

# UWI CONTINUING ENGINEERING EDUCATION CENTRE

Clément Imbert\*

## INTRODUCTION

The pace of technological change and progress in today's world demands that professionals, particularly in areas such as engineering, keep up with the latest developments in their field. The technical knowledge that engineers acquire becomes, to a greater or lesser extent, obsolete in a few years in several areas. In addition the emphasis of the work undertaken by professional engineers changes as their careers progress. As a result they require further training or retraining during the course of their careers. Continuing education has therefore become essential for the modern professional engineer.

It is now well recognized that continuing education benefits employees as well as employers, the professions and nations. For example, France, in recognizing that continuing education is necessary for economic expansion, has enacted legislation to make employers contribute up to 2% of employees' wages for continuing education. Some professional bodies now have mandatory continuing education requirements for professional license renewal and professional membership such as the state of Iowa in the US and the Institution of Civil Engineers in the UK.

Most employers provide release time from the job and financing for their engineers to attend continuing education short courses. Many large firms provide their own "in-house" continuing education courses in some areas. They may depend, however, on other organizations for some of their training needs, as do most smaller companies. University continuing education programmes, professional societies and specialist training organizations have traditionally filled this need. The Continuing Engineering Education Centre of the Engineering Institute of the Faculty of Engineering of The University of the West Indies was established to satisfy the needs of the Commonwealth Caribbean.

## OBJECTIVES

The general objectives of the Continuing Engineering Education Centre are to satisfy the demand for continuing education in engineering and allied

\* *Chairman, Continuing Engineering Education Centre, Faculty of Engineering, The University of the West Indies*

professions in the region and at the same time generate surplus funds which could be utilized in assisting the Faculty in its development. It is intended to combine the teaching and research resources of the Faculty with the expertise of industry to utilize effectively available engineering knowledge which will lead to an improvement of the economy and living standards of the region.

More specifically, the Centre is charged with the responsibility in the short, medium and long term:

- (i) To administer and/or sanction as appropriate all continuing education activities within the Faculty of Engineering and with which the Faculty is associated.
- (ii) To develop an overall programme of continuing education offerings utilizing the following formats:
  - (a) Short courses
  - (b) Video (Cassette) courses
  - (c) Distance education courses and electronic media programmes including TV and satellites
  - (d) Specialized MSc, Diploma and Certificate courses
- (iii) To establish professional development programmes which will aid practicing engineers in meeting their individual needs.
- (iv) To develop linkages between the Faculty of Engineering and other academic institutions, professional bodies and industry that will facilitate the exchange of faculty staff as well as information and knowledge related to continuing education activities.

## DEVELOPMENT OF CONTINUING EDUCATION IN THE FACULTY

### Continuing Education Committee (CEC)

The Faculty of Engineering established in 1972 a Continuing Education Committee to respond to the needs



of practising engineers in the region. Since then, over two hundred short courses, seminars, workshops, meetings, conferences and exhibitions, on a wide range of topics, have been conducted by the Faculty, often in collaboration with local and international organizations. Over five thousand engineers and allied professionals, mainly from industry, have participated in these continuing education activities. The surplus funds generated have been used for the development of the Faculty in several ways particularly in assisting academic staff members of the Faculty to attend various courses/conferences and other professional development programmes and to acquire academic materials, computer hardware and software and other items of equipment.

### **Recent Developments**

#### ***Continuing Engineering Education Centre***

The Continuing Education Committee of the Faculty of Engineering evolved into the Continuing Engineering Education Centre (CEEC), one of the many Centres of the Engineering Institute (in the Faculty of Engineering) with its own staff and relatively autonomous status.

The Engineering Institute started operations in mid 1994 and was formally launched in September 1994 [1]. The Continuing Engineering Education Centre reports to the Board of Directors of the Engineering Institute. The Centre has a Steering Committee made up of representatives of each Department of the Faculty of Engineering and also includes members from industry and commerce and other relevant organizations. The Management Committee comprises the members of the Steering Committee from the Faculty of Engineering.

#### ***Increase in Number, Scope and Venues of Courses***

In the last five years, the number of courses workshops and conferences offered by the Faculty has increased dramatically from about five to six per year in the 1970s and 1980s to about thirty by 1993. Certain courses in the recent past have been so "popular" that they have had to be repeated in some cases several times. Examples are "Human Resource Management", "Basic Food Processing", "Geographic Information Systems", "Rational Use of Energy", and "Preventive Maintenance" and courses in AutoCAD. In July 1993 there was, for the first time, an Engineering Summer School. This took the form of a very successful four-week "Summer School in AutoCAD"

held in collaboration with Dr. Richard Pilkington of Salford University, UK. This was a follow-up to a regional course in AutoCAD conducted the previous year by Dr. Pilkington and which was sponsored by the Commonwealth Science Council and the British Council. The Engineering Summer School was successfully continued in 1994 and is expected to be a regular feature in the future. The success of courses in Computer Aided Engineering and Design has led to a proposal for the establishment of a separate Centre in order to cater also for the need/demand for services, research and development in the area [2]. The Computer Aided Engineering and Design Centre is being nurtured by the Continuing Engineering Education Centre with which there will be close cooperation, particularly in the early stages, because of the emphasis on training in the initial years. This close cooperation between the Continuing Engineering Education Centre and other Centres of the Engineering Institute will also be a feature of those Centres which have continuing education as a significant part of their operations.

