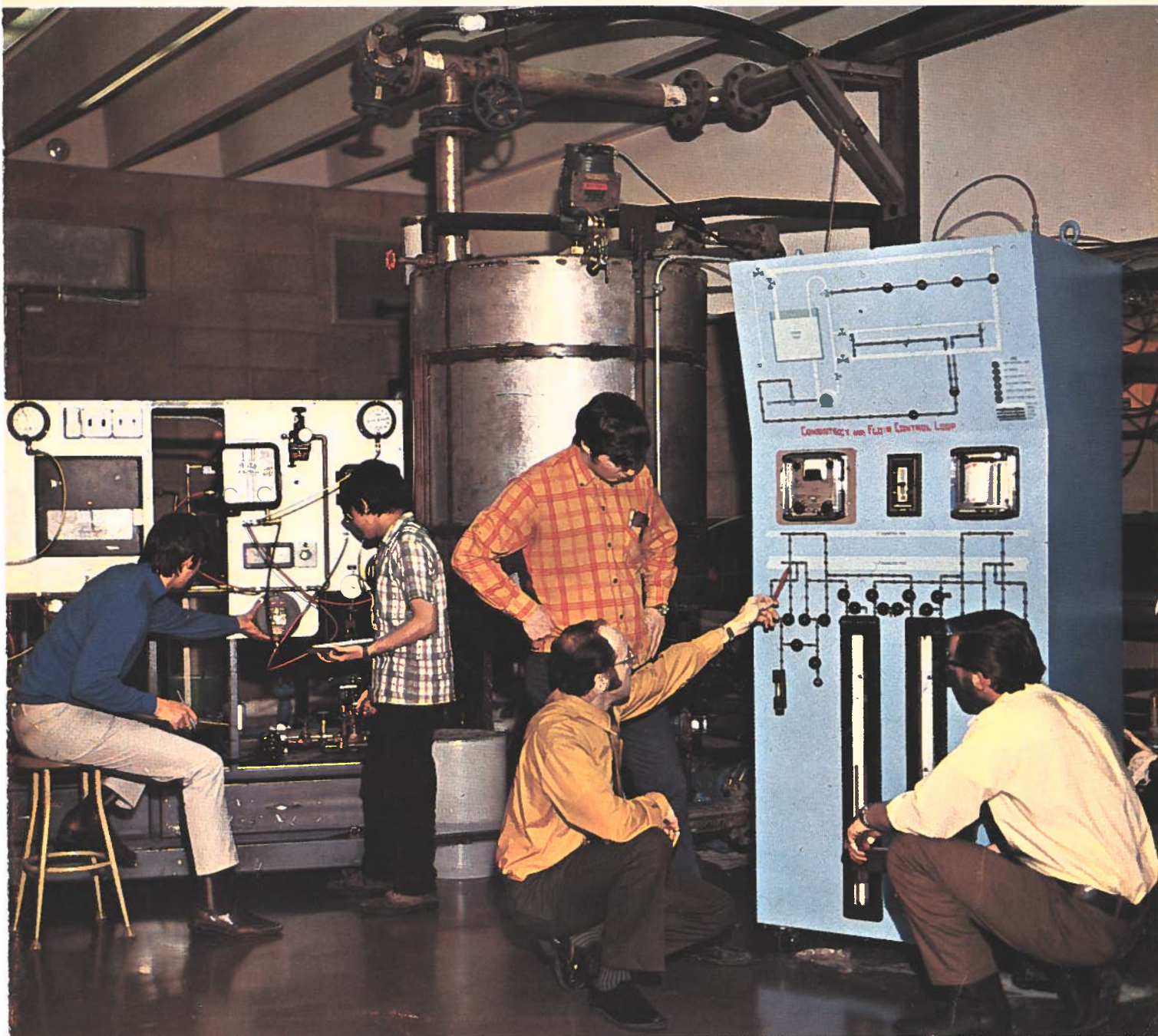


chemical engineering technology



LAKEHEAD UNIVERSITY



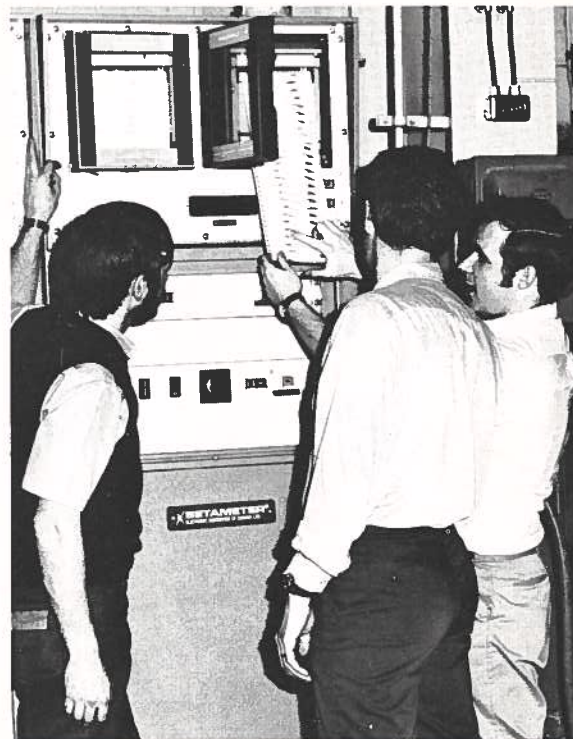
As a Chemical Engineering Technologist

You will be in the branch of Chemical Engineering concerned with the development and operation of industrial processes in which chemical and physical changes to materials are involved. A rapidly growing field of Chemical Engineering relates to environmental preservation involving the recovery and re-use of wastes from industrial processes, and more recently the recycling of used material such as cans and glass etc.

In Canada our major processing industry is Pulp and Paper and so special courses in the technology of this industry are included in our Chemical Engineering Technology Program. Other process industries include petroleum, plastics, mining, explosives, textiles, etc.



Student evaluating the tensile strength of a paper sample in the environmentally controlled Physical Testing Lab.



Mill Process Engineer explaining the operation of a moisture control system to students during a mill visit.

*Cover:
Students engaged in operating process and instrumentation equipment in the Chemical Engineering Unit Operations laboratory.*

Some typical questions that Students ask

What are some of the challenging future goals of industry and society and in what ways can a Chemical Engineering Technologist participate?

Never before in history has man been faced with the challenges presented today. He is on the brink of entering a new era - "The Post Industrial Society". While many such graduates will work in the productive elements of our society others will assist engineers, scientists, sociologists, and economists in the growing sphere of interdisciplinary activities. Problems requiring such an approach include, environmental preservation, population explosion, information explosion, urbanization, systems analysis, transportation, northern development, etc. Such challenges can only be met by close co-operation and interaction between industry, government and educational resource centres. The Chemical Engineering Technologist has a vital role to play in all these activities.

Suppose a graduate of Chemical Engineering Technology wanted to become a Chemical Engineer. What credits would he be given toward his degree?

