49.101 Draughting—Common Service Course

Techniques of reading and producing orthographic drawings using standard format and the development of basic skills in applying these techniques. Use of instruments, line work, geometric constructions, orthographic projection, isometric drawing and sketching, sections, dimensioning.

49.106 Engineering Concepts I

A study of applied mechanics and design concepts for non-Mechanical students. Topics include some metallurgy, forces, moments, couples, frames, beams, centroids, friction, and some elementary dynamics.

49.107 Applied Mechanics

(i) Statics. Vectors, force systems, concurrent and coplanar, nonconcurrent and coplanar. Graphical representation and solutions. Lami's Theorem. Ideas of equilibrium. Mathemical representation of equilibrium. Analysis of frames. Statically determinate structures. Redundancies. Beams, principle of moments, and centroids. Second moment of area. Theorems of parallel and perpendicular areas.

(ii) Dynamics. Kinematics. Basic equations of motion. Engineers and physicists units. Kinetics: Newton's laws. Problems involving space, velocity, and acceleration diagrams. Work, energy, and power. Impulse and momentum. Mechanical vibrations.

49.150 Production Engineering

Metal-cutting materials; mechanics of metal-cutting; single-point and multi-point cutting-tools; tool life and cutting speeds. Metal removal rates and power required with experimental work to demonstrate these principles. Costs and economics related to metal removal.

49.165, 49.265 Shopwork

Practical experience in the use and application of basic metal-cutting machine tools—engine lathe, drill press, shaper, milling machine, power saw, planer and precision grinder, layout and bench work.

Metrology—General concepts and principles of measurement. The use of standards. Graduated manual measuring-tools, dial indicators, gauges, micrometers, verniers, sine bar, etc.

49.200 Mechanical Draughting II

More-advanced techniques involving limits and fits, isometrics, descriptive geometry, intersections, developments, gears, threads and fasteners, weld symbols, and working drawings.

49.202 Draughting—Civil and Structural II

Intersections, developments, descriptive geometry, contours, sections, profiles, cut and fill problems. All treated in general on a project basis with C & S design procedures.

49.203 Draughting—Survey and Mining II

Techniques in ink; intersections and developments; dip, strike, and outcrop; contours; profiles; rights-of-way; mining and survey problems and projects.

49.204 Draughting—Chemical and Metallurgical and Forest Products

Intersections; developments; descriptive geometry; isometrics; piping diagrams; flow-sheets of typical mill processes; charts and diagrams; equipment layouts; field dimension and specifications.

49.206 Engineering Concepts II

Study of some of the basic principles required in engineering design. Solution of problems involving mechanics and strength of materials. Practical work to be carried out by the student in the engineering materials laboratory.

49.210 Strength of Materials

Study of stresses, strains, and deflections resulting from action of tensile, compressive, shear, and torsion forces on simple types of structural and machine elements. Consideration of beams, columns, shafts, thin-walled cylinders, riveted and welded joints. Laboratory testing of engineering materials and common machine elements.

49.225 Applied Heat

Study of basic topics leading to engineering thermodynamics, including heat, energy, work; fluid properties, processes and systems, ideal gases, enthalpy and entropy; first and second laws of thermodynamics; Carnot engine and heat pump; standard air cycles; calorific values of fuels. Laboratory work will be carried out to supplement theory presented in lectures.

49.250 Production Engineering

1. *Machine tool theory*—The utilization of modern machine tools for manufacturing processes. Planning of operational sequences for economic manufacture of components.

2. *Metrology*—Interferometers and associated devices, optional comparators, optical alignment of tools, the flatness of surfaces and surface texture, measurement using electromechanical devices. The metrology of angles, and screw threads.

49.265 *See* 49.165.

49.266 Introduction to Machine Tools

A basic course designed to familiarize the student with shop tools and equipment and with shop terminology and established standards of workmanship. Demonstrations are carried out to provide a practical understanding of the subject.

49.267 Introduction to Machine Tools

The study of modern machine tools, with practical experience in their use and application. Costs and economics related to production.

49.300 Engineering Graphics

A study of advanced draughting practices and graphical solutions to engineering problems.

49.302 Civil Engineering Graphics

A special study of engineering graphics as applied in Civil and Structural Technology, involving road plans, profiles and sections; pipe services; pump-

ing-stations; treatment plants; joint detailing; welded and bolted connections; dams. All work conducted on a project basis.

49.312 Machine Design

This course consists of a study of basic principles of machine design. Topics include stress analysis, design factors, stress concentration, notch sensitivity, and fatigue. Study of design is provided including practical design of beams and columns with axial and (or) transverse loading, belts, chain-drives, and gearing.

49.313 Production Mechanical Design

Emphasis is placed on application of basic design concepts to practical situations.

After a brief review of engineering materials and basic strength of materials formulæ, the course examines Mohr's circles of stress and strain; strain gauges; cyclic loading and stress concentration; threaded fasteners; components under combined loading-shafting; welded joints. An accompanying problem lab gives the students an opportunity to practise the material covered during lectures.

49.315 Fluid Mechanics

Principles of hydrostatics, including properties of fluids; pressure measurement; forces on submerged surfaces; fundamentals of fluid flow; flow through pipes, nozzles, and orifices; streamline and turbulent flow; flow measurement; flow distribution and pressure losses in pipe systems; application to fluid power systems.

49.325, 49.425 Thermal Engineering

Review of fundamentals of thermal systems. Study of steady-flow processes; thermodynamic properties of pure substances and of mixtures of liquids, vapours, and gases; energy sources and energy release; steam processes and power plants; centrifugal pumps and fans and associated systems; heat transmission, refrigeration and air-conditioning; air compressors and internal-combustion engines. Laboratory work includes investigation into fluid flow measurement, combustion of fuels, steam conditions and performance influences on machinery such as steam turbines and generators, heat exchangers, pumps, fans, refrigerators, air compressors, gas turbines and other internal-combustion engines.

