RCC World
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RCC ALUMNI, COLLEGE AND INDUSTRY NEWS AND EVENTS

Athabasca University Welcomes RCC Graduates

The past few issues of the RCC World have described the many continuing education options for RCC graduates.

Well here is another one. Athabasca University reviewed the curriculum of our Electronics Engineering Technologist program. They determined, based on the strength of our CTAB accreditation, that graduates of this program would be eligible to receive 50% credit towards a Bachelor of Science (B.Sc.) degree.

Athabasca is Canada's only Open University and as such is a leader in distance education. All of Athabasca's courses are delivered online giving ultimate flexibility and convenience to full-time workers.

A graduate holding an Electronics Engineering Technician diploma may qualify for up to 30 credits towards the same degree.

At this time RCC and Athabasca are exploring other degree programs that may be beneficial to graduates of both the electronics and Computer Networks Engineering Technology programs.

For more information regarding Athabasca University and the programs contact Frances Gunn (905) 420-0825 or email gunn@sympatico.ca.

Last issue we also told you about Memorial University's bachelor of technology degree and their offer of three years credit. Memorial sent us some course outlines that we have available. If you have any questions about their programs or the degrees they offer, please do not hesitate to contact us at withers@rcc.on.ca.

Less than 2 years ago the computer department at RCC was comprised of two instructors and 30 students. Today with the new programs (see article below) the computer department has seven instructors (and growing) and 120 students. Pictured above (left to right, front to back) Ajoda Bridgemohan B.Sc., EET, MCP, Bruce Bamford BA, EET, Doug Shirriff B.Sc., EET, CNA, Daniel Muttiah BASc., B.Ed., Terry Wister BA, B.Ed., MCSE, Ross Bigelow EET, Richard Philpot.

New Technologist Program Announced

In the mid 1950's, RCC along with Ryerson developed a new program called Electronics Engineering Technologist. The purpose for this program was to create a person capable of working with both a technician and an engineer/scientist. Without losing their practical "hands-on" technician level knowledge, these students would be exposed to higher level calculus, electronics design and some basic economics and management principles.

During the mid 1980's RCC introduced a modified Honours Electronic Engineering Technologist program, to recognize the advanced academic standing of graduates from colleges, universities and, at the time, Ontario grade 13.

We are now proud to announce a new technologist program starting in September of 1998, Computer Networks Engineering Technologist program.

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Techcom Computer Systems Inc.

Techcom Computer Systems Inc. is a Canadian owned and operated company, proudly providing complete computer services, nationwide, since 1994. Our product and service base extends from all levels of computers and computing, whether it be software development, hardware sales, internet access or network installations using operating platforms such as UNIX, Windows NT or Novell. Our unbiased approach to computer technology gives us the opportunity to experiment with new applications and apply them as cost effective solutions to businesses anywhere in Canada.

In the next few issues of RCC World, we will be discussing some of the new applications and Installations encountered by us in the ever changing world of computer technology. Stay tuned...

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New Technology Program *(Cont. from page 1)*

This program has taken more then a year to develop in consultation with many industry professionals. We hired a consultant who has spent many years working with accrediting bodies, most recently with CTAB (Canadian Technology Accreditation Board) and consulted with many companies both large and small to determine the types of emerging careers for IT professionals. We would like to thank Techcom, SHL, CIBC, IBM, EDS, Alpha Computer Systems for their participation and advice on the development of this program.

The major subject areas for the Computer Networks Engineering Technologist (after successful completion of the Computer Networks Engineering Technician program) include: Network Design and Configuration, Network Administration and Management, Telecommunications, Computer Communications, Information Technology (Database Systems), Internet and Intranet Systems Design and Configuration, Digital System Design, Computer Control Design and Applications. Complete course details can be found on our web site at www.rcc.on.ca. The first graduates will be available in March 1999.

Adopt Design Practices for Component Reliability

The following article is reprinted with permission from the most recent edition of " The OntarioTechnologist"

ELECTRONIC DEVICES HAVE CREPT INTO almost every aspect of our daily life. Electronic component unreliability can be critical, and in some cases life threatening. Reliability should be a key concern for companies designing electronic products. Every manufacturer wants the products to work. The bottom line is that product returns cost money, whether it is repair or replacement cost, or potentially compromised customer confidence, or even the expense of litigation. So how can a manufacturer ensure a certain level of consistent reliability'? By designing for reliability, of course!

