

A LAND SURVEYOR'S REGISTRATION

COURSE AT UNITECH ???

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Department of Surveying and Land Studies

PNG Univ. of Technology

PAPER FOUR

BACKGROUND:

Papua New Guinea is a land of vast contrasts. The topography varies from incredibly steep mountain ranges to extensive coastal plains, the climate ranges from "eternal spring" in some areas of the highlands to scorching heat in the lowlands. With some 300 distinctly identifiable languages, the people have a variety of cultural heritages that is unique in the world, leading to some complexities in attempts to adopt "western" style concepts of land ownership and economic matters. Notwithstanding their cultural diversity, Papua New Guineans maintain a national pride that is the envy of many nations.

The two principal tertiary institutions in the country are the University of Papua New Guinea (UPNG) in the national capital Port Moresby and the Papua New Guinea University of Technology (Unitech) near Lae on the northern coast of the main island. UPNG is a "traditional" university with a comprehensive curriculum in many areas of study, while Unitech, as its name would suggest, concentrates more on technology based disciplines. Degree courses in surveying, cartography and land management are conducted only at

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Upon completion of their Bachelor of Technology, surveyors who wish to pursue a career in cadastral survey seek indenture under a Registered surveyor for two years. During this training period they may submit to the Papua New Guinea Surveyors Board 4 projects for examination by the Board. Upon approval of these projects the surveyors undertake a practical examination and an oral examination and then may apply for Registration by the Board.

INTRODUCTION:

The proposal of a Graduate Registration course for Land Surveyors in Papua New

Guinea is not new. The potential was explored in private conversations between surveyors during the early 1980's and has been discussed on numerous occasions in the years since the introduction of the Survey Practice Course by the Queensland University of Technology.

The need for such a course in Papua New Guinea is obvious: Government Departments and private surveying companies alike are encumbered with numerous graduates from Unitech who, while employed in substantially cadastral operations, have not proceeded to Registration. After some years of experience many of these graduates have been elevated to more senior roles, often on an acting basis, without having achieved the pre-requisite qualification necessary to proceed in the ranks of Registered Surveyors.

One does not expect 100% to become Registered, as there are many surveying fields where Registration would be irrelevant, such as mining, civil engineering construction and geophysical exploration. But one would expect that in a country with such a need for Registered surveyors, that at least 50% would pursue Registration diligently enough to achieve it.

Why such a low percentage of these surveyors proceed on to achieve Registration is not known for certain, but it is suggested the reasons may be socio-economic in nature. For instance:

1. Graduates receive a large increase in personal income upon employment after graduation and may be content with the income level achieved.
2. The return for the additional effort required to achieve Registration may not be sufficient to promote the required ambition.
3. The increase in social standing upon employment after graduation is substantial. Graduates may see themselves as complete, not students who are still only part way along the path to professional qualification.

Whatever the reasons, the percentage of surveyors proceeding on to Registration after

graduation is too low in a country in dire need of Registered surveyors to perform their part in the ongoing process to bring under a registration scheme the 97% of land currently held under unregistered customary ownership.

THE QUEENSLAND MODEL

The Queensland University of Technology currently offers a Graduate Diploma in Surveying Practice (refer Q.U.T.). The course is open to applicants who are surveying graduates of the Queensland University of Technology, Queensland University or who hold, from another tertiary institution, a degree acceptable to the Surveyors Board of Queensland and which is at least equivalent to the Bachelor of Applied Science at the Queensland University of Technology. The major objectives of this course are:

1. To prepare surveying graduates for registration by the Surveyors Board of Queensland with an endorsement to perform cadastral surveys (this is similar to registration by the Surveyors Board of Papua New Guinea).
2. Further develop the practical skills and knowledge gained from a surveying bachelor degree and tailor this towards the practice of surveying.
3. Develop a knowledge and understanding of the managerial and administrative aspects of the practice of surveying.
4. To broaden the view of the practice of surveying beyond its technical requirements and to understand the extent of services provided to the community by the surveying profession.
5. To enhance the ability to communicate effectively to ensure that the role of surveyors is properly understood in working with other professions and to develop a team approach in the application of skills and knowledge.