49.350, 49.450 Production Engineering

Study of various elements of industrial operations. Design of manufacturing process. Cost estimating, product development, plant engineering and maintenance, production control. Productivity, automation, and numerical control of equipment. Fundamentals of inspection, installing lot-by-lot inspection, sampling continuous products, installing process inspection. Special control charts for use when equipment is old and worn. Applying quality control in the plant. Mass production gauging. Management aspects of quality control. Study of case histories.

49.412 Machine Design

Basic principles derived in 49.312 are applied to various design elements. Topics include springs; roller bearings; power screws; spur and helical gearing; bevel and worm gearing; couplings, brakes, clutches; mechanical vibration, damping, critical speeds of shafts; systems having one and two degrees of freedom.

49.425 *See* 49.325.

49.435 Fluid Power

Energy transfer in bulk flow systems; hydraulic turbines and centrifugal pumps; fluid couplings and torque converters. Hydraulic and pneumatic power transmission and control systems; heavy-duty equipment and industrial applications. Introduction to fluidic control systems and logic principles.

49.445 Manufacturing Processes

Study of modern manufacturing processes, including the machines, materials, methods, and practices used in the mechanical industries; casting; welding; hot and cold forming; extruding; forging; die casting; stamping; and pressing. Course content is related to material covered in Engineering Materials and to training given in Shopwork 49.165 to 49.465. Field trips to appropriate local industries are arranged.

49.450 *See* 49.350.

49.455 Tool Design

Study of tool design as related to manufacturing methods and requirements; tooling for production and gauging; standard tooling components and devices; consideration of drill jigs; press tools, punches, dies, and special devices.

49.465 Shopwork

The course will involve several projects which will act as vehicles to enable the students to process them through some of the more intricate machine-tools.

This will include study, processing, set-up, and operation of a jig borer machine, a numerically controlled drill, an omniversal milling machine, a universal milling machine, and a cutter grinding machine.

49.471 Mechanical Equipment

A study of mechanical equipment relating to the development, transmission, application, and control of power with particular reference to the wood-processing industry. References to types of prime movers, speed conversions, drives, bearings, hydraulic and pneumatic systems, and maintenance are included.

MINING

50.101, 50.201 Geology

Definition, basic concepts, earth's crust, geologic time; atomic structure of minerals, crystal forms and symmetry systems; properties of common

minerals; sedimentary rock types, clastic and chemical sedimentaries; igneous rock types, classification; deformation of earth's crust, folds, faults; metamorphic rocks; weathering, erosion, and glaciation; economic geology, mineral fuels, non-metallics, ore deposits and their controls; geological history, pre-cambrian, paleozoic, mesozoic, tertiary, pleistocene; geologic maps.

50.102, 50.202 Mining

Nature of mineral industries, brief history, classification, search for economic mineral deposits, prospecting techniques; preliminary exploration methods; terminology; evaluation; production and treatment methods; recoverable unit value, smelter contracts, evaluation, sampling methods, weighted arithmetic mean, determination of average grade, ore reserves; the *Mineral Act;* exploitation of mineral deposits, planned systems of extraction, and classification of mining methods. In addition an introduction to some unit operations in mining, e.g., drilling and haulage.

50.201 *See* 50.101.

50.202 *See* 50.102.

50.301 Geology—Structural

Brief review of mechanical principles of rock deformation and of the primary structures of sedimentary, igneous, and metamorphic rocks. The origin, nature, and classification of joints, folds, and faults, with emphasis on their relation to mineral resources.

Laboratory work includes examination of specimens, methods of recording structural data, mapping and solution of structural problems, with emphasis on economic aspects.

50.302, 50.402 Mining—Operation and Equipment

Mining economics; cost components; selection and utilization of equipment; break-even ratio; breaking ground; ground support; ore- and waste-removal; development drives; examples of mining practice; control of water, drainage, grouting; ventilation; occupational hazards; *Mines Regulation Act;* mine organization.

Laboratory sessions; mainly field trips to mines and suppliers of mining equipment for familiarization with mining methods, systems, and equipment. Also sessions are given on power generation and distribution and electrical equipment for mine service, pumping, ventilation, V-belt drives, dust and noise control, hoisting, and compressed-air practice. Certificate in mine-rescue work can usually be obtained.

50.401 Geology—Mineral Deposits

The terminology, classification, manner of occurrence, distribution, and economics of mineral resources, with emphasis on typical Canadian occurrences. Ways of recognizing, discovering, and developing mineral deposits.

Laboratory work will illustrate and develop techniques in: megascopic study and identification of hand specimens; valuation of mineral deposits.

Field trips will be correlated with all classroom work in geology.

50.402 *See* 50.302.

SURVEYING

51.101, 51.201 Surveying

Introduction, types of survey; fundamental principles, accuracy and precision, errors and mistakes; measurement of distance, direction and elevation, calculation of latitude and departure areas and volumes; horizontal and vertical curves; use of plane tables, levels, compasses, theodolites, chains, and calculating machines; note-keeping and plotting of records; care, maintenance, and adjustments of equipment.

51.104 Introduction to Survey for Building Students

Introduction to engineering survey; linear distance; introduction to the theory and use of the theodolite; direction, bearings, and angles; use of traverses in site engineering, areas and volumes; elevations, use and theory of the level; use of the plane table; simple circular curves.