Each application is usually considered on an individual basis. Consideration is given to both his academic record and industrial experience. Most often in conventional four year engineering degree programs the diploma graduate is given credit for first year and part of second year toward a degree program. Presently Lakehead University is considering implementing a special two year engineering degree program with entrance requirement being a diploma in technology. This in effect would mean that the time spent in educating to the degree level would be the same for the student choosing a route through technology as for the student who enters a conventional four year degree program from the grade XIII level. More information about this special degree program should be available soon and the reader is asked to check with university officials.

If a student has degree abilities would it be wise for him to take a diploma in engineering technology, work a few years, and then return to university or go directly into a degree program?

For students who have the ability and know what they want to be it is best for them to go directly into a degree program. For students who have the ability but are yet uncertain, a diploma in engineering gives them sufficient skills in a very short time with which they can find engineering employment and gain worthwhile experience

until such time as they decide to continue their academic pursuits to the degree level.

What is the status of the chemical Engineering technologist relative to that of an Engineer?

In today's rapidly advancing age of technology the Engineer has had to increase his fundamental knowledge of the natural sciences in order to make new advances. He has done this at the expense of eliminating the practical applied engineering courses from his curriculum. It is the technologist who is now filling this gap and is today the better qualified candidate for application engineering positions. This does not mean that the technologist is replacing the engineer but indicates that their roles are complementary. The engineer must still master many of the activities and new developments in a technical organization but he is now relying heavily on the technologist who is an important member of his engineering team.

