



**COLLEGE OF ENGINEERING, SCIENCE
& TECHNOLOGY**

SCHOOL OF BUILDING & CIVIL ENGINEERING

TRADE DIPLOMA IN LAND SURVEYING

**Programme Document
&
Unit Descriptors**

2014

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**College of Engineering, Science and Technology
School of Building & Civil Engineering
Trade Diploma in Civil Engineering**

1.0 Background Information

In early 2009, the Lands Minister then, pushed for the establishment of a survey course at the Fiji Institute of Technology because of a shortage of this profession in Fiji. The Diploma in Land Surveying started to run under the School of Building and Civil Engineering in the second semester of 2009 with a total of thirty seven students including twenty seven survey staff from the Lands Department. It is now part of the College of Engineering Science and Technology (CEST) of the Fiji National University.

This programme has undergone two changes since then. The first one was made in the second semester of 2010 where changes were made to strengthen the syllabus. The second change was in 2011 where the name was changed from Diploma in Land Surveying to Trade Diploma in Land Surveying.

This year, 2014, FNU senate has decided to change the mode of training of the Trade Diploma in Land Surveying (TDLS) from semester basis to trimester basis and also adopt common units for Trimesters 1 and 2 for all trade diploma programs in CEST. The introduction of the common units and the change in mode of training affected the existing TDLS programme and its syllabus needs realignment/adjustment to cater for the changes made.

The realignment of the whole Trade Diploma in Land Surveying is now presented in this document.

1.1 Rationale

The curriculum documents have been prepared to comply with the requirements of The General Academic Statute of the Fiji Institute of Technology and more recently the University Academic and Student Regulations (UASR) of the Fiji National University (FNU).

1.2 Aims and Objectives

The aim of the TDLS programme is to prepare students either for further study or for direct entry into the industry at technician level. This programme develops student's knowledge and skills and the process and techniques in an attempt to provide for the demand that exists in the Land Surveying profession today.

1.3 Graduate Profile

The graduates of this programme will be able to:

- 1.3.1 Carry out the duties of a technician surveyor either in the design office or on site.
- 1.3.2 Provide constructive support to the surveying team

- 1.3.3 Act as an effective channel of communication between the surveying team and the design office.
- 1.3.4 Liaise with appropriate bodies/organizations for approval of plans and to satisfy legal requirements.

1.4 Program Philosophy

The Diploma in Land Surveying is a two year programme that prepares students for employment in various industries where Land Surveying is an important component in the organization's structure. Through out the programme, the emphasis is on personal development, whether through projects or through traditional teaching methods. Units provide a mixture of theory and practice to develop the intellectual skills of the student and with hands on activities to develop the cognitive skills, which are vital for the surveying students.

2.0 Programme Regulations

2.1 Admission Requirements

The minimum entry requirement for admission to TDLS Programme shall be a pass in Fiji School Leaving Certificate, or its equivalent with at least 50% marks in subjects like English, Physics, Mathematics and either another science subject or technical drawing. The students are admitted directly in first stage of the TDLS programme.

Enrolment in the programme is done after duly verifying all the documents including transcripts, birth certificate, identification etc. Final enrolment is confirmed only after he or she paid the full fees or made alternative arrangements with the finance department in writing.

2.2 Award of the Certificate

To be considered for the award of the Trade Diploma in Land Surveying, the candidate must have:

- a) Completed the prescribed units and accumulated a minimum of 250 credit points.
- b) A minimum of six months relevant industrial attachment in a reputable and legally recognized organization in any field of surveying and civil engineering in Fiji or overseas. .

3.0 Programme Structure

3.1 General

The duration of the programme is two years consisting of five trimesters. The student will be expected to undergo 6 months industrial attachment to complete the programme. The programme consists of 35 units drawn from Trimesters 1 to 5.

3.2 Compulsory Units

All units are compulsory.

3.3 Delivery Mode

The programme is full-time based on 15 weeks per trimester. Intakes are at the beginning of each academic year and students proceed from one trimester to another until trimester five.

3.4 Order of Delivery

Units are tabled according to the year/trimester in the Programme Descriptor/Structure (Tables 1 & 2). Unit content instruction should be delivered chronologically as itemized in the Programme Descriptor

Table 1. Programme Descriptor

There is a considerable degree of flexibility tolerated for students who wish to break their studies, have to do supplementary assessment or repeat the units. The only stipulation being

- Prerequisites must be satisfied before proceeding to advanced units and
- Supplementary assessments and repeats can only be done when the unit is next offered officially.