51.109, 51.209, 51.110, 51.210 Engineering Surveying

Fundamental concepts of surveying: measurement of distances, use of compasses, theodolites, plane tables, levels and chains, site surveys. Calculations relating to traverses, triangulations, areas, and volumes: obtaining, recording, and plotting topographic detail. Care, maintenance and adjustment of equipment.

51.201 *See* 51.101.

51.203 Natural Sciences

Study of the forest flora of British Columbia; the characteristics of native trees, identifying features and common uses. Elementary geology, including the study of rocks and minerals; geologic structures, general location and uses of common ores; soil classification and location.

51.204 Introduction to Survey for Natural Gas and Petroleum Technology Students

Introduction to the theory of engineering survey; practical application of linear measurements; introduction to and theory of the theodolite; bearings and traverse computations; introduction to and theory of levelling; computation of areas and volume.

51.209, 51.210 *See* 51.109, 51.110.

51.301, 51.401 Plane Surveying II

Generally deals with surveys which do not have to account for curvature of the earth.

Analysis of methods and instrumental errors, use of specialized equipment. Application of survey methods to engineering surveys, hydrographic surveys, mining surveys, legal surveys, and higher-order surveys.

51.302, 51.402 Geodetic Surveying II

Generally deals with surveys which take into account curvature of the earth; covers theory of error, convergency, geographic co-ordinate system, map projections, conversion of co-ordinate systems, vertical control, triangulation and trilateration, adjustment of triangles, quadrilaterals, level circuits, etc., strength of figure, heights of towers, and other miscellaneous problems.

51.303, 51.403 Computations II, A and B

This course is run in conjunction with 51.301, 51.401 and 51.302, 51.402, and is divided into two parts, A and B.

Both these parts involve some use of electronic machines and programmed computers.

51.304, 51.404 Field Surveying II

Deals with the field methods used in conjunction with plane and geodetic surveying and is done in conjunction with these subjects; 51.304 consists mainly with the students learning how to use the different instruments, and 51.404 mainly with practical projects making use of these.

Projects are aimed at engineering hydrographic, mining, legal, and precise surveys and include some triangulation and trilateration work.

51.305 Draughting

Application of draughting fundamentals to preparation of plans for, preliminary plans, construction plans, "as built" plans, subdivision plans, highway and other right-of-way plans, posting plans, and plans and fieldnotes under the *Land Act* and *Mineral Act* in accordance with the General Survey Instructions to British Columbia Land Surveyors.

51.306, 51.406 Astronomy

Introduction to practical astronomy; spherical trigonometry; the celestial sphere; the astronomical triangle; universal time, mean solar time, sidereal time; the ephemeris and star almanacs; instruments used in solar and stellar observations; star identification; observations for latitude; observations for time and longitude; observations for azimuth.

51.307, 51.407 Photogrammetry

Introduction to photogrammetry; horizontal photographs, aerial photographs; cameras; flight planning for vertical photography; determination of scale; mapping from aerial photos; mosaics, principle of stereo-vision; determination of heights from aerial photos; photo interpretation; route reconnaissance; radial-line plotting; oblique photos; plotting machines.

51.308 Description for Deeds

Purpose and characteristics of descriptions; systems of survey, township system and district lot system, the preamble; the correct use of the words "more or less"; descriptions by adjoiners, description by aliquot parts, descriptions by metes and bounds, descriptions by exceptions, descriptions of rights-of-way by means of centre line; plans to accompany descriptions; Land Registry Office procedure.

51.309, 51.409 Surveying for Civil and Structural Technology

Application of survey methods to construction surveys, topographic surveys; triangulation; base-line measurement, use of electronic measuring devices; route surveys, including preliminary profile and cross-sections, calculation of quantities and volumes, and plan preparation; site surveys, including horizontal and vertical control; bench-mark levelling and adjusting of nets; calculation of areas, volumes, closure, circular curves, transitional curves, and vertical curves; elementary photogrammetry applied to planning, site surveys, route surveys, grades, and quantities.

51.310, 51.410 Surveying for Mining Technology

Application of survey methods to underground surveying; illumination of stations; use of mining transits, connecting surface and underground surveys, location and control of tunnels, construction of plans and sections related to mining, elementary astronomy, elementary photogrammetry applied to mining, stope surveys and quantity calculations. Mining Acts related to surveying.

51.311, 51.411 Surveying (Photogrammetry Option)

Control surveys by triangulation, trilateration, and traversing; indirect optical distance measurement; electro-magnetic distance measurements; the gyro-theodolite; position fixing by means of terrestrial navigational devices; trigonometrical and barometric levelling; survey adjustments; national survey systems.

51.315 Draughting (Photogrammetry Option)

Lettering and scales, diagrams; grids and graticules; symbolization (national map series); scribing; type patching; surround detail; topographical cartography; draughting materials and specifications.

51.317, 51.417 Photogrammetry

The geometry and physical nature of the photograph; the survey camera; mapping from single photographs, radial triangulation and plotting; stereoscopy and height determination from parallax bar measurements; stereoplotters and their operation; aerial triangulation; ground control; field completion; oblique photographs; terrestrial photogrammetry; air-photo interpretation; the organization of photogrammetric operations.

51.401 *See* 51.301.

51.402 *See* 51.302.

51.403 *See* 51.303.

51.404 *See* 51.304.

51.406 *See* 51.306.

51.407 *See* 51.307.

51.409 *See* 51.309.

51.410 *See* 51.310.

51.411 *See* 51.311.

51.417 *See* 51.317.

MEDICAL LABORATORY

70.A01 Medical Laboratory Orientation

A critical review of the basic theory and use of microscopes.

70.B01 Medical Laboratory Orientation

An introduction to principles and use of precision instruments and equipment.