Can a graduate of such a program contribute to the betterment of our society?

Very definitely so. The Chemical Engineering technologist will very often be directly engaged in the areas of waste disposal, waste utilization, water purification, and other areas of environmental preservation. His technical training provides him with a most relevant education, directed not only to the production of needed products but also giving him the tools to fight against pollution, and the many other social problems requiring a technological solution.

What are the entrance requirements?

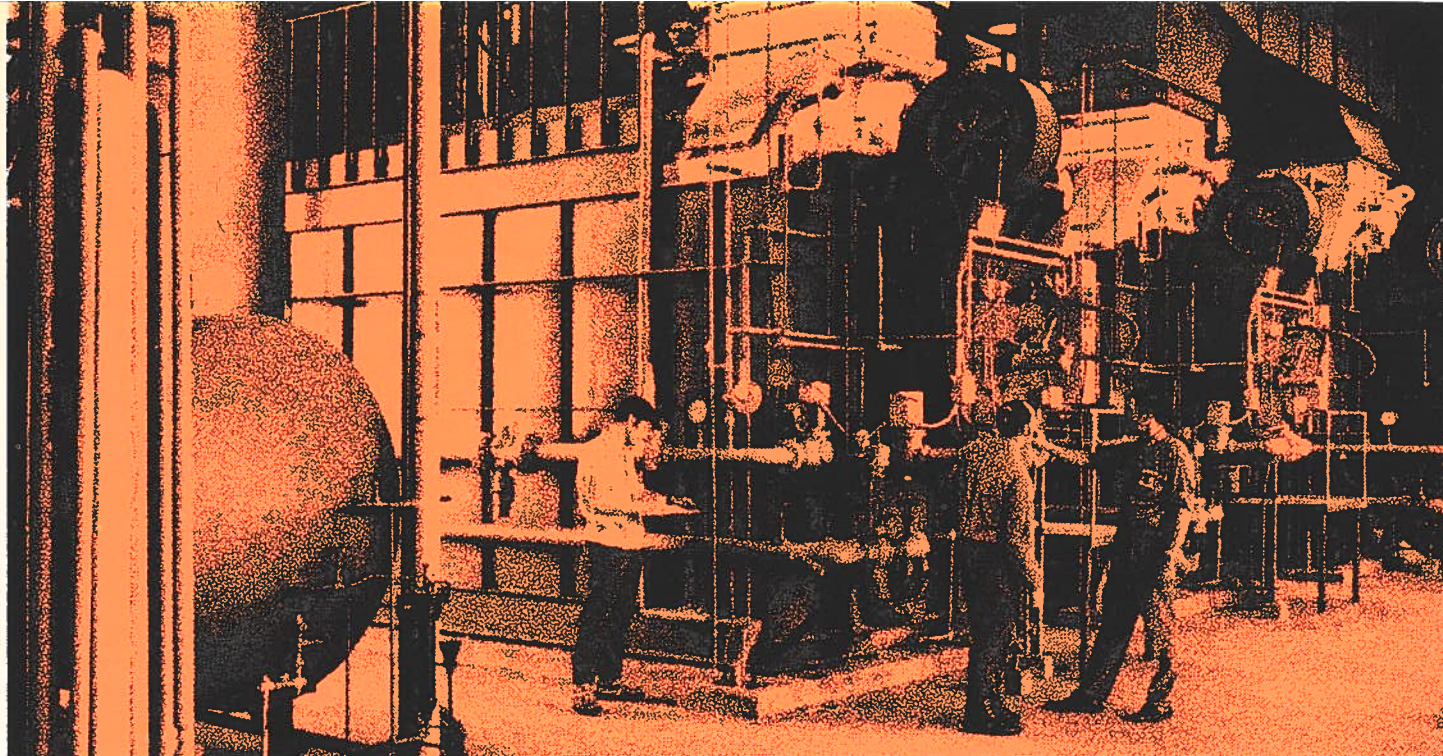
Entrance is from Grade XII. Because these requirements are under constant review the reader is asked to check the university calendar for more specific details.

