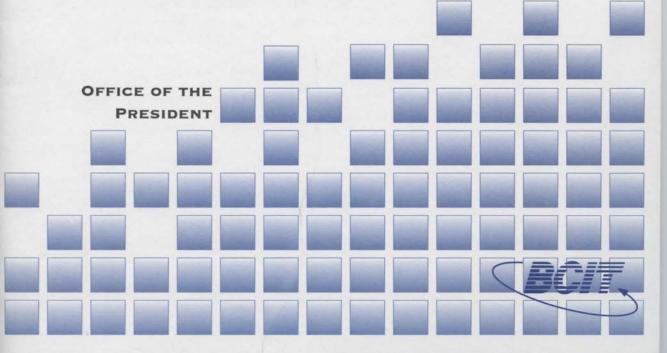
# TECHNOLOGY DEGREES AT BCIT

### PROGRAM DESCRIPTIONS



BCIT'S MISSION IS TO PROVIDE
BRITISH COLUMBIANS WITH
WORLD-CLASS,
JOB-READY SKILLS
FOR
CAREER SUCCESS.

### Dear Colleagues

In 1994, BCIT achieved its dream to become a degree-granting institution. This milestone was achieved because British Columbia needs a Bachelor of Technology degree to support the exponential growth of new scientific, technological and organizational knowledge that is driving economic globalization. As wealth creation in our province evolves from being resource-based to knowledge-based, the demand for people who can use and apply newly developed technologies and processes is increasing.

BCIT has a strong desire to share its educational plans with the British Columbia post-secondary system. We want to open up discussion with other institutions in order to strengthen our relationships and build strong partnerships. As a system, we must increase access by laddering and bridging our degree programs with other institutions, and we must minimize duplication.

We welcome open discussion and comments on our proposed plans for Technology Degrees at BCIT. As part of this discussion, we will also need to take into account the benchmarks established by the Ministry of Skills Training and Labour for evaluating the system as a whole: relevance, access, affordability and accountability.

In this document, we have outlined our degree plans for the next few years. In the majority of cases we have made significant progress in the approval and development processes. This is not a matter of staking out our territory. It is a matter of defining BCIT's niche and strengths and working with the post-secondary system to achieve a coherent and strong set of programs to enhance the economic and social development of British Columbia. In achieving this goal, and our mandate, we ask for your support and assistance.

Sincerely,

Brian Gillespie President

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### BCIT's

### **BACHELOR OF TECHNOLOGY DEGREES**

BCIT's Bachelor of Technology degrees reflect the exponential expansion of scientific, technological and organizational knowledge that is driving economic growth in British Columbia and Canada. These programs are being developed to meet the needs of industry and society for leading edge technology skills and to help satisfy the career advancement aspirations of working adults. BCIT's Bachelor of Technology degrees will equip students with the degree-level knowledge, skills and attitudes they need to succeed in an ever changing work environment.

### TECHNOLOGY DEGREE MODEL

Traditional academic models for degree programs are not well suited to the mandate and culture of career technical programs. They tend to be too theoretical in their approach and are intended for full-time learners with little or no work experience. BCIT's Bachelor of Technology stresses a practical approach that is closely tuned to the changing needs of industry. The delivery, admissions and other administrative policies are highly flexible and designed to accommodate the needs and career objectives of working adults.

The Bachelor of Technology is best described as a degree-completion program because it builds on the diploma program, which constitutes the first two years of the degree. Diploma graduates, who have traditionally faced frustration when seeking advanced credentials because of limited credit recognition, can now receive full credit for their diploma studies.

A two-year work experience component reinforces the practical focus of the degree and gives students the experience and maturity to optimize their degree-level studies. In addition to advanced technical courses, all degrees include management studies and a liberal education component.

The main components of the technology degree programs are as follows:

- Diploma of Technology
- two years relevant work experience
- · advanced technical specialties (including practicum)
- management courses
- · liberal education courses.

### **UNIQUE FEATURES**

In summary, BCIT's Bachelor of Technology degree offers the following unique features:

- it is designed as a career advancement opportunity rather than as a job entry credential
- the curriculum is designed to meet employers' needs for advanced technical training coupled with general knowledge skills
- it is a building-block degree program rather than a continuous program
- · it is offered part-time to accommodate working individuals
- it has a multi-disciplinary focus.

