MEMBERS OF THE BOARD OF THE FACULTY OF LIFE AND PHYSICAL SCIENCES

ITEM FOR CONSIDERATION BY CIRCULAR

The following item require members’ endorsement. **Members are requested to advise me in writing by Monday 11th 2008** if they have any objection to the circulated item being approved.

If no comments/suggestions/objections are received by noon on that day, the item will be processed in the normal way and the recommendation will be recorded as a resolution in the next set of minutes.

Imelda Ooi
Administrative Officer

1. **DIRECT ADMISSION FOR A STUDENT FROM THE SECOND HIGH SCHOOL ATTACHED TO BEIJING NORMAL UNIVERSITY (SHSBNU) REF:**

Currently, high school students seeking admission to the University are required to complete a Foundation Year prior to admission to their chosen degree course. In April 2006, the Admissions Committee considered a request from the Faculty of Engineering, Computing and Mathematics (FECM), for students who were ranked in the top 1% of Gao Kao (also known as the National University Entrance Examination, and is a standardized nationwide examination that determined students’ admission into higher education institutions in the People’s Republic of China [PRC]), be given direct entry to the first year courses offered by FECM. Details of Gao Kao and an extract from the Minutes of this meeting are attached (Attachment A and B). The proposal submitted by FECM was not supported on the basis that it would be difficult to identify the top 1% as a result of difficulties with Gao Kao.

The Dean would like a case to be put forward to the Admissions Committee for a student from a strong Science high school in the People’s Republic in China to be considered for direct admission to the Bachelor of Science. In 2007, Ms Yueming (Kelly) Sun undertook the Short Term Study Program which she enjoyed and subsequently contacted the University seeking financial support for her studies. The Vice-Chancellor agreed to fund a scholarship for Ms Sun on the basis that she was a strong student from a secondary school that has produced many winners of national and international Olympics in mathematics, physics, chemistry and biology. Details of the School and academic achievements of the student are detailed in the attached (Attachment C).

The Admissions Committee has confirmed that students who have completed the Gao Kao in Mathematics, Chemistry and Physics would be considered as having completed TEE Chemistry, Physics and Mathematics. Although Ms Sun will have met the TEE prerequisites for the units that she will undertake in first year, Ms Sun still needs to meet the English Language requirements before she can be admitted to the Bachelor of Science.

*The Dean recommends that the proposal for Ms Yueming (Kelly) Sun to be admitted directly to the Bachelor of Science be endorsed, and forwarded to the Admissions Committee for approval.*
Background Paper

ACCEPTANCE OF GAOKAO (NATIONAL UNIVERSITY ENTRANCE EXAMINATION) STUDENTS FROM CHINA

The Gaokao or also known as the National University Entrance Examination is taken nationwide in China. The Gaokao was restored in 1977 after the Cultural Revolution. Over the years, it underwent a number of reforms, aimed at making the test fairer and more objective. Today, the Gaokao is a standardized nationwide examination which helps to determine students' entry to higher education institutions.

The most common medium of instruction used in educational institutions at all levels in China is Putonghua (Mandarin), the spoken language of the majority Han ethnic group. However, considerable emphasis is placed on foreign language study. In fact, foreign language instruction can begin as early as Grade 4 in urban schools and continues through the school years, and the National University Entrance Examination (Gaokao) requires one paper in a foreign language, in addition to three compulsory subjects namely, Chinese, Mathematics and politics.

The diagram below shows the qualification structure in the Chinese educational system.
In order to sit for the Gaokao students must achieve a specified level of academic achievement in a senior secondary school and satisfy certain political and health requirements. Following successful completion of the National University Entrance Examination students then compete or entry into a four-year Bachelor degree program in any of the Universities in China.

It has been proposed that Chinese students achieving the top 1% in the National Entrance Examination be accepted for direct entry to the first year Engineering course in the Faculty of Engineering, Computing and Mathematics at UWA.

However, there are a number of important issues that must be considered to ensure the transparency and comparability of the University’s Admissions decision.

