



COLLEGE OF ENGINEERING SCIENCE & TECHNOLOGY

**School of  
Mechanical Engineering**

Certificate IV in  
Fabrication and Welding

Programme Details  
&  
Units Descriptions

2013

**COLLEGE OF ENGINEERING SCIENCE AND TECHNOLOGY**

**School of Mechanical Engineering**

**Certificate IV  
In  
Fabrication and Welding**

**Rationale**

Welding and Fabrication is a fundamental discipline of engineering in the developing economy. Its practitioners are in demand over a wide range of industries. These can be as diverse as shipbuilding, sugar production, civil works, building construction and vehicle repair work.

**Graduate Profile**

A successful graduate will be able to make contribution to a wide range of activities, both on site and in the workshops. Technical knowledge will allow graduates to:

- break problems of some complexity, down into routines and standard procedures
- Solve problems within a limited range of predictable solutions which involve selection, basic comparison and routine decision making.
- Use well developed practical skills to perform a wide variety of tasks to meet specific standards and quality control requirements.
- To follow general instruction under minimal supervision, and take responsibility for other team members.
- Maintain and set up tools to perform a range of standard tasks in a safe and a good workman like manner.

**Philosophy**

The philosophy of the course is based on student's outcome and the production of a portfolio of work including both practical, theoretical and assignments to demonstrate competencies. This portfolio will include examples of both institutional and industrial work.

## **Aims and Objectives**

### Aims:

- To provide a basic technical skills course for the Fabrication and welding industry which forms the basis for employment as a crafts person in fabrication and welding.
- To provide industry with an adequate number of capable and trained personnel who have acquired a sound knowledge and understanding of the principles and processes of Fabrication and Welding trade (skills).
- To impart core technical knowledge to students who may wish to extend their studies to higher qualifications and specialisation in Fabrication and Welding.
- To develop the craft skills of the student to enable them to make a positive contribution to the standards and quality of fabrication and welding work in their chosen field of employment.

### Objectives:

To provide students with a sound core of skills based on a broad analysis of essential competencies for:-

1. Employment as fabrication and welding foremen within industry
2. Employment as a maintenance worker within industry. Particular attention being drawn to safety, good working practices, quality of workmanship, materials selection, numeracy and other skills such as drafting and measurement. Emphasis is also placed on quality control and the maintenance standards.
3. Employment within the fabrication and welding Industry and related occupations.
4. To provide the theoretical input to balance the practical experience and development of the student engaged in related industrial activities.
5. To support and cooperate with industry and relevant training agencies in the development of competent craft skills to meet employment needs.

## **PROGRAM REGULATIONS**

### **Admission Requirements:**

- (a) Fiji School Leaving Certificate level of education or Equivalent.
- (b) Mature students with one year of industrial experience.

### **Credit Value of Program**

The total credit value for the 20 units is 150 credits.  
The credit value for one academic year is 150

### **Duration of Program**

The program should be completed in One and a half years, including the mandatory minimum of six-month

### **Cross Crediting**

All common units to other programs are fully cross-creditable.

### **Assessment**

The general requirements for award of the qualification are laid down in the latest issue of the UNIVERSITY ACADEMIC & STUDENT REGULATIONS (UASR) of the University Grades A to E are allocated according to the level of achievement.

## **PROGRAM STRUCTURE**

### **General**

The course consists of twenty (20) units. The total instruction time is detailed in the respective Unit Descriptors. Students will be expected to demonstrate their ability to organise and progress work as part of the underlying core skills required of a responsible employee.

Cert IV in Fabrication and Welding			L	T	P	T.C.H.	SDL Hours	C.P
1	CIN102	Application of Computer Technology in Communication	1	2		36	24	4
2	OHS401	OHS	1	1		24	21	3
3	FWG313	Welding Technology 1	2	1	6	108	87	13
4	FWG311	Fabrication Technology 1	2	1	6	108	87	13
5	FWG315	Fabrication Drawing 1	2	1		36	39	5
6	EEE329	Electrical and Electronic Principles and Testing Equipment	1	1	3	60	15	5
7	EVG301	Ethics, values and Governance	1	1		24	21	3
8	FWG323	Trade Calculation	2	1		36	24	4
total			12	9	15	432	318	50
student contact hours			36					
total Learning Hours			750					

						T. C.H.	SDL Hours	C.P
1	FWG433	Fabrication Drawing 2	2	1		36	39	5
2	MEN306	Applied Engineering Material	2		2	48	42	6
3	FWG431	Welding Technology 2	2	1	7	120	75	13
4	FWG445	Welding Science	2	1		36	39	5
5	FWG321	Fabrication Technology 2	2	1	7	120	75	13
6	MEN418	2D-CAD using AutoCAD	1		4	60	60	8
total			11	4	20	420	330	50
student contact hours			35					
total Learning Hours			750					

						T.C.H	SDL Hours	C.P
1	FWG451	Fabrication Technology 3	3	1		48	42	6
2	FWG452	Welding Technology 3	3	1		48	42	6
3	FWG454	Fabrication and Welding Project	2	1	9	144	96	16
4	FMG 317	Basic Machining Processes and Practice	1	1	4	72	48	8
5	FWG453	Fabrication Drawing 3	3	1		48	42	6
6	MEN419	3D-CAD Using Solid Works	1		4	60	60	8
total			13	5	17	420	330	50
student contact hours			35					
total Learning Hours			750					

### **Compulsory Components**

All units are compulsory. The Program might be changed from time to time using the additional units offered in the program structure table above.

