The Panel of experts wishes to record its sincere appreciation to the Staff of Wawasan Education Foundation for looking after all aspects of our meeting in Kuala Lumpur. The occasion was both an enriching and pleasurable one.

The Panel also wishes to record its sincere thanks to Annette Bacchus, of the Commonwealth of Learning, for transforming our draft reports into a superb document. Her attention to detail and language has made this report that much better.
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GAJARAJ DHANARAJAN

Gajaraj (Raj) Dhanarajan joined COL as its second President on 1 September 1995. Dr. Dhanarajan has been involved in distance education and open learning for over 25 years. Starting his career as a research officer and lecturer with the School of Biological Sciences at the University of Science Malaysia, Dr. Dhanarajan became increasingly involved in distance education. He later served as Associate Professor in Distance Education and Deputy Director of the University’s Centre for Off-Campus Studies. He joined the newly established Open Learning Institute of Hong Kong (now the Open University of Hong Kong) in 1989 as Associate Director (Academic), and served as Director from 1991 to 1995. He was conferred Professor Emeritus of the Open Learning Institute of Hong Kong in 1995.

In 1994, he was conferred with an Order of Chivalry (which conveys the title of Dato’) by the State of Penang, Malaysia. He has also received honorary degrees from the University of Maryland University College, USA (Doctorate in Humane Letters, 1992); the British Open University (Doctor of the University, 1995); Kota Open University, Rajasthan, India (Doctor of Letters, 1996); the University of Abertay Dundee, Scotland (Doctor of Education, 1996); Charles Sturt University, Australia (Doctor of the University, 1998); Athabasca University, Canada (Doctor of Letters, 1999); Allama Iqbal Open University, Pakistan (Doctor of Philosophy, 1999); the Open University of Hong Kong (Doctor of Social Science, 1999); and the Open University of Sri Lanka (Doctor of Letters, 2000).

In 1996, The College of Preceptors, London, awarded him an Honorary Fellowship and in 1997, he received the first Asian Association of Open Universities Meritorious Service Award to the Cause of Distance Education in Asia.

Dr. Dhanarajan has also been Secretary General of the Asian Association of Open Universities, a member of the Executive Board of the International Council for Distance Education (ICDE), educational advisor to the International Union for the Conservation of Nature and has served on several international consultancy bodies.

He is a Malaysian citizen and holds BSc and MSc degrees from the University of Madras, a DIC and an M.Sc. from the Imperial College of the University of London and a PhD in Biology from the University of Aston in Birmingham.

BOB BUTCHER

Since graduating with a BSc (Hons.) from University College London and a PhD from the University of East Anglia, Dr. Bob Butcher has worked in a number of higher education institutions. He now has over 20 years experience in the field. The majority of this time has been spent in open and distance education, first with the UK Open University and since 1993, with the Open University in Hong Kong. He currently holds the post of Deputy Director of the Open University of Hong Kong’s Li Ka Shing Institute of Professional and Continuing Education. His particular interests are in the area of student support models in open and distance learning as well as quality assurance.
PAULINE CHENG

Pauline Cheng joined the Finance Unit of the Open University of Hong Kong (OUHK) (formerly the Open Learning Institute of Hong Kong) in 1991 and is currently a Senior Accounting Officer taking care of budgeting and investment. The OUHK has a turnover of HK$500 million with active student of around 24,000 and over 500 full-time staff and close to 2,000 part-time staff.

OUHK was required to be self-financing on its fifth year of operation; from then on operating expenditures would mainly be financed by tuition fees paid by students and financial aids would be necessary. Since joining the OUHK, Pauline’s major tasks included the achievement of self-financing through effective allocation of resources and the establishment of student financial assistance schemes. Various physical resources development plans, for instance, purchase of a regional learning centre, upgrading of information technology equipment and software, purchase of a permanent office in Mainland China, etc., had also been realised in the past decade. Most of which were financed through either recurrent surplus and/or donations.

After obtaining her BBA (Honours) in 1985, Pauline completed her Master of Finance degree in 2000 and is currently a doctoral student of the Macquarie University, Sydney, Australia.

ANDREA HOPE

From 2001 to 2003, Andrea Hope was Education Specialist (Higher Education) at the Commonwealth of Learning, with a particular interest in Quality Assurance and Credit Mobility. Her career in the administration of open and distance learning began at the UK Open University. She was appointed Registrar of the Open University of Hong Kong in 1990. Subsequently, she has been involved in the process of institutional upgrading and quality review as Associate Vice-President (Development) at Lingnan University of Hong Kong (1996–1999), as an independent consultant and most recently as Associate Academic Vice-President of Shue Yan College in Hong Kong since January 2003.

MOLLY N.N. LEE

Dr. Molly Lee is an Associate Professor in the School of Educational Studies in Universiti Sains Malaysia, Penang. She teaches sociology of education and science teaching methods. Her research interests are in higher education, teacher education, private education, science education, educational policies, women and education. She has published four monographs and over 30 articles on various topics on education in Malaysia. She was a British Council scholarship recipient, a Fulbright Fellow, a founding member of the Comparative Education Society Asia and Malaysia Educational Research Association, and is currently a member of the Penang Education Consultative Committee. She has done consultancy work with various international agencies including the World Bank, IDP Australia and the Commonwealth Foundation.
ROGER MILLS

An experienced distance educator, specialising in student support systems and services, Roger Mills has been with the UK Open University in six different roles over 32 years, including that of Pro-Vice-Chancellor. He is currently Regional Director of the Open University in the East of England with responsibility for over 17,000 students, 750 Associate Lecturers and 80 full-time academic, advisory, administrative and support staff. In 1998, he was responsible for managing the Quality Assurance Agency’s Continuation Audit of the Open University and in 2001 reviewed the provision of National Vocational Qualifications in the Open University.

He has been involved in the validation of the provision of a number of institutions outside the UK Open University. He is currently joint Chair of the Steering Group of a joint National Institute of Adult Continuing Education/Open University project researching the impact of Information and Communication Technology on Social Exclusion.

CHRISTINE SWALES

Christine Swales began her career in academic and educational publishing and moved into distance education in 1981 setting up and managing the publishing and materials development systems for a private open university in Southeast Asia, using the British Open University model. She has subsequently specialised in setting up open and distance learning (ODL) programmes, programme design, project management including scheduling and quality issues, writing, instructional design, editing and consultancy for UK and overseas academic institutions and other bodies. She has written a number of practitioner handbooks and manuals on materials development and copyright for the Commonwealth of Learning.

Her experience is in the establishment of instructional design and publishing systems, in course materials development in a range of media and in their subsequent transfer between institutions and environments. She has particular expertise in writing distance learning materials at undergraduate and postgraduate levels, transferring teaching materials between global institutions, staff development and training for developing and presenting DL programmes, contracts and copyright and academic and university publishing.

WONG TAT MENG

Since 1993, Wong Tat Meng has been the Chair, Professor and Dean of the School of Science and Technology, The Open University of Hong Kong. From 1972 to 1993 he was attached to Universiti Sains Malaysia in Penang where he served in various capacities including Dean, School of Biological Sciences (1977–1979) and Foundation Director, Centre for Marine and Coastal Studies (1991–1993).

Academically, he has published widely in the area of marine biology, benthic communities, aquaculture and marine pollution during his service with USM. Since joining the Open University of Hong Kong, his interest has shifted to open, distance and virtual learning systems and quality assurance in distance education institutions. He has undertaken consultancies for EPMI and Shell Petroleum companies (Malaysia), IDRC (Canada) and the ASEAN Secretariat, as well as conducted international workshops on various aspects of Quality Assurance in Distance Education.
Professionally, he has held leadership positions in a number of learned societies and professional organisations including Secretary-General, Asian Association of Open Universities (1999–2002), President, Malaysian Society of Marine Sciences (1985–1987) and Council member, Malaysian Scientific Association (1982–1984). He has organised numerous international conferences on open and distance learning and is currently the Secretary-General of the Organising Committee for the 21st International Council for Open and Distance Education (ICDE) World Conference to be held in Hong Kong in June 2003.
This Report concerns the establishment of the Open and Virtual University of Malaysia (OVUM). The ultimate goal of the venture is for the University to become a virtual ‘open’ university. However, achievement of this aim will depend very much on the development of the appropriate digital infrastructure in Malaysia. Currently, broadband is only available in the vicinity of the capital city, Kuala Lumpur, and Georgetown, Penang. Appliance and connectivity costs are high and only affordable by a small proportion of the population. Until the technology environment is friendly, affordable and universally available, print-based learning materials supported by local tutorial centres should be the approach.

The Wawasan Education Foundation (WEF) will sponsor the University. The Foundation is a not-for-profit arm of one of the country’s political parties. The party is a component of the ruling party in the country and is expected to be in power in the foreseeable future. There is an arm’s length relationship between the Foundation and the political party. The trustees of the Foundation are all non-politicians.

The Foundation will be responsible for raising the necessary finances to support the University. To date, they have pledges of up to M$105 million. The expectations are high that this amount will increase. Moreover, there is already a pledge from a benefactor of land and buildings on the island of Penang to provide the location for the headquarters of the University.

This is not a report of a feasibility study. It is assumed that the (WEF), sponsoring an Open and Virtual University of Malaysia (OVUM), is familiar with the educational landscape of Malaysia and is confident that this landscape is appropriate for another university serving the needs of a population that cannot attend a campus for full-time study. This population is made up of individuals who are comfortable to study mostly on their own with a range of local support that will enrich the learning experience.

The panel of experts who have put together this report are all familiar with the ways that distance-teaching universities are established and function. They bring together their individual and collective experiences to describe in some detail:

- how a distance education system should be assembled;
- kinds of academic programmes that could be provided for Malaysians;
- arrangements for learner support in various parts of the country;
- parameters applied to arrive at financing such a venture;
- staffing required including full- and part-time, academic and non-academic;
- protocols necessary for good course development and delivery;
- design and development of administrative structures and management information systems to enable the organisation to be efficient and effective;
- processes and procedures for quality assurance; and
- infrastructure including the ‘campus’, library and learning resources and technology support.
In this report, we have taken as given that OVUM will be underpinned by the philosophy of *open learning*; it will mostly teach its students *at a distance* and at some time in the future, when the country’s digital infrastructure is supportive and appropriate, become *virtual*. We would envisage a gradual evolution of the delivery methods to *virtuality* over a number of years.

Resource and time constraints did not allow the panel to travel around the country extensively to ascertain the demand for and availability of education and training in Malaysia. Also, the team did not meet in person during the study phase. Our interactions were mostly carried out through the Internet with the occasional audio-conferencing. Each chapter of the report was written by individual experts and reviewed by other members of the panel for accuracy, consistency, appropriateness and currentness.

In response to the request from the Wawasan Education Foundation, Malaysia, the report has a number of parts:

- An Open University with a Difference.
- Open Learning – Guiding Philosophies.
- Malaysian Educational Environment for Post-Secondary Studies.
- Academic Programmes.
- Teaching and Learning Methods.
- Student Support Arrangements.
- Development of Learning Materials.
- Governance, Administration and Management of OVUM.
- Financing of OVUM.
- Quality Assurance.
- Library and Learning Resources and Campus Facilities.
- Technology Support
CHAPTER 1: AN OPEN UNIVERSITY WITH A DIFFERENCE

Malaysia already has a publicly owned ‘open’ university (UNITEM) with financing through a start-up grant from the Government. It is registered as a ‘private’ university for purposes of legislation; the implication is that the University is self-financing after the initial start-up grant. UNITEM is governed by a board of directors all of whom are from the 11 conventional universities of the country. UNITEM may not be totally ‘open’ in its practice and this could disenfranchise many Malaysians from making use of the opportunity. Moreover, the fees currently charged by UNITEM are considered high.

In defining the nature and character of the proposed OVUM, the panel was clear that this university would be different to any other provider of tertiary education in Malaysia as outlined below:

- First and foremost, it will be a University without ‘walls’ – ‘open to people, ideas, teaching methods and innovation’.

- Second, it will recognise that it is not required to make a judgement on whether a citizen is eligible or not eligible to participate in higher education. Its task is to ensure that the citizen is given an opportunity to experience higher education should she or he wish to do so.

- Third, the University will be free of the shackles and constraints that bind other universities. The University should consciously work towards removing barriers to an individual’s learning, barriers such as location of learning, pace of learning, time and style of learning and the personal cost of learning. Thus the University will admit students above 18 and will not impose an upper age limit and it will be open to ALL residents of Malaysia. It would also mean building and acquiring study centres, employing part-time tutors, establishing regional administrative structures and mobilising local resources for residential schools, classes, etc. Modularisation of the programme will also be built into the system and fee structures developed to enable payment for modules rather than payment for academic years. All these measures should keep the cost of learning affordable to the ordinary working Malaysian.

- Fourth, the University will make access to ALL as its primary mission and purpose and will do everything possible to make this happen. OVUM is expected to be totally ‘open’. A foundation studies programme will be developed to act as bridge between prior learning and post-secondary education, enabling those without adequate prior learning to participate in the University’s regular programme.
• Fifth, the University will set up systems to recognise prior learning and enable learners to move from one level of learning to the next in a seamless fashion as is possible. The University’s curriculum is expected to be flexible in its entry and exit requirements. This would mean developing a strong credit bank facility and having exit certification at certificate, diploma, degree and Masters level. The ‘ladder of attainment’ culture is to be firmly embedded in the institution. Undergraduate qualifications will be named (BBA, BSc, etc.).

• Sixth, the University will apply all communication technology tools that are available to Malaysians to construct and deliver learning. However, it will keep in mind the access to these tools by potential learners in order to ensure that its primary mission is not compromised. This would mean that self-instructional multi-media course materials should drive the teaching and learning environment. This may be difficult to achieve in the early years and therefore some compromises on media will have to be made. Print-based materials will dominate but these will be instructionally designed and academically sound.

• Seventh, although the University will be open to ALL regardless of prior learning experience, its exit standards will be on a par with national and international benchmarks for the academic credits it will award. This would mean that the curriculum, course development, course production, delivery and assessment would be subjected to intense external scrutiny and audit to achieve successful accreditation by the Malaysian authorities. Internal quality assurance protocols will be developed for all functions. To further identify and associate itself with the broader culture of higher education the University will follow the typical Malaysian academic year of two semesters. This will not preclude some courses or even a majority of courses straddling two academic semesters. The University may be different in its philosophical and practical underpinnings, but in all other respects it will be a typical Malaysian University.

• Eighth, the University will make its curriculum relevant to the principles and ideals of life-long learning. Its courses will be utilitarian in character and support the nation’s desire to be an active player in the knowledge economy by the high levels of skills and knowledge of the workforce. Industry, Business and Government should find the courses appropriate for their human resources needs. Language (communication) and numerical skills are important, as are knowledge of and ability to apply ICTs in daily life.

Throughout this report, three terms: distance education, open learning and virtual learning are used. Definitions of these terms are:

1. **Distance education** (DE) is the delivery of education to students who cannot attend a campus full-time. Learning takes place through self-instruction at the time, place and pace of the learner’s choice. Organised
learning support in the form of tutorials, residential schools, laboratories and peer learning forums may be provided.

2. **Open learning** is access to formal learning for a qualification without having to demonstrate prior learning achievements. However, such a demonstration may be required to ensure that learners are prepared to meet the challenges of upper level courses.

3. **Virtual learning** is learning in an educational environment mostly delivered through or buttressed by information and communications technologies (ICTs), especially the Internet and the World Wide Web (WWW).
In the academic year, 2000–2001, about 1.7 million Malaysian children were in secondary schools. In 2001–2002, this number would have gone up slightly say at around 1.85 million. Malaysia’s demography indicates that the rate of increment will be similar at least until the end of the decade. A total universal level of participation in primary school education by the relevant age cohort is a great credit to Malaysia and its educational policy. While transition from primary school to middle school and from middle school to senior school is not quite universal, nevertheless it is impressive. In the year 2001, about 350,000 young people completed the equivalent of a school certificate (SPM, ‘O’ levels) and of these about 25% went on to pre-university programmes (STPM, ‘A’ levels, local universities matriculation programmes, etc.).

Despite the success at the school level, participation in the country’s educational system beyond secondary school education and training has been less than satisfactory. Between 2001 and 2005, participation rate, which has been low (around 16% throughout the 1970s and 1980s), is expected to improve rapidly according to recent information from the Ministry of Education. Polytechnics, Community Colleges, Teacher Training Colleges, Universities and private colleges take these rates to some 30% of the age cohort. On an annual basis, this may still leave some 150,000 Malaysian youth without access to any form of post-secondary education or training. These are the very people who form the bulk of the nation’s labour force.

Yet as a nation, Malaysians are committing to be active global players in the knowledge economy that depends on the knowledge and skills of the people. If Malaysia is serious about its future intentions, then it has to make two fundamental provisions in its education and training strategies. The first concerns increasing participation rates in higher education of those coming out of schools (post-SPM) to between and 60% in the next decade. The second concerns opening education and training facilities (up to university undergraduate level) to those already in the workforce. The second is extremely important, as those currently in the workforce will continue to be in the workforce for at least another 25 years or more. Malaysia needs to do this in order to be competitive in a global economy that is fast moving away from manufacturing to service and from brawn to brain. Its nearest competitor, Singapore, is already well on the way to achieving in excess of 40% of its workforce with post-secondary learning; further afield the OECD countries are considering in excess of 60% as their minimal target. Providing opportunities for advanced learning to some 9 million young people between the ages of 15 and 44, who make up the bulk of the nation’s workforce and who missed out experiencing higher learning earlier, is a daunting task. It cannot be accomplished by traditional methods of delivering education and training. Innovations, such as open and distance learning (ODL) are more than an insignificant option. UNITEM is currently offering such an option but it is constrained and therefore its
efforts may not be enough. Another university with a much broader and more egalitarian philosophy is needed. OVUM is a response to this challenge.

Open learning and distance education are relatively new concepts. It is only during the last four decades that these innovations have taken root in many countries across the world. Today, some 20 to 25% of the world’s post-secondary education participants study through distance education with dedicated single-mode distance teaching institutions or with external and flexible study departments of conventional systems. Not all of the distance teaching systems offer open access (for example, UNITEM) and not all open access systems function as distance teaching institutions (for example, Ramkhamkeng Thailand). We suggest that OVUM should be both a *distance teaching* institution and one that provides *open access* as well.

In an open access distance teaching system, entry to foundation level studies is not governed by prior qualification other than a person’s ability to read, write and self-instruct. When operating as a distance teaching system, there is a physical separation between ‘teacher’ and learner most of the time. Study materials (print, CD-ROM) form an important part of instruction and both broad and narrow cast technologies such as television, radio, audio and video tapes, multi-media aids are used to bridge the gap between the ‘teacher’ and learner. While the University will be operating mostly in a DE mode there will be occasions when it could also resort to face-to-face instruction.

OVUM should be seen as a means of expanding post-secondary education and training opportunities to as many Malaysians as possible and thereby making a significant contribution to the nation’s 2020 vision and aspirations to be a knowledge-based society. The University should therefore not be dependent on any single means of delivering instruction to students. Learners will be able to select a number of ways by which they receive instruction. The system will attempt to provide opportunities to access the programmes of study and the materials being studied in ways that are most appropriate to the individual. The University will place the students in control of the learning materials, thus enabling them to study at a pace and in a way best suited to them.

In positioning itself to provide flexible learning access, OVUM has the potential to use one or more instructional media, making judgments about the media mix on the basis of their applicability or usefulness in particular circumstances. Thus, OVUM can choose to employ conventional classroom instruction, audio and video materials, computerised materials, Internet, web-based, print and telephone instruction. In the early years of the University’s life, practical considerations as well as the availability of the technology to students will dictate the range of instructional options.

We wish to reiterate that the idea of openness must relate to access to education regardless of previous academic achievements. Even where these serve as effective measures of the ability of young people to study at the tertiary level, they become increasingly irrelevant as indicators of the capacity of adults to benefit from further education. Openness also reflects the value to society by encouraging, instead of
erecting barriers against, education as a life-long pursuit. People who improve their knowledge, understanding and skills are assets to society. When they re-equip themselves as they progress though their careers and in the face of advances in knowledge and economic as well as social change, they enhance their value to their societies as well as bring advantages to themselves. A policy of open access removes obstacles to study. It also shifts responsibility onto the students to establish whether they have the aptitude and application necessary to progress through higher education.

We would therefore advocate that the WEF accepts the principle of open access. The University will be open to all individuals over the age of 18 to embark on a course of study, subject only to practical constraints on the number of students that OVUM will be able to admit at any one time. There will be no principle of selecting those who, on some measure, are considered to be best qualified to study. In as far as the numbers to be admitted to study has to be constrained, admission could be in order of application while recognising the important place of advice and counselling in the application process.

In operating a policy of open access, OVUM must also accept the responsibility that follows from this. First, to those seeking admission, OVUM must make clear the nature of the commitment that study at the OVUM involves, and the extent of the student’s responsibility. Second, OVUM must provide advice and guidance to potential students so that they can assess whether they have the language skills and general capacity to undertake particular forms of study. The choice of whether a student proceeds with a course of study must nevertheless remain with that individual. OVUM should be able to offer guidance and advice, but it is for the individual to decide whether to accept or not. Third, students embarking on a course of study within OVUM must receive clear and explicit advice about the appropriate routes forward and any pre-requisite knowledge and skills, which study of any course, will demand. Fourth, there is an obligation imposed on OVUM by the policy of open access to ensure that students who embark on a course of study do so with a reasonable expectation that they will be able to enhance their educational experience. OVUM will achieve all of these through the quality of the learning resources it provides; by structuring its programmes such that a ladder of opportunity allows students to progress step by step, gaining credit for what they achieve and being able to call a halt at various stages; and by ordering learning so that it can realistically be pursued alongside their other demands.
CHAPTER 3: POST-SECONDARY LEARNING OPPORTUNITIES IN MALAYSIA

Malaysia has made tremendous strides in the provision of basic education by expanding its primary and secondary school system to accommodate every child of school-going age in the country. The enrolment rates for primary, lower secondary and upper secondary levels were 96.77%, 85.0%, and 72.61% respectively in 2000 (Ministry of Education, Malaysia, 2000). These figures show that Malaysia is approaching universal secondary education. As a result of this great success, there is an ever-increasing demand for post-secondary education. In 2000, the enrolment rate for post-secondary and college level (17+–18+) was 16.24%, and 8.06% for the university level (19+–24+). The participation rate in tertiary education of those in the 17–24 age cohort is expected to increase from 25% in 2000 to 40% in 2010. Therefore, there is a great need to provide ample post-secondary learning opportunities to school leavers as well as working adults. The purpose of this chapter is to analyse the demand and supply of higher education in Malaysia with respect to short-term and long-term needs.

3.0 DEMOGRAPHY AND POPULATION DISTRIBUTION

The total population in Malaysia in 2002 was 24.37 million and it is estimated to reach 26.04 million by 2005, growing at an average annual rate of 2.3%; the size of the labour force is expected to reach 11.2 million (Malaysia, 2001). People in the 20–44 age group of the labour force will be seeking recurrent education and training opportunities so that they can adapt to the rapidly changing demands of the workplace as Malaysia moves from an industrialised economy to a globalised knowledge economy.

Table 3.1: Total population according to age groups in 2000

<table>
<thead>
<tr>
<th>Age range (years)</th>
<th>Number of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–24</td>
<td>2,087,173</td>
</tr>
<tr>
<td>25–29</td>
<td>1,921,052</td>
</tr>
<tr>
<td>30–34</td>
<td>1,800,196</td>
</tr>
<tr>
<td>35–39</td>
<td>1,705,044</td>
</tr>
<tr>
<td>40–44</td>
<td>1,487,498</td>
</tr>
<tr>
<td>Total</td>
<td>9,000,963</td>
</tr>
</tbody>
</table>

Source: Malaysia (2000a)
There were about 9 million people between the ages of 20 and 44 in Malaysia in 2000. The distribution of this group of people according to states is given in Table 3.2. Johor, Selangor and Sabah have the most number of people in this age range. As for the labour force, there were about 9.9 million people in 2001 and 71.5% are in the 20-44 age group (see Table 3.3).

**Table 3.2: Distribution of people 20–44 years of age according to States**

<table>
<thead>
<tr>
<th>State</th>
<th>Number of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johor</td>
<td>1,106,916</td>
</tr>
<tr>
<td>Kedah</td>
<td>567,537</td>
</tr>
<tr>
<td>Kelantan</td>
<td>371,931</td>
</tr>
<tr>
<td>Melaka</td>
<td>232,569</td>
</tr>
<tr>
<td>N. Sembilan</td>
<td>317,477</td>
</tr>
<tr>
<td>Pahang</td>
<td>460,714</td>
</tr>
<tr>
<td>Perak</td>
<td>687,633</td>
</tr>
<tr>
<td>P. Pinang</td>
<td>558,275</td>
</tr>
<tr>
<td>Perlis</td>
<td>64,622</td>
</tr>
<tr>
<td>Sabah</td>
<td>993,294</td>
</tr>
<tr>
<td>Sarawak</td>
<td>788,932</td>
</tr>
<tr>
<td>Selangor</td>
<td>1,874,113</td>
</tr>
<tr>
<td>Terengganu</td>
<td>285,116</td>
</tr>
<tr>
<td>Kuala Lumpur</td>
<td>656,729</td>
</tr>
<tr>
<td>W.P. Labuan</td>
<td>32,085</td>
</tr>
</tbody>
</table>

*Source: Malaysia (2000a)*

**Table 3.3: Percentage distribution of labour force by age group, Malaysia, 2001**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Total (’000)</th>
<th>Male (’000)</th>
<th>Female (’000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15–64 (%)</td>
<td>9,892.1</td>
<td>6,435.9</td>
<td>3,456.2</td>
</tr>
<tr>
<td>15–19</td>
<td>6.8</td>
<td>6.3</td>
<td>7.7</td>
</tr>
<tr>
<td>20–24</td>
<td>16.1</td>
<td>14.7</td>
<td>18.9</td>
</tr>
<tr>
<td>25–29</td>
<td>16.8</td>
<td>16.5</td>
<td>17.4</td>
</tr>
<tr>
<td>30–34</td>
<td>14.4</td>
<td>14.7</td>
<td>13.9</td>
</tr>
<tr>
<td>35–39</td>
<td>12.9</td>
<td>13.1</td>
<td>12.5</td>
</tr>
<tr>
<td>40–44</td>
<td>11.3</td>
<td>11.5</td>
<td>11.1</td>
</tr>
<tr>
<td>45–49</td>
<td>9.0</td>
<td>9.3</td>
<td>8.4</td>
</tr>
<tr>
<td>50–54</td>
<td>6.8</td>
<td>7.4</td>
<td>5.5</td>
</tr>
<tr>
<td>55–59</td>
<td>3.7</td>
<td>4.1</td>
<td>2.9</td>
</tr>
<tr>
<td>60–64</td>
<td>2.2</td>
<td>2.5</td>
<td>1.7</td>
</tr>
</tbody>
</table>

*Source: Malaysia (2001)*
3.1 DEMAND AND SUPPLY OF HIGHER EDUCATION

As stated in the Eighth Malaysia Plan, “the demand for tertiary education will continue to grow in tandem with the increase in the number of qualified students and the reducing number of students pursuing their education abroad” (Malaysia, 2001, p. 124). Looking at the demand side, the number of SPM outputs for the last three years and projections for the next 5 years are shown in Table 3.4.

**Table 3.4: SPM outputs**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of SPM school leavers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>309,096</td>
</tr>
<tr>
<td>2000</td>
<td>348,196</td>
</tr>
<tr>
<td>2001</td>
<td>334,667</td>
</tr>
<tr>
<td>2002</td>
<td>372,487*</td>
</tr>
<tr>
<td>2003</td>
<td>396,541*</td>
</tr>
<tr>
<td>2004</td>
<td>398,196*</td>
</tr>
<tr>
<td>2005</td>
<td>422,752*</td>
</tr>
<tr>
<td>2006</td>
<td>441,396*</td>
</tr>
<tr>
<td>2007</td>
<td>474,206*</td>
</tr>
</tbody>
</table>

*Projected figures; Sources: Ministry of Education Malaysia (1999, 2000b, 2001)

On average, there is an increase of SPM school leavers each year. It is estimated that there will be a total of 2.1 million SPM output in the coming five years, a proportion of which will be seeking post-secondary education. Under the Eighth Malaysia Plan (8MP, 2001–2005), the participation rate in tertiary education of those in the 17–23 age cohort is estimated to increase from 25% in 2000 to 30% in 2005. In other words, there will be a total of **630,000** newly qualified SPM students seeking tertiary education in the next five years.

However, this social demand for higher education does NOT take into consideration the number of working adults who would be seeking educational and training opportunities to upgrade themselves in the labour market. Looking at the figures in Table 3.5, only 15.3% of the labour force has tertiary education, and 55.3% of them have only secondary education. In other words, about 5.5 million working adults have attained secondary education. If only 10% of this group of working adults were to seek higher education, there will be another **550,000** people looking for post-secondary learning opportunities in Malaysia.
Table 3.5: Percentage distribution of labour force by education attainment and ethnic group, Malaysia, 2001

<table>
<thead>
<tr>
<th>Educational attainment</th>
<th>Labour force total: 9,892.1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Malaysian citizens</td>
</tr>
<tr>
<td></td>
<td>Total Malaysian citizens</td>
<td>Bumiputera</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>No formal education</td>
<td>5.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Primary</td>
<td>23.7</td>
<td>20.9</td>
</tr>
<tr>
<td>Secondary</td>
<td>55.3</td>
<td>58.3</td>
</tr>
<tr>
<td>Tertiary</td>
<td>15.3</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Source: Department of Statistics, Malaysia (2001)

On the supply side, Table 3.6 shows student enrolments in both public and private higher education institutions in 2000 and 2001. In 2001, the total student enrolment was 616,336 and about 56% of this total was enrolled in the public sector.

Table 3.6: Student enrolments in higher education institutions, 2000 and 2001

<table>
<thead>
<tr>
<th>Types of educational institutions</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polytechnics</td>
<td>43,248</td>
<td>49,612</td>
</tr>
<tr>
<td>Teacher Training Colleges</td>
<td>23,740</td>
<td>17,766</td>
</tr>
<tr>
<td>Community College</td>
<td>-</td>
<td>1,024</td>
</tr>
<tr>
<td>Tunku Abdul Rahman College</td>
<td>17,547</td>
<td>22,323</td>
</tr>
<tr>
<td>Public universities</td>
<td>251,593</td>
<td>254,707</td>
</tr>
<tr>
<td>Sub-total I</td>
<td>336,128</td>
<td>345,432</td>
</tr>
<tr>
<td>Private universities</td>
<td>n.a.</td>
<td>27,060</td>
</tr>
<tr>
<td>Private colleges</td>
<td>209,589</td>
<td>243,844</td>
</tr>
<tr>
<td>Sub-total II</td>
<td>209,589</td>
<td>270,904</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td>545,717</td>
<td>616,336</td>
</tr>
</tbody>
</table>

Sources: Ministry of Education Malaysia (2000b, 2001a); Kementerian Pendidikan Malaysia (2001a)
During the 8MP period, the Government will further expand the absorptive capacity of the public institutions of higher learning. The establishment of four new universities in Melaka, Negeri Sembilan, Pahang and Perlis will provide an additional 20,000 places at degree level by 2005. The establishment of polytechnics in Balik Pulau, Mersing and Miri will provide an additional capacity for 10,800 students, while ten new city polytechnics will accommodate a total of 6,000 students at the diploma and certificate levels (Malaysia, 2001).

The 8MP estimated that the total enrolment at tertiary level in public institutions would increase from 321,729 in 2000 to 526,679 in 2005. Despite the Government’s efforts, there will still be a shortfall of about 100,000 places for SPM school leavers in the next five years. In addition, it is estimated that there will be another 550,000 working adults seeking further education and training to upgrade themselves.

The private higher education sector will be expected to take up the slack. Currently, the private institutions can provide about 270,000 places and the number is expected to increase as these institutions expand their capacity. Assuming that this capacity will increase to about 500,000 in the next five years, there will still be a short fall of 150,000 places.

Distance learning programmes will play a very important role in making higher education accessible to all those who wish to further their education. In 2000, distance learning programmes catered to about 36,000 students and this figure is expected to increase to 54,000 in 2005 (Malaysia, 2001). Currently, there are two major universities that provide distance education, they are, UNITEM and UNITAR. The latest statistics show that UNITEM had a total enrolment of about 6,500 students in 2002, and UNITAR has a total of about 13,000 students in 2003. These figures show that there is much room for expansion in the field of distance education in the next 5–10 years.

As Malaysia moves towards a knowledge economy, lifelong learning will enhance the productivity and employability of individuals through the use of ICT in distance and web-based learning. More diversified courses will need to be offered in the distance learning mode to cater for different levels of educational attainment and interest.

### 3.2 HIGHER EDUCATION PROGRAMMES

Under the 7MP, the ratio of science to arts students is 42:58 (see Table 3.7). This ratio is going to be reversed in the 8MP. It is stated in the 8MP that “Malaysia requires a pool of Science and Technology manpower to leverage on the new knowledge and technological advancements to achieve sustainable growth. The capacity of S&T related education and training programmes would be further expanded to expedite the achievement of the 60:40 ratio of science to arts students” (p. 115). To achieve this objective, enrolment in S&T degree programmes in local tertiary institutions will be increased.
Table 3.7: Number of first degree graduates from public universities according to fields of studies

<table>
<thead>
<tr>
<th>Fields of studies</th>
<th>7th Malaysia Plan (1996–2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>Arts</td>
<td>78,433</td>
</tr>
<tr>
<td>Arts and Humanities</td>
<td>40,612</td>
</tr>
<tr>
<td>Economics and Business</td>
<td>34,261</td>
</tr>
<tr>
<td>Law</td>
<td>3,560</td>
</tr>
<tr>
<td>Sciences</td>
<td>34,805</td>
</tr>
<tr>
<td>Medicine and Dentistry</td>
<td>4,019</td>
</tr>
<tr>
<td>Agriculture and Related Fields</td>
<td>4,409</td>
</tr>
<tr>
<td>Pure science</td>
<td>6,502</td>
</tr>
<tr>
<td>Others</td>
<td>19,875</td>
</tr>
<tr>
<td>Technical fields</td>
<td>22,765</td>
</tr>
<tr>
<td>Engineering</td>
<td>16,980</td>
</tr>
<tr>
<td>Architecture, Town Planning and Survey</td>
<td>3,201</td>
</tr>
<tr>
<td>Others</td>
<td>2,584</td>
</tr>
<tr>
<td>TOTAL</td>
<td>136,003</td>
</tr>
</tbody>
</table>

Source: Malaysia (2001b)

In a further breakdown of these aggregate figures, Table 3.8 shows the enrolment in first degree programmes in the years 2000 to 2005 in public universities. Table 3.9 shows the enrolment in diploma and certificate programmes in the same period.
Table 3.8: **Enrolment for first degree courses from local public educational institutions, 2000–2005**

<table>
<thead>
<tr>
<th>Course</th>
<th>2000</th>
<th>%</th>
<th>2005</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>81,914</td>
<td>48.0</td>
<td>103,846</td>
<td>42.5</td>
</tr>
<tr>
<td>Arts &amp; Humanities(^1)</td>
<td>40,130</td>
<td></td>
<td>48,208</td>
<td></td>
</tr>
<tr>
<td>Economics &amp; Business(^2)</td>
<td>37,875</td>
<td></td>
<td>50,522</td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td>3,909</td>
<td></td>
<td>5,116</td>
<td></td>
</tr>
<tr>
<td><strong>Science</strong></td>
<td>49,575</td>
<td>29.0</td>
<td>71,897</td>
<td>29.4</td>
</tr>
<tr>
<td>Medicine &amp; Dentistry</td>
<td>6,908</td>
<td></td>
<td>8,656</td>
<td></td>
</tr>
<tr>
<td>Agriculture &amp; Related Sciences(^3)</td>
<td>4,940</td>
<td></td>
<td>5,961</td>
<td></td>
</tr>
<tr>
<td>Pure Sciences(^4)</td>
<td>9,081</td>
<td></td>
<td>14,739</td>
<td></td>
</tr>
<tr>
<td>Others(^5)</td>
<td>28,646</td>
<td></td>
<td>42,541</td>
<td></td>
</tr>
<tr>
<td><strong>Technical</strong></td>
<td>39,305</td>
<td>23.0</td>
<td>68,784</td>
<td>28.1</td>
</tr>
<tr>
<td>Engineering</td>
<td>31,494</td>
<td></td>
<td>57,684</td>
<td></td>
</tr>
<tr>
<td>Architecture, Town Planning &amp; Survey</td>
<td>4,682</td>
<td></td>
<td>7,920</td>
<td></td>
</tr>
<tr>
<td>Others(^6)</td>
<td>3,129</td>
<td></td>
<td>3,180</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>170,794</td>
<td>100.0</td>
<td>244,527</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Notes:**

\(^1\)Includes Islamic Studies, languages, literature, Malay culture, social science, library science and art & design

\(^2\)Includes accountancy, business management, resource economics and agri-business

\(^3\)Includes home science and human development

\(^4\)Refers to biology, chemistry, physics and mathematics

\(^5\)Includes pharmacy, applied science, environment studies, food technology and science with education

\(^6\)Includes property management

**Source:** *Malaysia (2001)*
Table 3.9: Enrolment for diploma and certificate courses from local public higher educational institutions, 2000–2005

<table>
<thead>
<tr>
<th>Course</th>
<th>DIPLOMA</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>%</td>
<td>2005</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Arts</td>
<td>39,871</td>
<td>43.2</td>
<td>55,961</td>
<td>37.8</td>
<td></td>
</tr>
<tr>
<td>Arts &amp; Humanities&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2,746</td>
<td>3.6</td>
<td>3,621</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics &amp; Business&lt;sup&gt;2&lt;/sup&gt;</td>
<td>37,125</td>
<td></td>
<td>52,340</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>17,023</td>
<td>18.4</td>
<td>22,945</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>Agriculture &amp; Related Sciences&lt;sup&gt;3&lt;/sup&gt;</td>
<td>2,071</td>
<td></td>
<td>2,400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others&lt;sup&gt;4&lt;/sup&gt;</td>
<td>14,952</td>
<td></td>
<td>20,545</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>35,410</td>
<td>38.4</td>
<td>69,119</td>
<td>46.7</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>27,419</td>
<td></td>
<td>42,879</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture, Town Planning &amp; Survey</td>
<td>6,710</td>
<td></td>
<td>20,711</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others&lt;sup&gt;5&lt;/sup&gt;</td>
<td>1,281</td>
<td></td>
<td>5,529</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>92,304</td>
<td>100.0</td>
<td>148,025</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>CERTIFICATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts</td>
<td>6,325</td>
<td>22.5</td>
<td>21,434</td>
<td>24.1</td>
<td></td>
</tr>
<tr>
<td>Arts &amp; Humanities&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1,392</td>
<td></td>
<td>4,749</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economics &amp; Business&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4,933</td>
<td></td>
<td>16,685</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1,008</td>
<td>3.6</td>
<td>2,110</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Technical</td>
<td>20,821</td>
<td>73.9</td>
<td>65,304</td>
<td>73.5</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>20,396</td>
<td></td>
<td>64,516</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture, Town Planning &amp; Survey</td>
<td>425</td>
<td></td>
<td>788</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>28,154</td>
<td>100.0</td>
<td>88,848</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
<sup>1</sup> Includes public administration, photography, music and secretarial studies
<sup>2</sup> Includes accountancy, banking and hotel management & catering
<sup>3</sup> Includes home science and human development
<sup>4</sup> Includes computer studies, applied science and environment studies
<sup>5</sup> Includes property management

Source: *Malaysia (2001)*
The enrolment of students in private higher education institutions at the certificate, diploma and degree levels according to the fields of studies in 2001 are shown in Tables 3.10–3.12. At the certificate level, the most popular programme is Computer Technology (37,909 students), and this is followed by Foundation programmes (19,480 students) (see Table 3.8). The Business Administration programmes (11,367), Language programmes (8,898 students) and Engineering and Technical Skills programmes (8,288 students) are also quite popular. At the diploma level, the most popular programmes are Computer Technology (38,824 students) and Business Administration (37,628 students). The next popular are the Engineering and Technical Skills programmes with 18,758 students. At the degree level, student enrolments in Business Administration programmes (29,246 students) exceed all the other programmes. Computer Technology programmes rank second with an enrolment of 13,883, followed by engineering programmes with 9,289 students.