**Comparability**

UWA relies heavily on the guidance provided by standard independent assessment authorities such as the AEI-NOOSR (Australian Education International – National Office Overseas Skills Recognition) and the UK NARIC (National Academic Recognition Information Centre) to assess comparability of all overseas qualifications.

According to UK NARIC, the Gaokao is assessed as being comparable to the educational level of GCE Advanced Subsidiary (AS) level only. This in turn is assessed as being comparable to an Australian Year 11 standard. UWA does not admit students on the basis of AS level qualification only. This would be inconsistent to UWA’s admission policy, no matter how good the student is.

Since the Gaokao, as an overall qualification, is not considered equivalent to the educational level of an Australian Year 12 Award, UWA requires a level higher than the Gaokao for entry into any of its undergraduate courses. Hence, successful completion of the first year of University study towards a four-year degree programme in China (or completion of an Australian Foundation programme from one of the Group of eight universities) is considered as the minimum qualification required for consideration for admissions into UWA’s undergraduate courses.

In one of the attached e-mail correspondences, Yinong notes that ‘a typical engineering course at UWA consists of 28~30 lecture units and 1170 lecture hours [whereas] a typical BE course in China consists of >2000 lecture hours. A teaching semester has 17~18 weeks. Typically a week contains ~30 lecture hours’. Despite this, according to both UK NARIC and AEI-NOOSR a completed four-year University Bachelor pass degree from a recognised institution in China is assessed as being comparable to the educational level of an Australian three-year Bachelor degree. The extra year in the Chinese degree is internally consistent with UWA’s view that Gaokao students should undertake a foundation year before seeking admission to a Bachelor degree programme at this University.

It should be noted that a qualification regarded as being ‘University readiness’ within the Chinese context, cannot be taken to translate the same in the UWA context. Therefore, I cannot agree with your view that ‘students who are accepted by top universities in China (Zhong Shan University, Beijing University, Zhejiang University, Harbin Institute of Technology, Dalian University of Technology, Qinghua University, Nanjing University, South China University of Technology, Shanghai Jiao Tong University, Tong Jie University, Fudan University or universities of similar standing)’ should be treated in the same way by UWA.

**Prerequisites versus Overall Comparability**

Matters relating to prerequisites are indeed a separate issue to that of the overall basis of admission. Satisfying prerequisites for entry into particular UWA courses does not necessarily mean that one has also met the overall basis of admission. The latter is premised on UWA’s recognition policy of an overseas qualification in total rather than on an assessment of individual components of that qualification. In other words, the overall comparability of the qualification is what matters the most. Faculty prerequisites are an additional requirement over and above the basic eligibility criteria for admissions.
Although the Gaokao Mathematics, Chemistry and Physics syllabi are viewed, as pointed by Les Jennings, as being sufficient for entry into UWA Engineering, research indicates that the overall comparability of the qualification is not sufficient for admissions into UWA.

Admission Policies of other Universities
The proposal presents interesting information on the way in which other Universities such as Oxford University, University of Toronto and Adelaide University, treat the Gaokao.

While such data may be used for the interest of comparison, UWA does not formulate admission policy on the basis of what other institutions do, however prestigious they may be. To take the argument to a logical conclusion – the Oxford University example does not seem to require proof of English Language Competence (IELTS being optional). Should UWA follow suit?

Further, it would be problematic in that the admission requirements and process vary significantly across universities. For instance, while academic merit forms the primary basis for admission at UWA, the selection procedures at Oxford University involve, among other indicators, an academic interview process. The fundamental difference in the overall selection procedures across universities automatically disqualifies the argument that UWA should follow the pathways adopted by other highly regarded universities in the treatment of Gaokao as an acceptable form of qualification of undergraduate admissions.

Moreover, although universities (such as Oxford University or the University of Toronto) often publish minimum educational attainment, the competitive nature of admissions often means that in practice few of these students are actually successful in gaining a place (UWA admission to TAFE Diploma holders being a prime example).

Third, there is no logical basis for UWA to draw references from the selection procedures of other Universities. To ensure consistency, UWA has always relied on standard independent assessment sources such as the AEI-NOOSR and the UK NARIC which are both specialised units that conduct extensive independent research and present an informed opinion on overseas qualification.