The final outcome for graduation must be the accumulation of 36 appropriate units plus the mandatory 6 months industrial attachment. The student should submit the Work Experience Record Book to the school duly signed by the employer

TRIMESTER 1			TRIMESTER 2		
Serial Number	Unit Code	Unit Title	Serial Number	Unit Code	Unit Title
1	DEN500	Engineering Graphics	1	MTH504	Engineering Mathematics 2
2	DEN501	Engineering Graphics Laboratory	2	DEN504	Engineering Mechanics
3	MTH405	Engineering Mathematics 1	3	DEN505	Engineering Mechanics Laboratory
4	PHY402	Engineering Physics/Engineering Chemistry Lectures	4	CHEM402	Engineering Physics/Engineering Chemistry
5	PHY403	Engineering Physics/Engineering Chemistry Laboratory	5	CHEM403	Engineering Physics/Engineering Chemistry Laboratory
6	DEN502	Introduction to Computer Programming	6	DEN506	Introduction to Computer Programming
7	DEN503	Introduction to Computer Programming Laboratory	7	DEN507	Introduction to Computer Programming Laboratory
8	OHS403	Occupational Health & Safety/Ethics, Values & Governance	8	ETH401	Occupational Health & Safety/Ethics, Values & Governance
9	COM401	Technical communication			

TRIMESTER 3			TRIMESTER 4		
Serial Number	Unit Code	Unit Title	Serial Number	Unit Code	Unit Title
1	DLS409	CAD for Surveyors	1	DCE501	Hydraulics & Fluid Mechanics 1 (Lecture)
2	DLS408	Surveying Law and Regulations	2	DCE502	Hydraulics & Fluid Mechanics 1 (Laboratory)
3	DLS407	Town and Country Planning	3	DLS509	Surveying 2
4	DLS405	Surveying 1	4	DLS513	Introduction to Geodetic & GPS Surveying
5	DLS406	Surveying Drafting	5	DLS519	Topographical Surveying
6	DLS403	Surveying Practice	6	DLS511	Engineering Survey Theory

TRIMESTER 5		
Serial Number	Unit Code	Unit Title
1	DLS514	Cadastral Survey and Survey Practice
2	DLS605	Cadastral Survey Project
3	DLS606	Engineering Survey Practice
4	DCE603	Hydraulics & Fluid Mechanics 2 (Lecture)
5	DCE604	Hydraulics & Fluid Mechanics 2 (Laboratory)
6	DLS516	Introduction to Photogrammetry and GIS

Table 2. Programme Structure

Trade Diploma in Land Surveying									
Trimester 1									
Serial #	Unit Code	Unit Title	Lecture Hours	Tutorial Hours	Labs & Studio	Total Contact Hours	SDL hours	Total Learning Hours	Credit Points
1	DEN500	Engineering Graphics	2	1		36	36	72	5
2	DEN501	Engineering Graphics Laboratory			4	48	30	78	5
3	MTH405	Engineering Mathematics 1	4	1		60	60	120	8
4	PHY402	Engineering Physics/Engineering Chemistry Lectures	2	1		36	50	86	6
5	PHY403	Engineering Physics/Engineering Chemistry Laboratory			2	24	20	44	3
6	DEN502	Introduction to Computer Programming	4	1		60	60	120	8
7	DEN503	Introduction to Computer Programming Laboratory			4	48	30	78	5
8	OHS403	Occupational Health & Safety/Ethics, Values & Governance	3	1		48	30	78	5
9	COM401	Technical communication	3	1		48	30	78	5
Total			18	6	10	408	346	754	50
Trimester 2									
Serial Number	Unit Code	Unit Title	Lecture Hours	Tutorial Hours	Labs & Studio	Total Contact Hours	SDL hours	Total Learning Hours	Credit Points
1	MTH504	Engineering Mathematics 2	4	1		60	60	120	8
2	DEN504	Engineering Mechanics	4	1		60	60	120	8
3	DEN505	Engineering Mechanics Laboratory			3	36	45	81	5
4	CHEM402	Engineering Physics/Engineering Chemistry	4	1		60	60	120	8
5	CHEM403	Engineering Physics/Engineering Chemistry Laboratory			2	24	20	44	3
6	DEN506	Introduction to Computer Programming	4	1		60	60	120	8
7	DEN507	Introduction to Computer Programming Laboratory			3	36	40	76	5
8	ETH401	Occupational Health & Safety/Ethics, Values & Governance	3	1		48	30	78	5
Total			19	5	8	384	375	759	50
Trimester 3									
Serial Number	Unit Code	Unit Title	Lecture Hours	Tutorial Hours	Labs & Studio	Total Contact Hours	SDL hours	Total Learning Hours	Credit Points
1	DLS409	CAD for Surveyors			6	72	72	144	10
2	DLS408	Surveying Law and Regulations	3	1		48	48	96	6
3	DLS407	Town and Country Planning	3	1		48	48	96	6
4	DLS405	Surveying 1	4	1		60	84	144	10
5	DLS406	Surveying Drafting	1		5	72	60	132	9
6	DLS403	Surveying Practice			6	72	72	144	10
Total			11	3	17	372	384	756	50