A minimum of one year's field experience in the practice of surveying is suggested prior to entry into the Survey Practice Course.

A summary of the course subjects is shown below as Diagram 1. It includes a breakdown into lecture time, tutorial/workshop and field and office project work.

TYPE OF ACTIVITY/HOURS/CREDIT POINTS

SEMESTER/SUBJECT	Lecture	Tutorial/ W'shop	Project Work		Total	Credit Points
			Field	Office		
Semester 1						
Professional Practice Management	64	29	12	45	150	12
Survey Computing & Processing	20	52	----	28	100	8
Survey Project Management	24	12	4	60	100	8
Boundary Definition Surveys I	18.5	48.5	60	23	150	12
Property Development Surveys	19	13.5	----	67.5	100	8
Semester 2						
Engineering Surveying	16	29.5	52.5	52	150	12
Boundary Definition Surveys II	3	38	80	29	150	12
Project Site Surveys	17.5	24.5	37.5	20.5	100	8
Spatial Information Systems	36	19	----	45	100	8
Property Management Surveys	21	19.5	30	29.5	100	8
TOTAL	239	285.5	276	399.5	1200	96

1200 hours - 34 weeks of 6-8 hours/day

Diagram 1. Survey Practice Course breakdown at Queensland University of Technology (QUT 1994)

The course duration is 34 weeks. The daily work environment is made to imitate the normal working situation, with full working days and out of hours work sometimes required.

Most of the teaching is conducted by private practicing surveyors who are contracted under an arrangement between the University and the Association of Consulting Surveyors Queensland (A.C.S.Q.). Fees are paid to the lecturers through the A.C.S.Q.

Equipment for the practical work was originally provided through the facilities of the undergraduate course, but since the introduction of the Survey Practice Course in 1988,

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Equipment for the practical work was originally provided through the facilities of the undergraduate course, but since the introduction of the Survey Practice Course in 1988,

additional surveying equipment and computing facilities have been added in conjunction with the undergraduate program.

The funding for the course is provided from two major sources:

1. Approximately one third comes from standard education funding through the university.
2. The remainder comes in the form of sponsorship from State Government, Local Government and Statutory bodies. These agencies provide collectively towards the program each year. In exchange for funds provided, work is carried out on projects classified as low priority or unavailable if commercial fees were necessary for their completion. Additional sponsors, on this basis, are welcomed.

A SURVEY PRACTICE COURSE AT UNITECH

Basic goals for the course are proposed:

1. The primary goal of the course is to train surveyors to a standard such that they may be registered by the Surveyors Board of Papua New Guinea.
2. To increase familiarity with modern surveying and computing practices in keeping with existing and developing industry standards.
3. To improve communication skills with the community, authorities and government departments, as well as with fellow professionals.

To achieve these goals a 29 week program, generally in accordance with the University Calendar, is proposed commencing at the beginning of February each year. The year will be divided into four "terms". Each term will, for the most part, concentrate on one "Registration Project" and this subject will be examined by the Papua New Guinea Surveyors Board at the end of the relevant term. There will also be additional studies, and therefore examination, in the subjects indicated in the goals above. These will be examined by Unitech at the end of the relevant semester.

Table 1 below shows a basic subject layout for the four terms. Note that subjects with

a status of "B" are to be examined by the Papua New Guinea Surveyors Board. These subjects would be examined by project submission. Those with a status "U" are to be examined by Unitech.