Measuring Academic Performance
It is largely unclear as to how UWA would measure the academic performance in the Gaokao to determine if an applicant is in the top 1% of students. Careful consideration should be given to the following questions:

- How would we identify such top-ranked students?
- Where would a reasonable cut-off lie, that could be applied reliably and not just to the proposed individual case or based on individual observations to date, but with reasonable confidence to all such similarly placed students from other countries as well as domestic students with similar overseas qualification seeking admissions into other UWA courses?
- How would we define, in detail, ‘appropriate academic performance’ for such high achieving students – in relation to specific subjects, for example?

Failure to adequately address these questions and not having an element of consistency in the assessment of overseas qualification could raise serious equity issues for UWA.

While UWA is keen to operate with reasonable flexibility in respect of admission policy, a key consideration is the maintenance of internal consistency and robust admission standards based on the clear comparability of various qualifications, both internationally and locally.

It would appear from expert assessment that there has been a sound basis for the exclusion of the Gaokao as an admission qualification to date, hence the requirement for the Gaokao students to undertake a foundation year to qualify for UWA entry.
EXTRACT OF MINUTES OF A MEETING OF THE ADMISSIONS COMMITTEE HELD
ON TUESDAY, 18 APRIL 2006 IN THE SENATE ROOM AT 2.15PM

8. ACCEPTANCE OF GAO KAO (NATIONAL ENTRANCE EXAMINATION)
STUDENTS FROM THE PEOPLE’S REPUBLIC OF CHINA – REF: F14422

The Gaokao, also known as the National University Entrance Examination, is a standardized
nationwide examination that determined students’ admission into higher education institutions in
the People’s Republic of China (PRC).

The Faculty of Engineering Computing and Mathematics had proposed a change to UWA’s
Admission requirements in that students (mainly international) who were ranked in the top 1% of
Gaokao be given direct entry to the first year course within the Faculty of Engineering, Computing
and Mathematics (see Agenda Attachment E1). The following arguments were presented in
support of such a recommendation:

- that other reputable universities (such as Oxford University) considered the possibility of
offering direct entry to Chinese students who achieved or were predicted to achieve in the top
1% of the Gaokao exam; and
- that Gaokao Mathematics, Chemistry and Physics syllabi were adequate as pre-requisites for
entry into UWA Engineering

In the Chair’s memo to the Faculty, dated 24 February 2006, it was noted that the proposed
recommendation could have wider implications for the University’s Admission policy. The key
areas of concern related to the following:

- Comparability
According to UK NARIC (National Academic Recognition Information Centre), a standard
independent assessment authority, the Gaokao was assessed as being comparable to the
educational level of GCE Advanced Subsidiary (AS) level. This in turn was assessed as being
comparable to the educational level of an Australian Year 11 award. Since the Gaokao was not
considered comparable to the educational level of an Australian Year 12 Award, UWA required a
level higher than the Gaokao for entry into any of its undergraduate courses. Hence, successful
completion of the first year of University study towards a four-year degree programme in the PRC
(or completion of an Australian Foundation programme from one of the Group of eight universities)
was considered as the minimum qualification required for consideration for admission into UWA’s
undergraduate courses.

- Prerequisites versus Overall Comparability
Although the Gaokao Mathematics, Chemistry and Physics syllabi were generally viewed as being
sufficient for entry into UWA Engineering, research indicated that the overall comparability of the
qualification was not sufficient for admissions to UWA. Satisfying prerequisites for entry into
particular UWA courses does not necessarily mean that one had also met the overall basis for
admission. The latter was premised on UWA’s recognition policy of an overseas qualification in
total rather than on an assessment of individual components of that qualification.