**Table 3.10: Enrolment in certificate programmes in private higher education institutions in 2001**

<table>
<thead>
<tr>
<th>Field of Studies</th>
<th>Number of students (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arts</strong></td>
<td><strong>43,103 (47.1%)</strong></td>
</tr>
<tr>
<td>Foundation programmes</td>
<td>19,480</td>
</tr>
<tr>
<td>Art, Design and Music</td>
<td>1,114</td>
</tr>
<tr>
<td>Business Administration</td>
<td>11,367</td>
</tr>
<tr>
<td>Education</td>
<td>280</td>
</tr>
<tr>
<td>Humanities</td>
<td>79</td>
</tr>
<tr>
<td>Law</td>
<td>226</td>
</tr>
<tr>
<td>Service</td>
<td>1,371</td>
</tr>
<tr>
<td>Social science</td>
<td>288</td>
</tr>
<tr>
<td>Language</td>
<td>8,898</td>
</tr>
<tr>
<td><strong>Science and Technology</strong></td>
<td><strong>38,658 (42.2%)</strong></td>
</tr>
<tr>
<td>Agriculture</td>
<td>12</td>
</tr>
<tr>
<td>Computer Technology</td>
<td>37,909</td>
</tr>
<tr>
<td>Health and Welfare</td>
<td>215</td>
</tr>
<tr>
<td>Medical</td>
<td>80</td>
</tr>
<tr>
<td>Science and Mathematics</td>
<td>442</td>
</tr>
<tr>
<td><strong>Technical and Vocational</strong></td>
<td><strong>9,781 (10.7%)</strong></td>
</tr>
<tr>
<td>Engineering and Technical Skills</td>
<td>8,288</td>
</tr>
<tr>
<td>Air and Maritime</td>
<td>134</td>
</tr>
<tr>
<td>Building and Manufacturing</td>
<td>1,359</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>91,542 (100%)</strong></td>
</tr>
</tbody>
</table>

*Source: Kementerian Pendidikan Malaysia (2001a)*
Table 3.11: **Enrolment in diploma programmes in private higher education institutions in 2001**

<table>
<thead>
<tr>
<th>Field of Studies</th>
<th>Number of students (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arts</strong></td>
<td></td>
</tr>
<tr>
<td>Foundation programmes</td>
<td>0</td>
</tr>
<tr>
<td>Art, Design and Music</td>
<td>6,771</td>
</tr>
<tr>
<td>Business Administration</td>
<td>37,628</td>
</tr>
<tr>
<td>Education</td>
<td>701</td>
</tr>
<tr>
<td>Humanities</td>
<td>2,958</td>
</tr>
<tr>
<td>Law</td>
<td>683</td>
</tr>
<tr>
<td>Service</td>
<td>4,460</td>
</tr>
<tr>
<td>Social science</td>
<td>2,144</td>
</tr>
<tr>
<td>Language</td>
<td>499</td>
</tr>
<tr>
<td><strong>Science and Technology</strong></td>
<td><strong>40,046</strong> (34.2%)</td>
</tr>
<tr>
<td>Agriculture</td>
<td>51</td>
</tr>
<tr>
<td>Computer Technology</td>
<td>38,824</td>
</tr>
<tr>
<td>Health and Welfare</td>
<td>0</td>
</tr>
<tr>
<td>Medical</td>
<td>1,143</td>
</tr>
<tr>
<td>Science and Mathematics</td>
<td>28</td>
</tr>
<tr>
<td><strong>Technical and Vocational</strong></td>
<td><strong>21,200</strong> (18.1%)</td>
</tr>
<tr>
<td>Engineering and Technical Skills</td>
<td>18,758</td>
</tr>
<tr>
<td>Air and Maritime</td>
<td>118</td>
</tr>
<tr>
<td>Building and Manufacturing</td>
<td>2,324</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>117,090</strong> (100%)</td>
</tr>
</tbody>
</table>

*Source: Kementerian Pendidikan Malaysia (2001a)*
Table 3.12: Enrolment in first degree programmes in private higher education institutions in 2001

<table>
<thead>
<tr>
<th>Field of Studies</th>
<th>Number of students (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arts</strong></td>
<td></td>
</tr>
<tr>
<td>Foundation programmes</td>
<td>0</td>
</tr>
<tr>
<td>Art, Design and Music</td>
<td>590</td>
</tr>
<tr>
<td>Business Administration</td>
<td>29,246</td>
</tr>
<tr>
<td>Education</td>
<td>475</td>
</tr>
<tr>
<td>Humanities</td>
<td>1,555</td>
</tr>
<tr>
<td>Law</td>
<td>1,313</td>
</tr>
<tr>
<td>Service</td>
<td>100</td>
</tr>
<tr>
<td>Social science</td>
<td>149</td>
</tr>
<tr>
<td>Language</td>
<td>237</td>
</tr>
<tr>
<td><strong>Science and Technology</strong></td>
<td>16,524 (27.6%)</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
</tr>
<tr>
<td>Computer Technology</td>
<td>13,883</td>
</tr>
<tr>
<td>Health and Welfare</td>
<td>0</td>
</tr>
<tr>
<td>Medical</td>
<td>2,381</td>
</tr>
<tr>
<td>Science and Mathematics</td>
<td>260</td>
</tr>
<tr>
<td><strong>Technical and Vocational</strong></td>
<td>9,776 (16.3%)</td>
</tr>
<tr>
<td>Engineering and Technical Skills</td>
<td>9,289</td>
</tr>
<tr>
<td>Air and Maritime</td>
<td>75</td>
</tr>
<tr>
<td>Building and Manufacturing</td>
<td>412</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td>59,965 (100%)</td>
</tr>
</tbody>
</table>

Source: Kementerian Pendidikan Malaysia (2001a)
3.3 MANPOWER PROJECTIONS

The output of skilled and semi-skilled manpower projected in the 8MP is shown in Table 3.13.

Table 3.13: Output of skilled and semi-skilled manpower by course, 2000–2005

<table>
<thead>
<tr>
<th>Course</th>
<th>2000</th>
<th>2005</th>
<th>Total</th>
<th>2000</th>
<th>2005</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Public</td>
<td>Private</td>
<td>Public</td>
<td>Private</td>
<td>Public</td>
<td>Private</td>
</tr>
<tr>
<td>Engineering</td>
<td>17,254</td>
<td>9,730</td>
<td>26,984</td>
<td>28,965</td>
<td>20,837</td>
<td>49,802</td>
</tr>
<tr>
<td>Mechanical</td>
<td>9,468</td>
<td>2,32</td>
<td>11,700</td>
<td>18,648</td>
<td>4,866</td>
<td>23,514</td>
</tr>
<tr>
<td>Electrical</td>
<td>7,364</td>
<td>7,378</td>
<td>14,742</td>
<td>9,685</td>
<td>15,721</td>
<td>25,405</td>
</tr>
<tr>
<td>Civil</td>
<td>422</td>
<td>120</td>
<td>542</td>
<td>632</td>
<td>250</td>
<td>882</td>
</tr>
<tr>
<td>Building Trades</td>
<td>1,966</td>
<td>547</td>
<td>2,513</td>
<td>2,600</td>
<td>1,200</td>
<td>3,800</td>
</tr>
<tr>
<td>Information &amp; Communications Technology</td>
<td>784</td>
<td>7,520</td>
<td>8,304</td>
<td>2,167</td>
<td>9844</td>
<td>12,011</td>
</tr>
<tr>
<td>Others</td>
<td>2,864</td>
<td>928</td>
<td>3,792</td>
<td>3,674</td>
<td>1,230</td>
<td>4,904</td>
</tr>
<tr>
<td>Skill Upgrading</td>
<td>2,893</td>
<td>n.a.</td>
<td>2,893</td>
<td>n.a.</td>
<td>4,651</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>25,761</td>
<td>18,725</td>
<td>44,486</td>
<td>42,057</td>
<td>33,111</td>
<td>75,168</td>
</tr>
</tbody>
</table>

Source: Malaysia (2001)

The service sector is expected to become the leading growth sector with 58.0% of the total net jobs created, growing at an average of 3.8% per annum. This growth will be mainly in the sub-sectors like finance, insurance, real estate and business services as well as other service sub-sectors.

The manufacturing sector is projected to create a total of 642,000 new jobs or 40.4% of the jobs created. Employment in this sector will account for 29.5% of total employment by the end of the 8MP period.

The projected manpower demand in the 8MP Plan period is shown in Table 3.14.

Table 3.14: Employment by selected occupation, 2000–2005

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Stock 2000</th>
<th>Employment 2005</th>
<th>Net Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineers</td>
<td>55,485</td>
<td>108,400</td>
<td>52,915</td>
</tr>
<tr>
<td>Engineering Assistants</td>
<td>130,024</td>
<td>247,739</td>
<td>117,715</td>
</tr>
<tr>
<td>Medical &amp; Health Professionals</td>
<td>21,270</td>
<td>36,835</td>
<td>15,565</td>
</tr>
<tr>
<td>Allied Health Professionals</td>
<td>45,052</td>
<td>115,821</td>
<td>70,769</td>
</tr>
<tr>
<td>School Teachers</td>
<td>298,083</td>
<td>349,086</td>
<td>51,003</td>
</tr>
</tbody>
</table>

Source: Malaysia (2001)
Demand for manpower in all occupational categories is expected to register a positive growth during the Plan period, with the highest growth in the administrative and managerial as well as professional and technical categories. The professional and technical category is expected to register an average annual growth of 5.2% during the Plan period. An additional 52,920 engineers and 117,720 engineering assistants will be required (see Table 3.14).

The rapid development of ICT industries as well as the application of ICT in production and service operations will lead to the emergence of new skill requirements. An additional 85,470 ICT workers will be required including system and hardware engineers, software engineers and developers, business and system analysts, computer programmers and technical support personnel during the Plan period.

The demand for medical and health professionals as well as allied health professionals is expected to increase to 36,840 and 115,820, respectively, during the Plan period. For medical and health professionals, the requirement will be especially high for general surgeons, urologists and radiologists. There will also be an increased demand for allied health professionals, especially nurses, medical assistants, laboratory technologists and pharmaceutical assistants.

### 3.4 FUTURE TRENDS AND DEVELOPMENTS

A very significant trend in the future is the urgent need to upgrade the workforce so that Malaysia can sustain its competitiveness in the global economy. Technology has created a new kind of knowledge economy that will dramatically re-order the way the world works. As Malaysia strives to become a knowledge economy, it has no choice but to re-educate its workforce. In this respect, all universities play a vital role in nurturing and re-training the right kind of workforce. Therefore, it is essential that there are enough post-secondary educational opportunities for working adults to upgrade and re-tool themselves.

Recurrent education and training for the workforce to meet new needs and requirements in the workplace is essential to move Malaysia into the next stage of economic development. The crucial skills that every well-educated person should possess include the following abilities:

- to identify, organise, plan, and allocate resources
- to work with others
- to acquire, interpret and use information
- to understand and work with social, organisational, and technological systems
- to work with a variety of technologies.
To further increase the accessibility to higher education, the National Higher Education Fund (NHEF) was increased by RM1 billion to RM2.3 billion at the end of the 7MP. With this additional fund, financial assistance was extended to students in private higher education institutions. This trend will continue in the 8MP. The private sector will continue to expand capacity to cater for the increasing number of students at the tertiary level. The provision of loans to students in private colleges and universities will be reviewed to expand its coverage. In addition, an Education Savings Scheme was launched in 2002 with a contribution of RM100 million from the government to encourage parents to save for their children’s education. The role of the private sector to supplement public training institutions is vital, therefore, the Skills Development Fund (SDF) will be extended to include trainees in private institutions.

The Government will also establish community colleges throughout the country to provide hands-on training for school dropouts, school leavers, workers and the public. The coverage of the Human Resource Development Fund (HRDF) has expanded to include firms in the energy, education and training industries. In the 8MP, the HRDF will further expand its coverage to include skills training in agriculture and other services such as water supply, transportation and private hospitals.

With the corporatisation of public universities, local universities are allowed to generate funding from external sources based on the business plan agreed to by the Government and the institutions. Efforts are being undertaken by the public universities to franchise their educational programmes to private institutions. Public and private institutions will continue to establish franchise arrangements to increase the number of places offered at tertiary level. To ensure the quality of private higher education, the Ministry of Education, through the National Accreditation Board (LAN), will set guidelines and standards for accreditation of programmes offered by private higher education institutions.

The Ministry of Education will continue to upgrade practicing teachers. The number of graduate teachers in secondary schools will be increased from 61% (or 69,329) in 2000 to 100% (or about 115,550) in the coming years. With the implementation of the use of English to teach Mathematics and Science in schools and universities, there is a great need to re-train teachers and lecturers to be fluent in English.

To summarise, the main points in this chapter are:

- There is a vital need to provide post-secondary learning opportunities to working adults in the 20–44 age group. There are about 5.5 million workers in this age group with only secondary education.
- With the advancement of information and communications technology, the most appropriate way to upgrade the workforce is through distance education.
- There is a great need for an open and virtual university to meet the strong demand for tertiary education among the working adults in Malaysia.
REFERENCES


CHAPTER 4: ACADEMIC PROGRAMMES

In line with its mission, OVUM will provide educational opportunities via the ODL mode to all sectors of the Malaysian community at an affordable cost. It will target three major groups of learners:

- working adults who wish to engage in tertiary level training and education;
- trained workforce who need continuing professional education (CPE) as part of the lifelong learning process that is required in a globalised knowledge-driven economic environment; and
- adults wishing to engage in life-long learning pursuits for personal fulfilment.

By providing such opportunities, OVUM will not only contribute to the Government’s objective of preparing the workforce towards a knowledge economy but also help to conserve foreign reserves that are currently drained by the need for Malaysian students to go overseas to obtain university level education.

OVUM will offer a broad range of courses leading to a spectrum of awards at the sub-degree, degree and postgraduate levels. The majority of these will be driven by the economic and manpower needs of the country, in particular, the human resources required to support the country’s rapid migration towards a knowledge economy. A focus of OVUM’s offerings will be the provision of courses and programmes to cater for the continuing professional development needs of Malaysian industries. Further, courses will also be offered to provide opportunities for learners to enhance their spiritual and intellectual development as well as satisfy the general community’s need for lifelong learning.

OVUM graduates will possess sufficient numeracy, literacy, communications and IT skills and competencies to function comfortably in the modern cyber-based work environment. They will also have developed the skills and the culture to continue to engage in lifelong learning as a way of enhancing their productivity as well as enriching their life experiences.

4.0 THE BASIC OVUM EDUCATIONAL MODEL

Students enrolling in OVUM courses will experience an educational model that is different from the one currently offered by conventional institutions. OVUM’s educational model will be characterised by the following features:

- **Open access to foundation and undergraduate courses**
  
  OVUM adopts the open access philosophy under which its courses are open to all those aspiring for them. However, as a responsible academic institution, OVUM will make available to prospective students free self-evaluation assessment papers for foundation, entry and middle level courses to enable them to ascertain their own readiness to undertake a particular
course. Those who are found under-prepared for university level education may be required to follow courses offered by the Foundation School and complete a 30-credit Matriculation Programme before embarking on university level courses and programmes. For higher-level courses, guidance will be provided in the form of advisory prerequisites in the course description as well as advice from trained academic counsellors. Admissions into honours level and postgraduate courses may require specific qualifications and experience as compulsory prerequisites. In the case of programmes, there may be specific programme entry requirements imposed by the National Accreditation Board that intending students have to meet.

- **Courses are credit based**
  
  All courses offered by OVUM will be credit based and courses may carry 3, 6 or 12 credit points. The total study hours for one credit will be approximately 30–35 hours. This includes studying the course materials, attendance of tutorials and time spent on assignments, carrying out self-tests, etc.

  On satisfactory completion of a course (including passing the final examination), the relevant number of credits will be earned and these can be accumulated towards fulfilling the requirements of a named award.

- **Courses presented primarily in the ODL mode**
  
  Courses offered by OVUM are in the form of materials designed for self-learning in the distance delivery mode. During the start-up phase, these materials will primarily be in print and supplemented by multi-media. In the longer term (5–6 years), OVUM is expected to migrate fully to the web-based mode and operate primarily as a virtual or e-learning institution.

- **Flexible progression pathway**
  
  Except for a small number of courses with compulsory prerequisites (for example, the honours project), students may elect to register for one or more courses at the same or different levels in any given semester to chart their particular progression pathway towards a named award. They may even elect to stay away for one or more semesters and resume when they are ready to continue with their studies. Counselling support will be available to assist students in developing their own progression plans.

- **Recognition of prior learning via advanced standing**
  
  Subject to the fulfilment of certain quality criteria, qualifications obtained from other tertiary institutions may be awarded credits through advanced standing granted under a block credit transfer basis. Block credit transfer may be awarded for completed qualifications from other institutions that meet certain prescribed quality criteria. A maximum of 50% of the credits for any OVUM programme may be fulfilled through the Advanced Standing mechanism. However, to ensure that graduates of any OVUM
programme have the necessary related technical knowledge, skills and competence, a top-up list of courses will be prescribed for the student concerned taking into consideration the courses that he or she has taken previously.

It is suggested that during the first 5 years of OVUM’s operation, it does not consider the issue of recognising experiential learning. This can be considered after the institution has matured and it has already gained wide acceptance for the quality of its awards and products.

- **Multi-entry and multi-exit system**

**Degree and sub-degree qualifications offered**

*Figure 4.1: Multi-entry multi-exit structure of OVUM courses and programmes*

As shown in Figure 4.1, students taking courses with OVUM can progress seamlessly through a series of pathways to a number of exit points at different levels to cater for their specific needs. A student exiting at one level (e.g., Diploma) may rejoin the institution after a period of working as a full-time employee. On subsequent continuation of studies with OVUM,
course credits previously gained can, where appropriate, be used towards the fulfilment of requirements governing other higher awards. In this way, a student may progress through intermediate qualifications before graduating with an honours degree in a named discipline. Similarly, a student coming into OVUM with relevant previous qualification from another recognised institution may receive, via an advanced standing mechanism, up to 50% of the credits required for the completion of a particular award. Such a multi-entry and multi-exit system will benefit working adults whose studies may be regularly interrupted by work and personal circumstances yet wish to engage in university level learning as a means to improve their employment capabilities.

- **Student support services**

Students enrolled in courses offered by OVUM will be provided with a variety of quality support services. These include the provision of high quality self-learning materials, access to learning resources, science and computer laboratories where appropriate, face-to-face tutorials, telephone counselling services as well as Internet-based support by trained tutors and course coordinators (see Chapters 5 and 6).

- **High exit standards**

Consequent to the open access policy, it is imperative that rigorous exit standards meeting international benchmarks are maintained for every course offered by OVUM. Clear and transparent assessment policies will be spelt out and implemented without compromise. External Examiners (EE) will be used extensively to ensure that appropriate exit standards are met. Given the open access nature of OVUM’s courses, EEs will be engaged at the course level rather than the programme level. However, where a number of courses cover the same discipline but are presented at different levels, it may be appropriate and desirable for the same person to be appointed as an EE.

### 4.1 NATURE OF OVUM COURSES AND PROGRAMMES

**Courses**

Courses offered by OVUM will be modular and credit-based. Students enrolled in a typical OVUM course will be provided with a package of high quality, purpose designed self-learning materials (in print or CD-ROM). These are likely to consist of a course guide, course materials that are standalone or wrapped around a textbook, supplementary audio and video or CD-ROM-based materials (for more details see Chapters 5 and 7). Students are guided to work through the materials. At regular intervals, there will be assignments to be prepared for submission. These serve the purpose of pacing the student’s progress as well as for the tutor to ‘teach’ through the provision of extensive feedbacks. Marks gained in summative assignments will contribute to the overall assessment for the course. On successful completion of the course, the specific number of credits will be earned and can be used in fulfilment of the
requirements of a named qualification. Courses may be developed entirely by OVUM or bought from external sources and adapted. The latter is recommended if ‘kick-starting’ the operation is necessary as developing courses from scratch will require at least 12 to 15 months of lead time. The protocols describing the processes involved in course development/adaptation/evaluation are presented in Chapter 7.

Programmes

OVUM will offer a variety of programmes at different levels to meet the demands of different sectors of the local community. They will include the following:

- **Matriculation Certificate (30)** – (900 to 1050 study hours).
- **Diploma (60)** – (1800 to 2100 study hours).
- **Bachelor with Honours (120)** – (3600 to 4200 study hours).
- **P-G Diploma (30)** – (900 to 1050 study hours).
- **Masters (60)** – (1800 to 2100 study hours).
- **Doctoral (90+)** – (above 3150 study hours).

(Bold figures in parentheses denotes the total number of credit points from prescribed courses required to qualify for the award while numbers in italics indicate the range of study hours required.)

Students at OVUM will formally register for a course rather than a programme although they may be asked to indicate their intended programme to facilitate counselling and advice provision. They can progress seamlessly from one programme to another without exiting with an intermediate qualification or exit at an intermediate qualification and return later to continue towards a higher qualification.
Programme development

Figure 4.2: Involvement of various parties in the programme development process

As shown in Figure 4.2, all programmes are developed following a protocol that involves input by external peers from academia and industry and assessed by appropriate authorities. During the programme development process, an Outline Programme Plan (OPP) will be initially developed by the relevant programme team from the School. This OPP will outline the aims of the programme, describe the broad curriculum outline, identify the target market sector and indicate the type of employment opportunities available for graduates. The OPP will be passaged through the School Board and the Senate for comments and endorsement. An example of such a document from the School of Science and Technology of OUHK is provided in Appendix 1 for reference.

After the OPP has received Senate endorsement, the School will form an Advisory Peer Group (APG) consisting of 4–6 representatives from senior academics and senior managers of relevant industries. The programme team from the School will work together with the APG to develop the Detailed Programme Plan (DPP). The DPP will contain information on the following:

- programme name;
- programme aims;
- programme objectives (learning outcomes);
• entry requirements, if any;
• programme structure;
• progression pathways and pre-requisites;
• programme regulations;
• honours classification (where appropriate);
• course description;
• course presentation schedule;
• proposed launch date; and
• target market and expected enrolment.

(The DPP of a programme offered by the School of Science and Technology of OUHK is shown in Appendix 2 as an exemplar.)

The DPP will be passaged through the School Board for comments and endorsement before submission to the Internal Validation Committee (IVC) for review. The IVC will be chaired by the Deputy Vice-Chancellor (Academic) and its membership will consist of all Deans and a representative from the Senate. The role of the IVC in the programme development process is to advise on the proposed content as well as the quality of the documentation. After passage through the IVC, the DPP can be submitted to the External Programme Assessor (EPA) for review. The EPA will be a senior Professor who will provide an external assessment of the proposed DPP against benchmarks of similar programmes offered by other established universities. The report from the EPA will be submitted to the Programme Review and Validation Committee (PRVC) for consideration. Any issues of concern raised by the External Course Assessor (ECA) must be satisfactorily addressed at the PRVC meeting, which the ECA will also attend. Once endorsed by the PRVC, the DPP can be presented to the Senate for final approval prior to its launch. External members of the APG and PRVC are paid a token honorarium and meeting expenses for each meeting attended while the EPA is compensated adequately for his or her professional services.

All OVUM programmes leading to named degree qualifications will have the following structure:

• **Basic core competency courses**

These consist of courses designed to ensure a certain level of competence in language (English or Bahasa Malaysia), numerical (Pure and Applied Mathematics and Statistics) and IT (Computing and Internet skills). They would generally be offered at the foundation level (ABC1xx). There should be no more than 24 credits of foundation level (FL) courses in the Diploma and BSc (Hons.) Programmes. Provisions will be made to incorporate the National Accreditation Board requirements for Malay, moral and Islamic studies in the basic core requirements. Students who possess a credit pass at the SPM level (or equivalent) in the relevant language or mathematics/IT course may have the corresponding requirement replaced by an equivalent number of credits of free choice courses.
• **Technical core courses**

These consist of technical courses in the disciplinary area at the middle (ABC2xx) and higher (ABC3xx) levels designed to ensure that the graduates have sufficient knowledge and skills to fulfil the core programme objectives. The Diploma (D) Programme should include at least 24 credits of technical core courses (12 credits at the higher level (HL)), while the BSc (Hons.) Programme should contain at least 72 credits of technical core courses (24 credits at HL and 24 credits of Honours level (ABC4xx) courses including an 18-credit project course).

• **Optional/elective courses**

These are courses related to the prescribed discipline designed to provide students with the appropriate breadth of knowledge. Diploma programmes will have 6 credits while the BSc (Hons.) programmes will have 18 credits of optional/elective courses.

• **Free choice courses**

These are courses taken from any credit-bearing courses offered by any academic unit in the University and are aimed at liberalising the student’s thinking through exposure to disciplines different from those that he or she is pursuing. There will be 6–24 free choice credits in any Diploma programme and 12–30 free choice credits in the BSc (Hons.) programme.

The distribution of credits for these four categories of courses in various programmes is summarised in Table 4.1.

**Table 4.1: Courses and credit distribution**

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Basic Core Competency</th>
<th>Technical Core</th>
<th>Optional/Elective</th>
<th>Free Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Diploma</td>
<td>6-24</td>
<td>24</td>
<td>6</td>
<td>6-24</td>
</tr>
<tr>
<td>BSc (Hons.)</td>
<td>6-24</td>
<td>72</td>
<td>18</td>
<td>6-24</td>
</tr>
<tr>
<td>P-G Certificate</td>
<td>-</td>
<td>18</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Masters</td>
<td>-</td>
<td>42</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

All qualifications offered by OVUM will be awarded on an unclassified basis except the honours degree. In the case of the honours programme, the degree shall be awarded using the usual First Class, Second Class (Upper and Lower division) and Third Class classification commonly used in Commonwealth universities. A system currently used by an established open university is reproduced in Appendix 3 as an exemplar. It is expected that OVUM may need to modify this for its own operational environment.


4.2 LANGUAGE POLICY

All OVUM graduates will be required to demonstrate a basic level of competence in Bahasa Malaysia and English (equivalent to credit pass at SPM level). Students without such credentials will be required to pass the appropriate language competency courses offered by the Foundation School while those who already have, may choose other courses in lieu. Courses in Science, Technology and Business should be offered in English while other programmes could be offered in other clearly specified languages.

4.3 ORGANISATION OF THE ACADEMIC SCHOOLS

The offering of various programmes by OVUM can be organised under five schools during Phase 1 of its development. Not all schools need be launched during the first year of OVUM’s operation and more schools can be added later as appropriate. The Schools to be set up during the first five years are:

- **School of Foundation Studies**: responsible for the development and presentation of matriculation/foundation level courses in Languages, Mathematics, Science, and IT skills.

- **School of Business and Administration**: responsible for the development and presentation of courses leading to awards in the traditional disciplines of Business and Administration as well as the newer areas such as Hospitality and Tourism Management, Logistics and Supply Chain Management and E-Commerce.

- **School of Education (& Languages)**: responsible for the development and presentation of courses leading to awards in Curriculum and Assessment, Educational Administration and Management, Counselling, Distance Education and E-Learning, Technical and Vocational Teacher Training, Teaching at Pre-School Level and the teaching of Languages (Bahasa Malaysia, English, Chinese and Tamil) and various other subjects.

- **School of Communications (& Languages)**: responsible for the development and presentation of courses leading to awards in various languages in particular, Bahasa Malaysia, English and Chinese as well as in various communication disciplines.

- **School of Science, Technology and Information**: responsible for the development and presentation of courses leading to awards in Information and Communications Technology, Environment and Health Sciences, Laboratory and Instrumentation Sciences, Engineering Sciences

The inclusion of Languages in both the Schools of Education and Communication reflects the situation whereby during the initial phase of OVUM’s development, the School of Education will be established as a founding School while the School of Communication expected to be established at a later date when the institution becomes more mature.
The organisational structure of a School is as follows:

Each School will be headed by a Dean who will also hold a substantive position as a Professor. The Dean will be appointed on contract terms and will report to the Vice-Chancellor via the Deputy Vice-Chancellor (Academic). He or she will be responsible for all operational matters related to the School. The Dean will be supported by an appropriate number of full-time core academic staff calculated on the basis of student registrations. Each programme or groups of related programmes will be led by a Programme Leader (at least Associate Professor level appointment) and supported by one or more academics at the Assistant Professor/Lecturer level reflecting an appropriate range of disciplinary expertise. The Programme Leader will provide leadership in the development and implementation of academic programmes and courses within each programme of the disciplinary area. Assistant Professors and Lecturers will be responsible mainly for the development and presentation of courses. As course coordination demands different skills from those of academics serving in conventional universities, adequate training must be provided for all new recruits. All academics must be capable of multi-tasking and have developed appropriate interpersonal, administrative and management skills. Samples of the job specification and appointment criteria for Dean, Programme Leader and Course Coordinator as well as the academic ranks of Professor, Associate Professor and Lecturer are shown in Appendix 4.
Each School will be provided with an appropriate number of support staff (for example, executive officer, clerks and lab technicians as appropriate). Part-time academic staff (tutors) appointment will, in general, be governed by the course registrations, though flexibility may be needed in view of the geographic locations and the desire to provide at least a minimum level of support at every regional centre.

All decisions related to the offering of courses and programmes will be deliberated upon and made by the School Board. The Dean will chair all School Board meetings, membership of which will include all full-time academic staff. It may also include representatives from amongst the part-time tutors and students. The Vice-Chancellor, Deputy Vice-Chancellor (Academic) and Registrar will be *ex-officio* members. The School Board shall meet at least four times a year and report to the University Senate.

### 4.4 ACADEMIC PROGRAMMES BY SCHOOLS

In the design of the academic programmes, the common core approach should be adopted, that is, all students will be required to develop basic common competencies in language, mathematics and computing at the foundation level. Beyond that, there will be progressive differentiation at the middle and higher level courses in line with the need to meet the technical competence of the named qualification in specific disciplines. Thus, BBA and BSc students will follow their respective additional common core courses in the middle level before differentiating further at the higher level to qualify for named awards such as BBA in Accounting, Marketing, Economics, etc. Such a system ensures that operational economies of scale are enjoyed at the foundation and middle level courses while at the same time providing for product differentiation amongst the graduates of the various programmes.

Within each disciplinary area, a choice of exit points will be offered at different levels to learners to cater for their specific needs. The course and programmes to be offered by the various schools may be as follows:

- **School of Foundation Studies**

  The School of Foundation Studies will offer a number of matriculation and foundation level courses designed to develop basic competencies in language (Bahasa Malaysia, English and Putonghua), mathematics as well as computing and the Internet. The successful completion of 30 credits of the matriculation level courses in accordance with prescribed combinations leads to the award of an **OVUM Matriculation Certificate**. These certificate holders are qualified to enrol in university level programmes offered by OVUM.

  Examples of courses to be offered by the School of Foundation Studies may include the following:

  - EL 001/6: Pre-University English
  - EL 102/6: English for University Studies
  - EL 103/3: Scientific and Technical English
  - MAT 001/6: Pre-University Mathematics
More courses can be added in other areas such as the arts, social sciences, health and social welfare for enrichment purposes and to meet the community's needs.

Courses at the middle, higher and honours level will be presented by the other four schools. In order to maximise operational efficiencies, courses from different schools can be used to fulfil requirements of programmes of studies leading to the award of named qualifications. In the following section, the titles of various named qualifications offered at different exit levels by the various schools are listed as examples deemed appropriate to the current environment. As working adults will form a major segment of OVUM’s target clients, the provision of continuing professional development courses and programmes will represent a major focus of the academic offerings. Changes are expected over time since there will be new developments in the macro-environment. The Dean and Programme Leaders of the four Schools will need to plan for the launch of specific suites of programmes as appropriate.

- **School of Business and Administration**

  The School of Business and Administration (B&A) is expected to offer courses leading to awards in the traditional business school disciplines as well as the newer disciplines of Hospitality and Tourism Management, Logistics and Supply Chain Management as well as E-Commerce. The programmes offered may include but are not limited to:

  **Diploma**
  - Business Administration
  - Business Information Systems
  - Accounting
  - Human Resource Management
  - Hospitality and Tourism Services
  - Finance and Banking
  - Real Estate Management
  - E-commerce
BBA (Hons.)
- Accounting
- Business Administration
- Business Information Systems
- Economics
- E-commerce
- Finance and Banking
- Human Resource Management
- Health Services Management
- Hospitality and Tourism Management
- Logistics and Supply Chain Management
- Marketing

P-G Diploma
- Electronic Commerce
- Health Services Management
- Finance and Banking
- Logistics and Supply Chain Management
- Marketing

Masters in Business Administration
- Accounting
- E-commerce
- Finance and Banking
- Human Resource Management
- Logistics and Supply Chain Management
- Marketing

• School of Education (E&L)

The School of Education (E&L) is expected to focus on conversion programmes to upgrade the training and qualifications of serving teachers as well as Teaching Certificate programmes for graduates of other disciplines to enable them to obtain professional teaching qualifications. Programmes offered may include but will not be limited to the following:

• Diploma
  - Teaching of English
  - Teaching of Bahasa Malaysia
  - Teaching of Chinese
  - Teaching of Tamil
  - Teaching at the Pre-School level
  - Use of IT in Teaching

BEd (Hons.)
- Primary Education
- Secondary Education
- Technical and Vocational Education
- Education Administration and Management
(The Honours programmes for primary, secondary and technical and vocational education will include a subject minor to better prepare the graduates for the local job market.)

**P-G Diploma/ MEd**
- Adult Education
- Curriculum and Assessment
- Educational Management
- Pre-School Education
- Counselling
- Distance Education & E-Learning

**School of Communications (\& Languages)**

The School of Communications (\& Languages) (C\&L) will offer programmes in languages (Bahasa Malaysia, English, Chinese and Tamil), translation (Bahasa-English, Bahasa-Chinese, English-Chinese) as well as in various communications disciplines.

**Diploma**
- Bahasa Malaysia
- English
- Chinese
- Tamil
- Translation Bahasa Malaysia-English
- Translation Bahasa Malaysia-Chinese
- Translation English-Chinese
- Business Communications
- Mass Communications

**BSc (Hons.)**
- Bahasa Malaysia
- English
- Chinese
- Tamil
- Translation Bahasa Malaysia-English
- Translation Bahasa Malaysia-Chinese
- Translation English-Chinese
- Business Communications
- Mass Communications

**PG Dip/MA**
- Translation Bahasa Malaysia-English
- Translation Bahasa Malaysia-Chinese
- Translation English-Chinese
- Business Communications
- Mass Communications
• **School of Science, Technology and Information**

The School of Science, Technology and Information (S&T) will move away from offering programmes in the basic sciences and instead focus on the newer disciplines such as Information Technology, Computing and Networking, Robotics and Computronics, Environmental Health and Safety, Laboratory and Instrumentation Sciences. Programmes offered may include but are not limited to:

**Diploma**
- Information Technology
- Digital and Mobile Communications
- Web Design and Development
- Computer Programming
- Network Management
- Nursing
- Environmental Safety and Health
- Software Engineering

**BSc (Hons.)**
- Information and Communications Technology
- Computer Systems and Networks
- Environmental Planning and Management
- Environmental Health and Safety
- Electronics and Electronic Engineering
- Laboratory and Instrumentation Sciences

**P-G Diploma**
- Multi-media Computing
- Internet Computing
- Mobile Communications
- Product Design and Technology
- Robotics and Automation
- Computronics
- Information Technology
- Integrated Environmental Assessment and Management
- Environmental Planning and Management

**Master of Science**
- Information Technology (Internet Applications)
- Multi-media Technology

An example of the programme structure incorporating a *Diploma in Information Technology*, a *BSc (Hons.) in Computer Systems and Networks* and a *P-G Diploma in Multi-media Computing* is presented at Appendix 5.
4.5 QUALITY ASSURANCE, ACCREDITATION AND PROFESSIONAL RECOGNITION

It is important that students following courses in OVUM are provided with a learning experience that meets with the highest of quality standards with respect to the course materials and learning resources and student support services. Similarly, the exit standards must meet internationally accepted benchmarks in both the quality assurance process as well as the actual academic standards. The main quality assurance mechanisms will involve the intervention of appropriate external peers at critical steps of the relevant processes. All OVUM programmes will seek accreditation by the country’s National Accreditation Board as well as with the country’s professional bodies where relevant.

Quality assurance protocols covering the development (and subsequent review) of academic programmes and courses, the monitoring of support services provided during course presentation as well as ensuring that the exit standards meet prescribed benchmarks are described in detail elsewhere.

4.6 STAFF RECRUITMENT, TRAINING AND DEVELOPMENT

As part of the quality assurance (QA) of OVUM, it is important that the institution recruits staff of high quality through the offer of competitive terms and conditions of service and provides initial and follow-up training, as well as programmes for the long-term development of junior staff. Since academic staff in an ODL institution are required to play multiple roles, it is important to recruit academically qualified personnel with multi-tasking capabilities. In particular, the part-time tutors must be adequately trained in the appropriate pedagogy, the use of appropriate technology to deliver their support services as well as interpersonal skills as they interface directly with the students. As ODL is still relatively new to Malaysia, a training protocol and programme must be developed to ensure that the academic staff are properly trained to carry out their course coordination and course development role effectively and efficiently. In particular, they must develop very good interpersonal and management skills.

4.7 STAFFING

The staffing needs of each academic unit will consist of a small central administrative core (Dean, Executive Officer and Secretary), an academic programme/course driven group of full-time academics supplemented by an appropriate number of clerks and technicians and a course registration-dependent number of part-time tutors. All full-time staff (from the Dean to the technicians) are expected to be capable of multi-tasking and working in an IT-mediated environment. Table 4.2 summarises the projected course offerings, student numbers, fee revenue and staffing requirements for all the academic units on a semester basis over the first five years of OVUM’s operations. Details
pertaining to each School are presented in Appendix 6 (Tables 6a-e). Since it is uncertain as to when the School of Communications will be established, staff numbers from this School are not included.

While academic staffing may appear ‘top heavy’ during the first year, the number of course coordinators will rise rapidly with the number of course offerings, so that by the fifth year each School will have one Dean, 2–4 Programme Leaders and 6–8 course coordinators who will manage 80–130 part-time tutors each semester. In order to ensure high quality supervision of the tutors by the Course Co-ordinator (CC), it is recommended that the CC:tutor ratio does not exceed 1:20.
Table 4.2: **Consolidated course offerings, student numbers, fee revenues and academic staffing estimates for OVUM’s academic units**

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CHAPTER 5: TEACHING AND LEARNING

In distance education, the teacher and learner are separated, thus the underlying philosophy of how teaching and learning takes place differs significantly from that normally encountered in a conventional educational institution. For the most part, the student can choose the time, place and circumstances of learning; they can study at their own pace, when and where they find most convenient. The policy of open education also has an impact on the design and development of student support systems.

Academic input is two-fold: through the design, development and delivery of self-instructional materials and through tutor interaction. This chapter focuses on the academic aspects of tutor support with particular emphasis on the pivotal role to be played by tutors in such a setting. It should be noted however, that in an ideal situation, the tutor would not just be responsible for providing academic guidance and support but would also carry out a counselling function, especially with regard to study techniques, help with administrative systems, etc. It is therefore important that the recommendations made here are considered in conjunction with those for non-course related student support made in Chapter 6 of this Report.

5.0 THE COURSE MATERIALS

Nature of the materials

Initially, course materials will be largely print-based supplemented with video and audio material as appropriate (for more details see Chapter 7: Development of Learning Materials). As access to appropriate technology becomes more widespread, the use of CD-ROM, Web and streaming video can be considered.

For print-based material, there are two basic methods of development. The first is to identify a textbook that covers the majority of the course syllabus at an appropriate level. If such a textbook exists, it is often expeditious to ‘wrap the course around’ the textbook. In such cases, students would be given a study guide of how to study the textbook, along with any supplementary material which is needed, plus self-assessment tests and so on. The advantages of this type of development are that they are relatively quick and cheap. The disadvantage is that the University must buy sufficient copies of the textbook and it would be at the whim of publishers with regard to updates and continued availability. In addition, for many subjects, it is often difficult to identify a book that provides adequate coverage of the required syllabus.

The alternative method of course materials production involves the development of a self-contained comprehensive package of materials. These materials would contain everything that the student needs in order to successfully complete the course. Additional reading materials (for example, journal articles) could be provided in the form of ‘readers’. The advantage of this method of development is that the materials can be tailor-made to meet the needs of the local population. The host institution is also
vested with the copyright of any materials developed in-house or commissioned and they are relatively easy to maintain and keep up-to-date. The disadvantages are that this method of development is relatively slow and expensive.

In either case, it is likely that in the early stages of operation and pre-operation, materials will be sourced from outside the University and adapted to local needs.

**The role of the materials**

In more traditional universities, students listen to lectures and make notes. However, in most cases, the actual learning process takes place outside of the lectures when students spend time sorting out their thoughts and notes and doing additional reading. The traditional lecture can offer students a stimulating environment where ideas and concepts are introduced by the lecturer. However, students often do not reflect on these theories and concepts and there is a tendency to learn by rote.

Well-written distance education materials stimulate students and at the same time give them the opportunity for reflection. When these materials are used within an appropriately supported learning/tutorial environment, students are encouraged to become independent learners who are able to study alone and find their own answers to questions. They thus develop skills that are often lacking in students educated in the conventional sector.

**Interaction with the materials**

Since distance education students do not have the opportunity for interaction with their tutors as frequently as those students in a conventional setting, the task of motivating and educating the students lies within the course materials. Effective distance education course materials have the following characteristics:

- lecture in print (the student feels the writer is talking to them personally);
- interactive dialogue with the student;
- involves the student in the learning process;
- provides opportunities for self-assessment with suggested answers (thus promoting interaction and opportunities for practice);
- relates to specific programme and course objectives; and
- contains a summary to help consolidate learning.

In order to study the materials effectively, students require detailed guidance about what and when they are expected to study to keep pace with the study plan and be ready for the examination (if any) at the end of the course. This information should be contained in a detailed *Course Guide* for each course, which would advise students on:

- hours of study per unit or section of each course;
- assignment schedule; and
- tutorial schedule.
The materials themselves should contain the following elements:

- objectives;
- content;
- activities (with commentaries) – activities should be designed to provide opportunities for students to reflect on, synthesise or apply what they have learned to their own experiences;
- self-tests (with feedback) – self-tests help the student to confirm that they have learnt and understood the materials and that they have met the course objectives; and
- summaries.

In addition, courses will also provide some or all of the following:

- set textbooks;
- readings (often in the form of journal articles);
- non-print materials (for example, audio or video tapes, CD-ROMs, etc.);
- assignment files; and
- specimen examination papers or sample questions.