TABLE 1

Term 1		7th February to 31st March		7 Weeks	
Subject	Status	Theory	Prac	Total Hours	
Automated Survey Practice	U	1	7	56	
Language and Report Writing	U	2	0	14	
General Computer Applications	U	1	1	14	
Astronomy for Surveyors	U	0	2	14	
Road and Drainage Design	U	1	3	28	
Cadastral Laws and Regulations	U	1	1	14	
Cadastral Survey Computations	U	1	1	14	
Engineering Practical	B	0	16	112	
TOTALS		7	31	266	

Term 2		11th April to 27th May		7 Weeks	
Subject	Status	Theory	Prac	Total Hours	
Automated Survey Practice	U	1	7	56	
Language and Report Writing	U	2	0	14	
General Computer Applications	U	1	1	14	
Astronomy for Surveyors	U	0	2	14	
Road and Drainage Design	U	1	3	28	
Cadastral Laws and Regulations	U	1	1	14	
Cadastral Survey Computations	U	1	1	14	
Rural Survey Practical	B	0	16	112	
TOTALS		7	31	266	

Term 3 5th July to 28th August**8 Weeks**

Subject	Status	Theory	Prac	Total Hours
Town Planning Principles	U	1	1	16
Survey Practice Management	U	1	1	16
Language and Report Writing	U	2	0	16
Urban Design	U	1	3	32
General Computer Applications	U	1	3	32
Cadastral Survey Computations	U	1	1	16
Cadastral Laws and Regulations	U	1	1	16
Town Planning Practical	B	0	16	128
TOTALS		8	26	272

Term 4 6th September to 21st October**7 Weeks**

Subject	Status	Theory	Prac	Total Hours
Town Planning Principles	U	1	1	14
Survey Practice Management	U	1	1	14
Language and Report Writing	U	2	0	14
Urban Design	U	1	3	28
General Computer Applications	U	1	3	28
Cadastral Survey Computations	U	1	1	14
Cadastral Laws and Regulations	U	1	1	14
Urban Survey Practical	B	0	16	112
TOTALS		8	26	238

Working days are to be continuous, as in a normal working situation. A standard working week of approximately 38 hours is envisaged, although additional hours may be required to complete specific tasks, as is the case in industry. Some extra-curricular study is bound to be required, but the intention is to minimize this.

COURSE STANDARDS COMMITTEE

It is recommended that a Course Standards Committee be put in place to ensure that the course is operated so as to achieve the goals as proposed and to amend those goals if required. It is suggested that such committee be made up of the members of the Surveyors Board and 2 representatives of the Department of Surveying and Land Studies at Unitech. Meetings of the Committee would be most efficiently held as an extension of normally scheduled Surveyor's Board meetings. It is intended that the day to day running of the program would be controlled by Unitech, while responsibility for standards would remain, as it is now, with the Surveyors Board.

EXAMINATIONS

It is proposed that Unitech examinations would be undertaken by a combination of continuous assessment and formal examinations, to be conducted at the end of each semester (i.e. in early June and in early November). A pass will be required in all subjects in the first semester to proceed to the second semester.

For the subjects examined by the Surveyors Board, examination will be by project submission at the end of each term. It is proposed to maintain the current assessment method for projects. The responsibility will fall upon the Board to ensure that examiners are available for the projects to be submitted at the end of March, mid-June, the end of August and the end of October. Field examination and oral examinations can then be scheduled by the Board in November. It may be more practical for these to be undertaken at Lae.

The Graduate Diploma will be awarded to students who pass both Unitech and Surveyors Board sections of the course.

TARGET GROUP

As explained earlier, the initial aim is to address those who have not proceeded to Registration after graduation. Accordingly the course will initially be offered to surveying graduates with at least 2 years experience in a cadastral environment. Eventually it may be

considered practical to offer the course to graduates of the undergraduate course immediately after completion of the Bachelor of Technology. It is not intended that the course will provide an easy route to Registration for those who have found it difficult. Conversely it is intended that by concentration on the specific aspects of surveying related to cadastral practice, the recipients of the Graduate Diploma will not only be Registered, but also have more to offer their profession.

STAFFING

Initially it is proposed to offer only 6 places per year while the course is established, this number to be enlarged in accordance with demand from the second year onwards.