70.C01 Medical Laboratory Orientation

The principles and procedures of volumetric analysis.

70.E02 Instrumentation in Clinical Chemistry

This course, designed primarily for the medical laboratory technologist, emphasizes the application of the following instruments: photometers and colorimeters, flame photometers, auto-analysers, fluorometers, etc. The use, care, and calibration of the instruments used in the clinical chemistry laboratory are taught, using biological specimens to demonstrate techniques involved.

70.E03 Hæmatology

Consists of a study of the composition of blood and the blood-forming tissues with emphasis placed on normal levels and functions; and an introduction to coagulation mechanism.

70.E04 Histology

The morphology of human cells, tissues, and organs. Emphasis is placed on the preparation of tissues for microscopic examinations: methods of fixation, embedding, sectioning, staining, and mounting.

70.E05 Microbiology and Parasitology

Introduction to principles and procedures of bacteriology and parasitology. Detailed study of laboratory procedures in clinical microbiology.

70.F03 Hæmatology

Consists of detailed studies of cell series; abnormal levels and functions found in peripheral blood and in bone marrow; the anæmias; abnormal hæmoglobins; and special test procedures.

70.F05 Microbiology and Mycology

Introduction to principles and procedures of mycology. Detailed study of laboratory procedures in clinical microbiology.

70.F06 Biochemistry and Physiology for Medical Laboratory Technologists

This course is concerned with specific physiological, anatomical, and biochemical processes of interest to the medical laboratory technologist. Particular reference is made to structure and the metabolic and hormonal functions of the gastro-intestinal and cardiovascular system.

70.F07 Blood Banking

Involves the study of the principles of blood grouping, inheritance of human blood groups; immunity, and general methodology and techniques utilized in the identification of human blood group antigens and antibodies. Records and controls.

70.F12 Clinical Chemistry

Principles, practice, and techniques of analysis of serum for nitrogeneous substances. Emphasis is placed on the specific chemical principles, sources of error, and the practical and theoretical aspects of these procedures in both health and disease states.

70.G03 Hæmatology

Includes an introduction to the leukæmias; special test procedures; certain infectious disorders; and a detailed study of coagulation and test methods.

70.G05 Clinical Bacteriology

Introduction to principles and procedures of virology. Detailed study of laboratory procedures in clinical microbiology.

70.G06 Biochemistry and Physiology for Medical Laboratory Technologists

Physiological, anatomical, and biochemical processes of interest to the medical laboratory technologist. Particular reference is made to the urinary and respiratory system.

70.G07 Blood Banking

Specific methodology for the most important blood group systems encountered. Investigation studies for pre- and post-blood transfusions, fœtal-maternal incompatibilities, donor blood selection, screening, collection, and storage. Utilization and minimum acceptable standards for whole blood and blood products.

70.G12 Clinical Chemistry

Designed for the medical laboratory technologists to enable them to become familiar with procedures for manual and automated methods for assaying serum, C.S.F., urine and fæcal specimens. Emphasis is placed on the sources of error, techniques, and principles of procedures for non-nitrogeneous substances in both health and disease states.

MEDICAL RADIOGRAPHY

72.A01 Introduction to Medical Radiography and Orientation

This course will acquaint the student with the activities of the X-ray department and the role of a radiographer. A study is made of the application of basic factors in producing a radiograph. During this term the student spends time in the X-ray department of one of the affiliated hospitals. Familiarization tours are made of the various departments within the hospital. The student is made familiar with the day-to-day operation of the X-ray department.

72.A02 Apparatus and Image Recording

This course introduces the student to the standard equipment used in the production of a radiograph. Fundamentals of the photo-recording system are introduced. Also studied are the basic factors of X-ray exposure, transformers, simple electrical controls, X-ray film construction, and the various film holders. Laboratory work related to all of these is included.

72.B01 Basic Medical Radiography

The student becomes familiar with the fundamentals involved in setting up a technique chart and the evaluation of the patient with regard to body habitus. Basic radiographic positioning used in the examinations of the upper and lower extremities is studied.

72.B02 Apparatus and Image Recording

This is a laboratory course only, covering the use and handling of equipment and accessories used in Basic Radiography. Experiments are performed in film processing, and types and brands of films and screens are compared.

72.B03 Anatomy and Physiology for Radiographers

This is a study of the formation of bone and the individual bones and joints of the human skeleton. The structures of the upper and lower extremities, the bony thorax, the vertebral column, and the skull are discussed. Included are the locations, descriptive terms, and radiographic appearances of each of the bones and joints.

72.C01 Basic Medical Radiography

Basic radiographic positioning used in the examination of the vertebral column, skull, and thoracic cage are studied. Considerable time is spent in the X-ray laboratory practising radiographic technique. Phantoms are utilized.

72.C02 Apparatus and Image Recording

Rectification, control circuits, and X-ray tubes comprise the apparatus studied in this course. The image-recording portion covers sensitometry and all aspects of radiographic processing. This includes developers, replenishers, fixers, ancillary chemicals, deep-tank, and various automatic processing systems.

72.C03 Anatomy and Physiology for Radiographers

The organs, vessels, and nonbony parts of each body area are considered. All nonbony structures of the head, neck, chest, and abdomen are discussed. As well as the structure and location of parts, emphasis is placed upon the functions and interrelationships of those organs pertinent to radiography. Throughout, attention is given to the surface landmarks of structures and to the radiographic appearance of body parts.

72.E01 Radiographic Technique

This course, given concurrently with 72.E06, covers, in detail, routine radiography of the digestive, urinary, and biliary systems. Special techniques related to the skeletal system are studied. Instruction is given in the use of contrast media.