The self-instructional mode is further supported by ‘real’ conversations between learners and tutors in face-to-face sessions, telephone tutorials and in written commentary on assignments (all of which will be covered in more depth later in this chapter).

**Student and tutor evaluation of course materials**

At the end of each presentation, students should fill out an evaluation questionnaire which asks for feedback on the course materials. This is particularly important in the case of courses developed in-house and for all courses when they are first presented. This information can be analysed by the course team and used to enable continuous quality improvement to take place. It would also be a good idea to involve course tutors in this process.

**How tutors use the materials**

Tutors must be familiar with the materials if they are to help students through the course. It is also important that tutors do not see the provision of materials as an easy fix with regard to their role. In other words, tutors should not simply regurgitate the materials back to students. It is often helpful for each course to provide tutors with a *Tutor Manual* which gives tips on how the material should be used and provides examples of exercises which can be used in face-to-face settings. This aspect will be expanded upon in the role of the tutor in Appendix 7.
5.1 TUTORS

There are sound theoretical and practical reasons for providing some form of human support for students studying in a distance learning environment. Much research has pointed to the link between retention rates and the provision of a tutor. Secondly, giving students the opportunity to have actual dialogue with another human being can help reduce the isolation that students may feel in an ODL context. Finally, it has been argued that distance education can potentially be a very authoritarian educational system where course materials present a particular perspective. In collaboration with a tutor, the student can take the opportunity to challenge this authoritarianism. The role of the tutor can be divided into the areas of academic and non-academic support although some provision is difficult to clearly define. For the purposes of this Report, this chapter will concentrate on academic support, i.e., the support of cognitive development within the student which is essentially facilitative in nature.

This section will focus on the various types of support and input that a tutor can make as well as look at the types of people who are suitable to act as tutors.

The role of the tutor

The tutor represents the human face of the institution. The tutor provides the personal touch, giving students support for their studies through face-to-face (FTF) sessions, assignment marking and telephone tutoring. Tutors fulfil their role in three major ways. They conduct FTF sessions, they mark and comment on assignments and they make themselves available on the telephone to support students as they study. One of the major challenges for any ODL organisation lies in making tutors aware of their role. Often tutors have only had experience of conventional institutions and assume that their role will be similar. The challenge is to move tutors away from the traditional explicative mode towards a facilitative one.

With regard to tutorial group size, it is recommended that normally a tutor be appointed to look after no more than 35 to 40 students studying on a course. This ratio may need to be altered depending on local circumstances such as the nature of the course (language courses may require a lower ratio as may project courses and courses of a higher academic level). Geographical issues may also need to be considered if the tutor has to travel to several centres in order to meet students. This group size should ensure that tutors are able to provide a good service to students in terms of response times. This ratio will also ensure that the tutorial sessions can provide an effective learning environment assuming that (as has been shown from experience elsewhere) not all students attend all tutorial sessions. In addition it is recommended that tutors should normally look after no more than two groups of students. This may be increased in special circumstances, for example, in the case of very experienced tutors or tutors who do not have full-time jobs.
Who will tutor?

There are a number of approaches which can be taken with regard to the provision of tutorial support. However, once the University is in steady state it is assumed that tutoring will be carried out by part-time staff. This has proven to be the most efficient and cost-effective method of providing such support in many ODL organisations. These tutors are likely to have full-time jobs elsewhere or they may be retired. In some circumstances, for example, in low population courses and for highly specialised courses, it may be necessary for this function to be carried out by the full-time academic staff of the University. This issue will be covered in greater detail in the section on full-time staff.

Tutors should have a mixture of professional experience, academic attainment, teaching experience and good interpersonal skills. The relative importance of these various skills will depend on the type of appointee sought and this, in turn, will be determined at least partly by the course and the type of students who will be studying the course. For example, in some courses pure content delivery is more important than the contextualisation required for higher level courses. In such circumstances it will probably be appropriate to appoint tutors with a strong academic background and probably with experience of tertiary education. On the other hand, a foundation level course where most of the students are adults returning to study after a long time out of the education system will require the appointment of tutors with different skills sets and experience. Appointment of professionals in certain fields, for example, commerce and industry, may be more appropriate especially where it is advantageous to put the academic material into a real life context or where the course or programme is work related. One advantage ODL systems have over conventional systems is that they give students the opportunity to interact with staff who can use real life examples to illustrate academic theories and concepts.

Face-to-face sessions

Face-to-face contact is a vital component of any good ODL programme. It is also usually the most expensive element of student support and also the most visible. Distance learners need FTF sessions for academic and social support. FTF sessions aim to help learners overcome difficulties related to matters such as course content and study skills, as well as providing them with greater opportunities to interact with their tutors and peers. In addition, certain courses will probably require learners to undertake some hands-on or laboratory work, for example, science and language courses.

FTF sessions may take many different formats and courses may include more than one type. The most common types of contacts are:

- tutorials;
- day (or residential) schools;
- laboratories; and
- surgeries.
Often, FTF sessions are optional, particularly tutorials and surgeries, because it is recognised that students who are studying by ODL may have difficulty attending such sessions because of constraints imposed by work and/or family commitments or geographical location. On the other hand, some courses will probably have compulsory sessions usually in the form of day schools or laboratory sessions. One major difference between conventional and ODL provision of FTF sessions is that distance learning students often have to make a great effort to attend these relatively rare sessions. As such they are likely to expect a much higher quality of provision than their conventional counterparts who may more easily forget and forgive a poorly organised or presented lecture.

**Tutorials**

Tutorials should be the most common type of FTF meeting, designed to offer regular support to learners. Ideally there would be sufficient students to allow for at least one tutorial group per region. This group would then be scheduled to meet with their tutor once per fortnight or once per month depending on the length of the course. It may also be desirable to provide more FTF hours for foundation level courses, as opposed to higher level courses, since it is at the foundation level where students are most likely to need the support of FTF provision. For a 6-credit course at foundation level, the provision of around 16–20 hours of FTF tutorials would be reasonable. This figure can then be adjusted for courses of different lengths and levels. In the case of low population courses or in start-up mode, it is likely that tutorial groups will have to be formed across larger geographical areas. In such cases, consideration will need to be given to meeting for longer periods on a less frequent basis in order to make travel worthwhile. In the case of very low population courses, tuition may have to be provided by HQ staff either by telephone or on a peripatetic basis at certain convenient locations.

It is essential that tutorials be organised at a time and place when the majority of students can attend. This will usually mean holding tutorials at weekends; the impact on any religious requirements students may need to fulfil should be minimised. As well as being a cost-effective way of providing support, bringing students together as a group also has the advantage of encouraging mutual support and overcoming isolation. In order for this to happen, the tutor must allow students to interact and share issues and problems. The tutorial is essentially facilitative and explicative in nature rather than being used for content delivery.

It is advisable for the full-time staff responsible for the course (the Course Coordinator (CC)) to provide a *Tutor Manual* or schedule of tutorial topics. These need not be prescriptive or rigid but will suggest various learning activities to be undertaken in the tutorial. The tutorials will also be used as a question and answer session, for group work, for case studies and for open discussions and debates. For some courses it may be appropriate for students to make individual or group presentations.
**Day (or residential) schools**

Day schools should be used to provide learners with opportunities to engage in learning activities that cannot normally be covered in tutorials and usually take place over a longer period, for example, a day or a weekend. Attendance may be compulsory. They are widely used in business courses where a longer time is needed for thorough discussion of case study material or where there is a need to undertake simulation games. They are also useful in science courses where fieldwork is required.

**Laboratories**

Many science and technology, and possibly computing, courses require students to have access to equipment which is not readily available in either the home or the workplace. Arrangements will need to be made to hire conveniently located facilities in schools or tertiary institutions. Attendance at laboratories is usually compulsory.

The provision of hands-on activities is important when the University applies for accreditation of courses and programmes for professional membership. It also helps to convince potential employers of the equivalence of science and technology courses completed in the distance mode. The costs involved in organising such sessions also justify making them compulsory and, in many cases, raise the status of the courses in the eyes of the students themselves.

**Surgeries**

Surgeries contrast with tutorial sessions in that they are relatively less formal occasions. They provide learners with the opportunity for direct individual FTF consultations rather than group-based activities and are often a useful supplement to tutorials. Learners are invited to come to sessions arranged in the evenings or at weekends to meet teaching staff and discuss any problems they may be having with the course. Depending on demand, a number of staff can be available and they will see students on a first-come first-served basis. Students can then consult an individual staff member and seek guidance on any particular difficulties they are having with the course materials. This can be a useful way of providing FTF support for low population courses, and full-time staff operating on a peripatetic basis can perform this duty.

**Telephone tutoring**

The telephone offers a means of establishing greater contact with students. It has the advantage of being widely available, involves no travel on the part of either the student or the tutor and helps to overcome geographical isolation. This means that students who are unable to attend FTF sessions, where it is not possible to provide FTF sessions, can still obtain human help. It also has the advantage of relative immediacy so that students can seek help without having to wait for the next FTF session.
It is advisable that as part of the tutor contract, expectations be spelt out with regard to availability for telephone contact. Research has shown that students are much more likely to contact their tutor by phone if the tutor has indicated the hours when he or she is available. An available period of 4 hours per week is recommended preferably in the evenings or at weekends.

Effective telephone tutoring will require tutor training as the techniques involved differ from those used in FTF sessions. The main disadvantage of this type of contact is the absence of visual cues for the parties, both in terms of illustrations and physical settings.

It may also be possible to arrange for conference calling from a single member of staff to several students. This could be useful where several students are studying the same course in a geographically isolated area where it is not possible to provide a local tutor. Again, adequate training would have to be provided to the member of staff concerned as there are specific techniques needed for this kind of interaction to be effective.

Depending on the costs involved, it may be necessary to consider making expense payments to tutors who have had to engage in a large amount of telephone contact or where long distance calls are involved. Decisions on this will be linked to the deregulation of the telecommunications industry in Malaysia.

**Correspondence**

Formal one to one correspondence will probably be limited to specific serious matters. It can be used for answering complicated queries and in situations where a record is needed. However, more informal written communication can also be effective in situations where the same information has to be communicated to a group of students. Examples of this include leaflets outlining study tips, lists of frequently asked questions (FAQs), general feedback on TMAst, etc. As the availability of Internet technology becomes more widespread this sort of information could be included on web pages for students to access on-line.

**On-line**

Although it is recognised that the limited availability of Internet technology will probably preclude its wide-scale use in the beginning, it is worthwhile considering the various issues and advantages so that these can be planned for. There is still some debate over the use of web-based teaching and much could be written about the issue. One factor which all institutions have to consider is the availability of the technology for both students and tutors. Any university which claims to be open must guard against limiting access to students simply because they do not have access to the requisite technology. This can be partially overcome by providing access at study centres but a measured approach is necessary.
Web-based technology can be used for many purposes. One area where there appears to be universal agreement concerning its efficacy is with regard to enhancing communications between tutors and students, students and students, students and the institution and tutors and the institution. Once fully utilised, web technologies could replace much of the FTF tutorial interaction detailed in the preceding sections. For example, students can lodge questions on a bulletin board rather than waiting for a surgery or phoning the tutor – this has an advantage of all students being able to see the question and answer. Certainly it is a very powerful tool with regard to making information available to students and has the added advantage of making it easier to keep information up to date. However, consideration will still need to be given to the advantages of FTF contact with regard to social interaction and alleviation of student isolation. It should also be noted that mediating on-line conferences for students is likely to increase the amount of time tutors need to spend in looking after their group. Tutors will also require staff development training to help them learn the techniques necessary to undertake such duties.

There is greater debate over the use of such technologies for content delivery. Certainly, courses which are specifically designed for such delivery can be very impressive and the Web can have significant advantages over print with regard to some forms of content delivery. However, too often, courses which were primarily designed for paper delivery are being converted into on-line versions. Such conversions are often flawed at best and in some cases are inferior versions of the original materials.

In time it is likely that the University will wish to move towards the provision of an Online Learning Environment (OLE) or Learner Management System (LMS) for students. These systems are usually web-based with each student having their own web page from where they can access course materials, send and receive e-mails, read and contribute to on-line discussions, submit TMAs and so on. Automated systems will also remind them of submission deadlines, direct them to web pages of interest and indicate any news pertaining to the course or university.

Current systems include WebCT and Blackboard. Several institutions and organisations are working on new developments and other off-the-peg versions may be appropriate in the future, notably that being developed by the UK e-universities in collaboration with Sun Microsystems.

Given the limited availability of the technology within Malaysia, consideration should be given to encouraging tutors to use ICT to communicate with staff at Headquarters (HQ) in the first instance. Experience in Hong Kong has shown that it is often the tutors rather than the students who are resistant to the use of new technologies. If all tutors were appointed from the beginning with an expectation that Internet usage would be a core part of their jobs, the University would be in a better position to fully utilise it once it is widely available. This would also have the advantage of simplifying and speeding up channels of communication between HQ and the tutors.


Tutor attributes and role description

People to be appointed as tutors should possess a degree or equivalent or a professional/vocational qualification in an appropriate area. It may not be necessary for them to have teaching experience but they should have an appreciation of how adults learn and they should be able to help adults become active learners through distance education. They must be sensitive to the needs of adult learners.

In order to help with the appointment of tutorial staff, it will be necessary for the University to construct a detailed role description. This will be particularly important if tutors are to be appointed by regional staff who lack the necessary academic background. An example of a tutor role description is given in Appendix 7. This has been adapted from similar documents used at the UKOU and OUHK.

5.2 ASSESSMENT

Assessment plays a vital role (in the form of both continuous assessment and examinations) in any tertiary institution. Continuous assessment plays an even greater role in an ODL institution as it presents a rare opportunity for the student to receive guidance and feedback from the University. There are two main types of continuous assessment, tutor-marked assignments (TMA) and computer-marked assignments (CMA). It is likely that continuous assessment will contribute between 40% and 50% of the final course mark. In order to ensure all groups are treated fairly and that assessment is set at the correct level, all assessment will be set by the Course Coordinator in consultation with other academics and the External Examiner for the course.

Role of the tutor-marked assignments

Tutor-marked assignments (TMAs) play a vital role in distance education by:

- tracking a student’s academic progress;
- acting as a pacing mechanism to maintain progress through the course;
- providing a vital opportunity for teaching via the tutor’s comments given on the assignment; and
- providing the student with an opportunity to apply what they have learned from the course.

Through their comments, tutors have an opportunity to support each student individually and give them the feedback they need to succeed on the course. Commenting on the assignment is as important as assigning a grade to it. Tutors will have to spend a great deal of time on marking and commenting on students’ assignments. This will have to be considered when calculating tutor remuneration. Depending on the assignment, it is normally estimated that each assignment will take approximately 45 minutes to mark. This will also have to be considered in the tutors’ workload.
Workload is also a consideration for students. Although assignments can vary widely in terms of the work needed to complete them, some guidelines will be needed over what constitutes a reasonable load on a course. It is recommended that for a half-year course 3–4 TMAIs is reasonable. For a year-long course, a student should be able to cope with 6–8 assignments. In recognition of the circumstances of adult learners, it is recommended that not all assignments on a course should be compulsory. Some latitude should be given to students so that if they cannot complete an assignment due to personal circumstances they will not ruin their chances of passing the course. A good rule of thumb would be for a course which has 4 assignments, to count the best 3 out of 4 for grade calculation purposes.

Given the nature of the system, OVUM will also need to develop a policy on plagiarism in assignments and tutors will need to be trained in this aspect of their work.

**Computer-marked assignments**

As the name suggests, CMAs are marked by a computer at HQ rather than by the tutor. This can be a useful method of providing feedback to students. There are now intelligent programmes that not only mark answers as right or wrong but can also provide standard feedback depending on the choice made by the student. The setting of effective multiple-choice tests is a skill which will require staff development input.

The use of CMAs may be expensive in terms of the equipment needed, for example, specialised optical character recognition hardware and software.

**On-line submission and marking**

Submission of assignments on-line by students has gained in popularity. The reasons for this are varied. For the student, on-line submission is more secure than the postal service, it is cheaper and allows the student to work up until the deadline! The use of on-line submission does present the institution with some challenges in terms of the administration of the workflow. For instance, a system has to be in place which prevents students from making multiple submissions or submitting after the due date. Concerns are also sometimes expressed about the lack of a paper record of the assignment, particularly where external scrutiny is required.

One step beyond the on-line submission of assignments by the student is on-line marking of the assignments by the tutor. This is where the tutor marks and comments on the soft copy of the assignment which is then returned to the student. There are many methods which can be used for this, ranging from the ‘highlight change’ tools in Microsoft Word to specialised programmes such as ‘Markin’ which allows tutors to make comments on the assignment and it can be returned to the student in the form of a hypertext page. Before implementation of any system, issues of software compatibility will have to be considered. For example exchange of ‘txt’ files has been used in some institutions to overcome the problems of software compatibility.
It is difficult to make precise recommendations in this area as the technology is changing so rapidly that we cannot predict what will be available by the time the University is ready to engage in this activity. However, it seems likely that some form of on-line learning environment will be adopted for students. In these environments, rather than students simply submitting assignments as e-mail attachments, they can upload files (of any type) into their own account. Access to this account is then restricted to the student, the tutor and the CC.

**Administrative procedures for TMAs**

The administrative system must allow for a rapid turnaround of marked assignments, recording of marks at HQ and monitoring of the marking. What follows is an example system, which has been tried and tested in various ODL universities:

*Step 1*

The student completes the assignment and sends it to the tutor before the cut-off date for marking. The TMA should be accompanied by a covering form which contains details of the student, tutor and course. It will be on this form, as well as on the TMA, that the tutor will assign the mark and make comments.

*Step 2*

The tutor marks the assignment and records the score and general comments on the cover sheet. The tutor keeps a copy for record and sends the rest to HQ. Scripts will be returned to HQ in batches as they are received and marked. Normally TMAs would be marked within 10 days of receipt to allow for rapid feedback to the student. HQ will check that everything is in order and record the student’s marks in the student database. At this stage, certain assignments will be selected and photocopied for monitoring purposes.

The HQ will be responsible for selecting sample assignments and copying them to the CC for monitoring. The CC should examine these assignments and decide if the grade is appropriate and if the comments made by the tutor are adequate and reasonable. This assessment should be fed back to the tutor along with recommendations for improvements if necessary. In this way, it is hoped that any problems with assignment marking can be rectified before the next TMA is due.

The number of assignments to be monitored for each tutor will probably vary depending on the experience of the tutor concerned and the stage of presentation of the course. For example, new tutors and new courses are likely to need a more intense level of scrutiny than experienced tutors and well-established courses. The normal level of monitoring would be for the CC to monitor around 3–5 assignments per tutor per assignment.
Step 3

HQ then returns the marked TMA, along with a copy of the cover sheet, to the student.

A system allowing for late submission of TMAs will also be needed. Usually progressively later submission require progressively more senior approval, for example:
- up to 7 days extension can be approved by the tutor;
- 7–21 days can be approved by the CC;
- over 21 days would require the School Dean’s approval; and
- no extension would be allowed for the last TMA on a course in order not to jeopardise the course result award process.

Examinations

It is likely that all courses will have an end-of-course examination that will contribute between 50% and 60% of the final course mark. All examinations will be set by the CC but will be marked by tutors subject to appropriate monitoring and guidance. Ideally, a system should be established to prevent tutors marking examination scripts from their own tutees. If this is not possible, anonymous marking should be employed. In addition to producing the paper, CCs will also have responsibility for the production of a detailed marking guide for the examination. This will be essential since, for large population courses, several tutors are likely to be involved in the marking process and detailed marking schemes will help eliminate some of the variation in marking. It is estimated that each tutor could mark in the region of 100–120 examination scripts; this figure allows for a reasonable workload and a fast processing time. As not all tutors will be exam script-markers, it is suggested that this work form the basis of a separate contract.

In order to further reduce variation in standards it is suggested that a meeting be held between the script-markers and the CC. It would be helpful if all parties, including the CC, could have marked, independently in advance of this meeting, three or four sample scripts. The meeting can then focus on the variations between script-markers and make any necessary adjustments to the marking scheme. This should help reduce the level of variation in marking standards but there will be other opportunities for standardisation (see next section).

One issue which will need consideration is the venue for examinations. For the convenience of students, it would be better if examinations could be held regionally. However, this raises issues concerning logistics and, more importantly, security of the examination papers and completed scripts. Presumably there are public examinations held on a national basis in Malaysia and this could be used as a model for the administration of examinations at OVUM.
Standardisation and award

Ensuring the application of similar standards to all students on a single course is always a challenge in mass education systems. Inevitably there will be variations between standards of teaching and marking and there should be a standardisation and award system in place to try and minimise these variations, thus ensuring that no individual student is unfairly disadvantaged. With regard to continuous assessment, CCs will monitor the marking of tutors and encourage them to adjust their standards as necessary as the course progresses. However, in the event of a tutor marking particularly severely or leniently, a system must be in operation to allow this to be considered when the results are being awarded. This forms part of the standardisation and award system.

In addition to continuous assessment, there is scope for variation in the standard of examination marking when this is undertaken by a number of part-time staff. The CC will also monitor the script-marking procedures. The CC should remark a sample of scripts from each script-marker, with involvement from the EE if appropriate. If problems of variable standards are encountered these can be dealt with by either scaling marks or, if necessary, arranging for an entire batch of scripts to be remarked.

The results for all students on each course would be scrutinised at a Standardisation and Award (S&A) meeting. This meeting would involve the CC (internal examiner), EE and senior neutral chair. Administrative support should also be provided. The performance of all tutors and script-markers can be considered and adjustments made if deemed appropriate. In addition, if the examination is found to be harder or easier than was originally envisaged, all examination marks can be adjusted at this meeting.

Course grade awards would also be recommended at this meeting. It is suggested that a grading system be developed which can form the basis of honours classification. For example, each course result could be graded into one of four pass levels (Pass 1 being the highest and Pass 4 being the lowest). These individual course grades would then be used as the basis for the final honours classification, which needs to be an automated process (requiring significant MIS input and support) when dealing with large numbers of students. Not all courses would need to be included in the calculation, for example foundation level courses are often excluded, and local practice would need to be considered.

Quality assurance

Although quality assurance mechanisms are an integral part of the processes at course level outlined in the previous sections, it will be necessary, given the importance of academic standards, to have a further check on the award of course results across the institution. It is suggested that a Course Results Group (CRG) be formed (consisting of the Deans, Registrar and chaired by the DVC (T&L)). This group would be responsible for scrutinising the minutes of all S&A meetings and would make recommendations to Senate for the award of results. This body could also consider any issues of general
concern which arose during the course of the examination period. CRG would also consider reports on the operation of each course at the end of each presentation.

5.3 RECRUITMENT, MONITORING AND TRAINING OF TUTORS

Appointment of tutors

The issue of how tutors are appointed will depend largely on the final decisions of the structure with regard to regional provision and staffing. This section is written on the expectation that, initially at least, there will be no full-time academic staff in the regions and that the reporting line for tutors will be via the CC to the School Dean at HQ. Day-to-day supervision will be carried out by the CC. Tutors will be appointed by open recruitment. Normally, newspaper advertisements would be placed in regional and national newspapers and candidates would apply to HQ (via regional centres) indicating their choice of course, qualifications and experience. However, for certain subjects and/or in certain regions, it may be necessary to be pro-active in the recruitment of tutors. It is likely that in the first instance, regional interview sessions will be held with staff from HQ travelling to regional centres to carry out the interviews. However, if a detailed person specification is developed, along with requirements for academic and/or professional qualifications, it is likely that tutors could be appointed by regional staff, if the involvement of CCs is not possible. As many tutors are likely to have full-time jobs, it should be made clear that tutors will be responsible for getting permission to ‘moonlight’ from their employers.

The status and ‘naming’ of tutors within OVUM will need consideration. For many institutions, tutors are classified as part-time staff. Other institutions classify their tutors as adjunct faculty members, sometimes even giving them more ‘academic’ job titles such as Associate Lecturer, thus raising their status. Local labour laws may have some bearing on this issue.

Tutor training

This will be a significant issue as most tutors will not have experience in distance learning. All tutors will require two types of training. The first will be training in the generic skills needed to be a tutor and the characteristics of ODL courses and students. Topics will include items on how to conduct tutorials, how to undertake telephone tuition, how to mark and comment on assignments, etc. As it is largely independent of subject matter, tutors can receive this type of training in a large group at a regional or national level. It should be a contractual necessity that all new tutors undergo this training before they commence their work. Regional staff could be responsible for the generic training.
An important focus of the generic training will be on the differences between being a distance education tutor and being a tutor in a conventional programme; the tutor is not employed to lecture but rather to facilitate understanding. The importance of the student-centred nature of the learning experience should be emphasised.

The second type of training is course related and is undertaken by the CC. This may necessitate the CC meeting groups of tutors at convenient locations. Course-based training will focus on the ethos of the course and any particular problems the tutor is likely to face. After initial FTF contact, some on-going training could be undertaken using ICT or telephone conferencing.

The staff development needs of part-time tutors must not be overlooked. Tutor training will need to be ongoing. It is suggested that additional training sessions take place during the course. At least two further sessions will be needed – one at around the time the first TMA is due and another shortly before the examination. Payment for attendance at staff development sessions is an issue. Some institutions pay for attendance whilst others only provide out of pocket expenses.

**Tutor as a developmental resource**

Once tutors become experienced with the systems and their operation they can be utilised as a developmental resource. It is recommended that experienced tutors be used in the staff development sessions for newly appointed tutors where they can share their experience. In addition, input from tutors can be valuable when course materials are being updated. Often, tutors are in the best position to be able to comment and advise on how the materials have been received by students and they will be aware of any problems that students have had understanding. Some institutions have also found it useful to involve experienced tutors with relevant subject expertise in the development stage of course materials.

**Contracts and payments**

Tutors need clear information of the University’s expectations with regard to their availability and performance and concern TMA marking turnaround times, availability for telephone tuition and so on. Contracts can be issued from the academic unit, regional centre or the Human Resources Unit (HRU) whichever is deemed most appropriate. In any case HRU will have an advisory function in terms of legal aspects and ensuring standardisation of the appointment and remuneration process.

There are many models which could be used for remuneration. The simplest is a single, or monthly, payment for all functions undertaken by the tutor. However, this has some disadvantages where the number of students allocated to a tutor varies and where the number of TMAs returned for marking by students (a significant part of the tutor workload) varies by course and tutor group. Another method of payment is to pay by function. Tutors would be paid an hourly rate for tutorial provision (including availability for telephone tutoring), a set amount for each TMA marked and possibly
a small overall lump sum to paid at the end of the contract for successful completion of all duties. Payment for examination script-marking should form the basis of a separate contract as not all tutors will be script-markers. This second method is more administratively complex but is a fairer method of payment.

Consideration will need to be given to the possibility of allowing differential payment rates depending on the level of the course or the subject area. The level of the course will have a particular impact on the marking of assignments and consideration should be given to differential payment rates for assignment marking depending on the expectation of tutor input. With regard to differential payment on a subject basis it is likely that market forces will prevail and that, for those subjects where tutors are in short supply or where external pay rates are high, higher payments may be warranted.

**Tutor monitoring**

As part of the QA procedures, the work of tutors will need monitoring. This will be the responsibility of the CC and will help ensure that students are getting fair service from the University. This monitoring will take place at two levels: the marking of TMAs and the provision of FTF tutorials. The monitoring of TMA marking was covered earlier.

It is recommended that visits be undertaken to tutorial sessions for each tutor at least once per course presentation. This is essential to ensure that tutors have adapted to the methodology required for tutorial provision in an ODL context and that they are well prepared and have developed a rapport with the students. In the absence of regional academic staff, and assuming CCs are logistically unable to visit all tutors, this function will have to be undertaken by regional staff. These staff would need training. Again, the feedback from the tutorial visit should be given to the tutor along with any recommendations for improvements and suggested staff development and training activities.

As the University grows and tutors become more experienced, it is recommended that a system of peer support and monitoring be introduced. Experienced and trusted tutors can be given extra responsibility to visit tutorials and monitor and support them.

It is also recommended that a system of student feedback on tutors be developed. At the end of each course presentation, students should be given the opportunity to complete a questionnaire on the performance of their tutors with regard to issues such as subject knowledge, preparation, availability, TMA comments and so on. Additional questions seeking views on the University’s administrative support systems and the quality of the course materials could also be included. The desirability or otherwise of whether this questionnaire should be anonymous and the level of sharing of the information collected with tutors should take account of local culture and customs. Tutors should also be given the opportunity to carry out some form of self-reflection on their own performance.
In the event that a tutor has to be dismissed it is recommended that this be undertaken by the Dean on advice from the CC. If the HRU has issued the tutor contract, it will be the party terminating the contract on advice from the Dean. As the regions expand and are staffed with academic staff, these functions could be devolved to a regional level.

5.4 FULL-TIME STAFF

Reporting lines

The CC will be responsible for ensuring that tutors perform to appropriate standards and will also be responsible for any training and staff development which tutors receive. They will confirm satisfactory performance for payment purposes and make recommendations about termination and re-appointments.

Full-time staff and students

A question arises of whether full-time staff will be expected to tutor students as part of their duties. This raises issues of workload and equity. In some organisations, it has been deemed ‘a good thing’ to have full-time staff involved in the tuition process as it helps keep them in touch with the student experience. However, it does raise issues with regard to monitoring of work – who monitors the CC if the CC is a tutor? In an organisation with a lean staffing structure this can cause some difficulty.

Some organisations make a compromise with regard to full-time staff acting as tutors and only involve them in ‘non-standard’ tutorial situations such as day or residential schools. This can also act as a focal point for meetings between CCs and tutors.

Full-time staff may be used as tutors for courses which have a small population where only one or two tutorial groups can be formed across the country. The majority of tutorial contact will probably have to take place over the telephone and, if resources allow, FTF meetings between students and their tutor could be arranged at a single or multiple central point either on a formal (tutorial) or informal (surgery) basis.

Full-time staff often have responsibility for tuition of students when a course is delivered on-line. CCs in such situations often closely monitor what is happening in chat rooms and newsgroups and will make significant contributions to such provision. However, this can come at a great cost in full-time staff workload and care needs to be taken to ensure that full-time staff servicing large population courses do not become overwhelmed by the volume of e-mails and messages.

Full-time staff are required to handle student complaints. The tutor will be the normal first point of contact for students. However, in the case of student complaints about the tutor or in the case of complaints that the tutor cannot handle, the CC will become the conduit.
5.5 POLICY FORMULATION

Policy pertaining to teaching and learning and the operation of tutors falls into two main areas – administrative and academic. As it is not always possible to draw a clear line between the two, it would be better if a system for policy formulation could be developed which allowed for input at both levels.

A Teaching and Learning Committee should be established under the Senate for this purpose, chaired by the DVC (T&L) and with membership consisting of the Deans, Registrar, Head of Regions, Finance Unit and HRU. This committee could then be charged with the formulation of all policy relating to teaching and learning for the Senate’s approval. This arrangement would probably not be quite so appropriate if, and when, power is devolved to the regions and they take on the role of ‘mini-HQ’. Once this happens it will be vital to discuss where authority for policy is vested. While one of the advantages of a strong regional structure is increased sensitivity to local needs and stronger identification of students with the University, the problem of differential treatment of students which may arise when individual regions implement policy differentially will need to be addressed.

It is recommended that a central unit be charged with the task of promulgating all policy to the regional centres. This should be done in the form of a manual of procedures (paper record) which is updated on a regular basis as well as briefing sessions for front-line staff (training). It is probable that this unit would be located within the Registry. An alternative is that the office of the Head of Regions be responsible for this promulgation of policy for all matters devolved to regional centres.

REFERENCES

Open University of Hong Kong (1998): Tutor Orientation and Training, Hong Kong: Open University of Hong Kong.
This chapter covers two related but separate aspects of the University. The first part deals with the physical infrastructure suggested for an Open and Virtual University operating across the whole of Malaysia. The second part outlines the kind of non-course related student support system which supports the course-related role of the tutor.

6.0 REGIONAL INFRASTRUCTURE FOR A NATIONAL OPEN AND VIRTUAL UNIVERSITY

It is possible, and there are current examples, for example, the National Extension College in the UK and Athabasca University in Canada, to operate a distance teaching system across a country without having a country-wide physical presence. As the ultimate aim for OVUM is that it will operate on-line as much as possible there may be arguments against setting up a complex and expensive network of regional and study centres.

However evidence suggests that even if eventually much of the teaching of such a university is on-line, the physical presence of the University across the country can do much to reinforce the fact that it does operate nationally and has students and potential students in all parts of the country. It also provides access to the student and potential student to the ‘human face’ of the institution. Such a presence will also provide access for students to ICTs if they cannot access at home or at work. It will also be the case that some students do not have a suitable environment at home in which to study comfortably and effectively.

In making the suggestions that follow the ultimate goal of an open and virtual university is kept to the forefront and proposals are designed to ensure a smooth transition to a mainly on-line system. For example, even if students may not be able to register for courses on-line initially the structure of the registration systems should be set up from the beginning with this in mind even if some registrations have to be completed manually or by telephone in the first instance.

This section deals with the following aspects of a national infrastructure:

- regional presence;
- activities to be undertaken at the regional level;
- need for local study centres and their functions;
- communications between the HQ and the regional centres;
- geographical and functional management; and
- staffing requirements and training needs both for administrative and advisory staff.
6.1 REGIONAL PRESENCE

In 1982 the International Council for Correspondence Education was renamed the International Council for Distance Education (ICDE). Behind this apparently simple change of title was an important philosophy, namely that students studying at a distance needed support and should not be left to study solely by correspondence and in isolation.

The UKOU (1971) set up a national network of regional and study centres, which emphasised its UK-wide nature and also provided a regional support base for both students and the tutors who were the students’ main source of individual support. This model with significant modifications has been implemented in many countries across the world most notably in India where the Indira Gandhi National Open University has a vast network of regional and local centres.

It is for those who know Malaysia well to make the decisions about the details of a national infrastructure for OVUM but the following suggestions for its activities are based on the notion that there might eventually be one regional centre in each state.

There is nothing fixed about this number; it is merely a starting point for discussion. It will be advisable to phase the establishment of regional centres with, say 5–6 centres being set up in the initial phase followed in years 3 and 4 by further centres as appropriate. The availability of premises in Penang, Kuala Lumpur and Petaling Jaya provides the opportunity for the initial planning of regional centres in these areas but it is important, even in the first phase to have one or two regional centres operating from areas geographically remote from Penang.

Such regional centres need not have large numbers of staff or occupy expensive buildings. They could be established in rented accommodation either in other educational institutions, in government buildings or possibly in commercial organisations. At the beginning, it is anticipated that there might be a Director (senior administrator) plus 10–12 other staff in support. The main initial task would be to establish OVUM in the local state followed by the recruitment of students. Space requirements are not high initially and renting would lessen the exposure of the University in the early years. Depending on the type of accommodation available a regional centre might need some 10,000 square feet in the first instance.

It may be useful to establish at the outset a principle enshrining the learner centredness of the institution, namely that the HQ should incorporate both a regional centre and study centre and that all regional centres should, where possible, incorporate a study centre. This would ensure that students and tutors had a sense of belonging to the University; that its centres were for them and not simply for the administration of the University.

There are lessons to be learnt from the experiences of Universiti Sains Malaysia (USM). It set up 13 study centres in high schools and teacher training colleges from which
tutorials and laboratory sessions are run. The location of these centres was based on the principle that no student had to travel more than 90 km to attend a tutorial or laboratory class.

6.2 ROLE OF REGIONAL CENTRES

The role of the regional centre is to:

- be the regional presence of OVUM, helping to establish it as a serious and relevant provider for individual students and for organisations nationally and within the state;
- be responsible for liaison with other providers, Government and business within the state and to secure funding for students from a range of sources;
- promote and publicise the University and be an advocate for its particular contribution to the education system of Malaysia;
- ensure that the HQ is aware of regional needs for educational programmes;
- provide a facility in the regional centre for some or all of the following activities in support of students or potential students:
  - advice and guidance about course choice and preparation or any pre-requisites;
  - advice and information about financial assistance;
  - an opportunity to examine on-line and printed/video/audio materials and other resources; and
  - a registration and fee payment point.
- a base where students can meet tutors and each other and from which induction meetings for students, staff development activities for tutors (including on-line training) can be organised;
- establishment of a local community of staff and students;
- a base for the establishment of local study centres and the negotiations regarding the type and quality for provision and its cost;
- a base where students could undertake on-line continuous assessment or take on-line or more traditional examinations;
- organisational base for graduation and other award ceremonies;
- an entry point for advice from the institution as a whole (Communication links with the Registry and the academic schools are important here. See Chapter 8.); and
- location for tutor/student allocation, timetabling and planning of tutorials.

Accommodation issues

A regional centre might typically comprise an open-plan area (some 10,000 square feet) with six workstations for regional centre staff, a meeting room for tutors and students (with some workstations which could be reserved in advance), an IT maintenance and training facility, a library and resources room, a location for advice and guidance (on-line, telephone, correspondence and FTF), and on-line facilities for students to undertake a range of academic and administrative tasks. Ideally, it would have a public
location with a *shop front* arrangement or at least a presence in the centre of a population which could attract potential students through ever-changing displays of publicity and promotional materials. It should be open at times that are convenient for students. Regional centres and the HQ would be hard-wired, as part of a national network.

**Study centres**

Once OVUM is mainly on-line, say in 10 years time, there may not be as great a need for regular FTF local tuition but for the present start-up situation, FTF support is important. Tutorial locations, including those requiring specialist facilities, for example, laboratories, need to be searched out and facilities negotiated. All regional centres should incorporate a study centre (extra accommodation requirements here in the form of tutorial space depending on the numbers of students and courses). It will be the case, however, that some study centres will be more local and that a regional centre may be responsible for the establishment of a considerable number of study centres in the geographical area it serves.

It is probable and perhaps desirable that such facilities should be rented or provided through sponsorship rather than purchased and that a member of staff based in the institution supplying the accommodation could be responsible for coordination and liaison, rewarded by a small honorarium paid by OVUM. It might be possible for local community centres, schools, colleges and other institutions to be designated as study centres. Local pride in establishing an OVUM study centre, with local people having a sense of ownership would be a real bonus. However, there are some advantages in an institution owning its own study centres. A SWOT analysis of the advantages and disadvantages of owning study centres comes out in favour of rental (Table 6.1).

**Table 6.1: SWOT analysis**

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>purchase cost</td>
</tr>
<tr>
<td>opening hours</td>
<td>management cost</td>
</tr>
<tr>
<td>facilities</td>
<td>lack of local support from staff in another institution</td>
</tr>
<tr>
<td>sole occupant</td>
<td>lack of local involvement and ownership</td>
</tr>
<tr>
<td>corporate image</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>can build up</td>
<td>maintenance of property, security, etc.</td>
</tr>
<tr>
<td>infrastructure,</td>
<td></td>
</tr>
<tr>
<td>develop IT facilities</td>
<td></td>
</tr>
<tr>
<td>can sell off at a</td>
<td></td>
</tr>
<tr>
<td>profit if purchased</td>
<td></td>
</tr>
<tr>
<td>wisely</td>
<td></td>
</tr>
</tbody>
</table>

Rental looks easily the best option especially as the ultimate aim is a virtual university. The same applies (although not to such a great extent) with regional centres.
One of the early jobs for the Regional Director would be to look for suitable regional and tutorial centre premises. It may be that local companies or institutions would wish to sponsor such centres in their own premises especially if an association with OVUM was seen as prestigious. In the early years of the OUUK, many local colleges competed for the privilege of being an OU centre. In Spain, for example, the *Universidad a Distancia* has study centres in a bank and in a town hall; in the UK some centres are located in libraries, in other universities, in colleges or schools; and in South Africa a wide range of community learning centres are used by several distance teaching organisations.

Regional centres will clearly need to be open, ideally for 6 days per week during hours that are convenient for students. Opening hours of study centres will much more depend on the volume of activity. It may be sensible from the outset to plan for study centres to operate on Thursdays, Fridays, Saturdays and Sundays (or a combination of these depending on the area) when access might be easier for students and where the costs of rental would be lower. The notion of critical mass is also important. Tutorials should be grouped together such that there is a good number of OVUM staff and students present at any one location at any particular time.

It would be sensible to plan from the outset for students to have access to some limited on-line facility at study centres with a more substantial provision in the regional centres. One of the main aims of tutors and tutorials will be to help prepare students to be more independent learners and to be comfortable with learning on-line.

### 6.3 STAFF ROLES AND TRAINING REQUIREMENTS

**Skills requirements of staff**

In the beginning centres should be staffed on the principle of multi-tasking. A range of skills, knowledge and experience will be needed in the following areas:

- negotiation;
- political understanding of educational environment in the region concerned;
- networking;
- financial;
- educational awareness and the possibilities offered by distance education;
- IT management;
- advice and guidance;
- administrative;
- promotion, marketing and public relations;
- office management;
- staff development; and
- quality assurance.
Assuming there are to be some 5,000 students recruited each year for the first 5 years, a staffing plan needs to incorporate drivers related to the increase in student numbers. This can also be an incentive to recruit effectively.

**Staffing of Regional centres in Year 1**

(Assumption for the purposes of this plan is that they will all be roughly the same size in terms of student numbers and importance in terms of geographical location.)