Trimester 4									
Serial Number	Unit Code	Unit Title	Lecture Hours	Tutorial Hours	Labs & Studio	Total Contact Hours	SDL hours	Total Learning Hours	Credit Points
1	DCE501	Hydraulics & Fluid Mechanics 1 (Lecture)	4	1		60	60	120	8
2	DCE502	Hydraulics & Fluid Mechanics 1 (Laboratory)			3	36	48	84	6
3	DLS509	Surveying 2	2	1	3	72	84	156	10
4	DLS513	Introduction to Geodetic & GPS Surveying	2	1	2	60	60	120	10
5	DLS519	Topographical Surveying		1	4	60	36	96	6
6	DLS511	Engineering Survey Theory	4	1		60	84	144	10
Total			12	5	12	348	372	576	50
Trimester 5									
Serial Number	Unit Code	Unit Title	Lecture Hours	Tutorial Hours	Labs & Studio	Total Contact Hours	SDL hours	Total Learning Hours	Credit Points
1	DLS514	Cadastral Survey and Survey Practice	2	1	3	72	72	144	10
2	DLS605	Cadastral Survey Project			1	12	120	132	9
3	DLS606	Engineering Survey Practice			6	72	72	144	10
4	DCE603	Hydraulics & Fluid Mechanics 2 (Lecture)	4	1		60	50	110	7
5	DCE604	Hydraulics & Fluid Mechanics 2 (Laboratory)			3	36	36	72	5
6	DLS516	Introduction to Photogrammetry and GIS		2	4	72	72	144	10
Total			6	4	17	324	422	746	50
Total Credit Points									250

Table 3 Pre-requisite for every unit

Unit Code	Unit Title	Pre – requisite
Year 1, Trimester 1 – Stage 1		
COM401	Technical Communication	Form 6 Pass
EEE450	Electrical & Electronic Engineering	Form 6 Pass
EEE470	Electrical & Electronic Engineering Laboratory	Form 6 Pass
ETH401	Introduction to Ethics, Values & Governance	Form 6 Pass
MEC450	Engineering Graphics	Form 6 Pass
MEC470	Engineering Graphics Laboratory	Form 6 Pass
MTH405	Engineering Mathematics 1	Form 6 Pass
PHY416	Engineering Physics	Form 6 Pass
PHY403	Engineering Physics Laboratory	Form 6 Pass
Year 1, Trimester 2 – Stage 2		

CHEM406	Engineering Chemistry	Form 6 Pass
CHEM470	Engineering Chemistry Laboratory	Form 6 Pass
CIN445	Introduction to Computer Programming	MEC450
CIN470	Introduction to Computer Programming Laboratory	MEC470
MEC451	Engineering Mechanics	PHY416
MEC472	Engineering Mechanics Laboratory	PHY403
MEC452	Workshop Practice	EEE450
OHS445	Occupational Health & Safety	Form 6 Pass
MTH504	Engineering Mathematics 2	MTH405
Year 1, Trimester 3 – Stage 3		
DLS409	CAD for Surveyors	Form 6 Pass
DLS408	Surveying Law and Regulations	Form 6 Pass
DLS407	Town and Country Planning	Form 6 Pass
DLS405	Surveying 1	MTH504
DLS406	Surveying Drafting	Form 6 Pass
DLS403	Surveying Practice	MTH504
Year 2, Trimester 1 – Stage 4		
DCE501	Hydraulics & Fluid Mechanics 1 (Lecture)	PHY416
DCE502	Hydraulics & Fluid Mechanics 1 (Laboratory)	PHY470
DLS509	Surveying 2	DLS403 & DLS405
DLS513	Introduction to Geodetic & GPS Surveying	DLS405
DLS519	Topographical Surveying	DLS405
DLS511	Engineering Survey Theory	DLS405
Year 2, Trimester 2 – Stage 5		
DLS514	Cadastral Survey and Survey Practice	DLS407 & DLS509
DLS605	Cadastral Survey Project	DLS407 & DLS509
DLS606	Engineering Survey Practice	DLS511
DCE603	Hydraulics & Fluid Mechanics 2 (Lecture)	DCE501 & DCE502
DCE604	Hydraulics & Fluid Mechanics 2 (Laboratory)	DCE501 & DCE502
DLS516	Introduction to Photogrammetry and GIS	DLS409