### BACHELOR OF TECHNOLOGY IN COMPUTER SYSTEMS

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Computer Systems is a practitioner-oriented program designed to supply well-trained information technology specialists with advanced skills in software development, and a general background in management and leadership skills. They will have a broad theoretical background and a sound liberal arts education in addition to their practical, industry-based technological skills. This program will give graduates advanced standing in occupations such as systems analyst, applications programmer, programmer/analyst and information systems specialist.

This program addresses the documented need for an expanded supply of graduates in the field of software development. It also provides existing MIS workers with retraining for professional development and career enhancement by building on existing credentials and work experience. Finally, it gives those with technical and community college training access to a credential that is accepted both by industry and the international community.

The Bachelor of Technology degree program emphasizes:

- · skills development for practical applications of technology
- information technology solutions to industrial problems
- project management and leadership with a team approach
- · critical thinking and technological innovation
- technology transfer and contributions to industry
- flexible admissions and delivery.

The Bachelor of Technology in Computer Systems meets the needs of:

- graduates of BCIT's two-year diploma programs
- graduates of computer systems programs from other colleges
- working professionals who wish to update or refresh their knowledge
- degree-holders in related disciplines who are making career changes.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Computer Systems, the graduate will be able to:

- analyze and evaluate the management issues and approaches appropriate to software development
- apply appropriate management approaches to specific software development projects
- communicate effectively and persuasively in a highly technical environment
- distinguish between and critically evaluate competing technical methodologies for software development
- design and integrate system solutions using applied research or technology transfer
- analyze, develop, and integrate plans to promote the sharing of information and technological innovation
- diagnose and solve problems in the computer industry by applying information technology methodologies and techniques

- develop, design, and implement software products that address organizational needs within a project team environment
- demonstrate superior analytical, problem-solving, and technical skills
- demonstrate expertise in a selected area of specialization such as data communications, computer graphics, applied artificial intelligence, or advanced database technology
- transfer newly acquired skills to the workplace.

# BACHELOR OF TECHNOLOGY IN APPLIED ENVIRONMENTAL ENGINEERING TECHNOLOGY

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Applied Environmental Engineering Technology (AEET) will deliver a broadly-based, technically current curriculum on the practical and applied aspects of environmental protection. The program will offer a multi-disciplinary approach to the environment that will prepare graduates to operate across the current disciplinary boundaries and make significant contributions as technology managers with small employers, government and consultancies. As members of environmental teams, graduates will work with other environmental specialists to:

- develop innovative and cost-effective solutions for the clean-up of existing environmental problems
- plan, design and construct new projects that minimize environmental damage
- take a proactive leadership role in promoting societal activities that work in harmony with the environment.

After satisfying common program requirements, students will be given a choice of multi-disciplinary training in the areas of engineering technology, integrated resource management and advanced chemical analysis. Students will select the most suitable combination of topics to complement their training and experience.

The AEET program will appeal to people who are already working in the environmental field who wish to broaden their skills and to people who are preparing to seek work in this field as a career change. The program will accept a broad range of students with both engineering and science backgrounds. Typically, they will come from applied disciplines such as civil and chemical engineering technologies; some, however, will have scientific backgrounds in chemistry or biology.

In addition to relevant work experience, successful applicants to the program will have:

- a diploma of technology from a recognized post-secondary college or institution
- · a bachelor's degree in either science or engineering.

### PROGRAM GOALS

On completion of the degree AEET program, graduates will have the multi-disciplinary skills needed to perform effectively as a member of an environmental team. Specifically, graduates will be able to:

- perform site audits to accurately assess environmental damage
- prescribe appropriate land uses based on an environmental audit
- manage the remedial operations needed to rehabilitate a site for a particular land use
- design cost-effective systems to control industrial air pollution
- determine cost-effective systems for solid-waste management, waste treatment facilities, recycling operations and related environmental facilities

- select, design, and monitor effective systems for municipal and industrial waste-water management
- design systems and structures that provide for cost-effective protection of the environment
- apply principles of geohydrology to determine the extent of subsurface pollution by liquids and gases
- · supervise the handling and transportation of hazardous wastes
- develop management systems for the handling, treatment, and disposal of advanced residuals including hazardous wastes, biomedical wastes and hazardous construction materials
- interpret and appropriately apply current environmental laws and regulations
- collect and analyze data to assist in effective risk and liability assessment.