- Director (an educational administrator) Senior Lecturer/equivalent level with performance-related pay driven by recruitment and retention? (1)
- IT Co-ordinator /help desk/trainer/technician (1.5)
- Adviser/Marketing/Promotional expert (1)
- Student and Tutor Support Managers (4)
- Receptionist and clerical support staff (5)

**Total 12.5**

Depending on the hours of opening it may be that shift working will need to be established. It may also be valuable to employ tutors as student advisers on a part-time basis. It is not envisaged that there would need to be any full-time academic staff based in regional centres at the outset, although staff will have to understand the needs of students and tutors. Centres, which have lower volumes of activity, would have fewer back-up staff but the overall structure of each centre would be similar. One of the key elements of a start-up activity is that all staff should multi-task and although each would have their own speciality, they would all be prepared to work on any task. Student numbers will be the driver most directly geared to staffing requirements.

Clearly, the post of Director post is important. In some other start-up distance teaching universities staff have been seconded from permanent positions in other Universities. This is not necessarily a good idea. Staff need to be totally committed to the new institution. The Director would need the following skills, experience and knowledge:

- understand the regional networks involved in education, training and business;
- be committed to open and virtual education as a way forward to support the economic growth and social and environmental development of Malaysia;
- understand the potential of IT for administrative processes, student support and teaching and learning;
- have a track record of managing teams;
- have sound financial skills;
- be able to promote and publicise OVUM as an active advocate and ambassador and to collect information about the region and its needs and feed back to HQ; and
- be able to train and develop staff both for the regional centre and for tutorials.

As well as being well respected within the region, the Director would need to be well respected at HQ. A combination of sound managerial skills, vision and a desire to
support students is more important than high academic qualifications for this post, but the people appointed must understand academic and educational processes.

**Staffing at Headquarters**

Regional development will have to be strongly co-ordinated. One of the difficulties of appointing a number of highly able regional directors will be their tendency to want to do things in their own way. This can lead to lack of coherence for the institution nationally and a duplication of energies and a waste of resources. Therefore the post of Head of Regions must be one of the most senior in the University with wide powers. He or she must be part of the senior management team of the institution with a status and remuneration at professorial level.

The Head of Regions would have all the regional directors as direct reports, plus some directorate staff who would have functional responsibilities for co-ordinating particular activities across all the regions. These functions might be, for example:

- marketing, promotion, advice and guidance;
- staff development;
- planning and resourcing; and
- teaching and learning, including the contractual and pay arrangements for part-time tutors.

There are some advantages in having a regional centre operation at HQ in terms of understanding and good communications between academic and registry staff and the regions. In such a case it might be that the Head of Regions is also Regional Director for that particular area.

The Head of Regions would report directly to the Deputy Vice Chancellor (T&L) along with the Registrar, the Librarian and the Head of the Educational Technology and Publishing Unit. In this way, the activities of the Registry and the Regions will be co-ordinated.

**Study centre staffing and arrangements**

If study centres are to be rented from other institutions, rather than owned it is critical from the outset to make clear the expectations of both parties in a service level agreement which would set out the responsibilities of each party. This should cover the following issues:

- availability of rooms, including clear statements about opening hours;
- equipment in rooms, including the possibility of OVUM corporate furnishings;
- access to IT facilities for individual students outside tutorial schedules;
- parking facilities;
- cleanliness of rooms and the general environment;
- clarity of responsibilities for health and safety;
- advertising OVUM by prominent location of OVUM logo, publicity materials and notice board;
- canteen and other social facilities; and
- rental agreement.

In this context there may be some advantage in OVUM employing a liaison person who also works in the host institution as the main day-to-day contact for OVUM staff and for students. There would be no permanent staffing then in study centres which initially would be locations for tutorial activity only. If, subsequently it was found that students wanted access to study centres at other times than those when tutorials were offered, then different arrangements could be made, including access to IT facilities.

6.4 COMMUNICATIONS AND MANAGEMENT STRUCTURES

One of the recurrent issues in distributed organisations is ‘who does what where’ and who is responsible and accountable for activities. It is important for OVUM to be clear at the outset where managerial responsibilities are located. This will be an important initial task of the DVC (T&L). There are a number of interfaces:
- Registry/regions.
- Registry/regional HQ.
- Regions/regional HQ.
- Regions/regional HQ/Academic Schools.
- Marketing/regions/registry.

It may be sensible to make a clear distinction at the outset between policy, standard setting, overall responsibility, securing resources, quality assurance (all of which could and should be national activities), and the implementation of policy locally within clear guidelines.

An example, using the interface between the registry and region and the region and the regional HQ may help to illustrate this point.
<table>
<thead>
<tr>
<th>Registry</th>
<th>Regional centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration and student records policy and overall responsibility</td>
<td>Implementing local registration and local records</td>
</tr>
<tr>
<td>Examinations and assessment policy and overall responsibility</td>
<td>Arranging examination locations, invigilation collection of papers etc</td>
</tr>
<tr>
<td>Overall responsibility for dealing with enquirers</td>
<td>Implementing policy locally</td>
</tr>
<tr>
<td>Award ceremony policy and co-ordination</td>
<td>Arrangement of awards ceremonies (if regional)</td>
</tr>
<tr>
<td><strong>Regional HQ</strong></td>
<td><strong>Regional centres</strong></td>
</tr>
<tr>
<td>Policy for contracts and payments of tutors</td>
<td>Recording of face-to-face tutorial activity, appointing tutors</td>
</tr>
<tr>
<td>Policy for staff development of tutors</td>
<td>Implementing staff development</td>
</tr>
<tr>
<td>Promotion and publicity policy</td>
<td>Establishment of good links with regional press (TV, radio and papers) and active recruitment of students.</td>
</tr>
<tr>
<td>Student support and guidance policy</td>
<td>Implementation of policy. Providing support system from regional centre*</td>
</tr>
</tbody>
</table>

*See Chapter 5 for role of learning support from regional centres

One key element here is the link between the tutors and the regional centres, as both groups need to work together to support students. Part-time tutors cannot be expected to deal with all aspects of student support and will sometimes need to refer students to the regional centre (see section 6.6).

### 6.5 QUALITY ASSURANCE AND STAFF DEVELOPMENT

Quality in most distance teaching institutions is founded on the three notions of excellent teaching and learning materials (print, audiovisual or web-based), excellent student support (especially through the student’s personal tutor) and effective systems and logistics. Clearly in terms of study centre facilities, service level agreements with host institutions will help with quality assurance. But regional centres will also need to set standards and have processes in place to monitor these standards including customer/student feedback. Standards for responses to letters, e-mails and telephone calls will need to be agreed and set as will the systems for monitoring these standards. Both qualitative and quantitative analysis should be established such that the quality of telephone enquiry handling is monitored as much as the speed at which calls are answered.

In all this effective selection, training and performance monitoring of staff are the key to quality assurance. Quality assurance of the work of tutors is dealt elsewhere in this Report but again, careful selection, training and support are key aspects.
6.6 **NON-COURSE-RELATED STUDENT SUPPORT**

Much has been written about the importance of the tutor in distance education. The tutor is the main human contact between the student and the distance teaching system. Tutors are appointed because of their subject knowledge and understanding and also because of their actual or potential skill in supporting distance learners.

6.7 **NON-COURSE–RELATED SUPPORT**

Tutors cannot be expected to know everything about the institution or know about all the possible ways of supporting students. Their role is primarily in relation to the course they are teaching. There are however other aspects of student support which are vital for the student and which will need to be provided in a variety of ways, on-line, by telephone, in writing and FTF. This support has been termed non-academic student support. Another way of describing it is generic or non-tuition related student support. We shall use the term non-course related student support (NCRSS) which although clumsy has the benefit of being precise.

The elements of such support are as follows:

- information, advice and guidance as to which course/s to register for; evidence suggests that incorrect initial course choice is a major factor influencing drop-out;
- credit transfer and advance standing advice including the accreditation of prior learning;
- how to prepare for studying in general or for a particular course;
- induction into the institution and to distance learning methods;
- library services and advice on how to use them; information on access to local library facilities;
- careers guidance – this is intimately linked to course choice for many students;
- financial advice;
- support for people with special needs, for example, disabled, institutionalised;
- generic, non-course specific study skills, for example, ICT training, generic learning skills including numeracy and literacy;
- examination skills; and
- support between programmes and courses.

It is important to recognise that this support is not ‘personal counselling’ but advice and guidance on issues which may affect study just as much as difficulties with understanding the actual course material.
6.8 PROVISION OF SUPPORT

It is proposed that this support is provided by a partnership between the national HQ for specialist advice and web systems development and regional centres for more generic functions. The main aim for the institution should be to move as much of the information and advice aspects of student support as soon as possible onto the Web (see www.open.ac.uk/learners-guide). What is clear is that the development of web-based interactive systems help students with the more specific and straightforward queries, but raise more sophisticated questions in the students’ minds which then have to be answered by telephone or e-mail by more highly trained staff. Information systems should be developed to enable all regional centre staff to have access to key course information on-line. Eventually this data would be made available directly to students. Specialist advice and information, for example in relation to credit transfer will best be dealt with by HQ, but with some mediation by staff in regional centres.

6.9 TUTORS AND THE REGIONAL CENTRES

Clear referral routes for students and tutors to sources of expertise either in regional centres or at the HQ are important. Tutors need to be very clear where their responsibilities for students start and finish. One area where there is often much misunderstanding is in the field of generic study skills. A tutor should, as part of his or her academic role, help the students with skills relevant to the course. For example, in a Maths course, the tutor will provide support with the skills necessary at the level of the course. The tutor would not be expected to provide support for basic numeracy if the course was at a higher level. Nor would the tutor be expected to provide support for other types of study skills, for example, ICT, literacy, note-taking, and time management, etc. For support in these areas students should be referred to sources of specialist (remedial?) support in the regional centre. Specialist workshops would be arranged by regional centres to meet any demand and the tutor’s role would be one of diagnosis of skills needs and referral to these specialist workshops.

The regional centre may also organise events where students meet to discuss their future course choice and listen to one another and their tutors about the student experience of studying particular courses. This activity is of utmost importance in that there is much evidence that a main cause of dropout is poor selection of courses in the first instance.

6.10 CENTRALISED VERSUS REGIONAL STUDENT SERVICE

It is tempting to think of a system which is national, embodying the one-stop shop principle where a student e-mailing or telephoning from anywhere in the country can get access to advice and guidance about a range of issues including course choice from a call centre type of operation. Such an operation could deal with simple queries and provide basic information and support with a referral system to regional centres where more personal guidance and support is needed. On the other hand, it is difficult to see
how skills workshops, support for students with special needs and meetings to support course choice, could be organised on anything but a regional basis. Whatever system is developed it is important that there is a clear national policy with clear standards of service and methods of monitoring such standards together with clear lines of responsibility.

6.11 STAFFING AND MANAGEMENT STRUCTURE

The DVC (T&L) would be responsible for setting the policy for student support, securing the resources necessary, defining the standards, developing mechanisms for monitoring the standards and ensuring that staff development in this area is undertaken. The Registrar and Head of Regions would then be responsible for its implementation. It is difficult to envisage a structure where regional staff can be managed on a functional basis direct from HQ especially as the nature of things will mean that the few regional staff will have to undertake a range of activities that may cut across different national responsibilities. The management of regional staff would be the responsibility of the regional director, within national policy directions and quality standards.

It should be accepted from the outset that the Regional Director is responsible for hiring and managing the staff there but that their activities will be located within a clear national framework. Although a level of innovation in relation to local need would be encouraged, great care must be taken to ensure that there is a clearly defined university-wide service with university-wide standards.

REFERENCES

Castro, A. et al (1985): An Australian Casebook of Study Centres in Distance Education, Distance Education Unit, Deakin University.
CHAPTER 7: DEVELOPMENT OF LEARNING MATERIALS

As a DE institution, OVUM will rely on study materials as an important part of instruction, using a number of mechanisms and technologies to deliver and support these materials. Instructional design, technology and publishing are core functions in designing, producing and delivering these materials to the student.

Although the ultimate goal of the venture is to become a virtual ‘open’ university, this will depend very much on the development of the digital infrastructure in Malaysia. Broadband is only available in the vicinity of Kuala Lumpur. Appliance and connectivity costs are currently high and affordable by a small proportion of the Malaysian population. Until the technology environment is friendly, affordable and universally available, it is anticipated that delivery of courses would be mainly through print with additional on-line, CD-ROM, audio, video and multi-media supporting materials although some compromises may be required initially in this area.

Students would not be expected to download their own print materials or access multi-media components on-line; they will be supplied with all their learning materials. Learners will be provided with FTF tutorial support through study centres and have access to computer facilities. Use of software, textbooks and access to library facilities would be required. Perhaps not initially, but over time they would be expected to have a minimum computer requirement that would enable access to web-based materials and databases for research, and have e-mail and computer conferencing through a learner management system.

This chapter identifies key processes and procedures and links through the university and also highlights some underlying themes that have implications. Areas and issues such as academic staff contracts and training and development, QA procedures, and the technology infrastructure obviously go across the institution and require overall policy decisions and implementation. An overall budgetary and costing system and a means to track and monitor individual courses within it is also required.

7.0 SETTING UP AN EDUCATIONAL TECHNOLOGY AND PUBLISHING UNIT

OVUM is required to formulate a clear teaching, assessment and student support strategy before materials development can be planned. Some fundamental decisions about means of delivery and the basic features of the learning packages need to be made. A needs analysis of the local student population would be required, followed by a costs and benefits analysis of appropriate delivery mechanisms and their supporting developmental and presentational infrastructure. Learner profiles would need establishing. These analyses and profiles would also inform any decisions on the
technology infrastructure. Strategies on delivery and presentation of courses would need formulating, including:

- Buying in from other institutions: policies, costs and benefits, adaptation and translation strategies.
- Print and other materials: format, design, and production features; likely to include Course Guide, Study Guide, Assessment Guide, additional resources as textbooks, readers, software on a course by course basis.
- On-line and multi-media use; learner management system; supporting technology.
- Textbooks, software and other resources: students required to purchase or supplied as part of course materials, logistics of supply in either case, costs and availability, suitability.
- Copyright and Intellectual Property issues of developed and bought-in materials.
- Requirement for generic materials such as Student Handbook, Study Skills manual for students, Tutor Manual.
- Use of library and on-line resources; licences for databases, journals, propriety software.
- Printing and media production facilities: in-house and outsourcing, partnerships and subcontractors.
- Printing runs and revision schedule for all individual course components.
- Centralised or decentralised warehousing of materials. Delivery to learners through post, courier or study centres.

However, it is apparent from preliminary investigations that it is likely that students will need to be supplied with complete packages to include whatever software or textbooks they require. It is also apparent that level 1 courses which are launched in the first presentation are likely to be brought in from an overseas institution and may be modified. This obviously has implications for the design of the whole academic programmes and future levels. In addition, courses on numeracy, IT, communication and cultural studies that form the Matriculation Certificate will need to be developed and specifically tailored to the local requirements using local staff. In all instances, there are time and money implications which need careful addressing.

The course development and production procedures that result in the learning packages that are sent to students are crucial to the success of any DE institution. In addition to providing the chief means of the University’s teaching at the required standards, efficient and cost-effective production and delivery are crucial to its economic success and viability. An Educational Technology and Publishing Unit (ETPU) should be set up to carry out all the processes and procedures for the preparation, production and distribution of learning packages to students. The Unit should include the management of all course development, publishing and production functions, management of outsourcing and partnerships with local publishing, bookselling and print and media production houses, and also provide leadership in decision making on technology infrastructure.
Initial staff required for ETPU include:

- Head of Educational Technology and Publishing.
- Senior Instructional Designer (plus instructional designers).
- Publishing Manager (plus editors, translators, graphic designers, multimedia designers, interactive designers).
- Desk Top Publishing systems and operators.
- Non-print media supply (limited in-house plus outside subcontracted production facilities for all major items and runs).
- Printing facility (limited in-house plus outside subcontracted production facilities for major items and runs).
- Warehousing and distribution staff.

The Head of ETPU will require the following experience and skills:

- experience of distance education at some level;
- experience of a tertiary level teaching/learning environment;
- management of major university/institution department including staffing; and
- IT, budgetary, leadership, interpersonal, change management and innovation skills.

The Senior Instructional Designer will require the following experience and skills:

- experience of instructional design in post-secondary education materials;
- experience of team and staff management and training;
- time and project management skills;
- multi-media and IT skills; and
- interpersonal, negotiating and contract managing skills.

The Publishing Manager will require the following experience and skills:

- experience of academic publishing/distance education publishing;
- experience of print and media production and purchasing including budgeting and scheduling;
- experience of team and staff management and training; and
- IT, interpersonal, negotiating, contract managing skills

The SID and PM positions will be at Senior Lecturer level. Instructional designers will report to the SID; editors, graphic artists, DTP operators, media specialists will report to the PM; and SID and PM will report to the Head of ETPU.

7.1 ESTABLISHING COURSE DEVELOPMENT PROCESSES AND PROCEDURES

Courses will be designed by OVUM’s academic and ID staff but probably developed by contract developers from within and outside the country using a course team approach. All materials will be academically sound and developed under rigorous procedures adhering to international benchmarks where instructional design plays a key role. The
curriculum, course development, course production, delivery and assessment will be subjected to external review and audit to achieve successful accreditation by the Malaysian authorities and the standards appropriate for a Commonwealth university.

It is anticipated that a limited number of level 1 courses would be presented for the first enrolments, and depending on the time scale, it is likely that these would be completely or partially bought in, and/or adapted as necessary. Lower level course materials will preferably be developed by the institution, with higher level ones initially being bought in from the best international sources with local adaptation.

Course development procedures need establishing to link the academic schools and ETPU to maintain rigorous, academically sound, instructionally designed and quality assured learning materials. A number of checklists for course review for in-house development and for imported materials, guidelines for course development, documentation for approval will need drawing up, adhering to good practice in distance education. Criteria for identifying effective instruction include:

- clear, appropriate and achievable learning objectives/outcomes;
- learner profile;
- appropriate sequencing and structuring;
- interactivity;
- feedback;
- motivation;
- transferability of skills;
- appropriate use of media;
- formal and informal assessment; and
- administrative requirements.

The following course development procedures adopt the Course Team of experts approach for courses developed in-house and also those bought in from other institutions and adapted. They apply to print, web- or multi-media-based materials. A Blueprint is initially prepared and a prototype worked up before the course development proper is started; this is reflected in contractual payments to all outside parties. The experience of the team should include subject content specialists, university teaching staff, instructional designers and, when more advanced on-line developments are envisaged, web designers and technical experts.

1. Course and curriculum proposed by School Board and approved by the Senate.

2. Internal course team (CT) formed comprising of typically:
   - School academic (Course Team Coordinator);
   - Course Coordinator (CC);
   - Instructional designer (ID) from ETPU; and
   - Academic from another School (Course Team Member).

3. CT performs course needs assessment, learners’ needs, course framework established with general outline and media mix/presentation strategy and
proposed strategy for in-house development or buying-in and adapting or translating.

4. Course budget drawn up to include materials development (including translation and adaptation as necessary) and production, purchasing, licensing, copyright clearance, and projected schedule

5. Developmental strategy agreed of:
   ➢ Buying-in (and adapting);
   ➢ developing/adapting with in-house developer;
   ➢ developing/adapting with outside developer and/or;
   ➢ complete development or using some stand-alone resources/components such as textbooks; and
   ➢ all individual course components are identified.

6. External subject reviewer (ESR) brought into CT. ESR is appointed by the School under direction and criteria of the Senate.

7. Bought-in materials/components reviewed and/or adaptor/CD brought into CT. CD is recommended by the School via the CT and contracted by the SID according to designated procedures.

8. CD briefed by ID and CTC and contracted to prepare blueprint as stage 1; prototype as stage 2; rest of materials as stage 3, linked payments to stages and sub-stages in stage 3.

9. Blueprinting: CD produces content syllabus and learning outcomes. Approved by CT.

10. Detailed blueprint with all course components detailed, course and unit breakdown, presentation and assessment strategies identified including online/multi-media usage, textbooks, copyright issues, etc. Approved by CT. Development and production schedule drawn up. Budget revised. CD contracted for next stage of course development.

11. CD prepares the Course Guide and the first prototype study unit for the Study Guide in conjunction with ID. Reviewed by CT and circulated to School, ESR, Finance, Registrar, Librarian, Head of ETPU, SID, PM. CT approves material or CD required to reiterate as necessary. Accompanying the study unit are all details for any third party copyright material.

12. CD completes rest of materials development with each component or study unit being signed off by CT after internal circulation including School. ID provides project management to keep development schedule on track and on budget. All other items such as Assessment Guide, with assessment questions and marking guides for tutors, examination questions with marking guide and sample examination questions with guidance on answers, multi-media scripts and outlines for tutorials are supplied to complete the development.
13. CD writes to a word processing template with input and help from the ID. Final manuscripts are processed through the Desktop Publishing system using experienced editors and operators; graphic designers and multi-media designers provide appropriate expertise; copyright clearances are carried out; multi-media packages managed through outside production houses; printed matter managed through outside printing facilities to warehousing and distribution. PM to manage complete process including logistics, scheduling and costs.

14. Course presentations are reviewed by CT and CC with input from tutors, regional centres, learners and EEs as part of an overall evaluation. Updates, errors and problems are returned to the CT for action. CT prepares evaluation report for School Board. Complete or partial revisions are subject to the same developmental processes and procedures.
Course development flow chart

Course curriculum approved by Senate
↓
Formation of Course Team
↓
Appointment of ESR and contracting of CD to prepare Blueprint
↓
Preparation of Blueprint by CD with input from ID
↓
Circulation of draft Blueprint by CT to ESR, School, Finance, Registrar, Librarian, Head of ETPU, SID, PM
↓
Approval of Blueprint by CT and contracting of CD for second stage of development
↓
Preparation of Course Guide and prototype unit by CD
↓
Circulation of draft Course Guide and unit by CT to ESR, School, Finance, Registrar, Librarian, Head of ETPU, SID, PM
↓
Reiteration as necessary and then approval by CT and contracting of CD for third stage of development
↓
Preparation of all materials including study units, assessment and tutorial material, and media by CD
↓
Circulation through CT, SID, PM, reiteration and approval by CT
↓
Editing, graphics, media, printing and production and distribution of course through ETPU
↓
Presentation of course
↓
Evaluation of course by students, tutors, RD, CT, EE
↓
Preparation of final evaluation report by CT to School Board
7.2 THE COURSE TEAM: ROLES AND RESPONSIBILITIES

The CT is responsible for reviewing, adapting, developing and delivering quality programmes of study; it is also required to assess demand for particular courses and provide the final evaluation of the delivered programme. Individual members have more specific responsibilities.

Course Team Coordinator (CTC): The CTC is a School academic with relevant qualifications and teaching experience at the appropriate level taking responsibility for the smooth operation of the CT and providing liaison with the School. They brief the ESR about their role, explaining the focus of their duties and the way in which their feedback is used. The CTC prepares the final report that goes to the School Board, and then to the Senate and also the final evaluation report after the first presentation.

Course Coordinator (CC): The CC is a School academic with relevant qualifications and teaching experience and is responsible for the subsequent course presentation and will be key in evaluating and monitoring the final course and providing feedback on tutor and student performance.

Course Developer/s: The Course Developer/s provide the content of the course and contribute to the teaching and assessment strategy. They are likely to be experienced academics with teaching experience at the appropriate level and knowledge of what approaches are most successful in maximising student learning. They can be from within the University (although this is unlikely except for adaptations of imported materials), from other Malaysian institutions and elsewhere.

Instructional Designer: The ID is primarily responsible for the design of the teaching and learning environment for the course and works closely with the CD. The role includes:

- project managing and keeping the project within the budget and on schedule, advising the CT on progress;
- briefing the CD on the contract, and techniques and good practice in writing learner-centred distance learning materials;
- assisting in the design of objectives/learning outcomes at the appropriate learning level and in the appropriate domain of learning;
- taking into account the learners’ needs and different learning styles;
- contributing to the assessment structure, its links with the learning outcomes, its role in feedback on learner progress, its contribution to the learner grade, and its role in the overall evaluation process;
- sequencing and structuring of course material to meet learning outcomes in manageable chunks and with necessary signposting;
- designing interactive learning activities that reinforce and pace the learning and motivate the learner and provide opportunities for active and deep learning;
• advising on the appropriate use of the learner management system, multi-media and on-line elements through a knowledge of the pedagogic strengths and weaknesses of particular media within cost and logistics constraints and in relation to the teaching of particular subjects;
• coordinating the development of multi-media/on-line materials with web and graphic designers and other technical experts and bringing them in to advise the CT and CD as necessary;
• monitoring technical issues for the learner, including modem connections and telephone lines that restrict size and quality of graphics and animations, for example;
• giving feedback to CD on draft units/materials and educational editing of final materials before transfer to the Editor;
• contributing to the overall evaluation of course presentation;
• reviewing and advising on instructional design and presentation issues of externally produced materials;
• keeping up to date with technological developments and local infrastructure developments;
• drawing up checklists for reviewing and evaluating internally and externally produced materials; and
• main point of liaison within ETPU advising on issues such as textbooks, software and clearing copyright.

Course Team Member: The principal roles of Course Team Members are to peer review and contribute ideas to the development and to comment and provide feedback on draft course materials.

External Subject Reviewer: The ESR is a subject expert with teaching experience at the appropriate level and from another institution. They provide feedback on subject content, level, and appropriateness of the assessment and are a key part of the Quality Assurance procedures.

7.3 QUALITY ASSURANCE PROCESSES

Quality Assurance (QA) of the learning materials is achieved by a system of academic and instructional design reviews, external and peer reviews, reiterations, adherence to guidelines and criteria of good practice, strict documentation and approval procedures, hiring and training of appropriately qualified and experienced personnel.

7.4 PUBLISHING

Publishing procedures need to be established with editorial, design and graphics functions being carried out by appropriately experienced and trained personnel using a desktop publishing system. Templates and fixed formats will provide a framework for consistency of style and approach. An Editor will be assigned to a particular course and will work to a house style guide; any major changes will be reported back to the ID and
the CT. The CT will approve the final proofs. Documentation will be completed to track and monitor progress and to confirm approval or indicate any further action required.

Copyright clearances for third party materials will be handled by the Editor, with appropriate documentation and acknowledgement, and with attention to restrictions and costs. Finance will need to be advised of invoicing, payment details and schedules and student numbers per presentation and a database system will be required to administer all copyright issues. Any major problems will need to go back to the CT for action.

The Editor in conjunction with the ID will liaise with media specialists to produce any multi-media components following guidelines and style and format criteria. Final products will be approved by the CT. Copyright clearances for media use will also be handled by the Editor.

The Publishing Manager will manage the complete publishing process to printed and duplicated copies available for despatch to students according to a predetermined mailing/despatch schedule. They will liaise with the Senior Instructional Designer and the Head of ETPU. The PM will also be central to buying in other components and dealing with physical and contractual issues including the supply of set books and software. The PM will need to develop commercial relationships/partnerships with local printers and media production houses.

7.5 CONTRACTS AND COURSE MATERIALS

All activities pertaining to the origination, use or transfer of course materials and any components involving copyright and intellectual property issues, as well as payment and delivery issues, should be covered by a contract. These include:

- employment contracts for full- and part-time staff;
- external contracts for adaptors, translators, developers, instructional designers, graphic designers, interactive designers;
- copyright clearance agreements for any third party materials including, for example, tables and figures, case study, journal article, textbook chapter, poem, piece of music, painting;
- using material on an intranet or accessing on the Internet through a web site;
- proprietary software licenses for staff and student use;
- use of databases and digitised electronic resources through library access;
- purchase of print, audio, video and electronic materials;
- adaptation or translation of any material; and
- presentation of course materials including third party materials in a different medium from the original.

The Publishing Manager is the best person to keep track of these contracts and link them with the actual course presentations, although contracts for library usage, for example, will be issued and managed through the library, and course developers’ contracts issued through the Senior Instructional Designer. In the initial stages of the University, various materials and/or complete courses and programmes will need to be
purchased from other sources. Institutional procedures for contractual negotiations with producers and clear budgetary parameters and control will be required in this area. The PM is likely to handle this area in consultation with the Deans of Schools and also to acquire information on courses and review copies from internationally recognised producers.

Courses and course components from external sources will need to go through the same procedures of review and development as developed courses, with appropriate adaptation and/or supplementary materials added to meet local needs.

7.6 ACQUIRING COURSE COMPONENTS

There are four simple forms of acquisition arrangement of courses and course components from external sources and even with courses developed from scratch bought-in components may still be required. Within any particular course, a combination of arrangements might be required. For example, the textbooks or videos might be provided as a direct sale of physical copies, a study unit as a direct sale of rights, and the audio or software under license to the University for one presentation. With different media, the possibilities and difficulties increase.

- The simplest type of transfer is a direct sale of course materials as physical copies. The user can use the material within normal copyright constraints, for example, no copying is allowed but learners can use the material. A contract may not be required if each party’s rights, responsibilities and remuneration are subsumed into the actual sale process. Through selling the copies, the producer has already undertaken the responsibility for ownership and third party copyright clearance in this environment or to this particular user. For example, an institution may produce its course materials as standalone textbooks and videos that are published commercially for worldwide sale.

- A producer can sell or assign the rights of material in perpetuity; the user could then do what they like with the material as they now own it. A simple contractual arrangement would be required for the sale confirming assignment of the rights for some consideration, however this is not a likely scenario.

- Permission to use allows material to be used in some way, without charge, and possibly under some conditions, for example, in a particular institution or territory and for a defined period of time. This is likely to be covered by a simple agreement outlining the conditions and confirming that the producer owns the complete work. The producer may be able, under the terms of course development funding, for example, to provide the materials to users in Commonwealth countries, or to specific types of user institutions.
• With licensing arrangements, a license allows the material to be used for a specified period of time with conditions. A license could be exclusive in a particular country or region. The materials may be modified, adapted, re-formatted, or translated in some way, and it may be possible for the user to sell on rights of these new materials to others. The contract needs to indicate the restrictions that both parties agree. However, the ownership of the rights to the original materials in all licensing arrangements remains with the producer; restricted rights are temporarily assigned to the user. Licensing arrangements are the most likely alternative for media other than print.

7.7 OTHER INSTITUTIONAL LICENSES

The University will need to hold blanket licenses for some readily available software packages and the library or learning resources centre will need access to specific databases, on-line journals and other electronic resources for which it has license agreements with publishers for access by distance learning students as ‘authorised users off-site’. This access may include downloading or printing and is likely to be password protected. The contracts with all these suppliers will need to identify exactly what the University can do.

7.8 COPYRIGHT POLICIES AND PROCEDURES

Malaysia is a signatory to the Berne Convention and copyright protection is governed by the Copyright Act 1987 which includes software, and the Copyright (Amendment) Act 1997 takes into account transmission of copyright material over the Internet and other technological issues. The law is enforced by the Ministry of Domestic Trade and Consumer Affairs. International conventions and national copyright laws protect creators and owners of material by making it illegal for others to use original materials without the creator’s or owner’s consent. However, copyright laws also protect users of material as they identify how they can use copyright material legally. The University must establish stringent copyright policies and procedures for bought in, adapted/translated and developed materials if it is to be able to transfer, present and develop materials in an international arena. It is an issue for all aspects of materials development whether buying in, adapting, or developing from scratch. Copyright will affect everyone in an educational institution whether a student, or a member of the academic or administrative staff. Members of the University need to understand the basics of copyright and why it matters and why and how it affects them. As well as an appreciation of the legal aspects, a culture of respect for other’s work needs to be developed through information and guidelines and workshops. This is not a FTF institution so use of materials is not governed by any fair or educational usage and in giving the materials to the students then the University must be copying them.

Under the Berne Convention, material is still covered by copyright law and protected even if it does not carry a copyright notice. The Berne Convention is administered by the World Intellectual Property Organisation (WIPO).
In their contracts, course developers are required to provide original material that they still retain ownership of; they then transfer the copyright to the University as part of the contractual payment. During course development, course developers are requested to provide all details of any third party copyright material that is required and to fill in appropriate documentation. The ID should advise on its intended use, and the likelihood of permission being given at a sensible fee. The Editor needs to apply for clearances and keep track of all details for print and other media. Third party copyright clearances can be expensive or simply not allowed, particularly if materials are taken from commercially published items or if there is a change of media. Password protection may be required for any electronic materials.

Different approaches to enable students to have access to the appropriate materials may be required and developers will need to allow for reiteration of the course to cope with any restrictions. Academics should be advised of these kinds of problems. They may be unaccustomed to this concept if they have been teaching in a FTF situation where they were able to USE material and refer students to the library journal sources, for example, but the University is not able to COPY the same material and send out to students. Even though the materials are included in the student’s course fee and not specifically sold back to the students, permission to use the material still needs to be sought and payment made if necessary. Deriving monetary gain from use and permission to use copyright material are not linked. Permission may be given by copyright holders if distribution is restricted to staff and students, and payment is linked to the number of students enrolled. This will then mean monitoring the registrations and paying out for each presentation.

In the transfer of a complete course, the situation can be very complicated. There may be an initial set-up fee, plus an annual administration fee, plus a fee per number of copies made or number of students enrolled. Perhaps study units or textbooks are purchased off-the-shelf. Payment for software licenses is likely to be per number of copies made or per number of machine installations or as an extension of an existing site license that could be required for study centres.

The PM needs to monitor all aspects of contracts for all materials and ensure that ownership, third party copyright and any change in media are all clear, legal and paid for as necessary. A database system will be required to monitor and administer contracts and copyright clearances and payments.

**7.9 TECHNOLOGY AND LEARNER MANAGEMENT SYSTEM**

In a managed learning environment, a computer-based or learner management system (LMS) provides the infrastructure for a ‘virtual’ university. It provides a suite of tools to enhance teaching and learning by delivering course materials, and providing communication channels and assessment via a common interface. Features would include e-mail facilities, discussion groups and bulletin boards as well as interfacing through individual profiles to other university systems and student services. Access
would be via a web browser-based student portal that would offer a virtual personal learning space and an interface with academic information resources, learning materials, assessment, course and programme information, communication channels, peers, tutors, administrative functions, student services, personal record of achievement and social activities. The University can also use the system for course registration, administration, record keeping and tracking student progress and results, fees and payments, provision of updates and news. Staff can use the system for tutoring and mentoring through discussion groups, personal tutorials and group projects. Students can access multi-media learning materials, university and on-line resources, e-mail tutors and peers, submit assignments and participate in group activities. There are a number of such systems commercially available that provide a range of features and depend on a particular infrastructure. Careful needs analysis and costs and benefits analysis would be required. However, it would make sense to use a system that is already in place rather than attempt to develop one from scratch. Mention was made of this as an on-line learning environment in Chapter 5.

As the University becomes established and the technology infrastructure of Malaysia becomes more advanced, more use of ICT could be made by increasing on-line interactivity and increasing the use of on-line resources. In addition, a ‘learning objects’ approach to course development could be adopted so that smaller components of courses can be disaggregated and reassembled into different programmes. This will necessitate increased expert input in the course development processes and procedures.

The establishment of the managed learning environment has implications for all areas: finance, administration, academic, education technology and publishing, learner support and study centres, library and on-line databases and as such needs to be integrated into the university’s management information system. Cost/benefits analysis and a feasibility study on the IT infrastructure need to be carried out by local experts considering short-term, medium-term and long-term scenarios of developments in Malaysia and the establishment, operations and success of the University. The need to reach all students should be balanced with the pragmatic issues of reaching the majority of students in major urban areas and presenting a public face of a ‘virtual’ university. In view of the fast changing nature of the field, careful planning will be required to meet the needs of different departments on a rolling basis as more features and functions become viable and cost-effective in the different areas.

7.10 INSTITUTIONAL POLICIES AND PRACTICES

Intellectual property and academic staff contracts

The University needs to own intellectual property (IP) rights under the employment contracts of full- and part-time staff members with the contract including all patents, inventions, literary and artistic copyrights, trademarks and designs. An institutional code of practice concerning academic activities should also be identified. The terms of staff employment need to be clear that anything created within or on behalf of the University belongs to the University. The University can allow authors to reuse
materials in conference papers and textbooks, for example, but this needs to be clear. External developers write under contract and assign copyright on receiving the fee payment. All authors need to ensure that their material is original and has not been plagiarised from another source. The material also needs to be still in their ownership, for example, using lecture notes as a basis for a textbook and then for a distance learning course may be in conflict.

Other contracts with external course developers, instructional designers, video, audio and software producers and suppliers, and anyone involved with course development for the institution should be very specific.

**Ownership of student materials**

The registry will need to make sure that details about registered students are kept accurately. Material is perhaps only licensed for registered students. Enrolment figures may be used as a basis for payment for third party copyright clearance and licenses to use any other material. The institution needs to protect student information that is produced in e-mail and computer conferencing facilities. The copyright of materials such as cases, assignment answers and articles that are produced by students needs to be clear.

**7.11 STAFF TRAINING AND DEVELOPMENT**

Through relevant printed guidelines and workshops and training sessions, academic and non-academic staff are supported, kept up-to-date and develop appropriate skills by:

- writing distance education materials;
- using multi-media in distance education;
- designing on-line learning;
- managing for electronic networking;
- copyright and distance education;
- reviewing distance education materials;
- editing distance education materials;
- using library and other resources in distance education;
- using learner management systems; and
- using learning content management systems.
CHAPTER 8: GOVERNANCE, ADMINISTRATION AND MANAGEMENT OF OVUM

8.0 FACTORS INFLUENCING ORGANISATIONAL STRUCTURE

Legislation

Private universities and colleges in Malaysia are subject to registration under the Private Higher Education Institutions Act 1996 (PHEIA) administered by the Department of Private Education of the Ministry of Education. www.studymalaysia.com/jps/bm/iptsakta1996.htm

As a private university, OVUM will also be subject to institutional accreditation by the National Accreditation Board, (LAN), and will be required to submit each of its academic programmes for validation by that body http://www.lan.gov.my/

Mission of the University

Within the constraints imposed by the legal requirements for registration under the PHEIA, an appropriate governance, administration and management structure for OVUM will be one which reflects its mission to be:

- an open access, distance teaching institution;
- responsive to regional and national manpower needs;
- a resource for lifelong learning;
- flexible and adaptable to rapid change;
- ICT enabled;
- well-controlled;
- reliable and efficient;
- cost-effective;
- self-financing; and
- student-centred.

This institutional profile suggests a requirement for a flat organisational structure and a managerial approach to planning and decision making underpinned by a comprehensive Management Information System.

Common characteristics of universities

It is important that a new university should share sufficient characteristics with other higher education institutions in the country to enable it to attract good academic staff and to be recognisable to the wider academic community as a functioning university.
Prized characteristics in this category would include collegiality, democratic governance structures and the establishment of a stable community of discipline-based scholars. While it is clear that effective teaching at university level must be underpinned by scholarship, the mission of the University would primarily focus on teaching and learning, and no special provision has been made in the proposed governance, administration and management structure for the development of cutting edge discipline-based research clusters. In the medium- to long-term, however, the University may consider establishing itself as a centre of excellence for training and research in open and distance learning.

**Requirements of open and distance learning**

The effective delivery of distance education requires a strong dependence on well-managed integrated systems for course development and delivery, student records, finance etc. The membership of the internal decision-making bodies in the institution will therefore also reflect the significant role played by the managers of key administrative functions in achieving its academic goals. The establishment of a nationwide network of regional centres to facilitate the distributed delivery of technology-enabled teaching adds a further level of complexity not experienced by conventional face-to-face institutions.
8.1 GOVERNANCE STRUCTURE

The proposed governance structure is shown in Table 8.1.

Table 8.1: Governance structure

- Board of Trustees
- Council
  - Executive Committee
  - Senate
  - Staffing Committee
  - Finance Committee
    - School Committees
      - Programme Review and Evaluation Committee
      - Academic Regulations Committee
      - Advanced Standing Committee
      - Teaching & Learning Committee
      - Course Results Committee
    - Business & Administration
    - Science, Technology & Information
    - Education (& Languages)
8.2 THE COUNCIL

Role of the Council

Day-to-day responsibility for running the institution would be in the hands of the Vice-Chancellor (VC) as the Chief Executive Officer, whose appointment must be approved by the Council of OVUM and endorsed by the Wawasan Education Foundation Board of Trustees. The VC would be accountable for the maintenance of the integrity of the institution. His or her power would derive from the Council, which is the supreme executive body of the University, having general control over the administration of the University and the conduct of its affairs. The University’s objectives as well as the membership and powers of the Council would be defined in the University’s Charter/Ordinance/Act.

Membership of the Council

As OVUM is a private university, ultimate control of all of its activities will lie with a Board of Trustees nominated by the sponsors, the Wawasan Education Foundation. The Trustees will appoint the Council. It is important to ensure that Council membership reflects and assists in the realisation of the unique mission, goals and objectives of the University. The senior members of the Council are the Chairman, the Deputy Chairman and the Treasurer. The Treasurer should be a person with qualifications and experience in financial matters. These members would normally sit on both the Board of Trustees and the Council.

To maximise effective participation, the total membership of the Council should not exceed 28 members. A membership of 20–28 is an acceptable norm. A balanced membership would have a ratio of one-third internal to two-thirds external members. Internal members would include ex-officio members such as the VC and DVCs and elected staff representatives. Effective student representation on university committees in a distributed distance teaching institution is difficult to achieve. Until student associations have been successfully established, it may be preferable to elicit students’ views through School-based academic consultative mechanisms and to transmit them to the Council via the School’s report to the Senate. External members of the Council appointed by the Foundation would include Malaysian experts on ODL and representatives of commerce and industry. In addition, it may be useful to include provision for up to two international members with relevant expertise (in virtual education) that is not available in the country. Provision should be made for the Council to nominate external members to the Council. The Deputy Vice-Chancellor (Administration) would act as Secretary to the Council.