72.E02 Apparatus and Image Recording

The apparatus studied in this course comprises nonstandard equipment such as tomographic, fluoroscopic, photofluorographic, rapid-serial exposure, dental radiographic, and mobile units. The radiographic image is studied in detail. Included are storage and retrieval, illuminators, and photographic recording equipment such as still, rapid, and motion-picture cameras.

72.E05 Radiobiology and Protection

A study is made of ionizing radiation and its interaction with matter. The rœntgen, rad, and rem and their measurement are studied. Permissible exposures and their rationale are considered.

72.E06 Clinical Experience in Medical Radiography (Hospital)

This course runs concurrently with 72.E01. The student acquires a basic knowledge of medical radiographic techniques by applying classroom and laboratory training in actual clinical situations in the affiliated hospitals.

72.F01 Radiographic Technique

This course, given concurrently with 72.F06, provides instruction in the routine radiographic procedures used in examination of the respiratory and lymphatic systems. Included also are operating-room and mobile radiography.

72.F02 Apparatus and Image Recording

This course includes the study of image amplifiers and closed-circuit television equipment. X-ray department planning and equipment faults are covered. Specialized image processing is covered. This includes videotape recording, disk, drum and tube storage, photographic reproduction, subtraction and image-enhancement methods.

72.F05 Radiobiology and Protection

The mechanism of radiation injury is studied. Somatic and hereditary injury are considered. The operating procedures and equipment which will reduce radiation exposure to both operator and patient are covered in detail.

72.F06 Clinical Experience in Medical Radiography (Hospital)

This course runs concurrently with 72.F01. The student applies the more advanced classroom and laboratory training in the clinical situation.

72.F07 Pathology for Medical Radiographers

A study is made of the common pathological conditions which can be diagnosed radiologically.

72.G01 Radiographic Technique

This course, given concurrently with 72.G06, covers in detail pædiatric radiography and special radiographic procedures.

72.G02 Apparatus and Image Recording

Extensive investigation of special techniques and equipment takes place in this course, both in the BCIT laboratory and participating hospitals. Procedures studied include rapid serial work, tomography, cine television and video tape recording.

72.G06 Clinical Experience in Medical Radiography

This course runs concurrently with 72.G01. The student acquires a broad knowledge of medical radiographic techniques by applying classroom and laboratory training in special procedures in actual clinical situations. The student also acquires more clinical experience in basic radiography.

72.G07 Pathology for Medical Radiographers

A study is made of the effect of pathology upon the technical factors used in radiography. During this term the student is taught to make a critical assessment of film quality as it is affected by pathology.

NUCLEAR MEDICINE

74.B07 Introduction to Nuclear Medicine

This course provides the student with an introduction to Nuclear Medicine and its scope and role in the field of diagnostic and therapeutic medicine. The basic concepts of how and why radiopharmaceuticals yield diagnostic information are discussed and illustrated. The student gains basic knowledge of the biological hazards of radiation. Radioactive contamination and its avoidance and containment are discussed. National and international regulations regarding the procurement, storage, handling, shielding, monitoring, and disposal of radionuclides are studied. Pertinent terminology is taught throughout the course.

74.C07 Introduction to Nuclear Medicine

This course provides the student with a complete study of the production, quality control, and storage of radio-pharmaceuticals currently in use. The mechanisms of localization of radionuclides both in vivo and in vitro are discussed. Future trends in Nuclear Medicine techniques are considered. Study is made of the calibration and decay of radionuclides. The types and uses of radioactive "standards" are covered, along with other basic aspects of radiopharmaceutical assay.

74.E04 Applied Physiology in Diagnosis and Therapy

In this course, and 74.F04 and 74.G04, the student is instructed in all aspects of the current applied physiology, including criteria, methodology, patient problems and approach, data collection and manipulation, etc.

Subjects covered specifically in this course include the thyroid gland, hæmatological studies, and the renal and hepatic systems.

74.E05, 74.F05, 74.G05 Clinical Experience in Diagnostic and Therapeutic Procedures

This course runs concurrently with 74.E04, 74.F04, and 74.G04. The student acquires a broad knowledge of nuclear medicine techniques by applying classroom and laboratory training in actual clinical situations in affiliated hospitals and clinics.

74.E06 Pathology for Nuclear Medicine Technologists

This course provides the student with a basic knowledge of human disease and the associated terminology. The causes of disease are studied. Emphasis is placed on those conditions likely to be encountered by the student in his role as a nuclear medicine technologist.

74.F02 Radiobiology and Protection

A detailed study is made of ionizing radiation and its interaction with matter. The rœntgen, the rad, and the rem are studied. Primary and secondary guide levels and their rationale are considered in detail, as well as the estimation of safe working procedures in special situations.

74.F04 Applied Physiology in Diagnosis and Therapy

This course follows 74.E04. The areas covered include the central nervous system, the respiratory and skeletal systems; the G.I. tract and the pancreas.

74.G02 Radiobiology and Protection

The interaction of ionizing radiation with living systems is studied. The basic principles of radiation therapy and radionuclide dosimetry are considered.

74.G04 Applied Physiology in Diagnosis and Therapy

This course follows 74.E04 and 74.F04. It deals with the cardiac system, eye tumour localization, and the parathyroid glands. Therapeutic measures using radiopharmaceuticals are also included. Considered are the newer techniques and advances such as activation analysis and radioimmunossay. A complete review of the Applied Physiology course, i.e., 74.E04, 74.F04, and 74.G04, will be presented.

NURSING

76.A04 Nursing

This nursing course is offered in the fall and winter quarters. It introduces the student to the theoretical aspects of the safety and comfort of sick persons and their families.