- Admission Policies of other Universities
Although some high ranking universities (such as Oxford University or the University of Toronto)
often publish minimum educational attainment, the competitive nature of admissions to prestigious
institutions meant that in practice few of these students are likely to be successful in gaining a
place. Furthermore, UWA does not formulate admission policy on the basis of what other
institutions do, however prestigious they may be.
• Measuring Academic Performance
It was largely unclear as to how UWA would measure the academic performance in the Gao Kao to determine if an applicant was in the top 1% of students. Careful consideration should be given to the following questions:
  ➢ Where would a reasonable cut-off lie, that could be applied reliably and not just to the proposed individual case or based on individual observations to date, but with reasonable confidence to all such similarly placed students from other countries as well as domestic students with similar overseas qualification seeking admissions into other UWA courses?
  ➢ How would we define, in detail, ‘appropriate academic performance’ for such high achieving students – in relation to specific subjects, for example?

Further, the identification of such top-ranked students would also be problematic due to a number of difficulties associated with Gao Kao. Drawing from the views of a long-time expert in Chinese education, Mr David Burns (Director of Development – University Pathway Programs, Taylors College, Melbourne), the following difficulties were cited:

• Developing a system for assessing the application
  Basing university entry purely on the student’s certificate of “Gao Kao” results (i.e. the examination performance) could be unreliable since one may be faced with the unfortunate issue of fraudulent documentation. Arguably, it was still the case in many areas in the PRC and that it is possible to purchase almost any document that was required.

• “Learning Style” in the PRC
  Arguably, the “learning style” in the PRC was highly teacher-centred and “dependent”. Arguably, the system produced students who “knew” a lot, but many do not really “understand” what they know. A general view was that many students may be seriously lacking in what Australian Universities call “generic skills”.

• English Proficiency
  The third issue with Chinese students seeking direct entry to Australian universities was their English proficiency. The Chinese have actually developed a system for “dependent learning” of IELTS. The most popular IELTS School, “New Oriental” gets its teachers to continually sit components of IELTS tests, and then memorise what they were tested on. Students may be cram taught all the possible variations of questions that they might get in the actual test. This often resulted in students coming out of China with an IELTS score of 6 or 6.5, but an English proficiency level that was much lower.

RESOLVED – 7
To recommend to Academic Council that:
• students ranked in the top 1% of Gao Kao be not given direct entry to the first year course within the Faculty of Engineering, Computing and Mathematics; and
• Gao Kao students be required to undertake a foundation year to qualify for UWA entry.
The Second High School Attached to Beijing Normal University

The Second High School Attached to Beijing Normal University (SHSBNU) was founded in 1953. It is a key high school of Beijing municipality and one of the first model schools of Beijing Education Commission. Senior students attend classes at Beijing Normal University and many carry out science projects under the supervision of staff at BNU.

The school has an outstanding performance in teaching, in subject competitions and in the national university entrance examinations. Over 90% of its graduates enter the top ranked Chinese Universities and many go overseas, particularly to the USA. The school has graduated a number of the top ranked students in the national college entrance examination, and has produced many winners of the national and international Olympics in mathematics, physics, chemistry and biology.

The school was one of the first Chinese high schools to admit overseas students and since 1968 more than 30,000 overseas students, teachers and researchers have worked or studied at the school.

The school has built good relationships with sister schools in the United States, Japan, Australia, Singapore, Russia, England, and South Africa. There are ongoing discussions that will link the school with Shenton College.

Yueming SUN

According to the principal of the School Yueming is one of their top students in science. She was one of the winners of the UWA prize at the Beijing Youth Science Creation Festival in 2007. Over 4,000 high school students took part in the competition. The prize was two weeks in WA during which she carried out a small project in microbiology. Yueming impressed everyone she had contact with. Listed below are some of the prizes she has won in science and technology competitions.
1. Third prize of “Tomorrow Young Scientist” Science Competition, November, 2007;
2. “Excellent” (highest) Level of Beijing Teenager Science and Technology Club Evaluation (Reviewed by 14 professors, including CAS academicians), October, 2007;
3. Certificate of short-term study program, Discipline of Microbiology, Faculty of Life and Physical Science, the University of Western Australia, July, 2007;
5. First prize of Beijing Youth Science Creation Competition, March, 2007;
6. Agilent Youth Science and Technology Talent Award of Beijing Youth Science Creation Competition, March, 2007;
7. Third prize of 2006 National English Proficiency Contest for secondary students, December, 2006;