

Dated: 11th April, 2012

To,

Sub: Response to ELECTRONICS & COMMUNICATION engineering diploma programme questionnaire.

Dear friend,

Gujarat Technological University is re-designing the curricula of its diploma engineering programme to match with the needs of the industries. For this purpose, we have collaborated with National Institute of Technical Teachers' Training and Research Bhopal (NITTTR Bhopal) who have the expertise in developing the curricula for technical educational programme at national level.

It has been decided by NITTTR Bhopal and GTU to design the curricula on the outcome/competency-based approach so that pass outs are not only theoretically knowledgeable, but are also able to perform well in the industry at the time of joining the industry from the polytechnic system. Once this curriculum is developed it would guide efforts of teachers and students to achieve the identified competencies.

For development of such a scientific curriculum, identification of the competencies to meet the requirements of the industry is the first step.

For the project, this questionnaire is jointly developed by GTU and NITTTR, which is designed to identify the entry-level competencies expected of **ELECTRONICS & COMMUNICATION** engineering diploma holders required to perform their jobs independently in an industry to avoid the present long-term training given to freshly recruited engineering diploma holders.

We would be thankful if the person, who is actually taking work from the **ELECTRONICS & COMMUNICATION** Engineering Diploma pass outs, responds to this questionnaire. Your response is voluntary and would be used only for academic purposes and would not be shared with any other agency. Only the collated responses of all the industries would be used for decision making.

Thank you very much for your valuable responses.

Yours sincerely,

Dr. Akshai Aggarwal

Curriculum Development Project
Identification of Competencies Required of
Electronics & Communication Engineering Diploma holders

Terms of Reference for this Project

‘**Competency**’ is what you expect a fresh engineering diploma holder to do at the entry level, i.e. *‘a statement which describes the integrated demonstration of a cluster of related skills and attitudes that are observable and measurable necessary to perform a **job** independently at the workplace, at a prescribed proficiency level’.*

While a ‘**job**’ is that which you will call upon your engineering diploma holder to do i.e. *‘a complete activity having a definite beginning point and an ending point, which can be performed over a short period of time independent of other works resulting in a product, service or decision’.*

The ‘**prescribed proficiency level**’ is the ‘*threshold level*’ at the end of three years of study at the polytechnic.

With these *terms of reference* in the background, your opinion of the competencies concerning a **fresh** engineering diploma passouts are listed here. Against each, you are required to **state your opinion** by ticking (✓) in the most appropriate box in the enclosed **one sheet** questionnaire.

Name of the Industry.....
 Main Product.....
 Address of the industry

Approximate number of engineering diploma holders employed in your industry:

- a) Electrical Engineering Diploma HoldersNos.
- b) Mechanical Engineering Diploma HoldersNos.
- c) Electronics Engineering Diploma HoldersNos.
- d) Instrumentation Engineering Diploma HoldersNos.
- e) Civil Engineering Diploma HoldersNos.
- f) Chemical Engineering Diploma HoldersNos.
- g) Computer/IT Engineering Diploma HoldersNos.
- h) Automobile Engineering Diploma HoldersNos.

Table – 1

Preferably this questionnaire needs to be filled up by *those who take work from Electronics & Communication engineering diploma holders*

	TECHNICAL COMPETENCIES <ul style="list-style-type: none"> ▪ <i>Essential</i> means it is core competency and used frequently ▪ <i>Not applicable</i> means not required in your industry at all. 	<i>Essential</i>	<i>Desirable</i>	<i>Rarely used</i>	<i>Not applicable</i>
T1	Maintain Electronic equipment using discrete electronic components				
T2	Test Electronic Circuits using test and measuring instruments like Multi-meter, CRO, Function Generator.				
T3	Prepare suitable test set-up for testing of electronic circuits/ equipment				
T4	Justify acceptance or rejection of a material, components or equipment				
T5	Calibrate measuring Instruments using standard instruments				
T6	Interpret circuit diagrams and specifications of electronic systems given in technical/service manuals for installation, testing and commissioning				
T7	Maintain Analog & Digital IC based Electronic equipment				
T8	Prepare PCB layout and artwork from schematics				
T9	Troubleshoot PCs and associated peripherals				
T10	Install Computer Networks with File Servers, Print Servers				
T11	Troubleshoot Computer Networks				
T12	Maintain Video cameras, Cam coders and Digital cameras				
T13	Maintain Biomedical equipment like ECG, EMG, CT scanner, MR scanner, Ultrasonic/ 3D Doppler machine, X-ray etc.				
T14	Troubleshoot Video Electronic gadgets like LCD (Monitor + TV) , LED (Monitor + TV), HD TV, Plasma TV, 3D TV, DTH etc				
T15	Maintain Communication related equipment like Telephone, KTS, EPABX, FAX, GSM/CDMA Handsets, Modems				