### BACHELOR OF TECHNOLOGY IN MANUFACTURING

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Manufacturing will help to foster the technological leadership needed for British Columbia's manufacturing industry to grow and prosper in the increasingly competitive global marketplace. The program is designed give graduates the skills they need to be effective technological leaders within their manufacturing organizations. Graduates of the program will be technically proficient in areas such as manufacturing processes, automation, and management and will have the skills needed to keep abreast of technological advances. They will also have the interpersonal skills needed to assemble and manage productive teams and an understanding of current business practice in critical areas such as labour relations, finance, and marketing.

### **Prospective Students**

The Bachelor of Technology in Manufacturing will attract candidates who:

- wish to upgrade their technical and management skills to enhance their position within their present company or to be more competitive in the job market
- have graduated from a diploma program in a related technology such as manufacturing, design, plastics, CAD/CAM, robotics and automation, wood products, or operations management, from BCIT or an equivalent program elsewhere
- · have bachelor degrees in engineering from a Canadian university

 are new Canadians with foreign degrees who wish to obtain a Canadian credential.

The curriculum will be structured to admit students with a variety of educational backgrounds by providing a selection of foundation courses for those who lack prerequisite knowledge.

### PROGRAM GOALS

The Bachelor of Technology in Manufacturing emphasizes practitioner-based training in manufacturing. The goal of the program is to give graduates the knowledge they need to:

- evaluate and implement existing and emerging manufacturing technologies
- integrate appropriate business and technical management strategies to effectively manage production resources including personnel, materials, and equipment
- optimize manufacturing productivity
- actively participate in and contribute to the product design process
- · work and communicate in a team environment
- ensure that quality standards are met by evaluating and managing quality assurance and quality control programs
- demonstrate critical thinking, analytical problem-solving, and technical skills in a chosen area of specialization including manufacturing processes, manufacturing management, or automation and control
- manage research and development projects and engineering projects within the manufacturing environment.

# BACHELOR OF TECHNOLOGY IN GEOMATICS/ GEOGRAPHIC INFORMATION SYSTEMS

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Geomatics/Geographic Information Systems (GIS) aims to prepare candidates for technical, supervisory, and management positions within the Geomatics and Geographic Information Systems industries.

It is proposed that the degree will have three areas of specialization:

- This Geomatics specialization will cover all aspects of field surveying—including land, hydrographic and engineering. It will also include mapping: photogrammetry, cartography, GIS, and satellite positioning.
- The Land Information Systems specialization is a GIS specialization which focuses on the use of GIS technology in managing land-related data by municipal, regional, provincial, and federal governments, and the utility industries.
- The Natural Resource GIS specialization will prepare students for positions in the environmental, forestry, geology, and mining industries.

### **Prospective Students**

The Bachelor of Technology in Geomatics/GIS will meet the needs of:

- graduates of technology diploma programs
- professionals within the geomatics industry wishing to upgrade or update their credentials
- graduates from allied university programs who wish to broaden their technology background.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Geomatics, the graduate will be able to:

- demonstrate technical competence in their chosen specialization within the field of geomatics
- · use the principles of human resource management
- use effective interpersonal communication techniques
- · use creativity in developing a new business
- describe and use the principles of sound financial management
- demonstrate an understanding of how to operate a business within the framework of contract and business law.

### BACHELOR OF TECHNOLOGY IN CONSTRUCTION MANAGEMENT

### PURPOSE OF THE PROGRAM

The purpose of the Bachelor of Technology in Construction Management is to educate managers to meet the demands of a complex and highly competitive industry. The program will be structured to enhance the skills of the diverse population in the construction and building industry. It will also develop the abilities required by managers to maintain this industry as a dynamic growth sector of the British Columbian and Canadian economies.