Term of office of Council members

The Chairman, Deputy Chairman and Treasurer will be appointed for four (4) years, renewable for one (1) further term. The other members of Council will normally be appointed for two (2) years, renewable for one further term. In the first instance, half of
the members should be appointed for 3 years to ensure long-term continuity of membership through rolling renewal.

**Responsibilities of the Council**

Among the Council’s primary responsibilities would be to:
- recommend to Board of Trustees, the appointment of the VC as the University’s Chief Executive Officer and monitor his or her performance;
- identify the mission and strategic direction of the University;
- define policy and procedures consistent with legal requirements and community expectations;
- initiate fund-raising activities on behalf of the university;
- establish and monitor systems of control and accountability;
- review and monitor the management of the University and its performance as an institution;
- approve financial plans and to receive financial statements;
- establish committees and to make rules;
- approve the membership of, and receive reports from, the Senate; and
- award degrees.

**Meetings of the Council and its committees**

While the Council would meet only twice a year, it would delegate powers to a number of standing committees to conduct its business. The Standing Committees of Council would be the Executive Committee, the Finance Committee and the Staffing Committee. In addition, the Council would have the power to create *ad hoc* committees, as required, to consider emerging issues of policy.

## 8.3 THE SENATE

The Senate will be the supreme academic body of the University, appointed by the Council for purposes of:
- overseeing the prescribed academic programmes and courses of study at the university; and
- providing advice to the Council on the conduct and content of those programmes and courses.

Specifically, the Senate will have the following functions:
- plan, develop, review and advise Council on and, if so empowered by the Council, to regulate the academic programmes of the University;
- advise Council on and, if so empowered by the Council, to regulate the admission of persons to courses of study provided by the University and their continuance therein;
• advise Council on and, if so empowered by the Council, to regulate examinations leading to degrees and other academic awards of the University, and nominate persons as examiners;
• advise Council on and, if so empowered by the Council, to regulate the requirements for the conferring of degrees and other academic awards of the University; and
• make recommendations to the Council on the allocation of resources for teaching and research.

In addition, the Senate may:
• discuss and submit to the Council an opinion on any matter relating to prescribed programmes of the University and, in particular, may make to the Council, such recommendations as it thinks proper with respect to instruction, studies, discipline, examinations, assessments, research, degrees and diplomas in those programmes; and
• regulate its own proceedings.

These powers will make the Senate the custodian of the University’s academic standards, which are central to its role as an academic institution. As indicated above, the terms of reference enable the Council to retain ultimate decision-making powers on academic matters until such time as it is confident that the Senate is sufficiently mature to regulate academic matters itself and to submit regular reports on its activities to the Council.

Membership of the Senate

The Senate will be chaired by the Vice-Chancellor. Ex-officio members include DVCs, Deans, the Head of Regions, the Head of ETPU, the Librarian and the Registrar (member and Secretary to the Senate). Elected members: three members of the full-time academic staff elected from each School.

When the University is in full operation, representation should be extended to students and part-time tutors of the University. In the initial stages, consultative mechanisms should be established at School and regional levels to ensure that the opinions and feedback of part-time tutors and students on academic matters are made known to the Senate.

Meetings of the Senate

In the start-up phase of the University, the Senate will be expected to hold frequent (monthly) meetings to determine and approve academic policy and procedures. In mature mode, the Senate would normally meet four times each academic year. Much of the on-going work of the Senate in relation to the drafting of policy and regulations, the review of course and programme proposals and course results, and perusal of applications from students for advanced standing and financial support would be delegated to Senate sub-committees. Standing Committees of the Senate would include
Academic Regulations Committee, Advanced Standing Committee, Course Results Committee, Programme Review and Validation Committee, Student Services Committee and Teaching and Learning Committee. In addition the Senate would establish *ad hoc* committees and working groups for special purposes as the need arose. While the university is in start-up mode and core staffing is at a minimum it will be important not to establish too elaborate a committee structure. More frequent meetings of the Senate at this stage can ensure a common approach to establishing effective systems and procedures.

### 8.4 SCHOOL BOARDS

The School Board is the academic committee of each School. Chaired by the Dean and consisting of all full-time members of the academic staff of the School, it is required to report regularly to the Senate on all academic matters pertaining to the School. The interests of part-time tutors would be represented in the first instance by the course coordinators. Reports of staff-student consultative activities would be a standing item on the School Board agenda. The School Boards would assume the major front-line responsibility for the development of degree programmes and for quality assurance of course delivery under Senate regulations.

### 8.5 MANAGEMENT BOARD

The Management Board is a committee under the VC which facilitates the effective operation of the flat organisational structure of Administration by providing a regular (quarterly) forum for debate and team-based decision-making on issues affecting the effective running of the University. Its major functions are to:

- advise the VC on policy issues and to review the efficiency and effectiveness of operations and make recommendations on courses of action to be taken to improve the performance of the University in supporting the achievement of its academic goals; and
- enhance the coordination, communication and cooperation between and among Schools and Units and between the University and other relevant external bodies.

The Management Board has a major function in relation to planning and performance review and in the allocation of resources.

The Management Board will be chaired by the VC. Membership of the Board will consist of the DVCs, the Head of Regions, the Deans of School and the Heads of all non-academic Units. The Head of the Finance Unit will be the Secretary to the Management Board.

Sub-Committees reporting to the Management Board will be established to develop policy and procedures and produce annual plans for approval relating to Information Technology, Public Relations, Budget, and Planning and Resource Allocation. The
Board will also have the power to establish ad-hoc working groups as required to deal with particular issues.

### 8.6 ORGANISATION STRUCTURE

The proposed organisation structure is shown in Table 8.2.

**Table 8.2: Organisation structure**
The organisational structure of OVUM follows from its function as an open learning and distance teaching university with a distributed regional delivery infrastructure. The structure must therefore reflect both its academic mission and its large-scale production and delivery methodology. The three sub-systems of an open and distance learning university: course development and production; course delivery and learner support; and administration will need to be supported by well-designed and developed management information systems so that the University can operate efficiently with relatively low levels of staffing. The design of the MIS system will require specialist advice. However, buying in an existing system operating in a similar institution and then customising it to fit the specific needs of the OVUM operation as it emerges can minimise delays.

In the interest of achieving a flat integrated organisational structure while supporting the three distinct key areas of activity defined above, it is proposed that each School should be headed by a Dean. The Deans should report to the Deputy Vice-Chancellor (DVC) Academic who, together with the DVC Teaching and Learning and the DVC Administration, should report directly to the VC. The Foundation Deans would normally hold professorial rank and would be appointed as Dean of the School for a period of three years in the first instance. Significant attention should be paid to the administrative capabilities of the applicants as well as academic reputation in determining whom to appoint. At the end of the first term, feedback from the School would also be taken into account by the VC in determining whether any extension would be offered.

Reporting to the DVC (Teaching and Learning) would be the Head of Regions, the Registrar, the Librarian and the Head of ETPU. Reporting to DVC (Administration) would be the Heads of the Finance Unit, Human Resources Unit, Public Relations Unit and the Information Technology Unit. In addition, a small Planning Office would be situated in the VC’s office. The Planning Officer would report to the VC and would undertake research and analysis exercises on behalf of the VC and DVCs. The above arrangement provides for a manageable span of control for the VC and DVCs and clear reporting lines. Nevertheless it is clear that to remain agile and effective, the University will have to take steps to ensure that cross-functional teams are established as the working norm and that a fully integrated management information system is developed from the beginning. This is required to support all managers in discharging their responsibilities in a way that combines cost effectiveness with excellence in service to students and other stakeholders. All Unit Heads will be responsible for their own budgets and held accountable for delivering approved target outputs defined in the Three-Year Plan.

8.7 REGISTRY

Responsibility for drafting policy and ensuring its observance through the implementation of well-documented procedures in order to ensure the integrity of the student record lies with the Registry. The Unit therefore has a critical function to manage the formal interface between the students and the University. In a centralised
open university, all of the services listed below would be the responsibility of the Registry. In the distributed system proposed in Chapter 6, regional centres may also be involved in delivery of personalised services to students in their region. Assuming the availability of good communications technology between the regional centres and HQ, as regional operations become more significant, many of Registry’s functions in relation to counselling, admissions, course registration, tutor allocation and room booking and examination arrangements can be undertaken at the regional level. The Registry’s role would focus more on policy development, liaison with the regions and monitoring to ensure the integrity of the central record and equity and relevance of services to all students. Key services in this category are indicated by an asterisk (*).

- compilation of the prospectus;
- provision of counselling to students on course choice and advanced standing;*
- administration of the course application process;*
- administration of the course registration process and issuance of student ID;*
- compilation of a Student Handbook (print and on-line versions);
- allocation of students to tutors and tutorial groups;*
- liaison with ETPU for collection/delivery of course materials;*
- creation and maintenance of complete student record;
- provision of information to Schools, regional centres, Finance Unit, etc.;
- administration of advanced standing/credit transfer arrangements;
- provision of student services for students with special needs including students with disabilities, remote students, students in the armed services, in prison or other institutions, students with financial difficulties;*
- liaison with student interest groups;*
- administration of the continuous assessment process including recording grades, administration of the monitoring process, handling queries;
- administration of examinations, including:
  - production of examination papers;
  - coordinating the booking of examination venues, and the appointment of invigilators at regional level;*
  - special arrangements for students with disabilities;*
  - making arrangements for the secure return of scripts to HQ;*
  - appointing markers, distributing scripts to markers, making arrangements for markers’ standardisation meetings (face-to-face or on-line);
  - recording examination scores, calculating results, producing results sheets, servicing standardisation and award committees;
  - informing students of examination results;
  - handling queries and appeals;
  - administration of re-sit examinations;*
- calculation of graduation outcomes;
• graduation services including informing students, all arrangements for graduation ceremonies including venue hire, gown hire, programme printing, hall management;*
• provision of secretarial support for the Academic Board and its committees; and
• safeguarding and interpreting academic rules and regulations.

Most functions will be familiar to academic administrators in tertiary institutions operating in the face-to-face mode, however, the large numbers of students involved in Ovum and their remoteness from HQ adds complexity and necessitates a level of systematization that is not required in a smaller scale FTF operation. All students will not be able to visit a regional centre and talk to an administrator about a particular University requirement, thus it will be the Registry’s responsibility to ensure that the procedures are clearly explained and that the necessary forms are provided to students to facilitate their exchanges with the University. The Website and the Student Handbook will be invaluable here, and it is recommended that early investment be made in designing a Website for registered students that is user-friendly and informative. Access to the Student Handbook and the student area of the Website will be reserved for registered students of the University and for full- and part-time staff. It will contain authoritative information about the University’s rules and regulations as well as details of all procedures for registration, re-registration, application for Advanced Standing, submission of assignments, sitting for examinations, calculation of course results, appeals mechanisms and sources of advice and support. It should be reviewed and updated at least once a year.

A number of the Registry functions will differ significantly in institutions operating an open access admissions policy and a dispersed examination system. The role of the Registry in the continuous assessment system was described in Chapter 5: Teaching and Learning. Other areas of note will be the application, registration, advanced standing, tutor allocation and monitoring and examination and certification operations. They are discussed in more detail below. The Registry Office responsible for the operation is given in brackets. Table 8.3 shows the organisation structure.
8.8 **REGISTRATION (ADMISSIONS AND RECORDS OFFICE)**

In order to generate applications for its courses, the University will need to place advertisements in newspapers most commonly read by its target student intake group. If resources permit, advertising slots may also be purchased in other news media such as radio and TV. It will be Registry’s function to liaise with the Academic Schools to ascertain which courses will be offered in each semester and to place the advertisements in the media. The advertisements will invite prospective applicants to visit the OVUM website and/or to pick up a prospectus. This will give detailed descriptions of all courses on offer and contains an application form, full details of how to apply as well as
information on Advanced Standing and on how to seek further guidance on course choice. Where regional centres exist, applicants will be invited to pick up a prospectus from there. In addition it is suggested that arrangements be made with public libraries and bookshops that will be carrying the OVUM set textbooks and course materials to carry supplies of the prospectus for free distribution.

As OVUM is a new institution offering open access to degree level qualifications, the academic establishment in Malaysia may view it with some suspicion. It is likely however, that its arrival will be greeted with enthusiasm by prospective learners who have previously been denied access to higher education. Since course places will be limited in the first few semesters by the availability of full- and part-time expert staff, the number of courses on offer and the existence of a fully-fledged regional infrastructure, applications for course places will most probably heavily exceed availability at the University’s launch. It is therefore essential to establish a robust and transparent system for dealing fairly with applications if consumer confidence is to be maintained. As open learning is a relatively new concept, it will also be necessary to establish an enquiry service to provide further information and guidance to applicants about course choice and University requirements, to reinforce the material contained in the prospectus. At a later stage this enquiry service may be automated, and web-based, but in the first semesters as information is constantly changing, it will be more effectively handled by a Registry/regional based telephone enquiry team augmented by temporary staff during the admissions period.

In a conventional system, applicants are judged on the extent to which they meet the academic criteria for admission. In such a system, priority will normally be given to applicants with the best examination results and the most glowing reference from their head teacher. In an open access system, the only relevant criteria are likely to be age and citizenship. Provided that students are over 18 years of age and are Malaysian citizens, submit their applications and pay their application fee by the published deadline, they will be eligible for entry to foundation level courses. The vetting of applications therefore is an administrative task that can easily be automated. Application forms may be machine-readable, or data will need to be entered manually into the central Registry Application system by central or regionally-based clerical officers. Upon receipt of a completed application form and proof of payment of the (non-refundable) application fee, all applicants will be given an application number. Since a first-come first-served system would give unfair advantage to applicants living within easy reach of HQ, it is recommended that a randomised computer selection system be employed to select those applicants who will be given the opportunity to register on courses of their choice. All valid application numbers would be fed into the computer and a list of successful applicants generated. If the management wishes to impose regional quotas on registrations, that can be accommodated within the selection process. An offer letter will be sent to all successful applicants inviting them to complete a registration form, pay their course fees into the University bank account via the banking system and to submit proof of the transaction together with their signed acceptance of the course place offer to Registry to complete the registration formalities. If the University is willing to accept credit card payment for applications and course
fees, it could establish an on-line registration process. It would be necessary, however, to weigh the costs and benefits of an early introduction of such a model if student access to technology is limited. If credit card payment is not an option, the University may also consider the introduction of a low-interest instalment plan system for fee payment to help learners to spread the financial burden. It should be noted however, that a significant administrative burden is incurred in both the Finance Unit and the Registry in identifying and chasing up students who default on fee instalments.

Subject to limitations of space and staff, facilities could also be made available for students to register and pay fees personally at HQ and regional centres, although the latter would require a dedicated real-time data link to the main record system at HQ. It should also be noted that additional security measures need to be put in place if large sums of money are to be handled on the University premises. The requirement for web-based application and registration should be included in the initial specification of the MIS for the University, so that it may be activated as soon as conditions allow.

In order to offer maximum flexibility to its learners, OVUM will adopt a modular system. Students will not be expected to proceed through a programme of study as a cohort and will be permitted to register on a number of courses each semester, up to a pre-determined limit calculated on the basis of a full-time equivalent workload. Students may also opt to suspend study for a number of semesters without penalty in terms of loss of credits and to resume their studies at a later date in order to complete their desired programme of study. Subject to early payment of course fees, students applying for re-registration will be given priority for the offer of places on middle and higher level courses in order not to impede their progress towards their graduation goal.

Once students have registered for a course for the first time, the record system will generate a unique student number that indicates the semester and year of first entry. Registry will issue a Student Identification (ID) card to each student which, depending on available technology, may either be bar-coded or employ smartcard technology to permit access to library and other student facilities as they are established. In order to ensure that sufficient tutors can be appointed and that students are successfully allocated to tutor groups and have received their course materials and tutorial schedules in advance of the start of the semester, it is necessary to commence the application and registration process at least 4 months in advance of the semester start. Nevertheless if course places remain available after the first round of registration, the University may wish to offer the remaining course places to late applicants on a first-come first-served basis as late as one month before the semester begins. Such a facility will undoubtedly be attractive to the adult learner, who may not be able to commit him- or herself so far ahead of time. The University needs to explain to learners, however, that the apparent gain in flexibility may be counterbalanced by a lack of choice in terms of tutorial groups and the requirement to collect course materials in person if they are to be able to begin study of the course on time.
8.9 STUDENT-TUTOR ALLOCATION (TUTORS OFFICE)

Registration for a course will trigger allocation of a student to a tutor group and the dispatch of course materials and a tutorial timetable. In a regionally-based system, allocation of students to tutor groups may be a regional responsibility. For some advanced level courses however, there may be insufficient numbers to justify the appointment of local tutors and the process will be undertaken at HQ by the Tutors Office team. For large foundation level courses, sufficient tutors may be available to allow students a choice of tutorial time and venue. To facilitate this choice, the University should establish an automated telephone-based tutor group selection system. Students who have paid their course fees by a given date will be enabled to choose their tutor group on the basis of the time or venue of the tutorial meetings. Once tutorial groups have reached their pre-determined quota they are no longer advertised as available on the system. Students not meeting the fee payment deadline and students who do not exercise their right to choose will be randomly allocated to a tutorial group by Registry and informed of the allocation outcome before the start of the semester. Students are not permitted to choose their groups on the basis of the tutor involved. However, Registry has the authority to reallocate students if there is reason to believe that a conflict of interests may exist.

While some tutorials may be held at HQ or in the regional centres, it is unlikely that there will be sufficient classroom and laboratory capacity there to satisfy demand. Moreover, the students demographic in any semester may require additional study centres to be located in areas not served by either. The University may delegate the sourcing of study centres to its building management team. Nevertheless it will be the responsibility of the Tutors Office of the Registry in consultation with the Academic Schools and departments to determine the total requirements for tutorial accommodation each semester and to specify the type of accommodation and facilities required.

8.10 ADVANCED STANDING (ADVANCED STANDING OFFICE)

The University’s policy on Advanced Standing is described in Chapter 4: Academic Programmes. It will be the responsibility of the Senate to take decisions on which qualifications to accept for the purposes of Advanced Standing on the basis of recommendations of the Advanced Standing Committee. It will be Registry’s responsibility to administer the system and provide an efficient interface between the applicants and the University in a process that can be extremely time consuming, particularly in the early stages of the University’s development. The key to efficient handling is to establish a reliable set of precedent cases and publish them on the website together with clear advice on how to apply so that applicants can judge their chances of success in advance. It is essential to have a computerised system that can automate the process of decision making where precedent cases exist, track the progress of applications and provide management information for the Advanced Standing Committee and for the Senate. However, the process is still labour intensive as it
necessitates web-based research as well as liaison with other universities and accrediting agencies to verify the status of courses and qualifications in the jurisdiction where they were first offered and establishing equivalence with the OVUM qualification in question. It is recommended that the University establishes a number of institutional credit transfer agreements nationally and internationally which guarantee a one-for-one credit recognition between the two institutions within the limits prescribed by regulations. The possibility of international recognition is always an attractive feature particularly to students who are also upwardly mobile working adults.

8.11 EXAMINATIONS ARRANGEMENTS (EXAMINATIONS OFFICE)

Examination sessions

The writing and approval of examination question papers is the responsibility of the Academic Schools. It is the Registry’s task to ensure that the question papers are printed in sufficient quantities and that sufficient appropriately designed examination stationery is available for each exam session. The reputation and credibility of the University largely depends upon the reliability of the security measures in place for the examinations. Since neither HQ nor its regional centres will have large examination halls as part of their built infrastructure, the Registry with the cooperation of the regional centres will be required to locate suitable exam facilities nationwide for the end of semester examinations of each course. As most of the students will be working adults, the exams will be held in the evenings and at weekends and it will therefore be possible to use school facilities as well as those of existing tertiary institutions. However, care should be taken that the facilities on offer are suitable for adult learners. If, for example, the desks are too small or if there is no air-conditioning, students may justifiably complain that the examination arrangements have had a significant adverse impact on their performance. Moreover, the use of remote examination centres creates a major security risk as far as the handling and storage of examination papers and scripts are concerned. In selecting exam centres it will be important to specify the requirement for secure storage for examination papers and examination stationery in advance of the examination.

As soon as the examination timetable has been finalised in consultation with the Academic Schools involved, Registry must issue an examination card to all registered students. The card carries the student’s examination number. The examination number cross-checks with the student’s ID number. Seating in the examination hall is in examination number order. As the examination is the only time that it is compulsory for a student to attend the University in person, there is also a danger of fraud through impersonation. One of the important tasks for the invigilator therefore is to verify the identity of each candidate by reference to the examination card issued by the Registry and the Student ID, cross-checked against their national ID card. In order to maintain the anonymity of the marking process, students will be required to use their examination number on the examination answer books instead of their Student ID. It is recommended however that all candidates be required to complete a tear-off strip on the
first page of their answer book that confirms both their exam ID and their Student ID for post-examination checking purposes in case scripts are lost or mislaid.

In every case where non-university/regional centre premises are used as examination centres, it is recommended that a security company be contracted to deliver the papers to the centre on the day of the examination and that they be signed for and put under lock and key by an authorised signatory. Registry will appoint invigilators for each exam centre, according to a formula relating to the number of candidates and the number of different examinations taking place simultaneously. It will be the senior invigilator’s task to open the question papers and distribute them to students’ desks.

The invigilators may (but need not necessarily) be tutors, but they should be appropriately qualified and experienced for the task and should be required to declare any interest they may have (for example, family members taking the examination) before being accepted for the duty. It is the responsibility of the CC in charge of each exam paper to be available to take telephone calls from examination centres in case students raise queries about the exam paper during the first 15 minutes of the session. After the examination, it is recommended that the scripts be collected by the security company and held in secure storage for delivery next morning to the Registry Exams office at HQ for logging, sorting and distribution to the appointed markers.

**Examination marking**

Marked scripts will be returned to Registry within a strict deadline. At that point it is the responsibility of the Exams Office to log in the returned scripts, enter all the question scores and overall scores awarded by the markers into the computer and verify that the final score awarded by the marker is correct. All errors need to be reported and adjudicated by a supervisor, if necessary in consultation with the CC. It is also Registry’s responsibility to select marked scripts from each marker to be monitored by the EE and the CC, and for collating the results of monitoring as well as providing statistical analyses of each marker’s scores for standardisation and award purposes.

As students wish to get their examination results as soon as possible to inform their choice of courses for the next semester, the exam results processing operation is very time critical. It is an operation where there is zero tolerance of error, but one in which, of necessity, Registry will have to rely heavily on temporary staff to enable it to meet very tight deadlines. Robust computer systems are required for the entry and cross-checking of scores on marked scripts and to calculate overall course results by aggregating continuous assessment and examination scores according to the assessment parameters approved by the Senate for each course.

**Examination results processing**

In a large-scale open learning system, the students are not known personally to the CC. Except when students’ results fall at thresholds between results statuses or where they have submitted claims of special circumstances affecting their exam performance, they
are unlikely to be considered as individuals. The validity of their results therefore depends upon the accuracy of the marking and score recording, on the efficiency of the system to analyse key performance factors and on the skill of the course administrator in spotting anomalies and in making informed decisions at the threshold scores between different grades.

**Award of course results**

Once the Senate approves the course results, the Examinations Office generates a result slip for each student, which informs him or her of the grade of pass attained on each course. If the University provides a re-sit opportunity for students who have obtained a pass in the continuous assessment element of the course and have marginally failed the examination, Registry will make the arrangements for eligible students to record their intention to re-sit and pay a re-sit fee and will then organise a mini-examinations operation to accommodate them. Registry will also receive and log-in all appeals against examination results in accordance with University policy. All appeals cases will be checked for calculation errors before being passed to the relevant academic unit for further consideration.

**8.12 GRADUATION (GRADUATION OFFICE)**

As OVUM will offer laddered learning opportunities with multiple certification points, it will be the role of the Graduation Office in the Registry to manage a computerised completion system which calculates the eligibility of each student for their declared award. Students who have completed all of the requirements for an award of the University will be invited to attend an award ceremony. These ceremonies may be held regionally or nationally according to student numbers and other political and logistical considerations. Award ceremonies are the supreme PR activity of any university. A coordination group under the chairmanship of a member of the senior management is required to undertake the detailed planning and arrangements. It is Registry’s task to ensure that the graduates are invited, and that their attendance is confirmed so that accurate programme details can be provided. Registry also organises the hire of academic dress for the graduates and rehearses them before the ceremony as well as providing usher services for graduates and their guests during the ceremony and arranging for the official photographer to take graduates’ pictures during the ceremony.

After the ceremony, the Graduation Office will also be responsible for the secure dispatch to graduates of their award certificates. This may best be achieved through the regional centres, which can provide a mechanism for students to collect certificates at the same time as they return their graduation gowns. It should be noted in this context that graduates prefer to have the gown in their possession for up to a week so that they can organise their own photo opportunities outside the graduation venue.

For ease of reference, the functions of each office listed above are reproduced in schematic form in Appendix 9.
8.13 REGISTRY STAFFING AND STAFF DEVELOPMENT NEEDS

It will be clear that a comprehensive and well-documented student management system is required to handle all these functions effectively and that familiarity with IT systems is a primary requirement for appointment to senior posts in the Registry. In-house staff development will need to focus on leadership, team-building and communication skills as well as IT skills enhancement programmes and the theory and practice of Distance Education. Table 8.3 shows a proposed organisation structure for the Registry. Initially, while student numbers are small, a rather flatter structure which omits the posts at DR level may be envisaged. As much of the clerical work is seasonal in nature, a significant element of Registry’s budget should be earmarked for the employment of temporary staff, particularly for work relating to admissions and examinations handling.

The proposed initial staffing requirements for Registry and other non-academic units are shown in Appendix 10. It is suggested that all Unit Heads should be appointed on contract terms of two (2) years in the first instance. Ideally the Registrar should have a thorough understanding of and commitment to DE and to service delivery. It may be difficult to appoint staff with the required skills and experience in DE. As the University intends to be entrepreneurial in nature, it should be prepared to look outside academic institutions for its non-academic staff.


CHAPTER 9: FINANCING OVUM

9.0 DEVELOPING A COST MODEL FOR ODL SYSTEMS

Open and distance learning (ODL) systems have a different cost structure than conventional education systems in that certain economies of scale are expected, as teachers are substituted by technology (Hülsmann, 1997). However, costing for technologies vary greatly. According to Rumble (2001), computer-mediated communication and assessment would lower the costs of tuition as a good deal of the student’s time would be spent studying the materials, and therefore the teacher needs to spend less time per student. For example, in the UKOU, they employ a “division of labour” model between those developing course materials, tutoring and script marking. In addition, tutors and script-markers are employed by contracts of service, thereby providing more flexibility in controlling costs. In costing administration, Rumble commented that there could be significant costs involved as well as potential for significant savings and therefore should be treated with care. It is reasonable to expect a rise in the overhead costs for several years during the initial years of development (Rumble, 1997).

Generally, in distance learning systems, payment of salaries to teaching and non-teaching staff accounts for the bulk of expenditure in most institutions, and that costing would be different should the academic staff be expected to assist in developing courses. Jung (1994) commented that ODL puts more emphasis on course material development, mass delivery systems and research related to the educational use of media. On the infrastructure side, computer systems are given more attention by ODL universities than by ordinary universities. In order to reach out to the mass population of students and potential students, student support systems that include the management of study centres, counselling and tutoring services are of prime importance.

Dhanarajan, Swift & Hope (1994), based on the development of the Open University of Hong Kong (formerly the Open Learning Institute of Hong Kong), remarked that one of the main aspects of OUHK achieving self-financing status in its fifth year of operation was due to having a small-sized full-time staff, but relied heavily on the use of contract staff and services available in Hong Kong and offshore. For example, copyrights for course materials were purchased from the United Kingdom Open University (UKOU), printing and reproduction were done in Hong Kong, rent-free study centres were negotiated across the city, part-time tutors provided support to students with monitoring performed by full-time academic staff.

Following these recommendations, when developing a cost model for OVUM, staffing costs which include academic, administrative and part-time staff costs will account for a major part of the recurrent expenditure. During the initial years, course materials will be purchased and the purchase cost and adaptation expenses will be factored into the recurrent cost. In the long term, OVUM will develop its own materials and the cost for this is expected to be financed by donations and recurrent funds. In costing
infrastructure, apart from refurbishing and fitting out the campus, laboratories and various study centres across the country, a major portion of the expenditure will be allocated to building computer systems and multi-media technology for course presentation and student services.

The University should, as far as it is possible, be self-financing, as students will be expected to meet the direct or recurrent costs. It is expected that the Foundation will provide a start-off grant of M$105 million to meet the costs of accommodation, core staffing, equipment and essential administration expenses.

9.1 REVENUE

The major source of income will be from student fees, which the University will collect in advance. The revenue will depend on the number of students and the credit value registered. This fees income will be used to finance operating expenditures and the balance invested or placed in deposits to earn investment and interest income.

A “differential fee” system is to be used. Lower level courses will charge a lower fee in order to attract new students to try the distance-learning mode of education. The fee rates for the lower, middle and higher level courses are as follows:

- Lower level: M$100 per credit
- Middle level: M$120 per credit
- Higher level: M$140 per credit

The University will have no fixed number of course places for admission and its students will be free to choose how many credits to register for. For planning purposes, it is assumed that students will take six years to finish an ordinary degree of 120 credits, i.e., 20 credits per year.

Three scenarios, low, medium and high enrolments will be presented. High estimates will be based on the size of the unmet demand for a place in the tertiary sector while the low estimates reflect the unmet demand but at a slower pace. The medium scenario will be the average of the two. Details of student enrolment estimates for the first ten years are listed in Appendix 13.

An initial dropout rate of 20% is assumed for the first three years, but this will decrease to 15% in later years when students are more acquainted with the distance mode of teaching.

In determining fee rates, the following factors were taken into account:

- fee income to cover at least the direct costs;
- self-financing as far as the recurrent costs are concerned, government grants and donations are to be sought for infrastructure/capital projects;
- competitive fee rates in relation to existing market providers; and
- rate of increase over the years.
9.2 **COSTS**

Costs can be divided into:
- direct costs;
- indirect costs;
- one-off setting-up costs; and
- annual capital costs.

**Direct costs** cover expenditures on delivering courses to students and include the costs for part-time tutors, course materials, examination, classroom, examination hall, laboratories, mailing and related expenses. Briefings and training will be provided to part-time tutors. It is expected that the direct costs will be relatively sensitive to student numbers but some degree of economies of scale can be achieved.

As OVUM plans to have at least 13 study centres across the country and most of them will be available *gratis* or rented, a standard rate will be calculated for the use of classrooms in the study centres. By doing so, all courses will have the same costing basis, irrespective of whether OVUM is renting outside classrooms or utilising study centre classrooms.

**Indirect costs** are the overhead costs for running the University. They include mainly the recurrent administrative expenditure for the infrastructure, such as rental of offices and study centres, salaries for core staff, training and duty visit costs for core staff, maintenance, utilities, temporary staff, general expenses, etc. There will also be academic-related expenses such as broadcasting, publicity, course validation, library materials, etc. Contrary to direct costs, indirect costs will be relatively insensitive to student numbers and higher degrees of economies of scale can be achieved. Nonetheless, with the increasing number of students, higher indirect costs have to be forecasted.

The **setting-up costs** are expected to be one-off in order to establish the University for operation and includes items such as stocking the library, equipment for science laboratories, multi-media centres, computer centres and laboratories, fitting out and furnishing the offices and study centres, and purchasing motor vehicles. The entire setting-up cost is to be financed from donations pledged by the Foundation.

The **annual capital costs** will mainly be those setting-up cost items but on a smaller scale and will mostly be for the upkeep of the facilities. The ideal will be to have the Government finance the annual capital costs, otherwise, student fees will have to be increased on a larger scale in order to incorporate such expenditure. In the longer term, when the University needs to upgrade its facilities, for instance, network upgrade, grants and donations should be the major source of funding. Only when such a source is difficult to obtain, will the University turn to increasing the student fee.

A detailed description of each cost element is given in Appendix 11.
Course materials are very important elements in the delivery of education by distance. Initially, the University can purchase some course materials from other institutions, such as UKOU. However, local adaptation costs should be included in the calculation. In the longer term, OVUM should develop its own course materials. Donation(s) should be sought for this purpose. In order to keep the development fund revolving, a percentage of the fee income of those self-developed courses should be ploughed back to the fund. It is estimated that the development cost of a 10-credit course will be M$50,000, inclusive of the course developer’s and course designer’s fees.

The percentages of direct, indirect and set-up costs in relation to income are detailed in Appendix 13.

9.3 PROJECTIONS

Based on the projected student numbers, and the direct, indirect and set-up costs percentages, a ten-year projection is developed. Three scenarios have been worked out, namely, high enrolment, medium enrolment and low enrolment and are given in Appendix 13.

No fee increase or inflation rate or cost of living adjustment has been included in the calculation. Using the constant dollar model, a summary of the medium enrolment projection is listed in Table 9.1.
Table 9.1: Summary of Financial Performance Projection – High Enrolment

<table>
<thead>
<tr>
<th>Year</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Students</td>
<td>1,700</td>
<td>3,400</td>
<td>5,100</td>
<td>6,500</td>
<td>7,350</td>
</tr>
<tr>
<td>Annual Fee per Student (M$)</td>
<td>2,711</td>
<td>2,866</td>
<td>2,969</td>
<td>3,050</td>
<td>3,082</td>
</tr>
<tr>
<td>Total Income</td>
<td>4.7 M$’M</td>
<td>9.9 M$’M</td>
<td>15.4 M$’M</td>
<td>20.2 M$’M</td>
<td>24.4 M$’M</td>
</tr>
<tr>
<td>Total Direct Costs</td>
<td>5.7</td>
<td>7.3</td>
<td>8.2</td>
<td>10.1</td>
<td>11.4</td>
</tr>
<tr>
<td>Total Indirect Costs</td>
<td>6.1</td>
<td>7.3</td>
<td>8.2</td>
<td>9.2</td>
<td>10.1</td>
</tr>
<tr>
<td>Set-up Costs</td>
<td>24.8</td>
<td>27.3</td>
<td>26.6</td>
<td>8.3</td>
<td>10.1</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>36.6</td>
<td>42.0</td>
<td>43.1</td>
<td>27.6</td>
<td>31.6</td>
</tr>
<tr>
<td>Surplus/(Deficit) before Set-up Grant</td>
<td>(31.9)</td>
<td>(32.0)</td>
<td>(27.6)</td>
<td>(7.4)</td>
<td>(7.2)</td>
</tr>
<tr>
<td>Set-up Grant</td>
<td>31.9</td>
<td>32.0</td>
<td>27.6</td>
<td>7.4</td>
<td>7.2</td>
</tr>
</tbody>
</table>

The projection is believed to be realistic and reasonable. It will be necessary, however, to review and adjust it periodically in light of actual enrolment and expenditure, as well as movements in the inflation rate and cost of living adjustment.

9.4 MONITORING AND CONTROL

While the longer-term direction of OVUM will be guided by its 10-Year Strategic Plan, its mid-term direction will be based on the Three-Year Business Plan. Annually, a budget will be prepared and approved by Council before the start of the financial year. Resources will be allocated in the annual budget exercise and, if necessary, reviews and adjustments will be carried out. Any variations will have to be endorsed by Senior Management before implementation in order to ensure self-financing.

9.5 STUDENT FINANCIAL ASSISTANCE SCHEME

OVUM is primarily intended for adult learners already in employment. Under normal circumstances, these learners can be expected to take care of their tuition and associated costs themselves. However, taking into account the recent economic turmoil globally, and especially in the Asian region, it may be judicious to set up a student assistance scheme to support students who may be suffering hardships. At such an early stage, OVUM will not have sufficient funds to finance its own student assistance scheme. Therefore, the University should solicit a block grant from the Government or philanthropists to set up the student financial assistance scheme for. The scheme is to be means-tested. Students with financial difficulties but with good academic records can
apply for assistance. The remaining undistributed funds can be invested to earn income to cover administrative expenses for running the scheme.

The University can offer different types of loan schemes such as:
- **pay after graduation**: for those needy students who can only afford to repay after graduation when they would have improved their financial situation with the help of the qualification gained;
- **pay within one year**: for those students who may have cash flow problems in paying a large sum for each enrolment; and
- **pay after one year**: for those in-between students.

Students can benefit from more than one type of loan schemes.
- In addition, OVUM can explore the possibility of arranging credit card payment for tuition fee by instalment through their local banks. The credit card centre will charge a handling fee but, normally, the loan is interest-free and has to be repaid within one year or the duration of the course.
- OVUM should recognise that there will be a need to provide assistance to students for social or physical reasons, such as those who are handicapped or institutionalised. Government grant or social agencies or private donations will be sought to provide direct assistance to those in need.

### 9.6 INVESTMENT

Since student fees will be collected in advance, those necessary for operating expenses will be placed on deposit, ranging from one week to three months. Those without immediate need can be invested to earn higher income.

Those one-off block grants received can be used to set up a revolving fund with part of it set aside for a specific purpose, the remaining can be invested to earn higher income in order to keep the fund going as long as possible.

A set of investment guidelines currently adopted by the Hong Kong Special Administrative Region is attached as Appendix 12 for reference.
REFERENCES


Jung, I. (1994): ‘Improving the economics of budget allocation in distance education: A case study of Korea Air and Correspondence University’. In G. Dhanarajan, P.K. Ip, K.S. Yuen and C. Swales (Eds.), *Economics of Distance Education, Recent Experience*. Hong Kong: Open Learning Institute Press.


OVUM’s establishment will open up opportunities for flexible part-time learning to a population of adult learners who, until recently, have been denied access to higher education in Malaysia. Dedicated open universities have been successfully operating around the world since the early 1970s, and, as has been observed (p.11), at present some 20–25% of the world’s participants in post-secondary education are engaged in some form of ODL. However, it has been the experience of ODL providers that the very features of openness and flexibility, which will make OVUM an attractive option for learners, will create suspicion about quality and standards among other institutions of higher education and the general public in Malaysia who are more familiar with the traditional FTF world of the university classroom. In that domain, it is the qualifications of the member of full-time academic staff engaged in teaching the students that are deemed to be the main determinant of teaching quality, while the entry qualifications of the students, attendance requirements, class size and access to library resources are seen as the primary factors influencing a student’s academic success.

In order to gain acceptance in the higher education community and to promote confidence among their many stakeholders, single-mode ODL providers have devised rigorous quality assurance (QA) protocols to demonstrate the rigour and dependability of the systems which underpin the key educational processes of a distance learning provider:

- programme planning;
- course design, development and production;
- course delivery;
- student assessment and award; and
- staff development.

In the case of the UK Open University, the Open University of Hong Kong and Indira Gandhi National Open University of India, these QA measures were initially the result of a conscious decision to adopt and adapt successful models from the conventional sector. The benefits of successful recognition more than outweighed, at times, the cumbersome bureaucracy incumbent upon a rigorously documented system implemented within a collegial academic committee structure.

The early establishment and implementation of rigorous quality assurance protocols in the five (5) domains of activity above as proposed in the foregoing chapters will certainly be invaluable in preparing for the validation of OVUM’s programmes by Local Area Network (LAN). Key requirements of these processes are transparency and the systematic inclusion of external advice and review at all stages of the key processes relating to course development, delivery and assessment.

In response to the huge increase in learning opportunities offered by distance learning, and in an attempt to safeguard the reputation of national providers and to protect consumers from ‘cowboy’ operators, significant attempts have been made by quality


All of these publications take, as their starting point, that the well-established essential ingredients of institutional quality are applicable to distance learning and that academic standards are independent of the methods of delivery. Thus, for any course or programme, irrespective of the mode of delivery, an institution must be able to demonstrate that:

- learning outcomes have been set at an appropriate level and are clearly communicated to students;
- content and design of the curriculum and the teaching methodologies employed are effective in enabling students to achieve the outcomes in terms of both the acquisition of knowledge and the development of related practical skills and abilities; and
- assessment is appropriately designed and rigorously administered to measure the achievement of the outcomes.

Nevertheless, significant differences remain between FTF and distance mode delivery and the accreditation community recognises that it faces a challenge to:

- identify the distinctive features of distance learning;
- adjust accreditation scrutiny to reflect those distinctive features; and
- pay more attention to student learning outcomes (Eaton 2001).

A private institution such as OVUM can ill-afford the loss of consumer confidence that would be engendered by the inability to produce evidence that it can withstand scrutiny by the traditional measures of academic quality as evidenced by accreditation. As OVUM begins to work towards the validation of its courses and programmes by LAN, it will be essential that it establishes a dialogue with the Council that ensures that the distinctive features of its course development and delivery are recognised and that it can demonstrate the rigour of the QA mechanisms that underpin every aspect of its activities. (See Guidelines for preparing documentation for approval and accreditation of courses offered by private institutions of higher education (1998) in Appendix 14.)

While internal and external academic accreditation will naturally focus on processes and practices and inputs and resources, research indicates that at the top of the adult distance learner’s hierarchy of concerns are the following quality outcomes:

- acquired content knowledge and skills should be relevant, transferable, specific for the purpose and should blend traditional education and applied technology skills;
• completion takes the form of credits or credentials that are recognised by professional accreditation bodies and employers and by other educational institutions as being of the same value as those acquired in FTF mode and that are transferable within programmes and institutions locally, nationally and internationally; and
• the return on investment of time, finances and energy meets the expectations generated by the institution in terms of accessibility to support as and when needed, the objective benefits and utility of the programme, the subjective achievement of personal goals and customer satisfaction with all elements of the course or programme studied.