4.0 Assessment

4.1 Assessment Philosophy

Assessment is broken down into formative and summative components. Details are expanded below.

4.2 Methods of Assessment

The aim of summative assessment is to provide the examination board with evidence on which to base its recommendations regarding the award of grades. The primary tool for summative assessment is by final examination. These will normally be of either two or three hours duration as appropriate to the subject matter. An additional ten minutes reading time will be allowed. In preparing examination papers, consideration will be given to the level of attainment of the candidates. The aim being to move the candidates progressively from closed type problem solving towards a more open ended style of examination question. The aim of formative assessment is to guide and encourage the student to meet the performance criteria set out in each of the unit descriptors. Its primary purpose is therefore educational. The primary tool for formative assessment is the assignment. Assignments are used to develop the students' problem solving skills and to provide guidance as to the level of attainment expected. Marks for assignment work reflect the degree to which the student has met the performance criteria. Comments on the student's submission indicate how the work could be improved to better meet those criteria. Assignments also form the basis of the tutorial programme where the emphasis is on active rather than passive learning. Classroom exercises are an essential part of the assessment procedure. They are assessed on the basis of a report of the work carried out and the conclusions drawn. As part of the exercise, the student is expected to conduct a literature search and review.

4.3 Criteria for Assessment

All units require that a student obtain a total mark of 50%. In units with final examinations the student must also obtain the stated minimum mark in the examination. Assignments must be completed to an acceptable standard. Attendance at laboratory sessions and completion of laboratory reports is compulsory.

5.0 Teaching and Learning Methods

5.1 Introduction

A variety of teaching methods will be used to facilitate the achievement of the aims and objectives of the programme. In the initial stage of the process of intellectual development the student will be guided towards the achievement of a successful outcome to each activity. In later stages however, this guidance will be reduced so as to encourage the student to become a self-motivated independent learner.

5.2 Methods

Teaching will be by a mixture of formal lectures, laboratory sessions and the solution of both closed and open-ended problems in engineering design and construction. Classroom-based activities will emphasise active participation in the learning process. In the early stage students will participate in traditional problem solving activities. Students will be expected to supply reasoned arguments in support of their approaches to solving assignment problems. Later on and as a pre-requisite to solving more open-ended problems, students will be encouraged to extend their knowledge base through directed

study of externally available resource material. In the final trimester the students will be required to carry out a design project based on civil engineering practice. The project will be directed towards an actual engineering problem in Fiji and will require integration of knowledge from different parts of the programme syllabus.

6.0 Monitoring, Evaluating and Reviewing of Programme

6.1 College Academic Board

The College Academic Board composition as detailed in the UASR, review, discuss and amend programmed curricula.

6.2 Examination Board

The Examination Board composition as detailed in the UASR sits to discuss, amend and recommend individual results at the end of each trimester for approval.

6.3 Ongoing Monitoring

The College Academic Board has to review programme curricula and make amendments according to the following:

- a) new technologies
- b) new industrial practices legislation
- c) new educational developments
- d) changes to staff responsibilities
- e) employers and the Industry Advisory Committee
- f) the College Academic Board
- g) student representative enrolled in the programme
- h) staff training roster
- i) review by external consultants etc.

The monitoring process is implemented by the application of Quality Management System procedures which ensure timely scheduling and recording of various meetings, regular calls to employer groups, launching and recording questionnaires, setting of internal and external reviews and maintaining close liaisons with industries, governments and educational bodies locally and abroad.

6.4 External Moderation

Final stage papers are externally moderated by experts in appropriate fields.

6.5 Industry Advisory Committee (IAC)

Composition of IAC

Chairman: A Representative from the Industry
Secretary: Head of School (TVET/Technical), Building & Civil Engineering
Members: Representatives from:

Ministry of Lands & Mineral Resources
Director of Lands
Fiji Institute of Surveyors
Fiji Institute of Engineers
Private Surveying Companies