In developing this program, BCIT will interface continuously with existing construction associations and organizations to ensure that their guidelines for technical and managerial skills are followed. The program aims to meet the demands in the construction industry, now and in the future.

### **Prospective Students**

The Bachelor of Technology in Construction Management will be designed to meet the needs of candidates who have:

- a diploma or degree in construction engineering
- some work experience.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Construction Management, the graduate will be able to:

- meet the guidelines of the construction industry for technical and managerial skills
- use the interpersonal and communication skills needed to manage effectively in a modern industry
- demonstrate an understanding of the financial organization and cost controls needed to run small, medium, and large businesses in the construction industry
- demonstrate the intellectual and managerial skills needed in the construction industry
- use creativity and innovation to develop new procedures, construction practices, and business opportunities
- integrate management practices at all levels of the industry.

### BACHELOR OF TECHNOLOGY IN ELECTRONICS

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Electronics will give graduates an academic credential that will be recognized by industry and professional associations for its high standards in advanced technical knowledge and applied skills in electronics.

The curriculum will support several areas of specialization that are relevant to the information technology industry in British Columbia and will include a significant component of non-technical engineering skills such as ethics, contract law, economics, business practice and market research.

### **Prospective Students**

The Bachelor of Technology in Electronics is intended to meet the needs of:

- graduates of BCIT's two-year engineering diploma program in electronics
- graduates of electronic engineering technology programs from other colleges
- working professionals who are currently employed as part of an engineering team and who wish to build and strengthen their skill level for career advancement
- degree holders in related disciplines who wish to enhance their opportunities for achievement and career success.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Electronics, graduates will be able to:

- demonstrate high-level engineering competence in their chosen specialization within the field of electronics and information technology
- qualify for advanced recognition by employers or professional associations
- demonstrate critical-thinking and problem-solving skills as a selfreliant individual and as a member of an engineering team
- apply balance and skill in the essential task of managing technological, human, financial, material and information resources
- communicate effectively using the most appropriate media in a highly technical environment
- develop, design and implement (in hardware and/or software) systems, products and components that are competitive, cost effective and of high quality
- demonstrate a high regard for ethical practice, public safety and protection of the environment.

### BACHELOR OF TECHNOLOGY IN ACCOUNTING

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Accounting will give graduates an academic credential leading to a professional accounting designation or to an MBA program. At the same time, students will acquire key technical, interpersonal, communication, problem-solving, and computer skills demanded by employers. They will also learn to work in teams—an increasingly important ability in the workplace. While the program will cover all relevant aspects of the accounting field, it will emphasize the small business sector through the use of examples and case studies. Liberal education courses are also an important element of the program and will provide the broad perspective required in a rapidly-changing business environment.

It is anticipated that most graduates will go on to complete a professional accounting designation such as a CA or CMA. Others will enter an MBA program. Qualified accountants will also register in individual courses in order to meet the mandatory professional development requirements of their professional accounting bodies or for career development.

Graduates of the Bachelor of Technology in Accounting will practice in a small or medium-sized accounting firms or as accountants in industry or government. As a result of the program's emphasis on small business, it is anticipated that many graduates will enter that sector of the economy.

The Bachelor of Technology in Accounting will be of interest to:

- graduates of the BCIT Financial Management Diploma program
- · graduates of other BCIT business programs
- graduates of similar programs from community colleges
- students who want to obtain an accounting degree with an applied technical emphasis
- students who presently pursue degree-completion through the Open University but would prefer a more specialized degree in accounting.

### PROGRAM GOALS

BCIT's accounting degree program will emphasize entrepreneurship and small business. Specifically, graduates of the program will be able to:

- demonstrate advanced technical expertise in financial and managerial accounting
- · apply these technical skills to international operations
- demonstrate the ability to develop new business
- work with a variety of management information systems and microcomputer software packages
- appreciate the importance of ethical and environmental issues
- · work well with others in a team environment
- communicate clearly, both orally and in writing
- identify and solve problems.