Derating

Two of the main factors that contribute to component failure are thermal and electrical overstressing. Both of these conditions are avoidable by practicing derating. Derating is a design practice intended to limit the electrical and environmental stresses applied to the parts to levels that are within specified capabilities. Derating is intended to enhance reliability and improve design integrity. For example, if you want to operate a particular component in an ambient operating temperature of 50°C, you would choose components rated to operate at higher temperatures, perhaps 60°C or 70°C.

Distribution and redundancy

Distribution and redundancy are two common practices of designing for reliability. You can liken the principle of distribution to the old saying, don't put all your eggs in one basket. For example, if you had a product with a fan to provide cooling, you may want to consider using multiple fans instead of one large unit. With this design topology in place, losing one fan might not mean immediate thermal failure of your device. It could buy a technician some time to replace the failed fan or time for someone to shut the unit down before it sustained any permanent damage. Redundancy is another common practice that enhances reliability. You may have heard the term n+ 1, which simply means use one more than you need. For example, to improve upon the principle of distribution, you might apply the n+l principle. In the preceding example you may have needed three fans to provide adequate cooling to your unit. By adding a fourth, your product would be able to tolerate the loss of one fan and still have adequate cooling with no interruption to operation.

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Adopt Design

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Reliability prediction

Once you have designed your product with the desired reliability and quality, you want to be able to quantify the reliability of the design. Most often this means calculating the mean time between failure (MTBF). The simplest method for calculating MTBF is the parts count method. Each component is assigned a failure rate, which is expressed as the number of failures in 109 hours.These failure rates or FITs (failures in time) are added up and divided by the number of hours in a year (8,760), yielding the MTBF in years. Other factors considered, such as thermal and electrical stress become multipliers for the FITS. For the purpose of the next example assumes an electrical stress of 50 percent and ambient temperature of 40°C (these figures yield a multiplier of 1).

The product has a low MTBF but this is a simplified example. Typical electronic products would have more pans and hence a higher MTBF (lower number of years). The preceding example was calculated using the Bellcore method found in TR-332. There is also a handbook published by the U.S. military called *MIL Handbook 21 7-F* that contains data on component reliability and prediction methods.

There is also an excellent text by Norman B. Fuqua, Engineering for Electronic Design, ISBN#08247-7571-6. The IEEE also has a reliability society, which is a great source for the latest information on new models and prediction methods.

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Career Development Centre News

Below is a list of some of the companies that have recently hired RCC graduates for the first time. We are pleased that they decided to choose an RCC grad over all the other job candidates. We hope that they will consider RCC their best source for highly qualified technical staff.

Electra, Power House Controls, Johnson Controls, Sable Mary Seismic, Milltronics, NBS Card Services, Imapro, St. Joseph's Hospital, CBC Television, Stentron International Inc., Matheson Valves, Veritas Seismic, Bayly Communications, HRI, Pratt & Whitney, D&D Automation, GEMultilin, Telecom Research, ADI, Gemicom Canada, Lovat, Advanced Laser Fusion Technologies, SPX Canada, Microtronic Datacom, Ontor Ltd., Nanometrics, Blue Systems, Voice Gate, Entourage, MIT Irvings, Petro-Environ Ltd. Comtronic Computer Centre, New Star Tech, Globalcom, Business Depot, Eastern Independent Telecom, Gilmore Global Logistics, New Star Technology, Gilmour Inc., Cognose Inc., Aavid, COMP/AS Inc., Nonhem Communications, Minit of Canada, Tech Comp Computers, Prodomax.

PRODUCT X

Part	FITS	Quantity	Total
Resistor	1	100	100
Diode	1	50	50
Transistor	3	20	60
Integrated Circuit	5	10	50
Total FITS for Product X			260
MTBF in years (109hours/Total Fits)/8760 hours 439 Years			

In the Sky, On the Water!

Some might think that you don't study electronics if you want a career full of adventure, travel ... but that's not true. While most of the entry-level jobs our graduates accept can lead to challenging and fulfilling careers, the following entry-level jobs represent two of the more exciting opportunities for several of last March's Electronics Engineering Technologist graduating class.

Scott Graham's first job with Scintrex's Airborne Division will involve airborne surveys in for oil & gas and mineral exploration industries. Prospective first assignments for Scott included stints in the far north of Quebec and the sunny southern climate of Mexico. Much of Scott's work time will be spent in fixed-wing aircraft and helicopters.

Jason Butler, Chad Parsons, Chris Sheppard, and Philippe Chiasson will need their passports because they will be spending much of their time in international waters and landing in exotic "ports of call" with Sable Mary Seismic Inc. They are crew members of vessels conducting geophysical exploration of the ocean floor.