PRACTICAL TRAINING OF STUDENTS AT THE FACULTY OF ENGINEERING, UDSM

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1. General Remarks about Practical Training (PT)

PT is considered to be an essential part of the undergraduate course at the Faculty of Engineering. As conditions of working in industry cannot be simulated in Faculty Workshops, the Faculty somehow "borrows" the facilities of various companies (including manpower) for a "life-training" of students.

As the activities of such companies are aimed at operation and production, there isn't much chance for the students to be trained as they are used to be in Faculty Workshops, where everything is arranged and done to assist the students in learning.

In industry there is mainly one chance of learning: learning by doing, by participating in the day-to-day routine work. But some companies are even reluctant to allow students to use complicated machinery and equipment because they fear that un-experienced students may cause damage. If a training officer is available, his main concern will still be the duties, which are assigned to him normally - and only if he can spare some extra time, he will deal with the students' questions and problems -without extra payment.

These conditions have to be kept in mind when setting goals for PT and making the assessment.

2. Goals for Practical Training of Engineering Students

The goals of practical training could be summarized as follows:

2.1 To train skills

- of using equipment and tools (with emphasis on under-standing rather than on acquisition of skills)

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2.2 To provide knowledge

- about materials
- about processes (such as design, production, construction, maintenance and repair)
- about human relations

with emphasis on learning by doing rather than on memorizing facts from books.

2.3 To develop abilities

- of reading drawings
- of searching for required informations independently (without any assistance from teachers or instructors)
- of planning and organizing work within the constraints of time and costs
- of making the right choice of alternatives
- of communicating at all levels in industry.

2.4 To foster attitudes

- of respect for the work of those, who later will be under the supervision of an engineer
- of alertness to problems encountered in industry
- of awareness of responsibilities as an engineer

The basic principles and processes of practical work are provided in faculty workshops during the first year of study.

Practical training is built upon this previous experience. It is aimed at deepening and expanding the practical experience of the student on different levels, from craftsmen to engineer.

3. Time-table for Practical Training

YEAR	TERM	PRACTICAL TRAINING
1st	4th	8 weeks in industry (I) on craftsmen level (C)
2nd	4th	8 weeks in industry(II)on technician level (T)
3rd	4th	8 weeks in industry(III)on engineer level (E)

4. Number of Places required for Practical Training of Engineering Students (according to present plans)

Year	Month	Civil-E.			Mech.-E.			Elec.-E.			Total			Total
		C	T	E	C	T	E	C	T	E	C	T	E	
1974	April May	30	-	-	20	-	-	10	-	-	60	-	-	60
1975	April May	45	30	-	30	20	-	15	10	-	90	60	-	150
1976	April May	60	45	30	40	30	20	20	15	10	120	90	60	270
1977	April May	60	60	45	40	40	30	20	20	15	120	120	90	330
1978	April May	60	60	60	40	40	40	20	20	20	120	120	120	360

5. Assessment of Practical Training

5.1 Marks

Assessment of practical training is made at the end of each of the three periods of training. The assessment consists of

Training Officer's Report	15 marks
Industrial Liaison Officer's Report	15 marks
Log-book	10 marks
Industrial Report + Individual Tutorial	60 marks
	100 marks

5.2 Industrial Report

Assessment of the student's industrial report by the industrial liaison officer. The industrial report contains the answers to questions, which were given to the students before the beginning of the practical training by the industrial liaison officer. It may consist of

5.2.1 observations on environment, equipment, personnel, management structure, safety pracautions, etc.

5.2.1 Constructive suggestions for improvement of training programme, factory layout, safety measures, relevance of academic study to training programme etc.

5.3 Individual Tutorial

Assessment of an oral examination before a committee on questions concerning the content of log-book and industrial report. The committee, one for each department, should comprise a senior academic, the industrial liaison officer or tutor, and a representative (of the respective) industry.

6. Some opinions about PT 1974

6.1 PT 1974 has contributed considerably to the students knowledge about some problems he may come across in his future career as engineer. Knowing more about his future work may enable the student to assess the relevance of courses taught at the University and to select those optionals which are of use for this work.

Valuable information has been obtained about organising and running such a training and will be used to improve the training in the years to come.

6.2 A questionnaire was given to students and training officers at the end of PT 1974 and some questions(and the respective answers) are given below.

Departments: C = Civil; M = Mechanical; E = Electrical		C		M		E	
S = Students; TO = Training Officers		S	TO	S	TO	S	TO
Number of Students per Department		30		20		9	
Number of Questionnaires considered		22	6	15	4	6	1
What is your opinion about	please tick						
1. the duration of PTI?	too long	6		2		1	
	adequate	14	5	9	2	5	1
	too short	1	1	2	2		
no answer / /	don't know			1			
2. the level of content of PTI?	too simple	4				2	
	normal	14	4	9	4	4	1
	too difficult	3	1	3			
no answer / 3	don't know		1				
3. the organisation of PTI?	good	1	3	4	4	1	
	medium	5	1	5		4	
	poor	14		5		1	
no answer 2 /	don't know		2				1
4. the relevance of PTI for the student's future work as an engineer?	very relevant	8	5	10	2	4	
	relevant	12	1	4	2	2	1
	not relevant	1		1			
no answer	don't know	1					
5. the relevance of PTI for the student's future studies at the university?	very relevant	6	3	7	2	2	
	relevant	11	2	6	2	3	1
	not relevant	3					
no answer /	don't know	1	1	2		1	
6. the efficiency of PTI with regard to its objectives?	very efficient	1	1		1		
	efficient	9	4	10	2	3	
	not efficient	12	1	3		3	
no answer 2	don't know				1		1
7. the necessity of tutor (staff members of university) visits during PTI?	very necessary	4	1	3	1	2	
	necessary	10	4	5	3	3	
	not necessary	8		7		1	1
no answer	don't know		1				
8. the number of tutor visits necessary per student during PTI?	three	5	1	3	1	4	
	two	7	1	5	2	1	
	one	7	4				
	none	2		6		1	1
no answer / /	don't know				1		
9. practical training in faculty workshops during the 4th term?	better than PTI	3		2		1	
	as good as PTI	2		1			
	not so good	12	3	9		4	
no answer 2 / / /	don't know	3	2	2	3	1	1
10. the student's contribution to the company's output?	positive	16	5	13	1	5	
	no effect	3	1	1	3		1
	negative	1					
no answer 2	don't know			1		1	
11. the necessity of PTI for engineering students?	very necessary	13	4	13	4	4	
	necessary	8	1			2	1
	not necessary			1			
no answer / / /	don't know						