It can be seen, from Table 1 above, that only 7 hours per week of lecture time is scheduled in the first semester. Of these 7 hours, it is proposed that 2 hours would be taught by the Department of Language and Communications, Unitech, while 1 hour would be taught by the Department of Civil Engineering, Unitech. The remaining 4 hours per week would be taught by the Department of Surveying and Land Studies, Unitech, supplemented by industry professionals contracted to undertake specific subjects. In semester 2 it can be seen that only 8 hours of lecture time per week is scheduled, of which 2 hours would be taught by the Department of Language and Communication, Unitech, while the remaining 6 hours per week would be taught by the Department of Surveying and Land Studies, Unitech supplemented by industry professionals contracted to undertake specific subjects.

As can be clearly seen, most of the student's time would be spent on practical project work. As these students will come from a working background, it is expected that a minimal amount of supervision will be required. Thus it is proposed that the additional staff required to run this course would be:

Senior Course Coordinator - this person would have a substantial experience base in survey practice as well as teaching skills, and would of necessity be a Registered surveyor. It may not be necessary that this be a full-time position.

Lecturer / Tutor - this person would have an academic background and be a Registered

Surveyor. The Lecturer / Tutor would be in constant contact with students and advise them on a continuous basis in a workshop style environment.

Senior Technical Officer - this person would have a background in surveying and be capable of organizing equipment and logistics to enable students to undertake the extensive practical exercises planned.

Industry Professionals - these visiting lecturers would be sought from the ranks of Principal/Regional Surveyors of the Department of Lands and Physical Planning and the Department of Works, as well as the ranks of experienced private practising surveyors. The participation of members of the Papua New Guinea Surveyors Board would certainly be of assistance.

EQUIPMENT AND INFRASTRUCTURE

It is proposed to make extensive use of existing Department of Surveying and Land Studies equipment and facilities. However it is considered that the following would be required:

1. A small classroom to be used as a dedicated Workshop/Tutorial room for the students. Access to be available beyond normal University hours.
2. One 15 seater bus to transport students to off-campus project sites.
3. One Total Station and data recorder.
4. Two computers with printer.
5. Access to Unitech computer facilities, including computer plotting facilities.

COURSE FUNDING

It is proposed that the course be predominantly self funding. Students will be required to pay a substantial fee to attend the course. Accommodation during the course will be provided by Unitech. As the students will be drawn from the current work force, it is hoped that employers will be willing to continue to remunerate students during the course, on the basis that the investment in staff education will be returned in increased staff abilities and qualifications

at the completion of the course.

INVOLVEMENT OF THE PAPUA NEW GUINEA SURVEYORS BOARD

Continuous and extensive involvement in the course, and in the progress of students is expected from the members of the Board. It is anticipated that involvement would take the following forms:

1. Interviews with each student at least three times during the year, in April, July and September, to assess progress and satisfaction with the course.
2. Examination of Registration project submissions would need to be undertaken promptly after the four submission dates, to determine if a resubmission is necessary and to assess whether the student is to continue. It is suggested that a fail in any Board submission would mean automatic discontinuance.
3. Contribution by the members of the Board to the syllabus design of each subject. As stated earlier in this paper, responsibility for standards will remain, as it is now, with the Surveyors Board. The responsibility of the Department of Surveying and Land Studies at Unitech will be to bring the students to the required standard.

RESPONSIBILITIES OF STUDENTS

As the proposed students are currently active in the practising profession, it is not proposed that Unitech staff will need to "force" them to learn, but that they will have their own ambition to succeed. Therefore Unitech staff would expect to supply information, guidance, infrastructure, facilities and encouragement, but would not expect to compel students to complete set tasks; it is expected that students, through their own ambition to succeed, will set their own goals and targets to achieve.

THE PURPOSE OF THIS PAPER

The purpose is to provide a basis for discussion, so that a truly useful course can be put in place for the general improvement of the profession in Papua New Guinea and to address, in

a positive way, the shortage of national Registered Surveyors in the country.

References

QUT Queensland University of Technology. Accreditation Submission for the Survey Practice Course 1994.

Office of the Surveyor General PNG. Survey Directions 1990.

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