76.A05 Nursing

This is a clinical nursing course offered in the fall and winter where experience is essentially in nearby hospitals. It includes all aspects of safety and comfort of patients. It must be taken concurrently with or preceded by Nursing 76.A04.

76.A07 Physical Fitness

This course is designed to teach students how to strengthen and use the large muscles of the body while assisting patients. Basic essentials of self protection are also included.

76.A20 Nursing

This is a course which combines nursing theory and clinical experience. It is designed to introduce the nursing students to the concepts of health and illness, human behaviour, and to the health resources in the community. The course is offered in both the fall and winter quarters.

76.C02 Fundamentals of Patient Care for Nuclear Medicine Technologists

This course will focus on the patient and his health problems. The student will gain some understanding of the functions of a hospital and methods employed to provide safety and comfort. Skills in observation, communication, and methods whereby the student can assist in unusual situations will be discussed.

76.C30 Nursing

This course introduces the student to nursing intervention. Cognitive, affective, and motor skills will be learned appropriate to specific nursing problems.

76.C35 Nursing

This course is taken concurrently with Nursing 76.C30 and is the clinical applications of these skills in hospital settings.

76.D30 Family Care Nursing

The course orients the student to the needs of the family during the maternity cycle as these needs are related to the normal physiological changes that occur. The pathology of the ante-, intra-, and post-partum periods is studied. Common childhood ailments are considered. The problem-solving method is used in identifying the family's needs.

76.D35 Clinical Experience for Family Care Nursing

Clinical experience, taken concurrently with 76.D30, provides the student with the opportunity to become increasingly involved in identifying and meeting the family's needs. Learning opportunities involving increased depth in application of communicative and motor skills are provided.

76.D40 Community and Mental Health Nursing

The course introduces the student to the field of psychiatric nursing. Emphasis is placed on communications and interpersonal skills as they are related to patients exhibiting the more maladaptive forms of behaviour.

76.D45 Clinical Experience for Community and Mental Health Nursing

Clinical experience, taken concurrently with 76.D40, provides opportunities for the student to work with psychiatric-treatment teams in promoting the interpersonal and social adjustment of psychiatric patients in active-treatment hospitals and selected community agencies.

76.D50 Medical-surgical Nursing

This course is designed to give the student experience in solving the more complicated nursing problems involved with intensive-care nursing, coronary-care nursing, and acute and long-term medical-surgical nursing.

76.D55 Clinical Experience for Medical-surgical Nursing

Taken concurrently with 76.D50, this clinical course provides the student with the opportunity to practise specific skills and apply knowledge gained in the classroom to selected medical-surgical problems in the hospital and the community.

76.E01 Fundamentals of Patient Care for Radiographers

This course covers basic skills and techniques which will assist the student to function effectively in the clinical area. The emphasis will be upon the patient and his health problems. The student is made aware of the patient as an individual and the importance of observation and communication. The student is introduced to factors which influence patient care in the hospital environment and measures used in giving assistance in emergency situations.

76.F60 Nursing Seminar

This course will include learnings related to legal aspects of nursing, trends in nursing education and nursing practice, and the research project for Nursing 76.H85.

76.G70 Nursing

An opportunity is provided for the students to practise their knowledge and skills in an environment similar to that which they will encounter in the health field as beginning practitioners. They will gain experience in the assessment of priorities in the nursing needs of the patient, the assumption of responsibility, and related organization and planning.

76.G75 Clinical Experience

Practical experience in clinical and related areas. Concurrent with 76.G70 during day, afternoon, night, and week-end duty.

76.H85 Nursing

This course will provide the students with electives in a variety of nursing settings. It is designed to broaden the skills and knowledge of the students and orient them to various employment settings. Students will be encouraged to develop their own objectives and meet their own learning needs in these situations.

BIOMEDICAL ELECTRONICS

78.E01 Biomedical Electronics

This course, taken concurrently with courses in the life sciences and mathematics, provides familiarity with the instrumentation associated with the electronic recording and measurement of biological and related signals.

78.E02 Biomedical Electronics for ENP Students

In this course a study is made of electronic and other instrumentation used in biology and medicine, but with an emphasis on equipment used to investigate and treat conditions of the brain and nervous system. The course includes a series of lectures devoted to neurophysiology which are related to the equipment aspects discussed.

78.F02 *See* 78.E01.

78.F04 Clinical Experience in Biomedical Electronics

Demonstrations and field investigations are carried out by arrangement with local hospitals and other health agencies.

78.F06 Clinical Experience in Electroneurophysiology

This course consists of clinical experience in EEG recording techniques and is carried out during three days per week at four affiliated hospitals. Also included is a series of some 36 lectures on clinical electroencephalography.

78.F12 Biomedical Electronics

Consists of those sections of Biomedical Electronics which deal with the circuits and techniques of digital computers as applied to medicine.

78.G03 *See* 78.E01.

78.G05 *See* 78.F04.

78.G07 *See* 78.F06.

78.G13 *See* 78.F12.

HEALTH DATA

80.A01 Introduction to Health Record Science

This course introduces the student to the principles underlying health record science. Special areas of consideration include orientation to the health care field, hospital organization, the history and nature of health records, quantitative analysis of health records, and the function of the medical record department in hospitals.

Included is an intensive study of medical terminology—prefixes, roots, suffixes, and common abbreviations as used in medical reports.

80.B01 Health Record Science

This includes a detailed study of numbering and filing systems, microfilming of medical records, medico-legal aspects of health records, and an introduction to coding and indexing procedures.

Other topics studied are human pathology and transcription systems, with practice in typing medical and surgical reports from dictation equipment.