Whereas in the 1970s and 1980s, almost all courses were held in Trinidad and Tobago, in recent years, courses have been done in several of the other Caribbean territories including Barbados, Grenada, Guyana, Jamaica, St. Lucia, St. Vincent and Tortola for local and regional participants. In the recent past also several courses have been specifically tailored for, and delivered to, specific industries and/or industrial sectors such as the petroleum and water and sewerage companies in Trinidad and Tobago as well as (electrical) power companies in Trinidad and Tobago, and Jamaica and throughout the Caribbean through CARILEC and the food industry in the Eastern Caribbean. Table I gives an indication of the range of courses that have been done recently.

#### ***Linkages with External Organizations***

In the past, the Continuing Education Committee had collaborated with some external organizations but in the last few years, this has increased extensively and the Continuing Engineering Education Centre has been collaborating recently with several national, regional and international industrial, professional and other organizations such as the Petroleum Company of Trinidad and Tobago, Complete Computer Systems, Jamaica Public Service, Association of Professional Engineers of Trinidad and Tobago, Trinidad and Tobago Bureau of Standards, Metal Industries Company, UWI Engineering Student Society, Jamaica Institution of Engineers, Council of Caribbean



- Use of Computers in Engineering Education
- Data Networks
- AutoCAD Courses
  - Introduction to AutoCAD
  - Customizing AutoCAD
  - Linking AutoCAD with a Maintenance
  - 3-D Drawing with AutoCAD
  - CAD Systems Management
  - Update to Release 12
  - Rendering in AutoCAD
- Robotics: Technology and Control
- Oil Analysis for Predictive Maintenance
- C.D.B. Workshop on Preventive Maintenance
- Decision Systems for Production Management
- Production Operations
- Management for World Class Productivity - 15 Week Evening Programme (4Courses)
- Human Resource Management (Current Approaches in Several Areas)
- Industrial Ergonomics
- Finance for Engineers
- Total Quality Management
- Geographic Information Systems
- Remote Sensing
- CIB International Conference - W 65 Organization and Management of Construction
- Concrete Technology Update
- Asphalt Paving Technology
- Ground Water Flow
- Rational Use of Energy
- Food Processing Technology
- Corporate Environmental Management
- Analysis of Engineering Failures
- Industrial Health & Safety

Table 1: Range of Courses conducted recently by the Continuing Engineering Education Centre, Faculty of Engineering, The University of the West Indies

Engineering Organizations, Caribbean Institute of Food and Technology, Caribbean Industrial Research Institute, Caribbean Development Bank, Pan American Health Organisation, Canadian International Development Agency, Canada Awards Training Project, USAID, Commonwealth Science Council, Commonwealth Engineers' Council, International Association for Continuing Engineering Education, UNESCO, International Council for Building Research, Studies and Documentation, Technical University of Nova Scotia in Canada and Salford University in the UK., Oilab Lubrication Ltd. of the UK. and W. R. Hayes Associates of Ohio, USA.

### Recent Major Projects

Some of the major projects that have been negotiated recently include:

- (i) A US\$84,000.00 project sponsored by Canada Training Awards Project (CTAP) for a four-week course in "Cartographic Design and Mapping Production" for participants from all over the Caribbean in the first quarter of 1994. The latest technology is being acquired to establish an advanced centre in this area in the Faculty of Engineering.

- (ii) The initial commitment by CFTC (Commonwealth Fund for Technical Cooperation) of £20,000.00 towards the Development of a Computer Aided Engineering and Design Centre for the Caribbean. Negotiations with the Commonwealth Secretariat have yielded a further £30,000.00 for a major regional training project, which represents the first year's allocation of what is expected to be a three-year programme initially. Encouraging discussions are also taking place for substantial private sector involvement in the operations of this Centre.
- (iii) Courses with USAID for regional participants (more particularly from the Eastern Caribbean) in food Technology. A four-week series of such courses was conducted in August/September 1994 in the Eastern Caribbean - project cost over US\$50,000.

#### CONCLUDING REMARKS

In the last two years, the Continuing Engineering Education Centre has had an average annual turnover of over TT\$1,000,000.00 with a cash surplus of well over TT\$200,000.00 (excluding staff honoraria) and has acquired for the Faculty over TT\$250,000.00 worth of equipment and software. These achievements have been attained without any grants or seed funding.

Plans for the (near) future include development of video courses (for which much equipment has been purchased), specialized postgraduate and certificate courses, (e.g. Maintenance Management), advanced GIS and cartographic services and enhancement of the physical and electronic infrastructure for distance

education, and closer links with companies, government and other organizations to help meet their specific training needs.

Discussions with engineers, human resource personnel and organizations throughout the Caribbean have revealed a significantly larger need and market for Continuing Engineering Education, throughout the Caribbean. In pursuance of this objective a needs analysis was conducted in the region and strategic alliances have been forged with industrial, educational and professional organizations in the territories. A programme of short courses has been formulated for the region and has been progressing very well.

There has been an increase in requests for academic credit for continuing engineering education courses and for specialized longer term courses. The academic committees of the University need to be sensitized to the need for relatively quick responses to requests for University certified courses which may not form part of its regular offerings, but which can be delivered by the Continuing Engineering Education Centre and similar units in other faculties.

#### REFERENCES

1. Mc Gaw, D.R., "Engineering Institute", (1994), West Indian Journal of Engineering, Vol.17, No. 1, July, pp. 46-48.
2. T. M. Lewis and C. A. C. Imbert, "Establishment of a Computer Aided Engineering and Design Centre at The University of the West Indies", 6th World conference on Continuing Engineering Education, Sao Paulo and Rio de Janeiro, Brazil, May 8 - 12, 1995. (In Press).