If OVUM is to live up to its promise of being a learner-centred organisation it must be cognisant of the concerns of its learners. The establishment of effective feedback mechanisms that ascertain students’ satisfaction with the University, its courses, administration and tutorial support, act upon the feedback and inform the students what changes and improvements have been made, will be invaluable in the process of continuous quality improvement required to develop a sound reputation for excellence in an increasingly crowded and aggressive global education market place.

10.0 RESPONSIBILITY FOR QUALITY

In a systems-driven environment, responsibility for the quality processes relating to a particular aspect of the University’s work devolves to the relevant Head of Unit. Development and approval of academic policy falls within the remit of the Senate and its sub-committees.

One of the tenets of quality assurance derived from the business environment is that in order to establish an effective organisational quality culture in an organisation there should be a champion at the highest level of Senior Management. In OVUM, this role may be assumed by the DVC Academic or the DVC Teaching and Learning. The designated DVC will report regularly on quality matters to the Senate. In the lean organisational structure proposed for OVUM it may not be necessary to establish a separate Quality Unit within the VC’s office. However, for the purposes of preparing for external validation, it will be important to designate a person or small group of people who will be responsible on behalf of the DVC for liaising with LAN on all matters relating to programme validation. They will be required to coordinate the production of documentation as well as organise ‘mock’ visits to provide an opportunity for OVUM participants to understand the process in advance of the actual validation event.

Staff training and development are crucial to the successful implementation of a quality culture. By providing staff with the appropriate knowledge and skills to implement University policy, OVUM will empower them to develop a fully integrated quality culture within the organisation.
There is a wealth of literature on the implementation of QA in the context of higher education and numerous case studies that can help to embed developments in a new institution. Suggestions have been made throughout the chapters on quality assurance mechanisms that have been successfully applied in other contexts. The final word of caution should be given to Alan Tait of the UKOU, editor of *Quality Assurance in Higher Education: Selected Case Studies*, published by COL in 1997:

“While the concepts can be learned from the literature relatively easily, and case studies of practice elsewhere are of considerable help, no quality assurance system can be transplanted from one institution to another across organisational, social and cultural boundaries. The development must be home-grown, recognising its context.” (Please see sections 4.5, 6.5 and 7.3 for other aspects of quality assurance.)

**REFERENCES**


CHAPTER 11: LIBRARY AND LEARNING RESOURCES

Among the many services an open university offers its students is access to a fully resourced library and supplementary learning resources. These services are as important to ODL as they are in a FTF context. Many would argue that these services are even more important in a distance-teaching environment than in a FTF environment. There are many reasons why OVUM must allocate resources for a fully functioning library. Three, however, are important:

- first, libraries provide the required additional information to enrich the learning materials that learners receive from OVUM;
- secondly, learners are assisted to become skilled in the search for information by themselves; and
- thirdly, library facilities are an integral part of any quality assurance and accreditation/evaluation/validation exercise that OVUM will be subjected to by national and international agencies.

As OVUM will have a national presence and be a national provider of educational and training services, its library services will also be national in character. We would suggest that during the early phase of the University’s development efforts be made to firstly, to establish a comprehensive central library that will have both digital as well as hard copy (print, audio, video etc.) collections. The digital collection will eventually become the backbone of the library but during the early phases access by learners to electronic databases may be limited and therefore the non-digital services will require greater attention. Secondly, we would suggest that all Regional Centres should also have the minimum basic collection to provide enrichment. These collections can be built in parallel to the launching of new courses and programmes. Thirdly, the central library puts in place mechanisms to serve students their needs, throughout the regions, via telecommunication channels (facsimile, Internet and the Web). Using postal services should be a consideration as well.

Borrowing and service arrangements can also be made with local libraries. Historically, however, such cooperation in Malaysia was very minimal amongst library service providers, and it is therefore difficult to be optimistic that these arrangements will bear fruit. On the other hand, there is every likelihood of using pre-packaged information services from commercial vendors such as Questia, XanEdu and ebrary through subscription or pay-per-use. Questia (www.questia.com), for example, claims to have over 70,000 books and journal titles covering multiple topics and subject areas, and it also offers reference services. OVUM’s library should enquire, as quickly as possible, about the feasibility and cost effectiveness of such arrangements.
The basic services OVUM’s library will provide, must include the following:

- reference library for developers of course materials;
- source of information for the pursuit of scholarship;
- source of enrichment materials that both course related as well as to support general scholarship;
- repository of all course materials as well as other supporting information;
- additional learning support such as study skills, web and Internet skills, etc.;
- bibliographies;
- subject searches to support course development;
- repository of knowledge of ODL practices; and
- self-study space for students.

Like any other library, OVUM’s library will need a cadre of staff to support all of its activities. Besides carrying out regular library functions, duties of OVUM’s library staff should also include:

- staffing out-of-office hours;
- staffing regional centres;
- fielding enquiries about OVUM and ODL; and
- providing input into course development.

The library at OVUM has the potential to become a state of the art Learning Resource Centre equipped with digital devices, and connecting its services to the University’s community can be immensely valuable.
CHAPTER 12: TECHNOLOGY SUPPORT

Internationally, using computing and information technologies, both analogue and digital, has been an integral part of distance education development from the very beginning. If the academic programmers constitute the heart of the venture then the computing technologies are the brains of the institution. With increasing sophistication, speed, intelligence and convergence, the availability of technologies to serve the purpose of the University are limitless. The question confronting institutions is not if the technologies are an essential part of the venture but which technologies are most appropriate, efficient and economical. The challenge for the University is in the exercise of that choice.

OVUM will have to develop its technology platform from the very beginning. It should be a platform that is modular, flexible, versatile, high speed, low-cost and connected internally and externally. It should, most importantly, serve the needs of management and academia. Figure 12.1 illustrates the purposes which technology can serve and where the ‘margins’ include many of the peripheral needs and benefits that can also be derived as ‘spin-offs’ of an efficient system.

The panel is reluctant at this point to suggest a technology infrastructure for the University for the following reasons:

- the technology environment is a rapidly changing one with new and cheaper hardware and software products coming to the market frequently, thereby making any advice obsolete very quickly; and
- our knowledge of the technology environment and capabilities in Malaysia is insufficient to make sound judgments.

Figure 12.1: Technology support in an educational institution (Daniel, 1999)
However, we wish to remind the sponsors of this *Report* that investment in technology is important and that technology-enabled design of administrative process and academic functions is changing the way that institutions of learning function. Greater integration is clearly an expectation of stakeholders. In addition, stakeholders will also be looking at the following needs to be served by the technology infrastructure:

- **Administration**: for faster and more comprehensive information regarding enrolment, performance, budgets and regional study situations in order to analyse efficiencies and effectiveness, as well as to respond to policy entities.
- **Faculty**: for support in the production of learning materials, enhancing learner support, greater access to student records, discipline, specific trends and collegial interfaces with peers, full-time and part-time tutors.
- **Students**: to assist them in providing greater and smoother access to administrative and support services as well as to library and other learning support opportunities.
- **Policymakers**: to enable them to access data faster and more reliably for use in developing funding levels, as well as realistic and feasible policies.

One way to proceed with the question of the technology infrastructure is to establish, as quickly as possible, a technology Strategic Plan Working Team to map out a technology policy for the University.

**REFERENCE**

CHAPTER 13: THE ‘CAMPUSS’

The needs of an open university in terms of a campus are quite different from those of conventional FTF contact institutions. Unlike conventional tertiary institutions, OVUM will not require a large self-contained campus to do all of its business. Instead, its mission is to deliver education to where students, live, work, play, build families and be active as citizens of a functioning democracy. However, distance education depends on rapid and clear communication between and among students, tutors, academic and administrative staff using a variety of available medium. It requires an extensive and responsive infrastructure through which to conduct that communication. It also requires space for its academics and administrators to meet, work, conduct business and declare their institution’s presence. OVUM’s campus therefore must be visible, generate respect as a seat of learning and must be equipped with the most advanced information and communications technologies.

The ‘campus’ of OVUM will have three layers to it. First, there will be a Headquarters (the heart of the University); secondly, there will be Regional Centres; and thirdly, there will be Study Centres. Each one of these will serve a distinct purpose and will therefore require different space needs as well as facilities.

OVUM’s Headquarters will be modelled on those of other comparable institutions for functional reasons, but it will also be designed to meet the unique needs of, and best suited to, the Malaysian environment.

It will house the following facilities:

- **office space** that is adequate to centralise all academic, administrative, finance, library and information systems;
- **warehouse, workshop and storage** space in which to create, store and distribute masses of learning materials;
- **meeting and conference rooms** to host meetings of Council, Senate, Management, Academic Committees and School Boards, as well as course team meetings;
- **computing centre** to have state-of-the-art facility with uninterrupted power supply as well as dedicated environmentally-controlled space. It should be equipped with reliable computing hardware and associated software, peripherals, networked with fibre optics cabling, all of which will be needed to maintain storage of massive data for OVUM’s entire operation;
- **audio-visual reproduction units** required to reproduce copies of materials acquired or commissioned;
- **library** that will function like a learning laboratory with multi-media learning materials, playback systems, study carrels, small group study facilities. This centre should be accessible 24 hours a day electronically;
- **lecture halls and theatres** for mass lectures when they are needed;
- **tutorial rooms** for students of Penang and neighbouring regions to meet for tutorials;
• **science project and computing laboratories** for science and technology students to meet and perform requisite laboratory exercises; and

• **student amenities centre** for students to meet in an informal social setting to relax, chat and provide support for each other.

A total of **20,000 square metres** will be required to house the Headquarters of the institution.

*Regional Centres* will provide one of two locations where students can meet with their University in their region. In Chapter 6, a description of the role and functions of regional centres is provided. In order to fulfil these functions, a Regional Centre must have space to accommodate:

• full-time administrative staff;
• meeting and working place for part-time tutors (‘hot desks’);
• computing and Internet facilities for use by students;
• tutorial rooms;
• one or two small lecture theatres;
• learning resource centre;
• meeting room for staff meetings; and
• ‘shop’ window to market the University, its products and services.

The space required for the above will depend on the location of the regional centre. In cities like Kuala Lumpur, Petaling Jaya and Johor Bahru, OVUM may require big centres of about **300 square metres**. In Penang, the Headquarters will serve as the regional centre for the state. Regional centres located in Ipoh, Malacca, Alor Star and other cities of similar size, the space required will be about **180 square metres** or so.

The *Study Centre* is a place for students to meet and benefit from peer learning. It is managed by no more than a very small staff (three persons) and will house small study rooms as well as Internet facilities for students. It is very much a **Telelearning Centre** providing all the facilities of such a centre. At some point in the future, the study centre will emerge as the ‘classroom’ for the virtual part of OVUM. This will be an evolutionary phenomenon. The number of such centres will depend on the growth of the University. These study centres could be developed with support from the local communities where the communities provide the space and OVUM provides the electronic infrastructure. Each study centre will be about **100 square metres** in size, although they could be smaller.
Outline Programme Proposal

BSc / BSc (Hons.) in Computer Engineering

16 August 2002

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2. Titles of the Programmes
3. Launch Date of the Programmes
4. Programmes Aims
5. Programmes Objectives
6. Descriptions of the Programmes
7. The Courses
8. Target Market
9. Expected Enrolment

Appendix I. Computer Engineering as an academic discipline
1. INTRODUCTION

Traditionally, the electronic engineer works with circuits and hardware, and the computer scientist designs software and applications. In the last two decades, the computer industry has come to realise that the design of high performance computer platforms relies on the expertise of professionals who have knowledge in both hardware and software. These professionals are the computer engineers and the demand for such personnel has led to the establishment of Computer Engineering as an academic discipline both in Hong Kong and abroad. In many universities, computer engineering was a spin-off from the more traditional disciplines of Electronic Engineering or Computer Science. In US universities, some departments have adopted the name *Electrical and Computer Engineering*. Many offer computer engineering as a major (see Appendix I).

Computer Engineering encompasses the theory and practices in the design of a computer system and its components. Broadly speaking, it covers the areas from the design of integrated circuit components, processors, memory, computers, networks, to operating systems and system programming.

In Hong Kong, there is a demand for computer engineers in both the servicing and manufacturing sectors.

(a) Hong Kong has a large demand for computer systems to support the corporate computing needs and customized solutions are required for individual businesses. The computer engineer thus specifies and designs the computing infrastructure, based on systems and components produced worldwide. The 2000 manpower survey\(^1\) conducted by the VTC indicated that the number of employees for hardware support and systems programming account for 30.2% of the total manpower in the IT industry.

(b) According to the Trade Development Council (TDC)\(^2\), IT equipment and parts is the largest export earner (21% of the electronics export in 2001) in the area of electronics, which in turn is the largest merchandise export earner for Hong Kong. TDC also cited the personal digital assistants (PDAs) as an example of focal areas of industrial development in the electronics industry in Hong Kong. Apart from the PDA, there are more and more consumer products incorporating an embedded computer processor. Thus we expect the demand for designers of embedded applications to increase gradually.

The proposed academic programme will provide coverage from fundamentals of the design of components to the implementation of systems. In addition, the opportunity to specialize in the areas of computer organization; multimedia systems and computer networking will also be provided.

The proposed programme is intended to fill a gap between the existing programmes of *Communications Technology; Electronics; Computing & Networking* and *Applied Computing*. Table 1 illustrates the areas of focus of these programmes. The Electronics programme has limited coverage on computer systems. Communications Technology focuses on communication systems in general. The Applied Computing programme (Electronics Stream) encompasses the general areas of computers, systems, software and electronics. Computing & Networking focuses on the software aspects of a computer system. The proposed Computer Engineering programme covers both computer hardware and software.

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Table 1. Areas of focus of the various related programmes currently offered by S&T School

<table>
<thead>
<tr>
<th>Areas of focus</th>
<th>Electronics</th>
<th>Communications Technology</th>
<th>Applied Computing (EL stream)</th>
<th>Computing and Networking</th>
<th>Computer Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic devices</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mechatronics</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Digital communication</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Information theory</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Wireless / mobile communication</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Artificial intelligence</td>
<td>✓</td>
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<tr>
<td>Computer architecture</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Operating systems</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Database</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial information systems</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Programming languages</td>
<td>✓</td>
<td>✓</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Software engineering</td>
<td>✓</td>
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<td></td>
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</tr>
<tr>
<td>Networking</td>
<td>✓</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Multimedia processing</td>
<td></td>
<td></td>
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<td>✓</td>
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<tr>
<td>Signal processing</td>
<td></td>
<td></td>
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<td>✓</td>
</tr>
<tr>
<td>Computer design</td>
<td></td>
<td></td>
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<td>✓</td>
</tr>
<tr>
<td>Microprocessors</td>
<td></td>
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<td>✓</td>
</tr>
</tbody>
</table>

2. TITLES OF THE PROGRAMMES

The titles of the propose programmes are:

BSc/BSc (Hons.) in Computer Engineering

3. LAUNCH DATE OF THE PROGRAMMES

The launch date for the programmes is proposed to be April 2003.

4. AIMS OF THE PROGRAMMES

The aim of these programmes is to produce graduates with comprehensive knowledge in the design and implementation of the system or components that make up a computer system. Graduates can embark in a career as a system designer/integrator; or as a system programmer.

5. OBJECTIVES OF THE PROGRAMMES

On the successful completion of the BSc in Computer Engineering degree programme, graduates should be able to demonstrate:

(a) basic knowledge and skills in Mathematics (M121, M122, M221), and Computing (U123, U101/M150new);

(b) knowledge of the fundamentals of Computer Engineering (T222 <new> Digital Design, T223, MT260);

(c) knowledge of the fundamentals of Computer Programming (MT258)

(d) depth of knowledge in Computer Engineering (T333 <new> Computer and PC Designs, T334 <new> Signal Processing and Multimedia Technology, CT312);
(e) breadth of knowledge in Computer network programming and website design (CT212, U234);
(f) breadth of knowledge of peripheral engineering (U228, U238);
(g) breadth of knowledge of management (B240, B290).

On successful completion of the BSc (Hons.) in Computer Engineering programme, in addition to the objectives stated in (a) to (g), graduates should be able to demonstrate:

(h) depth of knowledge in Computer Engineering related areas (T323, T396, MT356, MT311);
(i) skills in conducting an individual project in a systematic way (TCE401 Computer Engineering Project Course).

6. DESCRIPTIONS OF THE PROGRAMMES

Please refer to Table 2 for the list of courses.

**BSc in Computer Engineering**

Students pursuing this programme must complete at least 120 credits as follows:

(a) 20 credits from courses labelled F, by selecting 10 credits from U123 and U101, and 10 credits from M121 and M122.
(b) 50 credits from the compulsory courses labelled CD.
(c) 20 credits from specialised computer engineering courses labelled HD.
(d) additional 10 credits from optional courses labelled OD.
(e) additional courses as necessary.

**BSc (Hons.) in Computer Engineering**

Students pursuing this programme must complete at least 160 credits as follows:

(a) 20 credits from courses labelled F, by selecting 10 credits from U123 and U101, and 10 credits from M121 and M122.
(b) 100 credits from the compulsory courses labelled CH.
(c) 10 credits from middle level optional courses labelled MH.
(d) 10 credits from higher level optional courses labelled NH.
(e) additional courses as necessary.
<table>
<thead>
<tr>
<th>Course code</th>
<th>Title</th>
<th>Credit</th>
<th>Course length</th>
<th>BSc</th>
<th>BSc (Hons.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M111/M121</td>
<td>A Foundation Course in Pure Mathematics</td>
<td>10</td>
<td>Year</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>M112/M122</td>
<td>A Foundation Course in Applied Mathematics</td>
<td>10</td>
<td>Year</td>
<td>F</td>
<td>F</td>
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<tr>
<td>U123</td>
<td>Introduction to the Internet</td>
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<td>Year</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>U101/M150</td>
<td>Introduction to Information and Communications Technology</td>
<td>10</td>
<td>Year</td>
<td>F</td>
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</table>

**Foundation Level Courses**

<table>
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<th>Credit</th>
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<th>BSc (Hons.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M221</td>
<td>Mathematical Methods</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>MT258</td>
<td>Programming and Database</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>MT260</td>
<td>Computer Architecture and Operating Systems</td>
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<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>T223</td>
<td>Microprocessor-based Computers</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>T222</td>
<td>Digital Design</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>CT212</td>
<td>Network Programming and Design</td>
<td>10</td>
<td>Year</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>U234</td>
<td>Web Site Design</td>
<td>10</td>
<td>Year</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>U228</td>
<td>Engineers in Society</td>
<td>5</td>
<td>Semester</td>
<td>OD</td>
<td>MH</td>
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<tr>
<td>U238</td>
<td>Quality and Reliability</td>
<td>10</td>
<td>Year</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>B240</td>
<td>Principles and Practices of Management</td>
<td>5</td>
<td>Semester</td>
<td>OD</td>
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<tr>
<td>B290</td>
<td>Organization Behaviour</td>
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**Middle Level Courses**

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<th>BSc (Hons.)</th>
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</thead>
<tbody>
<tr>
<td>T334</td>
<td>Signal Processing and Multimedia Technology</td>
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<td>Year</td>
<td>HD</td>
<td>CH</td>
</tr>
<tr>
<td>T333</td>
<td>Computer and PC Designs</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>CH</td>
</tr>
<tr>
<td>CT312</td>
<td>Networking and Switching Technology</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>CH</td>
</tr>
<tr>
<td>T396</td>
<td>Artificial Intelligence for Technology</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>T323</td>
<td>Information Theory and Digital Communications</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>MT311</td>
<td>Programming Languages and Java Programming</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>MT356</td>
<td>Software Engineering and Project Management</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>TCE401</td>
<td>Computer Engineering Project Course</td>
<td>20</td>
<td>Year</td>
<td>-</td>
<td>CH</td>
</tr>
</tbody>
</table>

**Higher Level Courses**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Title</th>
<th>Credit</th>
<th>Course length</th>
<th>BSc</th>
<th>BSc (Hons.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T334</td>
<td>Signal Processing and Multimedia Technology</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>CH</td>
</tr>
<tr>
<td>T333</td>
<td>Computer and PC Designs</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>CH</td>
</tr>
<tr>
<td>CT312</td>
<td>Networking and Switching Technology</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>CH</td>
</tr>
<tr>
<td>T396</td>
<td>Artificial Intelligence for Technology</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>T323</td>
<td>Information Theory and Digital Communications</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>MT311</td>
<td>Programming Languages and Java Programming</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>MT356</td>
<td>Software Engineering and Project Management</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>TCE401</td>
<td>Computer Engineering Project Course</td>
<td>20</td>
<td>Year</td>
<td>-</td>
<td>CH</td>
</tr>
</tbody>
</table>

**Table 2:** Course table for computer engineering

It should be noted that the proposed programmes satisfy the one-third separation rule with other programmes (minimum of 40 and 60 credits difference at the BSc and BSc (Hons) levels respectively) offered by the School.

7. **THE COURSES**

All courses required for this programme are currently available from either School of Science & Technology or School of Business and Administration, except the following:

- U101/M150 Introduction to Information and Communications Technology (April 2004)
- T222 Digital Design (April/October 2003)
- T333 Computer and PC Designs (April 2004)
- T334 Signal Processing and Multimedia Technology (October 2003)
- TCE401 Computer Engineering Project Course (April 2005) which has to be developed.
8. TARGET MARKET

The two programmes are designed for those who wish to pursue an engineering career in the computer industry, i.e., involving the design and implementation of embedded applications, computer systems and infrastructure.

9. EXPECTED ENROLMENT

It is anticipated that this programme will be attractive to the Hong Kong students. We expect a net additional intake of 100 students per year. The market survey will be performed prior to the development of the DPP.

Electronics & Communications Technology Programme Team August 2002

Appendix I. Computer Engineering as an academic discipline

In Hong Kong, the following universities offer degree programmes in computer engineering, in addition to programmes in Computer Science and in Electrical/Electronic/Communication Engineering.

<table>
<thead>
<tr>
<th>University</th>
<th>Name of programme</th>
<th>Academic department</th>
</tr>
</thead>
<tbody>
<tr>
<td>HKU</td>
<td>BEng(Hons) in Computer Engineering</td>
<td>Jointly offered by two departments: Electrical &amp; Electronic Engineering, Computer Science</td>
</tr>
<tr>
<td>CUHK</td>
<td>BEng (Hons) in Computer Engineering</td>
<td>Computer Science &amp; Engineering</td>
</tr>
<tr>
<td>CityU</td>
<td>BEng(Hons) in Computer Engineering</td>
<td>Computer Engineering &amp; Information Technology</td>
</tr>
<tr>
<td>HKUST</td>
<td>BEng(Hons) in Computer Engineering</td>
<td>Jointly offered by two departments: Electrical &amp; Electronic Engineering, Computer Science</td>
</tr>
</tbody>
</table>

The following overseas universities (US, Canada, UK) offer computer engineering programmes. This list is by no means exhaustive.

<table>
<thead>
<tr>
<th>University</th>
<th>Academic department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan State University</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>University of Wisconsin-Madison</td>
<td>Electrical and Computer Engineering offering BS in Computer Engineering</td>
</tr>
<tr>
<td>UC (San Diego)</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>University of Illinois at Urbana-Champaign</td>
<td>Electrical and Computer Engineering offering Computer Engineering curriculum</td>
</tr>
<tr>
<td>University of Maryland at College Park</td>
<td>Electrical and Computer Engineering offering BS in Computer Engineering</td>
</tr>
<tr>
<td>University of Texas at Austin</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>University of Victoria (Canada)</td>
<td>Electrical and Computer Engineering offering B.Eng. in Computer Engineering</td>
</tr>
<tr>
<td>University of Calgary (Canada)</td>
<td>Electrical and Computer Engineering offering BSc / BSc(Eng) in Computer Engineering</td>
</tr>
<tr>
<td>The University of Manchester</td>
<td>Computer Science offering BSc(Hons) Computer Engineering</td>
</tr>
<tr>
<td>University of Southampton</td>
<td>Electronics and Computer Science offering BEng in Computer Engineering</td>
</tr>
</tbody>
</table>
Detailed Programme Proposal

BSc / BSc (Hons.) in Computer Engineering

3 October 2002

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This document and its appendices can be downloaded from the Computer Engineering Validation home page: [http://OLIV1.ouhk.edu.hk/~ckkwok/comp_eng.html](http://OLIV1.ouhk.edu.hk/~ckkwok/comp_eng.html) where you can also find the syllabi of other existing OUHK courses and other information related to the Computer Engineering programmes. The web site is also available on a CD-ROM.
1. INTRODUCTION

Traditionally, the electronic engineer works with circuits and hardware, and the computer scientist designs software and applications. In the last two decades, the computer industry has come to realize that the design of high performance computer platforms relies on the expertise of professionals who have knowledge in both hardware and software. These professionals are the computer engineers. During the past twenty years Computer Engineering has established itself as an academic discipline both in Hong Kong and abroad. In many universities, computer engineering was a spin-off from the more traditional disciplines of Electronic Engineering or Computer Science. In the United States of America, some departments have adopted the name of ‘Electrical and Computer Engineering’. Many of them offer computer engineering as a major. (Appendix 2.1 shows a list of universities offering Computer Engineering programmes in Hong Kong and abroad.)

Computer Engineering encompasses the theory and practices in the design of a computer system and its components. Broadly speaking, it covers the areas from the design of integrated circuit components, processors, memory, computers, networks, to operating systems and system programming.

In Hong Kong, there is a demand for computer engineers in both the servicing and manufacturing sectors.

(1) Hong Kong has a large customer base for computer systems to support the corporate computing needs. It is necessary to provide a customized solution for individual businesses. The computer engineer thus specifies and designs the computing infrastructure, based on systems and components produced from all over the world. The 2000 manpower survey[1] conducted by the VTC indicated that the number of employees for hardware support and systems programming account for 30.2% of the total manpower in the IT industry.

(2) According to the Trade Development Council (TDC) [2], IT equipment and parts is the largest export earner (21% of the electronics export in 2001) in the area of electronics, which in turn is the largest merchandise export earner for Hong Kong. TDC also cited the personal digital assistants (PDAs) as an example of focal areas of industrial development in the electronics industry in Hong Kong. Apart from the PDA, there are more and more consumer products incorporating an embedded computer processor. Thus we expect the demand for designers of embedded applications to increase gradually.

The proposed programme fills a gap between the existing suite of electronics and ICT programmes in the School of Science & Technology. The proposed academic programme will provide coverage from fundamentals of the design of components to the implementation of systems. In addition, the opportunity to specialize in the areas of computer organization; multimedia systems and computer networking will also be provided.

2. TITLES OF THE PROGRAMMES

The titles of the proposed programmes are

BSc/BSc(Hons) in Computer Engineering

3. LAUNCH DATE OF THE PROGRAMMES

The launch date for the programmes is proposed to be April 2003.

4. AIMS OF THE PROGRAMMES

The aim of these programmes is to produce computer engineers with comprehensive knowledge in the design and implementation of the system or components that make up a computer system. Graduates can embark in a career as a system designer / integrator, or as a system programmer.

5. OBJECTIVES OF THE PROGRAMMES

On successful completion of the programme BSc in Computer Engineering, students should be able to demonstrate:

(a) basic knowledge and skills in Mathematics (M121, M122, M221), and Computing (U123, U101/M150);
(b) knowledge of the fundamentals of Computer Engineering (T222, T223, MT260);
(c) knowledge and skill in Computer Programming (MT258);
(d) depth of knowledge in Computer Engineering and the capability to design computer systems (T333); multimedia systems (T334); computer networks (CT312); and integrated circuits (T335);
(e) skills in computer network programming and website design (CT212, U234);
(f) breadth of knowledge of peripheral engineering subjects (U228, U238);
(g) breadth of knowledge of management subjects (B240, B290).

On successful completion of the programme in BSc(Hons) in Computer Engineering, in addition to the objectives stated in (a) to (g), students should be able to demonstrate:

(h) depth of knowledge in Computer Engineering related areas (T323, T396, MT356, MT311);
(i) skills in conducting an individual project in a systematic way (TCE401 Computer Engineering Project Course).

6. ENTRY REQUIREMENTS

The programmes have no academic entry requirement.

7. DESCRIPTIONS OF THE PROGRAMMES

Please refer to Table 2.1 for the list of courses.

BSc in Computer Engineering

Students pursuing this programme must complete at least 120 credits as follows:

(a) 20 credits from courses labelled F, by selecting 10 credits from U123 and U101, and 10 credits from M121 and M122.
(b) 50 credits from the compulsory courses labelled CD.
(c) 20 credits from specialised computer engineering courses labelled HD.
(d) additional 10 credits from optional courses labelled OD.
(e) additional courses as necessary.

BSc (Hons) in Computer Engineering

Students pursuing this programme must complete at least 160 credits as follows:

(a) 20 credits from courses labelled F, by selecting 10 credits from U123 and U101, and 10 credits from M121 and M122.
(b) 70 credits from the compulsory courses labelled CH.
(c) 30 credits from specialised computer engineering courses labelled HD.
(d) 10 credits from middle level optional courses labelled MH.
(e) 10 credits from higher level optional courses labelled NH.
(f) additional courses as necessary.

In designing the structures for these programmes care was taken to ensure that in the worst case scenario, the course overlap with existing degree programmes do not exceed 66% thereby satisfying the current one-third separation rule between programmes (minimum of 40 and 60 credits difference at the BSc and BSc (Hons) levels respectively).
Table 2.1: Course table for computer engineering

<table>
<thead>
<tr>
<th>Course code</th>
<th>Title</th>
<th>Credit</th>
<th>Course length</th>
<th>BSc</th>
<th>BSc (Hons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M111/M121</td>
<td>A Foundation Course in Pure Mathematics</td>
<td>10</td>
<td>Year</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>M112/M122</td>
<td>A Foundation Course in Applied Mathematics</td>
<td>10</td>
<td>Year</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>U123</td>
<td>Introduction to the Internet</td>
<td>10</td>
<td>Year</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>U101/M150</td>
<td>Introduction to information and communications</td>
<td>10</td>
<td>Year</td>
<td>F</td>
<td>F</td>
</tr>
</tbody>
</table>

Middle Level Courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Title</th>
<th>Credit</th>
<th>Course length</th>
<th>CD</th>
<th>CH</th>
</tr>
</thead>
<tbody>
<tr>
<td>M221</td>
<td>Mathematical Methods</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>MT258</td>
<td>Programming and Database</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>MT260</td>
<td>Computer Architecture and Operating Systems</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>T223</td>
<td>Microprocessor-based Computers</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>T222</td>
<td>Electronics Principles and Digital Design</td>
<td>10</td>
<td>Year</td>
<td>CD</td>
<td>CH</td>
</tr>
<tr>
<td>CT212</td>
<td>Network Programming and Design</td>
<td>10</td>
<td>Year</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>U234</td>
<td>Web Site Design</td>
<td>10</td>
<td>Year</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>U228</td>
<td>Engineers in Society</td>
<td>5</td>
<td>Semester</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>U238</td>
<td>Quality and Reliability</td>
<td>10</td>
<td>Year</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>B240</td>
<td>Principles and Practices of Management</td>
<td>5</td>
<td>Semester</td>
<td>OD</td>
<td>MH</td>
</tr>
<tr>
<td>B290</td>
<td>Organization Behaviour</td>
<td>5</td>
<td>Semester</td>
<td>OD</td>
<td>MH</td>
</tr>
</tbody>
</table>

Higher Level Courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Title</th>
<th>Credit</th>
<th>Course length</th>
<th>HD</th>
<th>HD</th>
</tr>
</thead>
<tbody>
<tr>
<td>T334</td>
<td>Signal Processing and Multimedia Technology</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>HD</td>
</tr>
<tr>
<td>T333</td>
<td>Computer and PC Designs</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>HD</td>
</tr>
<tr>
<td>T335</td>
<td>Digital Integrated Circuit and System Design</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>HD</td>
</tr>
<tr>
<td>CT312</td>
<td>Networking and Switching Technology</td>
<td>10</td>
<td>Year</td>
<td>HD</td>
<td>HD</td>
</tr>
<tr>
<td>T396</td>
<td>Artificial Intelligence for Technology</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>T323</td>
<td>Information Theory and Digital Communications</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>MT311</td>
<td>Programming Languages and Java Programming</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>MT356</td>
<td>Software Engineering and Project Management</td>
<td>10</td>
<td>Year</td>
<td>-</td>
<td>NH</td>
</tr>
<tr>
<td>TCE401</td>
<td>Computer Engineering Project Course</td>
<td>20</td>
<td>Year</td>
<td>-</td>
<td>CH</td>
</tr>
</tbody>
</table>

8. STRUCTURES OF THE PROGRAMMES

The structures of the two programmes are shown in Figure 2.1.

BSc in Computer Engineering

The BSc curriculum has the following components:

- Foundation courses
- Core courses
- Specialised courses
- Option (middle level)
- Free choice courses

The computer engineering student starts by building up a solid foundation in mathematics (M121 or M122) as well as developing the necessary skills and knowledge in Computing and the Internet (U123 or U101).

The student then progresses to the middle level core courses that cover the following technical subject areas essential to the development of a computer engineer. These areas are
• mathematics (M221);
• digital logic and circuit design (T222);
• algorithms and programming in C (MT258);
• hardware and software interaction (T223);
• assembly language programming (T223);
• computer architecture (MT260);
• network and distributed systems (MT260);
• operating systems (MT260);
• microprocessor design (T223).

For broadening, there is a middle level option for a course on management or on a technical subject related to computer engineering.

Moving onto the higher level, students can select two courses covering some of the following areas of specialization:
• high performance computer design, processor and personal computer engineering, embedded system design (T333);
• digital signal processing, audio, video and speech processing (T334);
• digital integrated circuit design, digital system design (T335);
• computer networks, switching, data communication (CT312).

Students can make a selection according to their career interests. The following are some examples of specialized course selections:
• For prospective embedded application designers of interactive toys and consumer products: T333 and T334
• For prospective development engineers of PDAs, pocket PCs, personal and notebook computers, dictionaries and diaries: T333 and CT312
• For prospective system integrators and system programmers: T333 and CT312, in combination with CT212 as the middle level option
• For prospective digital integrated circuit designers: T335 and T334.

As in most of the University’s bachelor degree programmes, there is an additional requirement for 20 credits of free-choice courses. This requirement can be satisfied by any combination of credit-bearing courses available within the University.

**BSc(Hons) in Computer Engineering**

The honours degree is built upon the BSc degree above. To fulfil the requirements for the Honours programme, students must complete an additional 40 credits of courses from the following:
• One additional higher level specialized course (10 credits) (T333, T334, T335, CT312)
• A higher level optional course (10 credits) (T323, T396, MT311, MT356)
• The Hons. Project Course (20 credits)

Upon completion of 140 credits of courses towards the BSc(Hons) Computer Engineering degree, an honours student has to apply the knowledge gained from these courses to an honours project. The project would be on a topic relating to computer design and implementation, multimedia systems or networking. Thus, in addition to the broad-based BSc curriculum, the honours graduate will have in-depth knowledge and skills on a wide range of subject areas within computer engineering as well as the experience of conducting a piece of independent investigation and problem solving.
Figure 2.1: Programme structure
Laboratory and Hands-on Experience

Many of the courses in the programmes are supplemented by laboratory and other practical components including computer visualisation and simulation.

- **T222.** There will be laboratory experiments to be conducted in the Science Laboratory in the Ho Man Tin campus.
- **T223.** Students are given a take-home kit which is a single board computer with a temperature sensor. The kit is to be interfaced to the student’s home PC. Students will conduct simple experiments and programming assignments at home. Apart from this, there is also a computer visualisation exercise on the execution of instructions in a computer processor.
- **T333, T334, T335, CT312.** There will be computer simulation and visualisation programmes accompanying these higher level specialised courses.
- **MT258, CT212 and other software courses.** The tutorials are held in the PC laboratory where each student will sit in front of a computer where they can practice hands-on. Also they are expected to do programming exercises on their home PC. In addition, students have access to the computer laboratories in both the Ho Man Tin Campus and the Island Learning Centre at any time.
- **TCE401.** Students can perform all the experimental work in the Project Laboratory in the Ho Man Tin Campus. In practice, as with other programmes in the School of Science and Technology, some students prefer to do the project at their work place and other at home. Nevertheless, our Project Laboratory provides the basic electronic equipment, computers and workstations to enable our project students to construct both hardware and software systems.

9. PROGRESSION PATHWAYS AND PRE-REQUISITES

Students are recommended to take the following path in pursuing their qualification:

(i) Foundation courses
(ii) Middle level courses
(iii) Higher level courses
The following are advisory pre-requisites for different courses in this programme:

<table>
<thead>
<tr>
<th>Course code</th>
<th>Advisory Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>M111/M121</td>
<td>-</td>
</tr>
<tr>
<td>M112/M122</td>
<td>-</td>
</tr>
<tr>
<td>U123</td>
<td>-</td>
</tr>
<tr>
<td>U101/M150</td>
<td>-</td>
</tr>
<tr>
<td>M221</td>
<td>at least one of M121, M122</td>
</tr>
<tr>
<td>MT258</td>
<td>-</td>
</tr>
<tr>
<td>MT260</td>
<td>MT210 or MT258</td>
</tr>
<tr>
<td>T223</td>
<td>-</td>
</tr>
<tr>
<td>T222</td>
<td>M121, M122 or S121</td>
</tr>
<tr>
<td>CT212</td>
<td>-</td>
</tr>
<tr>
<td>U234</td>
<td>U123</td>
</tr>
<tr>
<td>U228</td>
<td>-</td>
</tr>
<tr>
<td>U238</td>
<td>M122</td>
</tr>
<tr>
<td>B240</td>
<td>-</td>
</tr>
<tr>
<td>B290</td>
<td>B240</td>
</tr>
<tr>
<td>T334</td>
<td>M221, MT258</td>
</tr>
<tr>
<td>T333</td>
<td>T223, MT260</td>
</tr>
<tr>
<td>T335</td>
<td>T222 or T202</td>
</tr>
<tr>
<td>CT312</td>
<td>-</td>
</tr>
<tr>
<td>T396</td>
<td>-</td>
</tr>
<tr>
<td>T323</td>
<td>M122</td>
</tr>
<tr>
<td>MT311</td>
<td>MT210 or MT258</td>
</tr>
<tr>
<td>MT356</td>
<td>MT210</td>
</tr>
<tr>
<td>TCE401</td>
<td>Must have completed 140 credits of courses towards the BSc (Hons) Computer Engineering programme.</td>
</tr>
</tbody>
</table>

10. **THE COURSES**

All courses required for this programme are currently available from either School of Science & Technology or School of Business and Administration, except

- U101/M150 Introduction to Information and Communications Technology
- T222 Electronics Principles and Digital Design
- T333 Computer and PC Designs
- T334 Signal Processing and Multimedia Technology
- T335 Digital Integrated Circuit and System Design
- TCE401 Computer Engineering Project Course

The syllabi of the new courses can be found in Appendix 2.III. Description of other existing courses can be found via the Computer Engineering validation home page: http://OLIV1.ouhk.edu.hk/~ckkwok/comp_eng.html

11. **COURSE DEVELOPMENT REQUIREMENTS**

There are six new courses (U101/M150, T222, T333, T334, T335, TCE401) to be adapted / developed by OUHK.

- U101 (10 credits) will be adapted from OUUK course M150 and will be presented for the first time in April 2004. This course is being developed by the Computing Programme Team to support another programme.
- T222 (10 credits) will be adapted from the existing T202 (20 credits) by extracting the parts
on digital electronics (Launch date: April 2003).

- T333 (10 credits) will be developed from scratch (Launch date: April 2004)
- T334 (10 credits) will be developed from scratch (Launch date: October 2003)
- T335 (10 credits) will be adapted from OUUK course T323. (Launch date: April 2006). This course is included in anticipation of an initiative from the Science Park to develop itself into a integrated circuit design centre. If the initiative is successful earlier, we are ready to launch the course sooner. The availability of this course is not critical to the computer engineering programmes.
- TCE401 (20 credits) is a project course. Unlike other courses, there will be no course materials. It will be modelled and adapted from other project courses such as TE401 and CT401 (Launch date: April 2005).

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
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<tr>
<td></td>
<td>04/02</td>
<td>10/02</td>
<td>04/03</td>
<td>10/03</td>
<td>04/04</td>
</tr>
<tr>
<td>T222</td>
<td></td>
<td></td>
<td>development</td>
<td>first presentation</td>
<td>second presentation</td>
</tr>
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<td>T334</td>
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<td></td>
<td>development</td>
<td>first presentation</td>
<td>second presentation</td>
</tr>
<tr>
<td>T333</td>
<td></td>
<td></td>
<td>development</td>
<td>first presentation</td>
<td>second presentation</td>
</tr>
<tr>
<td>U101/M150</td>
<td>adaptation</td>
<td>first presentation</td>
<td>second presentation</td>
<td>third presentation</td>
<td></td>
</tr>
<tr>
<td>TCE401</td>
<td>development</td>
<td>first presentation</td>
<td>second presentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T335</td>
<td></td>
<td>adaptation</td>
<td>first presentation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.2: Time line for new course development and presentation

12. HONOURS CLASSIFICATION

In Table 2.1, all the middle level courses are kept in group ‘b’ and all the higher level courses in group ‘a’. The project course TCE401 will be taken into account for honours classification under group ‘a’. The general procedures for determining the honours classification can be found via the link in the Computer Engineering Validation home page: [http://OLIV1.ouhk.edu.hk/~ckkwok/comp_eng.html](http://OLIV1.ouhk.edu.hk/~ckkwok/comp_eng.html) available from the Internet or from the CD-ROM.