80.C01 Health Record Science

Areas studied include coding by SNDO, ICDA, and H-ICDA; manual and computerized indexing by patient, diagnosis, operation, and physician, and interpretation of health data reports for the health data technologist's role in qualitative analysis of health records.

Continued study of human pathology.

80.E01 Health Record Science

Medical record department management studied through seminars and projects focusing on such areas as the problem of record retention, creative presentation of health data, and present and future trends in health data.

80.E02 Health Statistics

This course examines the collection, arrangement, analysis, and presentation of health statistics. Special areas of consideration will include health patterns in the community, birth and death rates, and disease and accident trends.

80.E03 Health Data Practicum

The objective of this course is to provide practical experience in hospitals, clinics, and other related departments, under the supervision of the Chief Medical Record Librarian and a faculty member. The first practicum presents an opportunity for understanding and practising routine clerical medical record department duties, including assembling, checking, and filing medical records.

80.F01 Health Record Science

A sequel to 80.E01, regarding medical record department management with projects related to the concurrent practicum.

80.F03 Health Data Practicum

A sequel to 80.E03, with practice in transcribing hospital dictation, in addition to coding and abstracting in the medical record department under the supervision of a faculty member and the Chief Medical Record Librarian.

80.F04 Medical and Surgical Transcription

Practice transcribing medical, pathological, and surgical dictation for health records.

80.G01 Health Record Science

In the theme of 80.E01 and 80.F01, wherein the Health Data Technology student studies special areas in medical record department management relating to her practical experience and to current trends in the field.

80.G03 Health Data Practicum

The final quarter of practical experience in the health data field of hospitals, etc., emphasising management skills (budgeting, skills in organization, and supervision of office personnel) and skill in working effectively with hospital personnel individually and through committees under the supervision of the Chief Medical Record Librarian and a faculty member.

80.G04 Medical and Surgical Transcription

Practice transcribing advanced health transcription, including X-ray reports, pathological reports, medical and surgical reports.

ENVIRONMENTAL TECHNOLOGY—PUBLIC HEALTH

82.A01 Public Health Inspection

This course will provide the student with a knowledge of duties and responsibilities in governmental organizations. A detailed review of related environmental and health legislation will be covered, as well as the division of control and authority at the Federal, Provincial, and local levels. Control techniques and methodology used by governmental organizations is stressed.

82.B02 Food Sanitation

An introductory course in sanitary practices and inspection techniques associated with the production, processing, and distribution of food. Visits are made to food premises.

82.C01 Public Health Inspection

See 82.A01.

82.C10 Draughting and Blueprint Reading

Fundamental introduction to draughting: lettering, oblique and isometric, perspective presentation techniques, charts and graphs, topographic maps, subdivisions, plan and profile of sewer systems, etc. Fundamental introduction to blueprint reading: principles of design of buildings, food processing plants, swimming-pools, camp-sites; plumbing, ventilation, lighting, acoustics, floor and building layouts.

82.C11 Private Water and Waste Disposal Systems

An introductory course which examines the means, methods, and the design and construction of facilities required to provide adequate potable water and sewage disposal in areas where municipal treatment systems are not available. Associated health hazards, protective measures, and how to solve problems encountered in individual systems will be considered. Further topics will include the characteristics of, and disposal methods for, agricultural wastes.

82.E04 Public Health Administration

The theoretical aspects of public health administration will be examined, showing the administrative philosophies from the classical school of administration to present-day philosophy. The student will be provided with an overview of modern concepts applied to the field. Particular reference will be made to Canadian governmental organization.

82.E08 Communicable Disease Control

This course is designed to provide the student with a sound knowledge of the natural history, spread, and control of communicable diseases. Emphasis is placed on specific diseases of Provincial and national importance and on epidemiological methodology.

82.E11 Hydraulics, Hydrology, Municipal Waste Treatment

Hydrostatics, properties of fluids, pressure; flow of fluids, velocity head, venturic jets, orifices, wires, water hammers; flow laminar and turbulent meters, valve pumps. The application of precipitation data to various run-off areas, measurement of storage and flows, characteristics of open channel and pipe flows, hydraulics in treatment plant design. Surveying.

82.E15 Occupational Health

An introduction to the ways and means of anticipating and recognizing potentially harmful situations. The course will cover topics such as types of surveys, industrial hygiene records and reports, human engineering and industrial safety sanitation, the mode of entry and action of toxic materials, pulmonary dust diseases and occupational dermatosis.

82.F05 Human Relations

This course examines the forces which underlie social behaviour in groups, large organizations, and communities. Interpersonal relations in the work-setting are exemplified through practical applications of public health education and public health exercises.

82.F11 Municipal Water and Sewage-treatment Systems

This course is designed to familiarize the student with the field of municipal water supplies, including protection, treatment, and distribution, and associated problems. Various methods of municipal sewage treatment, the collection system, characteristics of domestic and industrial wastes, and treatment and disposal problems will be studied. Cost factors will be considered.

82.F15 Industrial Hygiene and Toxicology

Emphasis will be placed on the application of engineering control measures to prevent possible injury of persons working in industry. Areas considered are sampling analysis and evaluation of atmospheric contaminants, air conditioning and cleaning, ventilation, air pollution control equipment, and the effects of air pollution.

82.G02 Food Sanitation

An examination in depth is made of the production methods of the main classifications of food, i.e., milk and milk products, meat, poultry, fish, baked goods, etc. Related sanitary control measures are studied. Visits are made to appropriate production plants.

82.G06 Personnel Administration

An introduction to the fundamental procedures of personnel management as applied to the public health organizational complex. Particular emphasis will be placed on individual interaction within the structure and techniques used to obtain the maximum effectiveness and efficiency of public health personnel.