### BACHELOR OF TECHNOLOGY IN MANAGEMENT

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Management is designed for professionals who already have work experience in areas such as labour, business, government, engineering technology, health sciences, and trades. The program aims to develop competency in management. It differs from traditional degrees in commerce and business administration in terms of its structure, outcomes and methods of delivery. This degree program:

- integrates a variety of management disciplines in planning and problem solving
- emphasizes skills that recognize and apply leading-edge information technology to operational quality and effectiveness
- uses a variety of delivery modes, including part-time studies and distance education, to accommodate the needs of participants
- recognizes prior learning in assessing student applications
- uses a global perspective on management, in the context of British Columbia's unique trading relationships and changing demographics
- produces graduates who are immediately competent to practice in the management role.

The Bachelor of Technology in Management degree has four components: core management courses, management specialization courses (from the fields of health, business and engineering), liberal education courses, and bridging or prerequisite courses (depending on a student's prior assessment). In addition, each student will be required to produce a project and thesis.

The Bachelor of Technology Management is designed for professionals who have a skill base developed through prior training and the application of that training in the workplace, and who wish to augment that skill base with a competency in management. As preparation for this degree program, students will have:

- a diploma in business, technology or trades from BCIT or the equivalent level of training from another institution
- at least two years of work experience in a job related to their discipline.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Management, the graduate will:

- · demonstrate critical-thinking and problem-solving skills
- demonstrate competence in the essential tasks of managing human, financial, material, and information resources
- use these resources to improve the performance of their organizations
- demonstrate the ability to provide leadership, facilitate change, and build effective teams
- demonstrate the ability to plan, organize, and promote continuous improvement within their organization.

### BACHELOR OF TECHNOLOGY IN NURSING

### PURPOSE OF THE PROGRAM

The BCIT Bachelor of Technology in Nursing aims to equip nurses with skills for acute care nursing specialties in health care. The program uses a variety of flexible delivery methods and combines a strong emphasis on theory with practical application in a highly technological environment. It also has the flexibility to respond to technological advances in the health care system.

Graduates will be self-directed professionals functioning as first-level specialists in the care of adults with life-threatening illnesses. They will think critically and apply problem solving and ethical reasoning to make competent clinical decisions. They will manage patient care by being adaptable, independent, and willing to collaborate, and by using well-developed management skills. They will learn broad skills and apply them in the context of nursing specialties in the everchanging health care system.

Specifically the Bachelor of Technology in Nursing will:

- provide students with practice-based learning in order to be jobready
- produce graduates who can provide and manage the care of individuals requiring specialized nursing care
- prepare graduates who develop their specialty nursing knowledge and practice through systematic inquiry
- enable faculty to provide expertise to the community in the areas of practice, education, and research.

The Bachelor of Technology in Nursing meets the needs of registered nurses throughout BC who are either seeking employment or who are currently employed in the field.

Those who are currently employed and wish to upgrade their skills are allowed to enter the program at a point suited to their level of knowledge and experience.

Students may also enter the program directly as graduates from various post-basic certificate programs.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Nursing, the graduate will care for the critically ill individual. Specifically, graduates will be able to:

- synthesize knowledge derived from theoretical frameworks to manage the health-related responses of acutely ill individuals
- use inquiry, creativity, critical and reflective thinking to enhance clinical decision-making and achieve learning goals
- competently manage and coordinate the delivery of care
- competently manage the technological environment
- work independently, interdependently, and collaboratively within the health care team
- · communicate clearly and openly in a variety of media
- develop an awareness of nursing research and it's application to practice
- integrate theoretical and practical knowledge in the clinical decision-making process
- enhance cultural sensitivity through the exploration of values, beliefs, and practices
- initiate independent and collaborative interactions to meet learning needs



### BACHELOR OF TECHNOLOGY IN ENVIRONMENTAL HEALTH

### PURPOSE OF THE PROGRAM

The Bachelor of Technology in Environmental Health will prepare people to work as Environmental Health Officers (EHO)/Public Health Inspectors (PHI) in national and regional health agencies, environmental control agencies, and the private sector. Graduates of the program will be well equipped to monitor, assess and manage environmental factors that impact on human health. They will also have the skills and knowledge needed to meet a growing range of environmental roles and responsibilities.