13. PRESENTATION SCHEDULE

The presentation schedule for various courses is given in Appendix 2.II.

14. TARGET MARKET

The two programmes are designed for those who wish to pursue an engineering career in the computer industry, i.e., involving the design and implementation of embedded applications, computer systems and infrastructure.

15. EXPECTED ENROLMENT

Based on the Trade Development Council’s forecast on the development of computer and embedded applications in Hong Kong and the Pearl River Delta, we anticipate this programme to be attractive to the Hong Kong students. We expect a net additional intake of 100 students per year.

The market survey was conducted during the first week of September 2002 on a batch of students in various programmes (Electronics, Applied Computing, Computing & Networking). Some preliminary results are available. In response to the question “Will you switch to the new programme?” 50.2% of the respondents indicated ‘yes’. In response to the question “Assume you have not enrolled in the University yet. Which programme would you choose?”, 36.4% of the respondents indicated ‘computer engineering’.

The result of market survey conducted by the Planning Unit is in Appendix 2.IV.
16. ELECTRONICS AND COMMUNICATIONS TECHNOLOGY ADVISORY PEER GROUP

The second meeting of the Advisory Peer Group (APG) for Electronics and Communications Technology was convened on 10 September 2002. The composition of the APG can be found in Appendix 2.V. The minutes of the meeting is included in Appendix 2.VI.

During the meeting, APG discussed the curriculum and structure of the programmes. The APG was in general satisfied with the aims and objectives of the programme. The following issues were raised:

1. The Hong Kong Science Park is planning to develop itself into an integrated circuit design centre. Some forty companies worldwide have expressed interest to set up design centre in the Park. According the model proposed by the Park, each company will provide experienced circuit designers from abroad to lead circuit design teams. It is anticipated that each experienced circuit designer will train four local graduates to become designers. This represents an important job market for computer engineering graduates. The APG is of the view that the University should position itself as a supplier of these graduates.

In response, we have included a higher level course on the subject (T335). It will be adapted from the OUUK course T323. The adaptation lead time is anticipated to be 6 months. Should the demand arise, we are ready to launch the course sooner than the proposed launch date of April 2006.

2. If T335 were to be launched, it would be beneficial to students to have some knowledge in analogue circuit designs, circuit theory and bipolar transistors. The APG proposed to include T202 in the curriculum so that students can have a choice of either T202 or T222. We will build this flexibility in the curriculum and advise students that T202 and T222 form excluded combination. Successful completion of T202 is considered as completion of T222.

17. EXTERNAL PROGRAMME ASSESSOR

Professor Victor OK Li, Chair Professor of Information Engineering and Managing Director of Versitech, Department of Electrical & Electronic Engineering, The University of Hong Kong, has been appointed as the External Programme Assessor for the Computer Engineering programmes.

Electronics & Communications Technology Programme Team
September 2002
### APPENDIX 2.I: COMPUTER ENGINEERING AS AN ACADEMIC DISCIPLINE

In Hong Kong, the following universities offer degree programmes in computer engineering, in addition to programmes in Computer Science and in Electrical/Electronic/Communication Engineering.

<table>
<thead>
<tr>
<th>University</th>
<th>Name of programme</th>
<th>Academic department</th>
</tr>
</thead>
<tbody>
<tr>
<td>HKU</td>
<td>BEng(Hons) in Computer Engineering</td>
<td>Jointly offered by two departments: Electrical &amp; Electronic Engineering, Computer Science</td>
</tr>
<tr>
<td>CUHK</td>
<td>BEng(Hons) in Computer Engineering</td>
<td>Computer Science &amp; Engineering</td>
</tr>
<tr>
<td>CityU</td>
<td>BEng(Hons) in Computer Engineering</td>
<td>Computer Engineering &amp; Information Technology</td>
</tr>
<tr>
<td>HKUST</td>
<td>BEng(Hons) in Computer Engineering</td>
<td>Jointly offered by two departments: Electrical &amp; Electronic Engineering, Computer Science</td>
</tr>
</tbody>
</table>

The following overseas universities (US, Canada, UK) offer computer engineering programmes. This list is by no means exhaustive.

<table>
<thead>
<tr>
<th>University</th>
<th>Academic department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan State University</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>University of Wisconsin-Madison</td>
<td>Electrical and Computer Engineering offering BS in Computer Engineering</td>
</tr>
<tr>
<td>UC (San Diego)</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>University of Illinois at Urbana-Champaign</td>
<td>Electrical and Computer Engineering offering Computer Engineering curriculum</td>
</tr>
<tr>
<td>University of Maryland at College Park</td>
<td>Electrical and Computer Engineering offering BS in Computer Engineering</td>
</tr>
<tr>
<td>University of Texas at Austin</td>
<td>Electrical and Computer Engineering offering Computer Engineering Major</td>
</tr>
<tr>
<td>University of Victoria (Canada)</td>
<td>Electrical and Computer Engineering offering B.Eng. in Computer Engineering</td>
</tr>
<tr>
<td>University of Calgary (Canada)</td>
<td>Electrical and Computer Engineering offering BSc / BSc(Eng) in Computer Engineering</td>
</tr>
<tr>
<td>The University of Manchester</td>
<td>Computer Science offering BSc(Hons) Computer Engineering</td>
</tr>
<tr>
<td>University of Southampton</td>
<td>Electronics and Computer Science offering BEng in Computer Engineering</td>
</tr>
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</table>
### APPENDIX 2.II: PRESENTATION SCHEDULE

<table>
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<tr>
<th>Level</th>
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<th>04/04</th>
<th>10/04</th>
<th>04/05</th>
<th>10/05</th>
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</tbody>
</table>
APPENDIX 2.III: SYLLABI OF NEW COURSES

U101 Introduction to Information and Communications Technology
- Data. Human and instrumental perception of data. Transmission and processing of data.
- Continuous and discrete data. Analogue and digital data.
- Digitization of text, sound, and graphics. Advantages of digital data over analogue data.
- Interface standards.
- Simple block diagram description of a computer.
- Data storage. Records and files, database and knowledge base.
- Reproduction and display of data. Information design, information representation, modalities of reproduction/display. Tradeoff between fidelity, expandability and cost.

T222 Electronics Principles and Digital Design
- Introduction to circuit components and designs, signals and waveforms
- Digital circuits. Combinational circuits, logic design and implementation. Sequential circuits, AD converters.
- Digital transistor circuits.
- Memory systems.
- Microprocessors and microcontrollers.

T333 Computer and PC Design
- Processor case studies. Pentium 4 architecture: CPU design, caches, instruction trace cache. Frontside and backside buses. Translation of CISC architecture into RISC-like microinstructions. IA-64.
- Motherboard; chipsets; power supply; cooling; EMC/EMI.
- Memory systems. Memory devices: SDRAM, RAMBUS. Memory modules. Memory buses.
- Graphics engines and graphics card.
- Networking devices. Ethernet 100 BaseT, dialup modems.
- Operating systems and BIOS.
- Mobile designs: PDA, notebook computers, pocket computers, power management.
- Embedded systems designs.
T334 Signal Processing and Multimedia Technology
- Discrete-Time Signal and System:
  Discrete-time linear time invariant system; discrete-time Fourier transform and frequency response; Z-transform; structures for discrete-time system. Review of digital filter design techniques.
- DFT and Fast Algorithms:
  Discrete Fourier series and Fourier transform (DFT), circular convolution; fast Fourier transform algorithms. Application to digital filtering: overlap save and overlap add methods.
- Adaptive Signal Processing:
  Basic concept and applications, FIR adaptive filters: steepest descent and the LMS algorithm, recursive least square (RLS) algorithm. Convergence and misadjustment.
- Digital Signal Processors:
  Modified Harvard architecture and example architecture of digital signal processors, application examples.
- Video Engineering:
- Audio Engineering:
  Background and history of digital audio, microphone, conversion of analog to digital signal, PCM and ADPCM, CD System, audio encoding in MPEG-I, audio encoding in MPEG-II, original Dolby noise compression, 3D surround sound system, examples of 3D sound standards [Dolby-AC3, dtx], digital audio broadcasting, speech coding, examples of low bit-rate speech codecs in wireless applications.
- Hardware and Software support for multimedia:
  PC hardware and technology, software technology. Industry standards and protocols for multimedia. Internet support for the delivery of multimedia content.

T335 Digital Integrated Circuit and System Design
- Integrated circuit. MOSFET, CMOS.
- Layout, design rules.
- Design of memory devices and circuits.
- Layout design of CMOS circuits.
- Custom and semi-custom design. Gate array and standard cell, programmable logic arrays.
- Design methodologies, simulation, design verification, silicon compilation.
- Design for testability.

TCE401 Computer Engineering Project
There is no prescribed syllabus for this course. Students will select a topic and conduct independent investigation to solve a particular problem and/or to construct a specific system. Afterwards, students are expected to be able to analyse and evaluate the outcome of the project.
APPENDIX 2.IV: RESULT OF MARKET SURVEY CONDUCTED BY THE PLANNING UNIT.
Survey on
BSc / BSc(Hons) in Computer Engineering

Target: 319 MT210 students
Method: Distribution at tutorials
Period: Early September
Results: The results are tabulated as follows:

Q1. Which programme are you studying at the OUHK?

<table>
<thead>
<tr>
<th>Programme</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC/BSCHE (Electronics)</td>
<td>27</td>
<td>8.5%</td>
</tr>
<tr>
<td>BSCAC/BSCHAC (Applied Computing)</td>
<td>88</td>
<td>27.6%</td>
</tr>
<tr>
<td>BSCCN/BSCHCN (computing and Networking)</td>
<td>140</td>
<td>43.8%</td>
</tr>
<tr>
<td>BEC/BECH (Electronic Commerce)</td>
<td>33</td>
<td>10.3%</td>
</tr>
<tr>
<td>BSCM/BSCHM (Mathematics)</td>
<td>5</td>
<td>1.6%</td>
</tr>
<tr>
<td>BGS</td>
<td>4</td>
<td>1.3%</td>
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<tr>
<td>HDIT</td>
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<td>0.6%</td>
</tr>
<tr>
<td>BBA</td>
<td>5</td>
<td>1.6%</td>
</tr>
<tr>
<td>DCP</td>
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<td>1.3%</td>
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<tr>
<td>BSCPDPT</td>
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<tr>
<td>BSCENMD</td>
<td>1</td>
<td>0.3%</td>
</tr>
<tr>
<td>Not yet decided</td>
<td>4</td>
<td>1.3%</td>
</tr>
<tr>
<td>No Information provided</td>
<td>7</td>
<td>2.2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>319</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Q2. Do you find the content of the new programme interesting?

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, very much so</td>
<td>78</td>
<td>24.5%</td>
</tr>
<tr>
<td>Yes, a little bit</td>
<td>200</td>
<td>62.7%</td>
</tr>
<tr>
<td>No, not at all</td>
<td>41</td>
<td>12.8%</td>
</tr>
</tbody>
</table>

Q3. How different is the content of the new programme compared with the programme that you are studying?

<table>
<thead>
<tr>
<th>Difference</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very different</td>
<td>52</td>
<td>16.3%</td>
</tr>
<tr>
<td>Somewhat different</td>
<td>227</td>
<td>71.2%</td>
</tr>
<tr>
<td>More or less the same</td>
<td>38</td>
<td>11.9%</td>
</tr>
<tr>
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<td>0.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>331</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Q4. Will you switch to this new programme if it is offered (assuming credit transfer is not a problem)?

<table>
<thead>
<tr>
<th>Opinion</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
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<td>49.5%</td>
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<tr>
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<td>0.3%</td>
</tr>
</tbody>
</table>

**Total**                       | 339   | 100.0%     |
Q7. Assume you have not enrolled in the university yet. Which programme would you choose, your existing programme or Computer Engineering?

<table>
<thead>
<tr>
<th>Existing programme</th>
<th>184</th>
<th>57.7%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Engineering</td>
<td>116</td>
<td>36.4%</td>
</tr>
<tr>
<td>No information provided</td>
<td>19</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

Q8. (For those who answered “Existing programme” in Q7)
Why would you choose your existing programme?
(Some respondents choose more than 1 choice)

| More relevant/useful | 87  | 48.7% |
| More updated         | 25  | 12.8% |
| More interesting     | 65  | 33.3% |
| A bit easier for me  | 1   | 0.5%  |
| Have a precedence for credit transfer | 1 | 0.5% |
| HK does not have any industry, engineering is not very useful for seeking job | 1 | 0.5% |
| More job related     | 1   | 0.5%  |
| 需要先達...2/3/2013 | 1   | 0.5%  |
| No information provided | 3 | 1.5%  |

Q9. (For those who answered “Computer Engineering” in Q7)
Why would you choose Computer Engineering programme?
(Some respondents choose more than 1 choice)

| More relevant/useful | 52  | 37.1% |
| More updated         | 44  | 31.4% |
| More interesting     | 43  | 30.7% |
| More overall covering on computer industry | 1 | 0.7% |

Q10. How can we improve the content of the proposed Computer Engineering programme?
APPENDIX 2.V: THE ELECTRONICS AND COMMUNICATIONS TECHNOLOGY ADVISORY PEER GROUP

The APG for Electronics and Communications Technology has the following external members:

Professor X Cao, Department of Electrical and Electronic Engineering, Hong Kong University of Science and Technology
Dr C K Chan, Chairman and CEO, TeleEye Holdings Limited
Professor T S Ng, Chair Professor of Electronic Engineering and Head, Department of Electrical & Electronic Engineering, The University of Hong Kong
Mr Henry Leung, President, ON Semiconductor, SCG Hong Kong SAR Limited
Ir Jolly Wong, Head, the 3rd Generation Command & Control Division, Communications Branch, Hong Kong Police
Professor W S Wong, Chair Professor and Head, Department of Information Engineering, The Chinese University of Hong Kong

The internal members consist of the Dean of Science & Technology and members of the Electronics and Communications Technology programme team.
APPENDIX 2.VI: MINUTES OF THE SECOND MEETING OF THE
ELECTRONICS AND COMMUNICATIONS TECHNOLOGY
ADVISORY PEER GROUP

Notes of the 2nd Meeting of APG for
Electronics & Communications Technology
of the School of Science & Technology
held at 6:30 pm, 10 September 2002, in Room P20, OUHK

*************************************************************

Present:  Dr. Mike Robertshaw (OUHK), Acting Dean & Chair
         Dr. C K Chan (TeleEye Holdings Ltd.)
         Prof. T S Ng (HKU)
         Ir. Jolly Wong (HK Police)
         Dr. Paul Kwok (OUHK)
         Dr. Wilson Chu (OUHK)
         Dr. George Lau (OUHK)

In attendance:  Ms. Jessica Wong (OUHK), Meeting Secretary

Apologies:  Prof. X Cao (HKUST)
             Mr. Henry Leung (ON Semiconductor, SCG HKSAR Ltd.)
             Prof. W S Wong (CUHK)
             Dr. Philip Tsang (OUHK)

*************************************************************

1.  Dr. Mike Robertshaw, Acting Dean of the School of Science & Technology
    (S&T) welcomed members and thanked them for their continued support to
    the School’s Electronics and Communication Technology (E&CT) programmes. He passed
    apologies from Prof. T.M. Wong, Dean of S&T, who was not able to chair this meeting. Dr. Robertshaw also explained that this
    meeting was convened to seek members’ comments and advice on the
    Detailed Programme Proposals for BSc/BSc(Hons) in Computer Engineering
    programmes.

2.  Notes of the latest APG meeting

    The notes of the 1st APG meeting for E&CT were tabled and confirmed with
    the following amendment:
2.1 The last sentence of Section 4.3.2 should read
“He added that ‘Electronics’ was one of the sixteen disciplines of the HKIE into which corporate members were admitted.”

3. **DPP for BSc/BSc(Hons) in Computer Engineering**

3.1 Comments from Prof. W.S. Wong and Mr. Henry Leung were received and tabled in the meeting. Verbal comments have also been received from Prof. X. Cao.

3.2 Dr. Paul Kwok then briefed members on the DPP for BSc/BSc(Hons) in Computer Engineering which contained information on various aspects of the programmes including entry requirements, aims and objectives, structures, progression pathways and pre-requisites, course development, target market and expected enrolment. He also presented the survey results representing how the MT210 students perceived the proposed programmes. Members were invited to give comments.

3.3 During discussion, the following points were noted:

3.3.1 In response to members' queries about the focus of the programme, Dr. Kwok informed members that the programmes were designed to cover both software and hardware aspects. Students may equip themselves with sufficient expertise in one particular area by taking relevant higher level course(s).

3.3.2 Due to the predicted increasing demand for IC designers in Hong Kong market, members suggested that the programmes should include some courses in 'VLSI', 'Embedded Design', and 'IC Design' so that graduates of these programmes would possess the required skills for filling the openings in the future job market. Such courses also served to help achieve the aims of these programmes, which is to produce computer engineers with comprehensive knowledge in the design and implementation of computer systems.

Given the uncertainty about how important these topics would be in the future members suggested that the School should include a corresponding higher-level course to cover these topics to be developed as and when demand arose.

3.3.3 Members were concerned about the degree of overlap between the proposed "Computer Engineering" programme and the existing programmes in "Applied Computing" and "Computer & Networking". Dr. Kwok explained to members about the OUHK's one-third separation rule under which there is at least 40 credits difference between programmes at BSc level and 60 credits for those at BSc(Hons) level. To give a clear presentation, the team was suggested to produce a Venn diagram to clearly illustrate the differences between the three programmes.
3.3.4 A member commented that the proposed programme curriculum did not include courses that teach basic knowledge in circuit analysis and analogue electronics. Adding of the course T202 Analogue and Digital Electronics was therefore suggested in order to bring in practical hardware experience.

3.3.5 In response to the comments made by Mr. Henry Leung regarding how student could be trained to handle customer projects, members generally agreed that there was not a single theory behind. Students could learn the skills through project work or on-the-job practising.

4. Dr. Robertshaw thanked members for their valuable contributions. The suggestions discussed in this meeting would be seriously considered. The team would keep members informed of the final proposal and circulate the notes of the meeting to members in due course.

Action: Electronics & CT team

There being no other business and the meeting was adjourned at 7:45 p.m.
1. Each degree with Honours shall be conferred with a classification of First Class, Second Class (Upper Division), Second Class (Lower Division) or Third Class save that exceptionally a degree may be conferred without classification.

2. Where credits are to be taken into account for the purposes of classifying a degree with Honours, each credit shall bear a score determined by the result status (grade) awarded to the student for the successful completion of the course with which the credits are associated.

3. The scores for each result status shall be as follows:
   (a) for Pass 1 status, four;
   (b) for Pass 2 status, three;
   (c) for Pass 3 status, two;
   (d) for Pass 4 status, one.

4. A course counted towards a degree with Honours as a result of a grant of specific credit transfer shall be graded as if passed at the lowest grade of pass.

5. Each score shall be multiplied by the credit value of the course with which the result is associated.

6. The scores for each credit taken into account for the purposes of classifying the degree with Honours shall be summed:
   
   (a) at X times the value in Regulation 5, for the best 40 credits in courses at the Higher Level save where the Programme Regulations identify certain courses that must be include, defined as the ‘Group (a)’ courses; and
   (b) at the value in regulation 5, for the best 40 credits in course at the Higher or Middle Level where such credits are not taken into account in Regulation 6(a), defined as the ‘Group (b)’ courses,

   where X is a value between one and three determined by the School/Institute on a programme by programme basis and announced to students in the Programme Regulations.

7. The numerical totals obtained under Regulation 6 shall be rendered on a scale of 40-100% and shall qualify the student for the award of a particular class of Honours degree as follows:
(a) Where the total is between 85.00–100% and the student has gained 30 credits in Group (a) courses at Pass Status 1, or 20 credits in Group (a) courses at Pass Status 1 plus 20 credits in Group (b) courses at Pass Status 1, a degree in the First Class;

(b) Where the total is between 85.00–100% and the student has not satisfied the criteria in 7(a), or where the total is between 70.00– 84.99% and the student has gained 30 credits in Group (a) courses at Pass Status 2 (or above) or 20 credits in Group (a) courses at Pass Status 2 (or above) plus 20 credits in Group (b) courses at Pass Status 2 (or above), a degree in the Second Class (Upper Division);

(c) Where the total is between 70.00–84.99% and the student has not satisfied the criteria in 7(b), or where the total is between 50.00– 69.99% and the student has gained 30 credits in Group (a) courses at Pass Status 3 (or above) or 20 credits in Group (a) courses at Pass Status 3 (or above) plus 20 credits in Group (b) courses at Pass Status 3 (or above), a degree in the Second Class (Lower Division); and

(d) Where the total is between 55.00–69.99% and the student has not satisfied the criteria in 7(c) or where the total is between 40.00– 54.99%, a degree in the Third Class.

8. Subject to the Ordinance and Statutes, and notwithstanding Regulations 1 to 7 above, the Council may in exceptional circumstances, and on the advice of the Senate, award a classification to an individual student other than that which would be derived using these Regulations.

9. Irrespective of the total number of credits completed, a student who has satisfied the requirements for the award of a Degree with Honours is permitted to obtain up to 40 further credits before accepting the classification awarded. The date of award of the Degree with Honours will be the date of the conferment immediately following the acceptance of classification.
## APPENDIX 4: MAJOR RESPONSIBILITIES AND APPOINTMENT CRITERIA OF ACADEMIC STAFF IN OVUM

<table>
<thead>
<tr>
<th>Major Responsibilities</th>
<th>Appointment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dean</strong></td>
<td></td>
</tr>
<tr>
<td>- Provide leadership and supporting teaching and research in an academic school</td>
<td>- An earned doctorate with a distinguished record of teaching &amp; research and scholarly publications</td>
</tr>
<tr>
<td>- Responsible for planning, development and delivery of programmes and courses in the school</td>
<td>- Extensive management experience in higher education</td>
</tr>
<tr>
<td>- Responsible for daily administration of the school and effective use of resources</td>
<td>- Involvement in professional and community activities</td>
</tr>
<tr>
<td>- Participate in University administration</td>
<td>- Experience in distance education</td>
</tr>
<tr>
<td><strong>Professor</strong></td>
<td></td>
</tr>
<tr>
<td>- Provide academic leadership in teaching and research</td>
<td>- Distinguished academic background and achievement</td>
</tr>
<tr>
<td>- Support teaching and research activities including monitoring and regulating of standards</td>
<td>- Demonstrated academic leadership and outstanding contribution in higher education</td>
</tr>
<tr>
<td>- Promote and facilitate the achievement of excellence in teaching and research</td>
<td>- An excellent record of research and scholarly publications</td>
</tr>
<tr>
<td>- Participate in school/centre/university administration and advise on studies and development</td>
<td>- Involvement in professional and community services</td>
</tr>
<tr>
<td>- Experience in distance education preferred</td>
<td></td>
</tr>
<tr>
<td><strong>Associate Professor</strong></td>
<td></td>
</tr>
<tr>
<td>- Undertake course planning, development and delivery and programme administration</td>
<td>- Normally an earned doctorate with considerable teaching experience preferably including course administration</td>
</tr>
<tr>
<td>- Undertake research activities</td>
<td>- A good record of research and publications</td>
</tr>
<tr>
<td>- Participate in school/centre/university administration</td>
<td>- Involvement in professional and community activities</td>
</tr>
<tr>
<td></td>
<td>- Administrative experience and ability</td>
</tr>
<tr>
<td></td>
<td>- Experience in distance education</td>
</tr>
<tr>
<td>Position</td>
<td>Major Responsibilities</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Assistant Professor    | - Undertake course planning, development and delivery and where necessary, programme administration  
- Undertake research activities  
- Participate in school/centre/university administration | - Normally an earned doctorate  
- Relevant professional/teaching experience preferably including course administration required  
- A record of research and publications  
- Involvement in professional & community activities  
- Experience in distance education preferred |
| Lecturer               | - Undertake course planning, development and delivery  
- Involvement in research activities  
- Participate in school/centre/university administration | - A higher degree  
- Relevant professional/teaching experience |
| Teaching Assistant     | - Assist in and where necessary, undertake course planning, development and delivery  
- Participate in school/centre/university administration | - An honours degree  
- Some relevant professional/teaching experience |
APPENDIX 5: AN EXAMPLE OF THE STRUCTURE OF A SUITE OF ARTICULATED QUALIFICATIONS IN THE IT DISCIPLINE*

DIPLOMA IN INFORMATION TECHNOLOGY (DIT)

Synopsis:

The Diploma in Information Technology aims to provide students with a general education background as well as the theoretical foundations of problem solving complemented by programming application skills in the field of Information Technology.

Diplomates should be:
1. proficient in the use of Object Oriented Programming in Java;
2. employable as programmers; and
3. able to undertake higher diploma and baccalaureate degree programmes in Computing, or any IT-related fields.

Programme structure:
1. General education: 15 credits (English, Mathematics, Science, and IT); and
2. IT core: 45 credits (see Table 1 and Figure 1).

HIGHER DIPLOMA IN INFORMATION AND COMMUNICATION TECHNOLOGY (HICT)

Synopsis:

The Higher Diploma in Information and Communication Technology aims to provide students with a general education background as well as professional training in the field of ICT.

Diplomates should be:
1. proficient in programming and software development;
2. employable as programmers and software developers; and
3. able to undertake baccalaureate degree programmes in Computing, or any IT-related fields.

Programme structure:
1. General education: 18 credits (English, Mathematics, Science, and IT);
2. ICT core: 63 credits (see Table 1 and Figure 1); and
**BACHELOR OF SCIENCE IN COMPUTER SYSTEMS AND NETWORKS (BScCSN)**

**Synopsis:**

The Bachelor of Science in Computer Systems and Networks aims to produce graduates who can apply computing and networking technologies in business and industry leading to careers in the development and maintenance of computer systems and networks.

Graduates should be:
1. able to apply theory and practice in the development of computer systems and networks;
2. proficient in programming and software development; and
3. employable as software developers, systems and network administrators.

**Programme structure (BScCSN):**
1. General education: 18 credits (English, Mathematics, Science, and IT);
2. ICT core: 93 credits (see Table 1 and Figure 1); and

**BACHELOR OF SCIENCE WITH HONOURS IN COMPUTER SYSTEMS AND NETWORKS (BScHCSN)**

**Synopsis:**

The Bachelor of Science with Honours in Computer Systems and Networks aims to further equip graduates with up-to-date techniques as well as to raise awareness of current issues in present day computer systems and networks.

Graduates should be:
1. able to apply theory and practice in the development of computer systems and networks;
2. demonstrate in-depth understanding of advanced techniques and issues in current systems and networks;
3. employable as software developers, systems and network administrators; and
4. able to articulate into postgraduate degree programmes in the field.

**Programme structure (BScHCSN):**
1. General education: 18 credits (English, Mathematics, Science, and IT);
2. ICT core: 93 credits (see Table 1 and Figure 1);
3. Professional electives: 9 credits (Oral Communications, Professional writing, and Business);
4. Honours core: 40 credits.
### Table 5.1: Courses at a glance

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Related programmes</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT101</td>
<td>Introduction to Computing I</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT102</td>
<td>Introduction to Computing II</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT103</td>
<td>Computer Organization</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT104</td>
<td>Data and Discrete Structures</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT108</td>
<td>Operating Systems</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT201</td>
<td>Database Systems I</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT202</td>
<td>Database Systems II</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT203</td>
<td>Computer Networks</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT204</td>
<td>Algorithms</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT205</td>
<td>Information Systems</td>
<td>D, H, BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT207</td>
<td>Software Engineering and Project Management</td>
<td>H, BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT208</td>
<td>Advanced Operating Systems</td>
<td>H, BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT212</td>
<td>Network Programming</td>
<td>H, BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT301</td>
<td>Professional Issues in Computing</td>
<td>H, BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT302</td>
<td>Wireless Communications</td>
<td>BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT303</td>
<td>Computer Architecture</td>
<td>BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT304</td>
<td>Information Theory</td>
<td>BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT305</td>
<td>Switching Technology</td>
<td>BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT307</td>
<td>Introduction to E-Commerce</td>
<td>BScCSN, BScHCSN</td>
<td>3</td>
</tr>
<tr>
<td>ICT308</td>
<td>Issues in Programming Languages</td>
<td>BScCSN, BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT402</td>
<td>Hand-held Computing</td>
<td>BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT403</td>
<td>Data Mining and Warehousing</td>
<td>BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT407</td>
<td>Commercial Systems</td>
<td>BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT408</td>
<td>Web Computing</td>
<td>BScHCSN</td>
<td>6</td>
</tr>
<tr>
<td>ICT460</td>
<td>Projects in ICT</td>
<td>BScHCSN</td>
<td>16</td>
</tr>
</tbody>
</table>

**Note:**
- *D*: Diploma in Information Technology
- *H*: Higher Diploma in Information and Communication Technology
- *BScCSN*: Bachelor of Science in Computer Systems and Networks
- *BScHCSN*: Bachelor of Science with Honours in Computer Systems and Networks
Pre-requisite: BScCSN

**Figure 5.1:** Recommended study pathways for DIT, HICT, BScCSN, and BScHCSN students
APPENDIX: BRIEF COURSE DESCRIPTIONS

ICT101: Introduction to Computing I (3 credits)
- program design and implementation in Java; and
- simple program constructs include classes, methods, and control structures.

ICT102: Introduction to Computing II (6 credits)
- object-oriented design and Java; and
- encapsulation, information hiding, inheritance and polymorphism.

ICT103: Computer Organization (6 credits)
- number systems;
- introduction of assembly language; and
- hardware aspects in computing.

ICT104: Data and Discrete Structures (6 credits)
- graphs;
- arrays and structures;
- points: C++ versus Java;
- discrete Mathematics; and
- Big O notation.

ICT 108: Operating Systems (3 credits)
- hands-on introduction to Windows-based systems, Unix, and Macintosh; and
- operating system concepts.

ICT201: Database Systems I (3 credits)
- concepts of relational database;
- survey of database models; and
- simple Structural Query Language (SQL).

ICT202: Database Systems II (6 credits)
- normalization;
- advanced Structural Query Language (SQL); and
- Java Database Connectivity (JDBC).

ICT203: Data Communications and Computer Networks (3 credits)
- concepts of data communications;
- local area networks (LANs);
- wide area networks (WANS) and the Internet; and
- network protocols.

ICT204: Algorithms (6 credits)
- searching techniques;
- sorting techniques; and
- analysis of algorithms.
ICT205: Information Systems (3 credits)
- information system theory;
- information system methodology;
- information system management; and
- data security.

ICT207: Software Engineering and Project Management (6 credits)
- software development life cycle – analysis, design, implementation, and testing;
- common practices in software engineering;
- standards in software engineering;
- project analysis and design;
- personnel, risk, and change management;
- budgeting and legal issues in software engineering; and
- information system management.

ICT208: Advanced Operating Systems (6 credits)
- process management;
- storage management;
- I/O systems; and
- modern operating systems and case studies.

ICT212: Network Programming (3 credits)
- network architecture and operating systems;
- network and Internet protocols;
- interprocess communications; and
- socket programming.

ICT301: Professional Issues in Computing (3 credits)
- social, ethical, and legal issues in ICT; and
- professional practices (location sensitive).

ICT302: Wireless Communications (3 credits)
- Digital Subscriber Line (DSL);
- Virtual Private Network (APN);
- emerging standards; and
- streaming and compression technology.

ICT303: Computer Architecture (6 credits)
- CPU and memory;
- input and output;
- design and implementation; and
- modern architectures.

ICT304: Information Theory (6 credits)
- error detection and correction;
- data encryption;
- data compression; and
- entropy and coding theories.
ICT305: Switching Technology (6 credits)
- ISO OSI standards;
- protocols of each layer;
- switching fundamentals;
- switching architecture and design; and
- performance evaluation.

ICT307: Introduction to E-Commerce (3 credits)
- E-Commerce marketing tools and strategies;
- security issues;
- legal issues; and
- electronic government.

ICT308: Issues in Programming Languages (6 credits)
- data types and expressions;
- control structures and subprograms;
- exceptional handling;
- design issues in programming languages; and
- different programming paradigms: procedural, functional, logic, and object-oriented.

Honours core:

ICT401: Web Computing (6 credits)
- Web components;
- Web server technology;
- computing with scripts and forms;
- Web database;
- Web caching and document distribution; and
- security and the Web.

ICT402: Hand-held Computing (6 credits)
- access technology;
- emerging standards;
- component level technologies;
- viruses and security; and
- computer telephony.

ICT403: Data mining and warehousing (6 credits)
- advanced database management;
- distributed databases;
- techniques in data mining; and
- applications in data warehousing.

ICT407: Commercial Systems (6 credits)
- components of typical commercial systems;
- building commercial systems;
- human factors in commercial systems; and
- commercial case studies.

ICT460: Projects in ICT (16 credits)
- planning and managing tasks related to computing projects;
- integration of knowledge and techniques; and
- report writing.

*Contributed by Assoc. Prof. Dr Reggie Kwan, Programme Leader for Computing, School of Science & Technology, OUHK*
Table 6a: Consolidated income and staffing costs

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
<th>S4</th>
<th>S5</th>
<th>S6</th>
<th>S7</th>
<th>S8</th>
<th>S9</th>
<th>S10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of credits</td>
<td>20,400</td>
<td>20,400</td>
<td>40,800</td>
<td>40,800</td>
<td>61,200</td>
<td>61,200</td>
<td>78,000</td>
<td>78,000</td>
<td>88,200</td>
<td>88,200</td>
</tr>
<tr>
<td>Fee Income (M$'000)</td>
<td>2,304</td>
<td>2,304</td>
<td>4,872</td>
<td>4,872</td>
<td>7,572</td>
<td>7,572</td>
<td>9,912</td>
<td>9,912</td>
<td>11,328</td>
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<td>Staffing:</td>
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<td>A. Core</td>
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</tr>
<tr>
<td>Dean</td>
<td>4</td>
<td>4</td>
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<td>4</td>
<td>4</td>
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<tr>
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<td>% to Income</td>
<td>34%</td>
<td>34%</td>
<td>23%</td>
<td>23%</td>
<td>18%</td>
<td>18%</td>
<td>17%</td>
<td>17%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Assumptions used:

1. Pay rates (inclusive of benefits) used for calculation are based on the best estimates of the on-going private university pay rates in Malaysia at 2002/03 price level

   MS
   Clerks         12,000 per annum
   Course co-ordinator 48,000 per annum
   Dean           144,000 per annum
   Executive Officer  24,000 per annum
   Programme leader  72,000 per annum
   Secretary       15,000 per annum
   P/T Tutors      50 per hour

2. Each part-time tutor is expected to take up 15 hours of tutorial per semester.
3. Only academic staff cost is included, administrative staff cost will be calculated separately.
Table 6b: Course offerings, student number, fee revenue and staffing estimates for School of Foundation Studies

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
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<th>S6</th>
<th>S7</th>
<th>S8</th>
<th>S9</th>
<th>S10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of courses</td>
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<td>(4)</td>
<td>4+(4)</td>
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<td>8+(4)</td>
<td>8+(4)</td>
<td>12+(2)</td>
<td>12+(2)</td>
<td>14+(2)</td>
<td>14+(2)</td>
</tr>
<tr>
<td>No. of student</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course per student</td>
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<td>2</td>
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<td>2</td>
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<tr>
<td>Credit per student</td>
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<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
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<tr>
<td>Total student number</td>
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<td>1,200</td>
<td>2,400</td>
<td>2,400</td>
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<td>3,600</td>
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<td>4,200</td>
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<td>Total number of credits</td>
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<td>21,600</td>
<td>25,200</td>
<td>25,200</td>
<td>28,800</td>
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<td>Fee income (M$'000)</td>
<td>720</td>
<td>720</td>
<td>1,440</td>
<td>1,440</td>
<td>2,160</td>
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<td>2,520</td>
<td>2,520</td>
<td>2,880</td>
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</tr>
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</table>

Staffing:

A. Core
- Dean: 1
- Executive Officer: 1
- Secretary (Note 11): 1
- Programme leader (Note 12): 2
- Course co-ordinator: 2
- Clerks: 1
- Part-time tutors: 34

B. Variable
- Programme leader (Note 12): 2
- Course co-ordinator: 2
- Clerks: 1
- Part-time tutors: 34

Notes:
1. ( ) denotes new courses
2. By S9 and S10, the School will be offering 8 x 6-credit courses in English, Bahasa Malaysia, Mathematics and Computing
3. There will be an average enrolment of 300 students per course
4. Each 6 credit course will be presented in one semester
5. Courses are assumed to have an average weighting of 6 credits.
6. Calculated on the basis of numbers of students taking 6 credit equivalents.
7. Each PL will undertake course coordination duties for 50% of his/her time with the rest spent on administrative duties
8. Each CC will handle a loading of 5500 credits covering at least 3 courses
9. Clerks will be trained to handle routine telephone enquiries related to courses within a programme
10. A tutor: student ratio of 1:35 is assumed
11. The secretary will be shared by the Dean and the Programme Leaders. All staff are assumed to be able to work in an IT base office environment.
12. One PL will be required to provide leadership for each of the major disciplinary area.
13. This takes into account that course coordination duties in Malaysia would require greater effort due to the geographical spread of the study/regional centers. It is also assumed that from the start CCs are expected to be involved in course development act
14. Fees are charged at RM100/credit for Foundation level.
15. It is also assumed that each student will take an average of 9-12 credits of coursework per year. They will be able
Table 6c: Course offering, student number, fee revenue and staffing estimates for School of Business & Administration

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
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<th>S4</th>
<th>S5</th>
<th>S6</th>
<th>S7</th>
<th>S8</th>
<th>S9</th>
<th>S10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of courses</td>
<td>4(+)</td>
<td>4(+)</td>
<td>4(+)</td>
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<td>8(+)</td>
<td>12(+)</td>
<td>12(+)</td>
<td>16(+)</td>
<td>16(+)</td>
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</tr>
<tr>
<td>No. of student</td>
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<td>1,000</td>
<td>1,500</td>
<td>1,500</td>
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<td>2,000</td>
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<td>2,250</td>
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<td>2</td>
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<td>4,000</td>
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<tr>
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<td>Fee income (MS’000)</td>
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**Staffing:**

A. Core

<p>| | |</p>
<table>
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<tbody>
<tr>
<td>Dean</td>
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<tr>
<td>Executive Officer</td>
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</tr>
<tr>
<td>Secretary (Note 8)</td>
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</table>

B. Variable

<p>| | |</p>
<table>
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</thead>
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<td>Programme leader (Note 9)</td>
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<td>Clerks</td>
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<tr>
<td>Part-time tutors</td>
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</table>

Notes:

1. ( ) denotes new courses
2. By S8 there should be sufficient middle and higher level courses to enable fast trackers to complete the requirements for the BBA award
3. By the 5th year, the School will be offering 36 courses (8 at FL, 16 at ML and 12 at HL). This will enable most students to complete sufficient specialised courses at the 300 and 400 level to graduate with a BBA.
4. There will be an average enrolment of 250 students per course
5. Each 6 credit course will be presented in one semester while 12 credit course are presented over two semesters
6. Courses are assumed to have an average weighting of 6 credits.
7. S1,S2: All FL
8. S3,S4: 4FL & 4ML
9. S5,S6: 4FL, 6ML & 2HL
10. S7,S8: 4FL, 8ML & 4HL
11. S9,S10: 4FL, 8ML & 6HL
12. Each PL will undertake course coordination duties for 50% of his/her time with the rest spent on administrative duties
13. Each CC will handle a loading of 5500 (Note 18) credits covering at least 3 courses
14. Clerks will be trained to handle routine telephone enquiries related to courses within a programme
15. A tutor: student ratio of 1:35 is assumed
16. The secretary will be shared by the Dean and the Programme Leaders. All staff are assumed to be able to work in an IT base office environment.
17. One PL will be required to provide leadership for each of the major disciplinary area.
18. This takes into account that course coordination duties in Malaysia would require greater effort due to the geographical spread of the study/regional centers. It is also assumed that from the start CCs are expected to be involved in course development act
19. Fees are charged at RM120/credit for Foundation level, RM140/credit for Middle level, RM160/credit for Higher level and RM200/credit for Hons. Level.
### Table 6d: Course offering, student number, fee revenue and staffing estimates for School of Science, Technology & Information

<table>
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<th>S7</th>
<th>S8</th>
<th>S9</th>
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<tbody>
<tr>
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<td>12</td>
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</tr>
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<td>Fee income (M$'000)</td>
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<td>936</td>
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</tr>
</tbody>
</table>

### Staffing:

#### A. Core
- Dean
  - 1
- Executive Officer
  - 1
- Secretary (Note 10)
  - 1

#### B. Variable
- Programme leader (Note 11)
  - 1
- Course co-ordinator
  - 1
- Clerks
  - 1
- Part-time tutors
  - 17

### Notes:
1. By S8 there should be sufficient middle and higher level courses to enable fast trackers to complete the requirements for the BSc award.
2. By the 5th year, the School will be offering 36 courses (8 at FL, 16 at ML and 12 at HL). This will enable most students to complete sufficient specialised courses at the 300 and 400 level to graduate with a BSc.
3. There will be an average enrolment of 150 students per course.
4. Each 6 credit course will be presented in one semester while 12 credit course are presented over two semesters.
5. S1,S2: All FL.
6. S3,S4: 4FL & 4ML.
7. S5,S6: 4FL, 6ML & 2HL.
8. S7,S8: 4FL, 8ML & 4HL.
9. S9,S10: 4FL, 8ML & 6HL.
10. The secretary will be shared by the Dean and the Programme Leaders. All staff are assumed to be able to work in an IT base office environment.
11. One PL will be required to provide leadership for each of the major disciplinary area.
12. This takes into account that course coordination duties in Malaysia would require greater effort due to the geographical spread of the study/regional centres. It is also assumed that from the start CCs are expected to be involved in course development activity.
13. Fees are charged at RM120/credit for Foundation level, RM14/credit for Middle level, RM160/credit for Higher level and RM200/credit for Honours Level.
Table 6e: Course offering, student number, fee revenue and staffing estimates for School of Education & Languages

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<th>S6</th>
<th>S7</th>
<th>S8</th>
<th>S9</th>
<th>S10</th>
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<td>16+</td>
</tr>
<tr>
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<td>600</td>
<td>600</td>
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<td>900</td>
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<td>1,200</td>
<td>1,350</td>
<td>1,350</td>
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<tr>
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</tr>
<tr>
<td>Fee income (MS'000)</td>
<td>432</td>
<td>432</td>
<td>936</td>
<td>936</td>
<td>1,476</td>
<td>1,476</td>
<td>2,016</td>
<td>2,016</td>
<td>2,304</td>
<td>2,304</td>
</tr>
</tbody>
</table>

**Staffing:**

**A. Core**
- Dean: 1 1 1 1 1 1 1 1 1 1
- Executive Officer: 1 1 1 1 1 1 1 1 1 1
- Secretary (Note 8): 1 1 1 1 1 1 1 1 1 1

**B. Variable**
- Programme leader (Note 9): 1 1 2 2 2 2 3 3 3 3
- Course co-ordinator: 1 1 2 2 3 3 4 4 4 5
- Clerks: 1 1 2 2 2 2 2 2 3 3
- Part-time tutors: 17 17 34 34 51 51 69 69 77 77

**Note:**
1. By S8 there should be sufficient middle and higher level courses to enable fast trackers to complete the requirements for the BEd award.
2. By the 5th year, the School will be offering 36 courses (8 at FL, 16 at ML and 12 at HL). This will enable most students to complete sufficient specialised courses at the 300 and 400 level to graduate with a BEd degree.
3. S1,S2: All FL
4. S3,S4: 4FL & 4ML
5. S5,S6: 4FL, 6ML & 2HL
6. S7,S8: 4FL, 8ML & 4HL
7. S9,S10: 4FL, 8ML & 6HL
8. The secretary will be shared by the Dean and the Programme Leaders. All staff are assumed to be able to work in an IT base office environment.
9. One PL will be required to provide leadership for each of the major disciplinary areas.
10. This takes into account that course coordination duties in Malaysia would require greater effort due to the geographical spread of the study/regional centres. It is also assumed that from the start CCs are expected to be involved in course development act.
There is often confusion about what distance education involves. It is recognised that course materials alone cannot meet all the needs of individual students. There is a need to supplement this material by providing each student with some form of individual tuition.