82.G14 Environmental Health and Engineering

This course will cover a number of topics relevant to the field of environmental public health. Topics included will be insect and rodent control, solid-waste disposal, emergency measures, camp and recreational sanitation, housing, environment, and community planning.

82.G15 Industrial Hygiene and Toxicology

This is a continuation of the course 82.F15. It will cover the following areas: fire and explosion hazards of combustible gases, vapours, and dusts; physiological effects of abnormal pressure; noise and hearing conservation; radiant energy; lighting; and the control of heat and its effects on workers.

BASIC HEALTH SCIENCES

98.A01, 98.B01, 98.C01 Human Anatomy and Physiology

This course is a systemic approach to the study of human anatomy and physiology. In the first quarter there will be an introduction plus a discussion of the skeletal and muscular system. The second quarter will focus on the nervous, circulatory, and respiratory systems. The digestive, urinary, and reproduction systems will be covered in the third quarter.

98.A03 Human Anatomy and Physiology for Biomedical Electronics Students

A study of human anatomy and physiology carried out by a consideration of the body systems. During the first quarter, attention is given to the structure and function of cells, tissues and the skeletal, muscular and nervous systems. The remaining body systems are considered during the second quarter.

98.A05, 98.B05 Basic Anatomy and Physiology for Radiographers

A study of the fundamentals of human anatomy and physiology. Included in the course are the basic principles of physiological chemistry.

98.A06 Physiology for Nurses

This course deals with those aspects of physiology which are indicated by the requirements of clinical applications. Anatomy commensurate with these physiological requirements is also included. This course must precede or be taken concurrent with Nursing 76.A04, 76.A05.

98.A07 Human Anatomy and Physiology for Health Data

The course provides a basic knowledge of anatomy and physiology. It relates this knowledge to medical terminology used by medical record technicians and to other aspects of their work, e.g., pathology, operative procedures and coding.

98.A21 Introduction to Behavioural Science

This course is designed to give a basic knowledge of the major psychological, social, and cultural factors which influence human behaviour and health within our complex, changing society. Emphasis will be placed on the individual's awareness of his role as a member of a health team, family and society.

98.A23 Organizational Psychology

This course deals with communication psychology, the interviewing process, attitudes, process of change, sociological and demographic data relating

to health and illness, validity and reliability of statistical data. Also studied are informal and formal lines of communication, evaluation and supervision in health care services.

98.A26 Psychology for Nurses

This course provides the student with a knowledge of the normal physiological, emotional, and social growth and development of people in contemporary society. It must be taken concurrently with or precede Nursing 76.A20 in order that the theoretical concepts can be applied to practical situations.

98.A27 Sociology and the Family

This course encompasses sociology of the family in contemporary North American society. It reflects the changing patterns of family life and cultural influences and the implications of these upon health delivery services.

98.A28 Sociology of Health and Illness

This sociology course encompasses the concepts of health and illness in contemporary society. The course includes cultural, sociological, and constitutional aspects which affect the delivery of health services.

98.A42, 98.B42 Public Health and Pollution Control Microbiology

This course is designed to introduce the student to those areas of microbiology that he will use in his daily work. It will include structures and physiological characteristics of bacteria, viruses and fungi and their significance as related to food, water, sewage, and waste disposal.

98.B01 *See* 98.A01.

98.B03 *See* 98.A03.

98.B05 *See* 98.A05.

98.B07 *See* 98.A07.

98.B21 *See* 98.A21.

98.B23 *See* 98.A23.

98.B42 *See* 98.A42.

98.B45 Medical Microbiology and Epidemiology for Health Data

This course deals with the basic characteristics of the various types of micro-organisms that cause disease in man. The concepts of communicability and host resistance are included. The epidemiology of specific infectious diseases is covered.

98.C01 *See* 98.A01.

98.C06 Physiology and Pathology for Nurses

A consideration of physiology beyond the levels established in Physiology for Nurses 98.A06. In addition, pathological processes as applicable to the requirements of Nursing 76.C30 and 76.C35 are explored. This course must precede or be taken concurrently with the above nursing courses.

98.C07 *See* 98.A07.

98.C44 Microbiology for Nurses

This course extends the basic integrated microbiology given in Nursing 76.A20. It deals with the microbial mechanisms of pathogenicity, and the various host responses such as phagocytosis, inflammation, and the immune response.

98.C45 *See* 98.B45.

98.C46 Introduction to Microbiology for Biomedical Electronics

An introduction to the study of microbes, pathogenic and nonpathogenic; fungi viruses; and rickettsia and the measures taken to prevent the spread of disease.

98.E02 Physiology for Biomedical Electronics Students

A review of human physiology, with emphasis on the cardiovascular, nervous, respiratory, muscular, and urinary systems.

98.E43 Introductory Principles of Immunology

A basic course designed to give a student encountering immunology for the first time a general background in the broad field of immunology. The course deals with the body defences in diseases, types of immunity, biologicals used, nature and function of antigens and antibodies, mechanics of antigen-antibody reactions, and hypersensitivity and allergy.

98.F02 *See* 98.E02.

98.F41 Basic Medical Microbiology and Epidemiology

A beginning course designed to present the student with basic knowledge concerning micro-organisms of medical importance. Topics include physiologic behaviour of micro-organisms; host-parasite relationships; communicability of infection; sources of infection, particularly as they exist in a hospital environment; methods of control, including asepsis and use of destructive agents.

98.G02 *See* 98.E02.

Human Anatomy and Physiology for Public Health Students

An investigation of the fundamentals of human anatomy and physiology applied to the industrial, health, and environmental factors of the public health inspector's responsibilities.

Printed by K. M. MacDonald, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1972