Faculty of Engineering

The Faculty of Applied Science (renamed Engineering in 1948) began operations in 1913. The first graduating class was in 1914 and included only seven graduands in civil engineering. From this modest beginning the faculty has expanded to include 1,280 full-time undergraduate students and 149 full-time graduate students.

Engineering graduates are engaged in careers in all Canadian provinces as well as in many parts of the western world. More than half of the membership in the Association of Professional Engineers, Geologists and Geophysicists of Alberta are graduates of the University of Alberta, and the total engineering membership of the body is very close to the number of graduates from the Faculty of Engineering since its inception.

The faculty is made up of the departments of chemical, civil, electrical, mechanical and mineral engineering. The past few years have seen major changes in all curricula to adjust to the broadening scientific base and rapid development in sophistication of professional engineering practice.

Members of the teaching staff are actively engaged in research and are also concerned with maintaining contacts with advanced current engineering techniques. A prominent example of engineering research is the work of the late Dr. Karl Clark who worked for many years in the department of mining and metallurgy, now incorporated with the division of petroleum engineering into the department of mineral engineering.

Early in his career he recognized the potential of the Athabasca Oil Sands and devoted the major portion of his research activities to the development of a solution to the problem of extracting oil from the sand. The result the hot water flotation process is being utilized today.

The Faculty of Engineering is aware of the need for a liberal education and offers courses in the areas of fundamental engineering, science, human relations, public relations, and communications.

Dean Ford

Dean George Ford, speaking as an engineer, once said that engineering training should provide a "liberal education" in the present technical age. An engineering education "should provide an excellent base for a bank manager, an insurance adjuster, service manager and so forth," he said.

Dean Ford, 54, has a keen interest in the oil sands issue and stresses that the engineering profession can play a major role, through universities and private enterprise, towards developing the technology to recover more of Alberta's oil sands and coal resources.

He is a member of an advisory science and engineering committee which hopes to participate in the defining of provincial government resource development policies.

The committee's intent, according to Dean Ford, is to map out a role for the engineering profession and the university in planning the development of Alberta's resources.

The dean has criticized engineering curriculums for putting too much stress upon technical education and too little on having students "learning to learn."

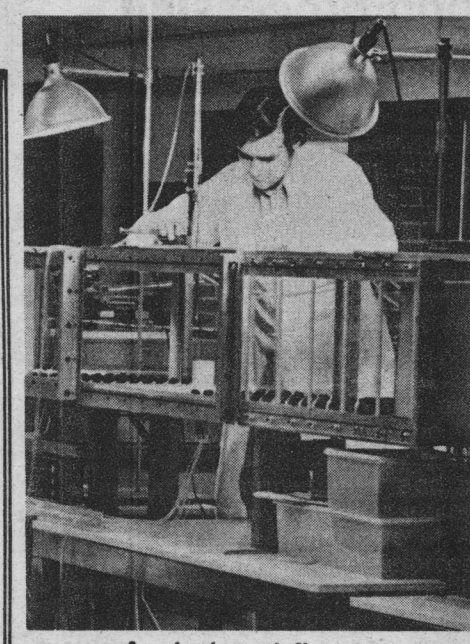
Society offers a world of "chanding demands" where problems are not always clearly defined and scientific information is incomplete. Engineers must be able to adjust, he has said.

His own engineering education began at the University of Alberta in the '40's and continued at Stanford University, Stanford, California. After his return he was appointed an assistant professor of civil engineering in 1948, an associate professor in 1953 and professor of applied mechanics in 1957.

In 1959, the university established the department of mechanical engineering and Dr. Ford was appointed chairman and professor of mechanical engineering. He was appointed Dean, Faculty of Engineering, in 1971.