### **Optional Components**

Additional units from the program structure table might be offered as free choice options in the future.

### **Special Requirements**

Students must complete a minimum of 6 months industrial practice after the final trimester.

### **Industrial Tour**

At the end of Trimester two (2) and three (3) there will be an Industrial Tour for students provided by the Institute; to the relevant industries.

### **Delivery Mode**

The program is Trimester mode. Therefore the students will enrol in trimester one (1) at the beginning of the year and complete the third trimester by December and then go for the industrial attachment for six (6) months the following year after which they can graduate.

### **Order of Delivery**

Students normally attend trimester mode of delivery progressing through the three trimesters respectively. Units are timetabled according to the chronological order of the Program Descriptor above. Content material instruction is delivered chronologically as itemised in the following Unit Descriptors.

### **ASSESSMENT:**

#### **Assessment Philosophy**

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

#### **Methods of Assessment**

Formative assessment takes the form of workshop projects and assignments, classroom exercises and laboratory practicals. Summative assessment takes the form of formal tests. Theoretical units also carry a final examination (marked (E) above). Marking weightings for the various components are detailed in each unit descriptor.

In addition to assessments the student must also demonstrate appropriate industrial experience for the required duration by way of a suitably completed Work

Experience Record Book (WERB) which must be produced to the Head of Department before the graduation.

### **Criteria for Assessment**

#### **Skills assessed are:**

Cognitive, communication and Psycho motor through tests, assignments and practical work respectively. Projects are used as a gauge for planning and organisational skills as well as self/collective motivation.

**Examinable units:** in order to pass a unit, students must pass the coursework and the final exam. (Note: students with less than 75% attendance will not be eligible to sit for the final exam)

**Non-Examinable units:** in order to pass a unit, students must pass the coursework (which is 100%) and obtain a minimum of 75% attendance. (Note: students with less than 75% attendance automatically fail the unit)

### **Fairness, Validity and Reliability**

The program contains a balance of examinable and non-examinable units in order to provide fair assessment across a wide range of practical and academic abilities. Examinable units provide a high degree of objectivity whereas the non-examinable units provide a measure of non-quantifiable personality factors through a more subjective approach such as a student's conscientiousness, inter-relations with peers and superiors and general attitude towards work.

Each unit carries at least two summative tests. Marks for these and other forms of coursework are entered onto the program record spreadsheet (Premium) which is submitted to the Examination Board for scrutiny. Examinable units have their papers moderated prior to sitting and afterwards, the marking is assessed. Final results are scrutinised by the Examination Board prior to submission to the Academic Board.

Definitions of Boards and other quantifiable assessment criteria and validation are explained in full in the University Academic & Student Regulations (UASR)

## **TEACHING AND LEARNING METHODS**

### **Introduction**

A variety of teaching methods are used as detailed below to cater for different learning styles and to promote guidance to learning in both structured and unstructured situations.

### **Student Centred Learning**

This is catered for in assigned tasks and projects as well as gaining experience in the industry attachment periods.

### **Methods**

Lectures coupled with workshop practicals. Workshop practicals are to develop hands-on skills. Drawing office practices are to develop representational abilities.

Tutorials are for practicing problem solving and other analytical skills. Project work is to develop initiative and teamwork.

## **MONITORING, EVALUATING AND REVIEW OF PROGRAM**

### **School Board**

The School Board (as detailed in the UASR) are to review, discuss and amend individual results by consensus at the end of every stage.

### **Academic Board:**

The Academic Board (as detailed in the UASR) are to review pass rate statistics and approve results by consensus at the end of every stage following the School Board.

### **On-going Monitoring**

Progressive monitoring of the program is exercised in the following ways:

- (i) Discussions within the Section's staff meetings, the School Board and the Academic Board, frequency- monthly
- (ii) Feedback from the IAC, individual employers and employer groups, trade and student unions and external moderators, frequency- approx. quarterly;
- (iii) An established roster for staff vocational training locally and overseas.
- (iv) An Introduction of new technologies and industrial practices legislation, frequency- periodic.
- (v) Reviews by internal and external consultants, frequency- periodic.

The monitoring process is implemented by the application of TQM 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 liaising with industries, government and educational bodies locally and abroad.

### **External Moderation**

The unit assessments are not externally moderated but the program is reviewed and approved by the IAC.

### **Industry Advisory Committee (IAC)**

Composition at the time of publication:

Chairman: to be decided  
Secretary: Head of School of Mechanical Engineering  
Members: Representatives from:



1. FNTC
2. Nagan Engineering Ba
3. Material Services
4. Akbar Engineering
5. Nitya Nand Engineering.
6. Fiji Ship Building Ltd.
7. Fletcher Steel Walu Bay
8. Former Graduate
9. PWD
10. FSC