What will you do next year?

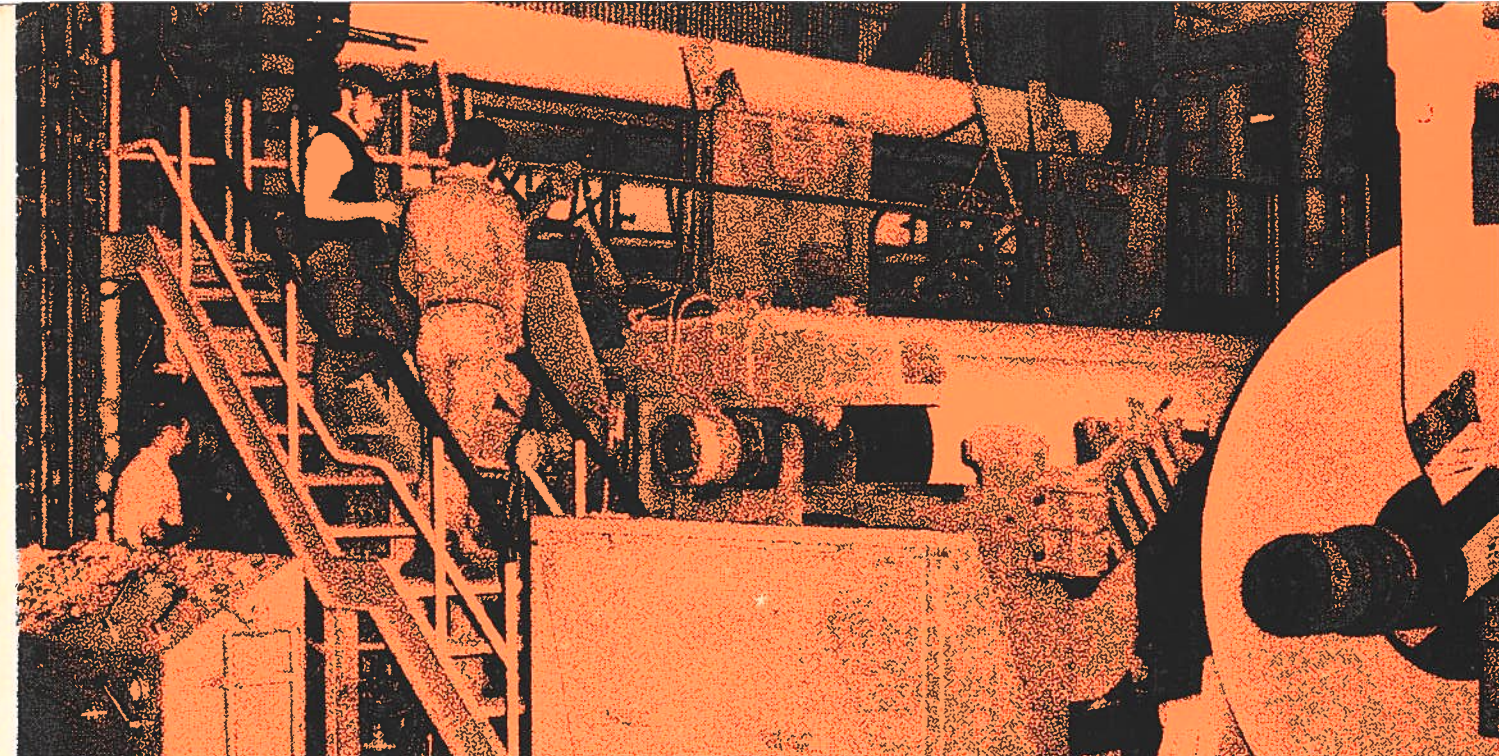
It will pay you to investigate the opportunities available for Chemical Engineering Technologists.

For further information write directly to:

Co-ordinator
Chemical Engineering Technology
Lakehead University
Thunder Bay, Ontario



Students collecting data for material and energy balance on gas fired steam boiler at Lakehead University.