ENGINEERING

MINERAL ENGINEERING	*Rm. No.*	*Electromechanical oscillator*	*136*
Metal heat treating	*Chem/Min 3, 108-110*	*Strength tester*	
Assaying of ores		*Wound rotor induction motor test*	
Mineral processing		*Primitive induction motor*	
Metal fatigue testing	*180*	*Power network analyzer*	*EB 540*
Thermal properties of metals and non-metals.	*178*	*Holographic displays*	*354*
Field emission microscopy		*Laser communication*	*450*
Electron Microscopy	*174*	*CO2 laser*	
Rock Mechanics	*210*	*Microwave technology*	*EB 433*
Mineral Processing	*208*	*Laser plasma fusion studies*	*EB 458*
Metallic Corrosion	*304*	*Laser induced gas breakdown*	
Chemical-analysis by X-ray and atomic absorption	*317*	*Organ preservation studies*	*EB 451*
Structures of metals and alloys by microscopy	*672*	*Microwave heating*	
Scanning electron microscopy	*679*	*Dielectric measurements*	
Gas flor through drill cores	*656*	*Simulation of an automobile suspension system*	*553*
Reservoir simulator for predicting oil and gas flow		*Bicycle ergometer*	
Melting and casting of metals and alloys	*704*	*Closed loop motor control demonstration*	
Mechanical properties measurements	*712*	*Wildlife tracking (Telemetry)*	
X-ray diffraction	*717*	*Computer simulation of rocket launch*	*EB 544*
Properties of tar sands	*774*	*Radio Astronomy (slide show)*	*251*
MECHANICAL ENGINEERING	*Mech. Eng. Bldg. Ground flr. Lev. 1 West entry*	*CIVIL ENGINEERING 7*	
Clothing heat losses		*Hydraulics Engineering Lab:*	
Solar heating		*Thermal pollution*	
Fatigue life testing	*Rm. 1-10*	*Mobile boundary hydraulics*	
Cyclic loading of nylon rope		*Laser doppler velocity*	
High frequency fatigue of welded joints		*Laser transit and communicator*	
400,000 pound testing machine		*Orthophoto mapping*	
Impact testing of hockey helmets	*Rm. 1-38*	*Structural Engineering Lab:*	
Vibration isolation		*Big testing machine*	
Electrodynamic shaker systems		*Joist specimens*	
Air track demonstration		*Prestressed concrete beams*	
"Road" testing	*Rm. 1-27*	*Steel specimens*	
Air pollution by engine exhaust		*Timber*	
Gas and steam turbines		*Test relating to tal buildings*	
	2nd flr. Lev. 2	*Geotechnical Group Displays:*	
Teaching engineering design	*W. lounge*	*Frank Slide studies*	
Industrial engineering	*& corridor*	*Pit slope analysis*	
Numerically controlled nulling machine		*Earth-filled dams*	
Thermosiphon for ice dams		*Tar sands research*	
Ice formation			
Arctic engineering	*Rm.2-1*	*CHEMICAL ENGINEERING*	*Chem/Min Bldg*
Photoelastic stress analysis	*Rm. 2-3*	*Stirred Tank Heater*	*274*
Lubrication research	*Rm. 2-9*	*Control of heat transfer process*	
Noise control demonstration	*Rm.2-11*	*Computer controlled distillation column*	
Hearing tests		*Liquid level control*	
Wind tunnel	*Rm. 2-14*	*Chemical Reactor experiment*	
Traffic noise	*Rm. 3-31*	*Evaluation of energy resources*	
Interferometer for heat transfer	*Rm. 4-37*	*Sulfur Recovery*	*356*
Water channel visualization of wind	*Rm. 5-23*	*Used in natural gas processing*	
Frost tunnel	*Rm. 6-23*	*Infrared Spectroscopy*	
Low temperature testing		*Catalysis research*	*364*
electrical engineering	*Main Eng. Bldg.*	*Pressure losses in fittings*	*359*
Electric arc discharges	*EB-B53*	*Lunar Landing Simulator*	*475*
Electric "WIND"		*Process operator's console*	
Small JACOBS LADDER		*Hybrid computer*	*428*
		What are you (really) drinking?	*456*
		Natural gas processing	*813*
		Hydrate formation	
		Solubility studies	



Analyzing airflow patterns.

Unique concept

Hungry? Want a place to grab a snack? Or perhaps a break from viewing the displays of the Open House?

HUB, a unique housing complex situated in the northeast section of the campus (number 18 on the centre fold map) may have the answer!

Enclosed under one of the longest malls in the world are 25 commercial facilities ranging from a variety of restaurants (Chinese food, pizza, fish and chips, hamburgers, hot dogs) and clothing stores, to a travel agency, book store, and plant 'cupboard'. The glass-enclosed mall stretches for nearly 1,000 feet and contains several recreation and lounging areas as well as the shops.

In addition, the recently-opened licensed restaurant in HUB offers a casual atmosphere where one can relax and have a bite to eat.

Owned and operated by the Students' Union, HUB is a unique concept in apartment housing on a university campus. Its 450 suites, ranging from bachelor to two and four-man units, can accommodate a total of 1,000 tenants.

Energy for society's wheels

Energy. Most people used to think of it in terms of something supplied by their favourite breakfast cereal.

Now the term is more apt to be used in reference to a power source to keep the wheels of society moving. With conventional fossil fuel sources fast becoming depleted and as energy bills rise, the search for greater efficiency in the production and use of conventional sources and for alternate sources takes on new meaning. Energy becomes a topic of interest to everyone.

This is particularly true in Alberta "Canada's energy province." And, as Alberta's largest post-secondary educational and research institution, the University of Alberta is naturally involved in a great deal of energy research.

The research is of a wide variety. It ranges from a study of the way heavy water is produced for Canada's nuclear power plants. It also deals with some of the unpleasant by-products of society's immense appetite for energy.

In room 1-22 of the east wing of the Chemistry Building—12 on the centre fold map a physical chemistry display will be devoted to three energy-related experiments. One demonstrates the extraction of bitumen from the Athabasca Tar Sands on a laboratory scale. Another experiment demonstrates the extraction by a method suitable to be undertaken on an industrial scale. A third shows a further step in the processing of the bitumen extracted from the tar sands its separation into fractions.

Oil wells drilled into a petroleum reservoir remove only that oil that is easy and therfore commercially profitable to remove. As the price paid for crude rises it becomes commercially profitable to remove more oil. This is done by a number of "enhanced recovery" techniques. By improving these techniques the extraction efficiency of Alberta's oil reservoirs can be increased.

The university's department of mineral engineering has a petroleum reservoir simulator which is used for just this purpose. Located in Room 656 of the Chemistry/Mineral Building 3 on the centre fold map this apparatus shows, with vivid contrast, the patterns made in an underground oil reservoir when a fluid such as water is used to enhance the recovery by pushing the oil towards producing oil wells.

In Room 1-10 of the Mechanical Engineering Building 9 on the centre fold Map another group of engineers will be on hand to reveal a contribution they make to the oil industry. Their display shows how mechanical engineers do fatigue testing of oil well components in corrosive situations.

The university's chemical engineers are involved in a research project which involves an intensive study of the method used for the production of the "heavy water" used in the CANDU nuclear power generation process. They are looking at the process with an eye to reducing its cost. This display and a related one dealing with improved processing of Alberta's natural gas, are located on

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