This degree program will meet the current and evolving needs of employers, the Canadian Institute of Public Health Inspectors (CIPHI), and the community. Most employers now require certification as a condition of employment, and a number require baccalaureate degrees. The Board of Certification of the CIPHI has recently mandated that a degree will be needed for certification of individuals who begin the academic component of their professional training in 1995.

Currently, BCIT offers the only program for environmental health professionals in Western Canada. The degree program will provide a flexible, accessible program of studies on a part-time basis, primarily by distance education.

The Bachelor of Technology in Environmental Health will meet the needs of:

- graduates of environmental health technology diploma programs
- professionals in environmental health wishing to upgrade or update their credentials.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Environmental Health, the graduate will be able to:

- conduct research and interpret research findings related to the environmental health field
- apply advanced principles of toxicology, epidemiology and biostatistics.
- demonstrate technical competence in their chosen specialization, such as management or health education and promotion
- conduct health-risk assessments to identify potential health risks
- assess options for correcting potential health risks
- propose appropriate intervention strategies where warranted
- demonstrate critical-thinking and problem-solving skills
- demonstrate the ability to provide leadership, facilitate change, and build effective teams
- appreciate the importance of life-long learning and professional growth.

### BACHELOR OF TECHNOLOGY IN MEDICAL IMAGING

### PURPOSE OF THE PROGRAM

BCIT will offer Canada's first baccalaureate-level degree program in medical imaging. The proposed Bachelor of Technology in Medical Imaging will be available by distance education to registered medical imaging technologists from across Canada and from other parts of the world. It will answer the pressing need for advanced training resulting from the significant technical and clinical advances that have occurred in medical imaging in recent years.

In many parts of the world baccalaureate education is now the norm for medical imaging technologists. Also, many radiography departments throughout British Columbia and the rest of Canada now require formal theoretical training before technologists can work in areas such as computed tomography, magnetic resonance imaging, digital radiography and fluoroscopy, interventional radiography, and cardiac angiography. The proposed degree program will provide technologists with the additional training they need to perform competently at an advanced level.

BCIT plans to first introduce a medical imaging degree program with specialization in radiography. Specializations in nuclear medicine and sonography will be introduced in the future.

The Bachelor of Technology in Medical Imaging program will meet the needs of:

- registered medical imaging technologists with a minimum of two years relevant work experience
- students who enrolled, or who were planning to enroll, in the Bachelor of Health Science (BHSc). The Open University is no longer accepting new applications to the BHSc in Medical Imaging and is planning to phase out the program
- students currently pursuing BCIT's Advanced Diploma Program in Medical Imaging.

### PROGRAM GOALS

On completion of the Bachelor of Technology in Medical Imaging, the graduate will be able to:

- provide quality patient care in advanced imaging procedures
- use digital imaging equipment successfully through the application of the principles and theories of its operation
- · evaluate performance characteristics of imaging equipment
- implement an effective radiation protection program by applying the principles of justification, optimization and dose limitation
- apply the knowledge of human sectional anatomy to related clinical procedures
- apply clinical imaging protocols to specialized imaging procedures
- apply the principles of management, organizational behavior, supervision, budgeting, human resource management and labor relations in a medical imaging environment

- enhance human interaction and performance in the clinical environment by integrating liberal education concepts
- adapt successfully to the changing nature of society by applying liberal education principles
- solve practical problems in medical imaging by applying skills in critical thinking, problem solving, communication, numeracy and computer literacy
- plan for lifelong learning by continuously updating skills and knowledge
- apply research skills to the investigation of problems in radiography and to the assessment and evaluation of instrumentation and procedures in radiology.

BCIT will be a province-wide, innovative organization, specializing in advanced technology training and focusing on those initiatives that increase the level of economic activity, entrepreneurial activity and employment for the province. BCIT will:

- Prepare dynamic, highly skilled members of the workforce by delivering full- and part-time courses of study including:
  - certificate, diploma, and degree studies in technologies and trade
  - contracted industry training and upgrading courses.
- Conduct technology transfer activities by providing opportunities for innovation, industrial assistance and contracted applied research.