Students at a local mill observe first hand the precision operation involved in transferring the paper web to a standby roll while paper machine operates at 2500 feet per second.

Facts in brief about The Pulp and Paper Option in Chemical Engineering Technology

What positions and work functions would a Chemical Engineering Technologist perform in industry?

Chemical engineering technology offers exciting careers across a broad spectrum involving such areas as Research and Development, Quality Control, Process Operations, Technical Sales-Service, and Environmental Preservation.

Typical Positions Open to Recent Graduates:

Technical Assistant

- Works with chemical engineers in consulting firms or individual plants to design new chemical processes and improve existing processes.

- Sets up equipment for laboratory or mill trial experiments, prepares chemical samples, gathers and assists in analyzing results of chemical tests.

- Analyzes manufacturing processes, tests samples of raw materials used and products produced.

Positions Open to Experienced Graduates:

Research Technologist

- Works independently or at a higher level of complexity with a Chemical Engineer or Research Chemist.

- Involved in all phases of investigation - operation of experimental equipment, data reduction, graphic and mathematical calculations and library research.

Development Technologist

- Assists engineers and chemist in developing new processes, improving existing ones, fighting pollution and carrying out experiments at pilot plant or full-scale production levels.

- Directs junior technologists or technicians.

Production Technologist

- Engaged fully in process manufacturing

- Works with production supervisors in solving process problems related to start up production or new waste recovery equipment.

- Assists in shut down plans, process evaluation, development work and trouble shooting.

Production Supervisor

- Instructs and directs others in process manufacturing.

Technical Sales & Service

- Provides technical assistance and advice to customers.

- Involved in selling process equipment or chemical supplies to manufacturing plants.

- Previous experience in many process operations is most desirable.

Government Inspection and Control Agencies

- The growing role of government in the field of environmental preservation will mean new opportunities for chemical engineers and technologists, who are familiar with process manufacturing operations and the composition of their liquid and gaseous discharges to the environment.

Why are there paper technology courses in the Chemical Engineering Technology Program?

The pulp and paper industry is Canada's major industry and employs more people than any other. This industry is based on the conversion of wood into useful products through the application of chemical engineering technology. The continued expansion of this industry has created a steady demand for persons with technical skills in chemical engineering technology. The course is designed to provide a graduate with these desired qualifications. The laboratory sessions stress the applications of chemical and engineering principles as they apply to any process industry but with special emphasis directed at the paper industry.

What kind of support or liaison exists between the university and industry regarding this program?

Chemical Engineering Technology is truly a regionally oriented program. The ten local pulp and paper mills in Northwestern Ontario financially supported the initial feasibility study aimed at ascertaining the demand for such graduates in industry. Based on this survey the program was instituted with the support and encouragement of the local mills. To ensure close liaison with industry a "Chemical Engineering Technology - Industrial Advisory Committee" has been set up composed of university and industrial people. They meet regularly to discuss program innovations, advise on employment opportunities, assist in public relations and in co-ordination of mill visits. The industry has been most co-operative in permitting their plants to be used as

teaching laboratories. In plant experiments with students represents the most unique feature of the Chemical Engineering Technology program and is felt to be most relevant for the students. Inter-action also occurs with industry, government agencies and other university disciplines through regular seminar sessions held throughout the year. The local technical section of the Canadian Pulp & Paper Association also permits student membership giving the student the opportunity for more direct involvement in the industries newest activities.

What are the opportunities for advancement?

As in any expanding industry there are always new positions becoming available. Advancement will depend only on your own individual initiative in the performance of your assignment and on your ability to accept responsibility.

Does the degree of specialization given in this program handicap the student if he wishes to work outside the paper industry?

Definitely not. Examination of the curriculum will indicate that the program is based on a strong background of chemistry and engineering principles which will make the graduate attractive to other process industries requiring chemical engineering skills.

What about such things as job location, work satisfaction, career development, and salaries?

Chemical Process Industries are well distributed across Canada. The pulp and paper industry is perhaps the only industry in which an individual can find employment in the geographical area of his choice. The communities associated with mill sites and research and development areas range from large cities to smaller communities. Because the industry is expanding, opportunities for advancement are good. The paper industry is foremost in employment and in wages paid.