At OVUM this is accomplished through the formation of tutorial groups and the allocation of a tutor to each group. The tutor will offer students personal help through FTF sessions, the telephone, the Internet and by written comments on the student’s work. The tutor will help students overcome personal difficulties both with the course content and with his or her methods of learning as an independent student.

It is essential for anyone considering working as a tutor for OVUM to appreciate the special nature of the work. Even if individuals have experience of working in a conventional, FTF institution they may find that they need to develop different communication skills to become a successful distance education tutor. The University will help tutors to develop these skills and will require them to attend relevant staff development sessions as part of their contractual obligations.

The duties of the tutor include:

− to provide academic support which may be offered through face-to-face tutorials, day (or residential) schools, surgeries or laboratory sessions as appropriate;
− to provide academic support by telephone or other means of communication, for example, e-mail or Internet;
− to be available for telephone contact for 4 hours per week;
− to provide correspondence tuition, assessing and grading students’ work according to well-defined marking schemes and giving written feedback to help students in their learning;
− to monitor the progress of students including making proactive contact with students and authorising late submission of assignments;
− to be a first point of contact for students for course and study related advice;
− for courses which have not been locally developed, to assist students’ understanding of the course by putting it into a local context;
− to help students develop their study skills and help them become independent learners;
− to take part in such staff development activities as the University may deem appropriate; and
− to be familiar with and make use of appropriate information communication technologies.
APPENDIX 8: UKOU STATEMENT OF SERVICE FOR STUDENT SUPPORT AND GUIDANCE

OUR COMMITMENT

The OU commits itself to a high quality service for its students. Full details of the service you can expect are set out in the Student Handbook, which also includes the Student Charter.

OUR STUDENT SUPPORT AND GUIDANCE SERVICES

ON JOINING THE UNIVERSITY AND STARTING YOUR STUDIES

From staff at your Regional Centre and at Walton Hall you can expect:

• Comprehensive, accurate and up-to-date information, in printed documents and on The Open University website, about the learning opportunities offered by the University, covering:
  – the range of courses and qualifications and the system of study; and
  – admission procedures and credit transfer arrangements;
• Access to Open University staff who can provide more information about Open University study, detailed advice about particular issues and specialist educational guidance, or direct you to other providers of educational guidance;
• Preparatory information, support and study skill materials;
• Introduction to The Open University’s system of supported open learning and to your course or programme of study; and
• Information about the cost of study, which varies from course to course

DURING YOUR STUDIES

From your tutor you can expect:

• Detailed teaching comments on your assignments
  – Other teaching support, which may take the form of tutorial meetings (attendance at these is optional), telephone tutorials or computer conferencing;
  – Monitoring of your progress; and
  – Support as a point of reference for administrative matters and specialist guidance and services.

From staff at your Regional Centre and at Walton Hall you can expect:

• Comprehensive, accurate and up-to-date information about your studies, including registration, fee payment, assessment, residential schools and University regulations and procedures;
• Timely despatch of course materials and information about your tutor, the tutorial programme and other important dates, such as examinations and residential
schools;
- Information and activities to support your learning and study planning, including study skills development and course choice events;
- Information, advice and guidance about your personal learning goals or career objectives and any aspect of your Open University studies; and
- Information about library resources and services.

STUDENTS WITH DISABILITIES

Over 7,000 students with disabilities are taking Open University courses and we provide a wide range of facilities to help everyone to study successfully and achieve their personal goals. Our policy and services are summarised in the publication *Open to your Needs*, available from your Regional Centre.

CAREERS SERVICE

We offer a range of information, guidance and services to help you with your career planning and personal development. Our policy and services are summarised in the *Careers Service Statement of Service*, available from your Regional Centre.

IMPROVING OUR SERVICE

We are committed to developing and improving the quality of our services. We welcome any comments you may have and regularly use surveys to find out whether our students are satisfied with the courses and support we provide.

We hope that you find the service you receive satisfactory, but if you do not we will investigate and deal with your difficulties. If you have a complaint it will be treated in confidence and we will make every effort to resolve your concern fairly and quickly in accordance with the University's complaint procedure.

We aim to meet the standards for student support and guidance set out by the Quality Assurance Agency in the Code of Practice for Higher Education Institutions.
APPENDIX 9: DETAILED ANALYSIS OF REGISTRY FUNCTIONS BY OFFICE

ADMISSIONS AND RECORDS OFFICE

- compilation of prospectus
- course advertisements
- enquiry service
- application fee payment
- receive applications
- generate application number
- generate list of successful applicants
- send course offer
- course fee payment
- record registration data
- generate student record
- generate Student ID card
- confirm course registration
- manage top-up registration process
- maintain accurate record of each student’s current status

ADVANCED STANDING OFFICE

- manage enquiry service
- receive and vet applications
- research and verification of claims
- preparation of cases for consideration by Advanced Standing Committee
- notification of application results
- update student record
- create and maintain precedent information

TUTORS OFFICE

- specify tutorial centre requirements
- draw up tutorial timetable
- allocate students to tutor groups
- inform students of tutor group and meeting schedule
- maintain tutor record for payment purposes
ASSIGNMENTS OFFICE

- maintain assessment parameters
- receive marked assignments from tutors
- register assignment scores
- select scripts for monitoring
- record results

EXAMS OFFICE

- make arrangements for exam centres
- draw up exams timetable
- have exam papers securely printed
- draft security company schedule
- appoint and train invigilators
- appoint scriptmarkers
- receive and record unmarked scripts from exam centres
- distribute scripts to markers
- receive, log and check marked scripts
- enter and verify scores
- select scripts for monitoring and dispatch to EE and CC
- draw up Standardisation and Award (S&A) timetable
- generate Award Board results data
- act as secretary to S&A meetings (including what-if analysis of changes)
- generate overall exam results data for Course Results Group
- produce and distribute exam results letters
- receive and process appeals against exam results
- organise re-sit examinations

GRADUATION OFFICE

- generate award lists
- inform candidates for award
- compile graduates list for degree ceremony
- arrange gown hire and return
- dispatch guest invitations and tickets
- rehearse graduates
- manage graduation ceremony
- organise graduates’ reception
- arrange for official photography
## APPENDIX 10: CORE SENIOR STAFFING REQUIREMENTS FOR OVUM NON-ACADEMIC UNITS AT START-UP

<table>
<thead>
<tr>
<th>Rank</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head, ETPU</td>
<td>1</td>
</tr>
<tr>
<td>Senior instructional designer (and instructional designers)</td>
<td>1 + 2</td>
</tr>
<tr>
<td>Publishing manager</td>
<td>1</td>
</tr>
<tr>
<td>Warehouse manager</td>
<td>1</td>
</tr>
<tr>
<td>Graphic designer</td>
<td>1</td>
</tr>
<tr>
<td>Interactive/web designer</td>
<td>1</td>
</tr>
<tr>
<td>Editors</td>
<td>2</td>
</tr>
<tr>
<td>Head, Human Resources Unit</td>
<td>1</td>
</tr>
<tr>
<td>Assistant, HR officers</td>
<td>4</td>
</tr>
<tr>
<td>Head, Finance Unit</td>
<td>1</td>
</tr>
<tr>
<td>Assistant Finance officers</td>
<td>4</td>
</tr>
<tr>
<td>Head, ITU</td>
<td>1</td>
</tr>
<tr>
<td>IT professionals (systems development and support)</td>
<td>6</td>
</tr>
<tr>
<td>Head, Public Relations Unit</td>
<td>1</td>
</tr>
<tr>
<td>Assistant PR Officers</td>
<td>3</td>
</tr>
<tr>
<td>Registrar</td>
<td>1</td>
</tr>
<tr>
<td>Deputy Registrars</td>
<td>2</td>
</tr>
<tr>
<td>Assistant Registrars</td>
<td>6</td>
</tr>
<tr>
<td>Librarian</td>
<td>1</td>
</tr>
<tr>
<td>Assistant Librarians (professional staff)</td>
<td>4</td>
</tr>
<tr>
<td>Head of Regions</td>
<td>1</td>
</tr>
<tr>
<td>Regional liaison officer</td>
<td>2</td>
</tr>
<tr>
<td>Planning Officer</td>
<td>1</td>
</tr>
<tr>
<td>Assistant Planning Officer</td>
<td>1</td>
</tr>
</tbody>
</table>
## APPENDIX 11: DETAILED DESCRIPTION OF EACH COST ELEMENT

### Direct costs

<table>
<thead>
<tr>
<th>1. Tutor costs</th>
<th>All recurrent expenses that relate to tutors and include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- tutorial fee</td>
<td>- salary paid to tutors for conducting tutorials to students</td>
</tr>
<tr>
<td>- tutor meeting fee</td>
<td>- salary paid to the tutor for attending tutor meeting to enhance the quality of the tutorials</td>
</tr>
<tr>
<td>- assignment marking fee</td>
<td>- fees paid to tutors for their duties on review, correction and comments on the assignment submitted from students</td>
</tr>
<tr>
<td>- examination fee</td>
<td>- fees paid to tutors for their duties on invigilation of examination and examination paper marking</td>
</tr>
<tr>
<td>- end of contract fee</td>
<td>- a lump sum paid to tutors after their completion of service contract</td>
</tr>
<tr>
<td>- tutor training</td>
<td>- fees paid to tutors for attending training seminar provided by OVUM in assisting them to perform the duty of tutor plus tutor materials, snacks, drinks, room charges and other expenses incurred for conducting the seminar</td>
</tr>
<tr>
<td>- senior tutors</td>
<td>- fees paid to part-time senior tutors for their duties on coordination between tutors and students</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Course materials costs:</th>
<th>All recurrent expenses that relate to course materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- printing and production distribution</td>
<td>- costs of course materials used in the course</td>
</tr>
<tr>
<td>- distribution</td>
<td>- all types of distribution expenses, e.g. delivery costs, postage, courier charges, hiring of transportation cost, etc., for the purposes of distributing of course materials to students</td>
</tr>
<tr>
<td>- adaptation</td>
<td>- being the consultancy fee, editing charges, film making fee and other materials purchased for the purposes of modification of course materials used for specific courses.</td>
</tr>
<tr>
<td>- related materials</td>
<td>- include video tapes, audio tapes, floppy diskettes, CD-ROMs and other media materials as part of the course materials</td>
</tr>
<tr>
<td>- related expenses</td>
<td>- include carriage charges, import duties and other expenses that relate to the production or delivery of course materials</td>
</tr>
<tr>
<td>- copyright fees</td>
<td>- being the per capita fee, license fee and administration fee paid to obtain the copyright of using course materials</td>
</tr>
<tr>
<td>- assessment preparation</td>
<td>- being the amount incurred in purchase of assessment prepared by the supplier of course materials</td>
</tr>
<tr>
<td>- course development</td>
<td>- the cost for developing OVUM’s own course materials should not be included in the recurrent cost. However, for equity in costing comparison with those purchased materials with license fee, a certain percentage of the</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Advisory Peer Group</th>
<th>- Tuition fee income should be set aside to make up part of the course development fund</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- All expenses that relate to the advisory peer group meeting and honorarium for members</td>
</tr>
<tr>
<td>External Course Assessor</td>
<td>- All expenses that relate to the external course assessor meeting and honorarium for members</td>
</tr>
</tbody>
</table>

3. Course related expenses:

- Student related expenses

  - Being the direct costs that related to students and tutors:
    - Printing, production and delivery of tutor marked assignments, computer marked assignments, correspondence, student ID card, handbook and post office box as well as the expenses incurred to arrange students to attend examination

- Tutor related expenses

  - Printing, production and delivery of tutor monitoring form, correspondence, tutor ID card, handbook and post office box

- External examiners

  - Includes airway ticket cost, subsistence allowance, hotel accommodation expenses, fax, telephone and honorarium for external examiners

- Course evaluation

  - Includes materials such as OMR forms, business reply envelope, postage for course evaluation

4. Hire of classroom and examination hall

  - Being rental payment for classroom and examination hall for course presentation and overhead charge such as labour costs for setting up and reinstating the classrooms, equipment charges, etc. For costing and comparison purposes, standard rates have to be calculated for those centres and classrooms provided gratis.

5. Laboratory expenses

  - Being the rental payment, overheads such as technicians and demonstrators working for the laboratories and materials incurred for course presentation

6. Academic staff cost

  - Being the basic salary, allowances, gratuity and retirement fund contribution for academic staff who are responsible for course presentation

7. Office expenses

  - Being the operating expense with comparatively small amount and infrequent occurrence in daily operations

8. Temporary staff

  - Being the salary, overtime pay, commission to agents and all expenses in relation to temporary staff that are necessary for performing general office work

**Indirect costs**

1. Administration staff costs

  - Being the basic salary, allowances, gratuity and retirement fund contribution for staff who are responsible for general administration of OVUM

2. Broadcasting

  - Being the costs for production and broadcasting of multimedia materials for promoting the OVUM through TV or other media. Also include the cost for broadcasting the OVUM course materials through television

3. Publicity

  - Expenses on advertisements on newspapers, journals and magazines, exhibition and seminar costs that include rental, counter set-up, materials used and labour expenses. Also include all other expenses that relate to promotion.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Rent &amp; rates &amp; management fee</td>
<td>Being the rents, rates, management fee, maintenance and repair for campus, regional centres and warehouse. The accessories and peripheral required for the extension of the telephone lines is included in maintenance expenses.</td>
<td></td>
</tr>
<tr>
<td>5. Utilities</td>
<td>Being electricity, gas, water and telephone charges for the campus and study centres</td>
<td></td>
</tr>
<tr>
<td>6. Central store and insurance</td>
<td>Being the centralised purchases of consumables, e.g. stationery, photocopying paper, etc. Insurance includes general insurance for the OVUM including property damage, company car, employee compensation, all risks and contingency insurance.</td>
<td></td>
</tr>
<tr>
<td>7. Equipment maintenance</td>
<td>All tools and parts and consumables and minor equipment and service charges and related expenses for repairing and maintenance of mainframe computer, software, personal computers, laboratory equipment, audio and visual equipment and general office equipment, such as photocopier, fax machines, etc.</td>
<td></td>
</tr>
<tr>
<td>8. Professional fee</td>
<td>Expenses incurred for appointment of auditors, obtaining advice from professional legal advisor and any other legal advice and audit</td>
<td></td>
</tr>
<tr>
<td>9. Consultancy fee</td>
<td>Costs incurred in appointment of consultant including salary, accommodation, medical, overtime, travelling and other related expenses to the consultancy.</td>
<td></td>
</tr>
<tr>
<td>10. Staff recruitment</td>
<td>Advertisement and medical examination fees that relate to the recruitment of staff. Overseas candidates will be provided with airway tickets and hotel accommodation for attending interviews. OVUM staff performing recruitment duties overseas will also be provided with airway tickets, hotel and subsistence allowance.</td>
<td></td>
</tr>
<tr>
<td>11. Student admission and graduation</td>
<td>The production, editing, adaptation and printing costs of prospectus for student admission. Costs also include advertisement, temporary staff, and postage for sending prospectus and information to students, computer service charges. Graduation expenses are those production, editing, adaptation and printing and postage costs for graduation materials. In addition, there will also be costs for hiring and setting up venues for graduation ceremony.</td>
<td></td>
</tr>
<tr>
<td>12. Council meeting expenses</td>
<td>All expenses that are necessary for holding the OVUM council and its sub-committee meetings, such as venue rental, meal expenses, meeting materials, etc. Honorarium, airway ticket and hotel accommodation will also be provided to overseas council members.</td>
<td></td>
</tr>
<tr>
<td>13. Staff development and duty visit</td>
<td>Being the conference/seminar/training fee, airway ticket, accommodation, subsistence allowance and other related expenses paid to staff for the purpose of development and training and duty visits.</td>
<td></td>
</tr>
<tr>
<td>14. Postage</td>
<td>Being the postage expenses used for the purpose of general office operations.</td>
<td></td>
</tr>
<tr>
<td>15. Library materials</td>
<td>Being the subscription fees for new and renewal of books, periodicals, magazines, database and multimedia materials.</td>
<td></td>
</tr>
</tbody>
</table>
which are placed in the library for student usage. Copyright clearance costs will also be included for the electronic versions of the books, periodicals, magazines and articles for the electronic library. For student’s convenience, subscription fee and annual fee will also be paid to outside libraries to obtain the right of using the facilities of these libraries for students’ usage.

| 16. Course validation & review | Expenses paid to outside authorised bodies to validate the courses offered by OVUM |
| 17. Departmental general expenses | Being the daily operating expenses for each department of relatively small amount and frequent occurrence, e.g. travelling expenses, entertainment, etc. |
| 18. Temporary staff | Salary, overtime and commission to agent for temporary staff to perform general office work on a short-term basis |
| 19. Research and development | Include all expenses that relates to the research and development activities |
| 20. Recovery from course development fund | Being the recharge of ETPU’s staff cost to the Course Development Fund for their involvement in developing courses for future presentation |
| 21. Recovery from student loan fund | Being the recharge of staff costs to the Student Loan Fund for their involvement in processing student loan applications and repayments |
| 22. Rental recovery | Being the recharge to individual schools for their usage of tutorial rooms and laboratories for seminars or tutorials for students |
| 23. Printing recovery | Being the recharge to individual departments for their usage of printing services rendered by the Publishing Department |

**Capital/Setup Costs**

<p>| 1. Library equipment | Being the cost for equipment such as microfilm machines, computers, printers, book shelves, and etc. that are to be used in the library |
| 2. Science Laboratories equipment | Being the cost incurred for science laboratories equipment, tools, laboratory materials as well as the installation cost such equipment |
| 3. Multimedia centre | Being the purchase cost and installation charges for multimedia equipment such as overhead projectors, personal computers, television sets, recorders, cameras, etc. that are to be used for both administration and course presentation |
| 4. Fitting out expenses | All expenses and that relate to fitting out the campus and regional centres for administration usages, course presentation and self-studying by students |
| 5. Telephone systems | Being the initial purchase and instalment cost of the telephone systems of the campus and regional centres |
| 6. Information technology centre | Being the purchase and installation cost for mainframe computer and its peripherals, office automation tools such as personal computer, cables, sockets, switch boxes, PC software, printer and its peripherals, modem, mouse, memory cards, and other tools for use in office and computer laboratories |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Motor vehicles</td>
<td>All incidental cost to acquire motor vehicles for the operation of the OVUM</td>
</tr>
<tr>
<td>8</td>
<td>Office equipment and appliances</td>
<td>Being the purchase and installation costs of office equipment and appliances such as photocopier, telephone answering machine, trolley, electricity appliance, shredding machine, binding machine, heavy duty stapler, heavy duty punching machine, typewriter, franking machine, vacuum cleaner, facsimile machine, overhead projector and any other equipment and appliances that are necessary for the operation of OVUM</td>
</tr>
<tr>
<td>9</td>
<td>Furniture</td>
<td>Being the purchase cost of office furniture including office desk, chair, whiteboard, cabinet, racks, blinds, bookshelves, folding tables, computer tables, etc.</td>
</tr>
</tbody>
</table>
INVESTMENT STRATEGY

Formulation of strategy

Having defined the investment objectives, departments may formulate the investment strategy by considering:

- the appropriate types of investment vehicle/instrument and currency that meet the objectives;
- the appropriate asset allocation model if more than one type of investment instrument is selected; and
- whether to manage the funds by in-house or by external fund managers.

Investment vehicle/Instrument

The investment objectives generally dictate the choice of investment vehicles/instruments. Some common types of investment vehicles and the risk associated are described briefly in the following table:

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Reward</th>
<th>Risk Level</th>
<th>Risk Associated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank Deposit</td>
<td>• the most common type of investment</td>
<td>• low</td>
<td>• low</td>
</tr>
<tr>
<td>Negotiable certificate of deposit (CD)</td>
<td>• purchase from secondary market or direct issue from bank</td>
<td>• low</td>
<td>• low</td>
</tr>
<tr>
<td>Exchange Fund bills or notes</td>
<td>• bills with a minimum denomination of HK$500,000 and a life of up to a year, notes can be bought in unit of HK$50,000 with maturity ranging from 1 to 10 years, normal dealing size: HK$1m to 2m</td>
<td>• low</td>
<td>• low</td>
</tr>
<tr>
<td>Placement with the Exchange Fund</td>
<td>Particulars</td>
<td>Reward</td>
<td>Risk Level</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------------</td>
<td>--------</td>
<td>------------</td>
</tr>
<tr>
<td>• normal dealing size: HK$100m</td>
<td>• low</td>
<td>• low</td>
<td>• nil</td>
</tr>
<tr>
<td>• maturity normally not shorter than 1 month.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• interest rates based upon the prevailing interbank rates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equities</td>
<td>• primary market: direct placement of the shares from the company to the public</td>
<td>• high</td>
<td>• medium to high</td>
</tr>
<tr>
<td></td>
<td>• secondary market: trading of shares in the Stock Exchange</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• investment in Funds that holds securities</td>
<td>• high</td>
<td>• medium to high</td>
</tr>
<tr>
<td></td>
<td>• diversification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Trust / Mutual funds</td>
<td>• investment in Funds that holds securities</td>
<td>• high</td>
<td>• medium to high</td>
</tr>
<tr>
<td></td>
<td>• diversification</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Diversification and hedging

In general, the risks in investments can be properly reduced by ways of diversification and hedging:

- As markets do not all normally move in tandem, and there are periods when one investment will perform better than another, therefore, diversification by investment, by maturity, by counterparty, and/or by geographical location will help to spread the risk.
- Hedging is a strategy designed to reduce investment risk using certain financial instruments. A hedge can help lock-in existing profits. Its purpose is to reduce the volatility of a portfolio, by reducing the risk of loss. For example, financial instruments that could be held to manage interest rate and foreign currencies exposures for hedging purposes include interest rate swap agreements, forward exchange contracts, foreign currency swap agreement and options.

**ASSET ALLOCATION**

A key area of risk management is asset allocation. This involves defining the proportions of the fund to be placed in different types of investment vehicles, such as equities, bonds, deposits, etc., and/or different currencies in order to balance risk and return and to meet the overall investment objective of the fund.
In general:

- the portfolio of a long-term growth and risk-taking fund, which can tolerate volatility of returns, may include a large percentage of equities and mutual funds and a relatively small portion of bonds and cash deposits; and
- for a short-term fund with high cash flow requirement, equities will likely be excluded and the portfolio may consist of bonds, certificates of deposit and cash deposits only.

However, if the fund managed by a department is small, diversification by investment type to reduce risk may not be practicable and the choice of investment is likely to be limited to fixed income instruments only.

**Four typical asset allocation models** and the types of fund for which these models could be assigned are illustrated below. The four models, which are not exhaustive, could be used for different types of fund and of course could be used with some modifications:

**Model A ('Growth')**

<table>
<thead>
<tr>
<th>Investment Types</th>
<th>Target Weighting</th>
<th>Tactical Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equities, Mutual Funds</td>
<td>60%</td>
<td>45% to 75%</td>
</tr>
<tr>
<td>Long term: one year or over Bonds, CDs, Deposits</td>
<td>30%</td>
<td>22% to 38%</td>
</tr>
<tr>
<td>Short term: less than one year Bonds, CDs, Deposits, Cash</td>
<td>10%</td>
<td>Any</td>
</tr>
</tbody>
</table>

It would be suitable for a fund which has long-term objectives, and which uses investment income to supplement other forms of income, or for one reason or another does not need immediate return from the investments. Where investment is successful, the fund could perhaps improve its activities in quantity or quality at some time in the future. The investment approach here may be considered more ‘risk-taking’.

**Model B ('Growth and Income')**

<table>
<thead>
<tr>
<th>Investment Types</th>
<th>Target Weighting</th>
<th>Tactical Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equities, Mutual Funds</td>
<td>40%</td>
<td>30% to 50%</td>
</tr>
<tr>
<td>Long term: one year or over Bonds, CDs, Deposits</td>
<td>40%</td>
<td>30% to 50%</td>
</tr>
<tr>
<td>Short term: less than one year Bonds, CDs, Deposits, Cash</td>
<td>20%</td>
<td>Any</td>
</tr>
</tbody>
</table>

It would be suitable for a fund which has similar long-term objectives, but which is likely to be more dependent on investment income. The fund needs some income in the early years to fulfil its primary purpose. This demands an investment approach which generates some growth in the value of the fund to ensure it can perform in the long term whilst producing some current income as well. Obviously, this income yield cannot be very high.
Model C (‘Income’)

<table>
<thead>
<tr>
<th>Investment Types</th>
<th>Target Weighting</th>
<th>Tactical Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equities, Mutual Funds</td>
<td>20%</td>
<td>15% to 25%</td>
</tr>
<tr>
<td>Long term: one year or over Bonds, CDs, Deposits</td>
<td>40%</td>
<td>30% to 50%</td>
</tr>
<tr>
<td>Short term: less than one year Bonds, CDs, Deposits, Cash</td>
<td>40%</td>
<td>25% to 55%</td>
</tr>
</tbody>
</table>

It would suit a fund whose activities are shorter term, say, seven to ten years. Here, inflation is of less concern, and maximising current yield is the important investment criterion. A small amount of the fund is allocated for growth.

Model D (‘Cash’)

<table>
<thead>
<tr>
<th>Investment Types</th>
<th>Target Weighting</th>
<th>Tactical Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long term: one year or over Bonds, CDs, Deposits</td>
<td>40%</td>
<td>30% to 50%</td>
</tr>
<tr>
<td>Short term: less than one year Bonds, CDs, Deposits, Cash</td>
<td>60%</td>
<td>50% to 70%</td>
</tr>
</tbody>
</table>

It would suit a short-term fund, say up to 7 years. Risk avoidance is the main criterion and a reasonably good yield is required.

Departments should note that asset allocation may change, either accidentally due to changing market values, or deliberately to reflect changing circumstances. Models need to be reviewed on a yearly basis.

The currency exposure should also be considered carefully. As a guideline, no more than 30% of the fund assets should be exposed to currencies other than HK$/US$. Exposure to any individual currency other than HK$/US$ should not exceed 5% of the fund assets and exposure to currencies not freely convertible should be zero.

**PERFORMANCE MEASUREMENT**

Departments are advised to evaluate the performance of the investment portfolio to determine whether the investment objectives are met on a regular basis. The performance can be measured against some benchmarks that can reflect the investment objectives of the fund. Common benchmarks include:

- a fixed rate of return
- a three-month Hong Kong Interbank Offer Rate
- an inflation related index, and
- an equity/bond index related measure

In particular, the investment performance in mutual funds should be reviewed against the performance of similar funds in the industry.
REPORTS TO MANAGEMENT

Regular management reports should be submitted to the department head, Investment Advisory Committee, and/or approving authority from time to time. The frequency and details may be specified by the approving authority or its delegates as appropriate. The reports generally include:

- the consolidated funds position
- the investment results for the period
- comparison of the current performance with the targets or benchmarks already set, and explanations/comments on significant differences
- projections and/or market outlook
- highlight of exceptions or confirmation of full compliance to the approved Investment Guidelines.
APPENDIX 13: FINANCIAL PROJECTIONS

Student Credit Projection

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Scenario (students are assumed to take 12 credits per semester)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit / Student</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Annual rate of increase</td>
<td>100%</td>
<td>50%</td>
<td>27%</td>
<td>13%</td>
</tr>
<tr>
<td>No. of course places</td>
<td>1,700</td>
<td>3,400</td>
<td>5,100</td>
<td>6,500</td>
</tr>
<tr>
<td>No. of credits</td>
<td>40,800</td>
<td>81,600</td>
<td>122,400</td>
<td>156,000</td>
</tr>
<tr>
<td><strong>Medium Scenario (An average of High and Low Scenario)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit / Student</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Annual rate of increase</td>
<td>100%</td>
<td>50%</td>
<td>27%</td>
<td>13%</td>
</tr>
<tr>
<td>No. of course places</td>
<td>1,700</td>
<td>3,400</td>
<td>5,100</td>
<td>6,500</td>
</tr>
<tr>
<td>No. of credits</td>
<td>30,600</td>
<td>61,200</td>
<td>91,800</td>
<td>117,000</td>
</tr>
<tr>
<td><strong>Low Scenario (students are assumed to take only 6 credits per semester)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit / Student</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Annual rate of increase</td>
<td>100%</td>
<td>50%</td>
<td>27%</td>
<td>13%</td>
</tr>
<tr>
<td>No. of course places</td>
<td>1,700</td>
<td>3,400</td>
<td>5,100</td>
<td>6,500</td>
</tr>
<tr>
<td>No. of credits</td>
<td>20,400</td>
<td>40,800</td>
<td>61,200</td>
<td>78,000</td>
</tr>
</tbody>
</table>
**Direct Cost %**

Assumption:
1. For planning purpose, a macro view is to be used.
2. The historical figures (% to income) of OLI/OUHK are used as a base.

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor fee</td>
<td>2.9%</td>
<td>2.8%</td>
<td>2.7%</td>
<td>2.6%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Course materials</td>
<td>50.0%</td>
<td>25.0%</td>
<td>15.0%</td>
<td>15.0%</td>
<td>15.0%</td>
</tr>
<tr>
<td>Course related expenses</td>
<td>2.0%</td>
<td>1.9%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Classroom expenses</td>
<td>2.2%</td>
<td>2.0%</td>
<td>1.9%</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Laboratory expenses</td>
<td>1.4%</td>
<td>0.6%</td>
<td>0.6%</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Academic staff costs</td>
<td>13.9%</td>
<td>11.9%</td>
<td>10.0%</td>
<td>9.5%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Office expenses</td>
<td>1.0%</td>
<td>1.5%</td>
<td>1.0%</td>
<td>1.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Total Direct Cost %</td>
<td>73.4%</td>
<td>45.7%</td>
<td>32.6%</td>
<td>32.1%</td>
<td>31.0%</td>
</tr>
</tbody>
</table>
**Indirect Cost %**

Assumption:
1. For planning purpose, a macro view is to be used.
2. The historical figures (% to income) of OLI/OUHK are used as a base.
3. For calculation purpose, indirect cost is to be constant in the three scenarios.

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin staff costs</td>
<td>53.5%</td>
<td>25.4%</td>
<td>16.4%</td>
<td>12.6%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Publicity</td>
<td>20.0%</td>
<td>7.5%</td>
<td>4.0%</td>
<td>3.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Rent &amp; rates &amp; mgt fee</td>
<td>7.0%</td>
<td>7.0%</td>
<td>7.0%</td>
<td>7.0%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Utility</td>
<td>1.7%</td>
<td>1.3%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Central store &amp; insurance</td>
<td>0.1%</td>
<td>0.8%</td>
<td>0.3%</td>
<td>0.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Equipment maintenance</td>
<td>0.0%</td>
<td>0.8%</td>
<td>0.9%</td>
<td>0.9%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Professional fee</td>
<td>0.6%</td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Consultancy</td>
<td>5.0%</td>
<td>5.0%</td>
<td>2.2%</td>
<td>2.2%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Staff recruitment</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Student admission &amp; graduation</td>
<td>3.8%</td>
<td>2.5%</td>
<td>1.2%</td>
<td>1.5%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Council meeting expenses</td>
<td>0.7%</td>
<td>0.5%</td>
<td>0.4%</td>
<td>0.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Staff development &amp; duty visit</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Postage</td>
<td>0.0%</td>
<td>0.2%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Library materials</td>
<td>5.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Course validation &amp; review</td>
<td>0.0%</td>
<td>0.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Departmental general expenses</td>
<td>2.8%</td>
<td>0.7%</td>
<td>0.9%</td>
<td>0.4%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Temp staff</td>
<td>1.4%</td>
<td>1.0%</td>
<td>1.3%</td>
<td>1.1%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Total Indirect Cost %</td>
<td>105.6%</td>
<td>62.3%</td>
<td>45.2%</td>
<td>40.0%</td>
<td>36.9%</td>
</tr>
</tbody>
</table>
**Setup Cost %**

Assumption:
1. For planning purpose, a macro view is to be used.
2. The historical figures (% to income) of OLI/OUHK are used as a base.
3. For calculation purpose, setup cost is to be constant in the three scenarios.

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library</td>
<td>100.0%</td>
<td>50.0%</td>
<td>25.0%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Laboratory equipment</td>
<td>20.0%</td>
<td>10.0%</td>
<td>7.5%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Multi-media centres</td>
<td>75.0%</td>
<td>100.0%</td>
<td>50.0%</td>
<td>10.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Fitting out expenses</td>
<td>75.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Telephone systems</td>
<td>6.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Information technology centre</td>
<td>150.0%</td>
<td>100.0%</td>
<td>75.0%</td>
<td>10.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Motor vehicle</td>
<td>1.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Office equipment &amp; appliance</td>
<td>50.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Furniture</td>
<td>50.0%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
## High Enrollment Projection

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of students</td>
<td>1,700</td>
<td>3,400</td>
<td>5,100</td>
<td>6,500</td>
<td>7,350</td>
</tr>
<tr>
<td>Annual Fee per Student (M$)</td>
<td>2,711</td>
<td>2,866</td>
<td>2,969</td>
<td>3,050</td>
<td>3,082</td>
</tr>
</tbody>
</table>

### Income

<table>
<thead>
<tr>
<th>Income Source</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition Fee Income</td>
<td>4.6</td>
<td>9.7</td>
<td>15.1</td>
<td>19.8</td>
<td>22.7</td>
<td>72.0</td>
</tr>
<tr>
<td>Other Income</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>1.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Total Income</td>
<td>4.7</td>
<td>9.9</td>
<td>15.4</td>
<td>20.2</td>
<td>24.4</td>
<td>74.7</td>
</tr>
</tbody>
</table>

### Direct costs

<table>
<thead>
<tr>
<th>Direct Costs Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor fee</td>
<td>0.1</td>
<td>0.3</td>
<td>0.4</td>
<td>0.6</td>
<td>0.6</td>
<td>2.0</td>
</tr>
<tr>
<td>Course materials</td>
<td>2.4</td>
<td>2.5</td>
<td>2.3</td>
<td>3.0</td>
<td>3.7</td>
<td>13.8</td>
</tr>
<tr>
<td>Course related expenses</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Classroom expenses</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Laboratory expenses</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Academic staff costs</td>
<td>1.4</td>
<td>2.0</td>
<td>2.4</td>
<td>2.7</td>
<td>3.0</td>
<td>11.5</td>
</tr>
<tr>
<td>Office expenses</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.8</td>
</tr>
<tr>
<td>Total Direct costs</td>
<td>5.7</td>
<td>7.3</td>
<td>8.2</td>
<td>10.1</td>
<td>11.4</td>
<td>42.7</td>
</tr>
</tbody>
</table>

### Indirect costs

<table>
<thead>
<tr>
<th>Indirect Costs Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin staff costs</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
<td>18.3</td>
</tr>
<tr>
<td>Publicity</td>
<td>0.9</td>
<td>0.7</td>
<td>0.6</td>
<td>0.6</td>
<td>0.5</td>
<td>3.4</td>
</tr>
<tr>
<td>Rent &amp; rates &amp; mgt fee</td>
<td>0.3</td>
<td>0.7</td>
<td>1.1</td>
<td>1.4</td>
<td>1.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Utility</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Central store &amp; insurance</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Equipment maintenance</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.6</td>
</tr>
<tr>
<td>Professional fee</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Consultancy</td>
<td>0.2</td>
<td>0.5</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Staff recruitment</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Student admission &amp; graduation</td>
<td>0.2</td>
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### Laboratory equipment

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## Medium Enrollment Projection

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## Low Enrollment Projection

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APPENDIX 14: GUIDELINES FOR PREPARING DOCUMENTATION FOR APPROVAL AND ACCREDITATION OF COURSES OFFERED BY PRIVATE INSTITUTIONS OF HIGHER EDUCATION (JAN 1998)

SECTION I

LAN’s role is to recommend to the Minister to approve or reject an application to offer a course of study. LAN will ensure that documentations are complete and will then appoint a panel of assessors. Documentations required:

1. Information regarding course
2. “ “ teachers
3. “ “ each subject
4. “ “ facilities
5. “ “ management
6. Rationale for offering the course

On the basis of the above, LAN’s responsibility is to advise the Minister if the proposed course meets LAN’s minimum standard. At the point of initial approval the institution may not meet all the requirements e.g. all teaching staff in place, buildings and physical infrastructure. But once the course begins all must be in place.

SECTION II

Information regarding course of study:

1. Name of Course
   Eg. Bachelor of Commerce

2. Level
   Bachelor’s degree

3. Language of Instruction
   English
4. **Period of Study**
   3 years (6 semesters)

5. Breakdown of Major, Minor and Elective courses and their breakdown by credit units and percentage.

6. **Credit requirement for graduation**
   Eg. BA 120 units, Diploma/Certification

**SECTION III: INFORMATION REGARDING TEACHING STAFF**

1. **Overall information of teachers in the programme:**
   
   Name/Designation/Permanent, Contract or Temporary/Nationality/Academic qualification/University/Year of Award/Experience, Employer/s, Length of Service/Professional involvement of teachers.

2. **Information on each teacher:**

   Name/Status of Employment/Qualifications/Research, Consultancy and publications/other academic and/or professional involvement.

**SECTION IV: INFORMATION REGARDING ALL SUBJECTS**

1. **Information re all subjects:**
   
   Name of subject/Code/Level (Major or Minor or Elective or Compulsory)/Credit Units/Teacher/Total No. of subjects, credit units and teachers.

2. **Information re each subject:**

   Name/Code/Status/Level/Credit Units/Pre-requisites/Assessment/Teaching staff/Semester/Objective of subject/Synopsis/Course outline and No. of hours/Reference.

**SECTION V: INFORMATION RE PHYSICAL FACILITIES**

1. **Teaching/Learning Rooms**
   
   Lecture halls, tutorial rooms, laboratories with relevant equipment

2. **Facilities for reference work (Library)**
   
   (i) In accordance with international systems
   
   (ii) Adequate collection
   
   (iii) Relevant journals
   
   (iv) Adequate reference materials
SECTION VI: INFORMATION RE MANAGEMENT OF COURSE

1. Method of delivery in detail

2. Curriculum Development
   Mechanism, process, bodies

3. Student Assessment
   Marking scheme/Assessment procedures

4. Explain how teaching and assessment is carried out. This includes how teaching materials and assessment are developed, usage, method of improvement, safety and confidentiality of examinations.

5. Academic records management
   Includes system of recording student admission, registration of subjects, marks and grades, attendance, requirements to sit for exams, student appeal and academic record information system.

6. Management of Student Affairs
   How student non-academic life is managed.
   Eg. Student Assistance service, academic counselling, guidance and counselling, management of practices.

7. Staff Development
   How this is managed. How staff are appointed. Opportunities for professional development.

SECTION VII: RATIONALE FOR OFFERING COURSE

Justification in detail:

1. Contribution of knowledge to mankind

2. Contribution to manpower requirements

3. Demand