	TECHNICAL COMPETENCIES	<i>Essential</i>	<i>Desirable</i>	<i>Rarely used</i>	<i>Not applicable</i>
	<ul style="list-style-type: none"> ▪ <i>Essential</i> means it is core competency and used frequently ▪ <i>Not applicable</i> means not required in your industry at all. 				
T16	Maintain controllers like PLC, SCADA, DCS etc				
T17	Maintain Different Antenna systems				
T18	Operate Microwave Components and equipment				
T19	Maintain Satellite communication systems				
T20	Operate RADAR equipment				
T21	Operate SONAR equipment				
T22	Operate Navigational Aids				
T23	Troubleshoot Cellular Phones				
T24	Troubleshoot Domestic appliances having electronic circuits like microwave ovens, washing machines etc.				
T25	Troubleshoot Audio Electronic equipment like Home Theatre, PA system,				
T26	Maintain Office automation systems like photocopying & fax machines, ATMs				
T27	Maintain Industrial & power Electronic Equipments.				
T28	Use Office (Word, PPT, Excel) Package				
T29	Use Office (Access, Outlook, Publisher) Package				
T30	Use Data Sheets for troubleshooting				
T31	Maintain Microprocessor-based electronic systems and controls				
T32	Maintain Electronic control systems employing Micro-controllers				
T33	Maintain Electronic control systems employing PIC Systems				
T34	Maintain Electronic control systems employing ARM Systems				
T35	Maintain Electronic Instrumentation systems used in process control				
T36	Maintain Digital switching systems in telephone exchanges				
T37	Maintain Color TV transmission/ reception systems				
T38	Maintain Radio transmission and reception systems				
T39	Operate CNC machines				
T40	Maintain Optical fiber communication systems				
T41	Maintain Spread spectrum radio transmission systems & reception				
T42	Simulate circuits using MATLAB				
T43	Use software like ORCAD, P-Spice, Multisim for simple applications				
T44	Maintain Uninterruptible power supplies (UPS)				
T45	Troubleshoot C Programs				
T46	Troubleshoot C++ Programs				

	TECHNICAL COMPETENCIES <ul style="list-style-type: none"> ▪ <i>Essential</i> means it is core competency and used frequently ▪ <i>Not applicable</i> means not required in your industry at all. 	<i>Essential</i>	<i>Desirable</i>	<i>Rarely used</i>	<i>Not applicable</i>
	Any other additional competencies				
1	Maintain solar photo voltaic (PV) systems and storage batteries				
2	Use Digital Signal Processing Hardware				
3	Use open source hardware and software available online				
4	Operate Electronics Circuits in Automobiles				
5	Operate Electronics Circuits in Robots				
6	Maintain Disaster Management related equipment like Ham Radio, Walki-Talki etc				
7	Use Machine Drawing concepts in Electronics Industry				
8	Apply concepts of Physics in Electronics				
9	Apply concepts of Chemistry in Electronics				
10	Develop Personality learning from the lives of Indian Legends.				
11	Implement logic circuits using VHDL				
12	Implement logic circuits using Verilog/ VLSI				
13	Use Multilayer PCB and SMD				
	Any other you may kindly add				
14					
15					
16					
17					
18					

Table – 2

Some generic *competencies* required by a diploma holder from any branch of engineering are also listed below. Kindly rate them by placing a tick in the appropriate column.

	GENERIC COMPETENCIES <ul style="list-style-type: none"> ▪ <i>Essential</i> means it is core competency and used frequently ▪ <i>Not applicable</i> means not required in your industry at all. 	<i>Essential</i>	<i>Desirable</i>	<i>Rarely used</i>	<i>Not applicable</i>
G1	Communicate effectively in English in oral and written form with superiors, subordinates and peers				
G2	Communicate effectively in Gujarati in oral and written form with superiors, subordinates and peers				
G3	Manage people at work				
G4	Work as a group leader & as a team member to achieve goals				
G5	Maintain inventory filing system, indexing system of drawings/documents and technical reference libraries				
G6	Lead group discussions and meetings independently				

	GENERIC COMPETENCIES <ul style="list-style-type: none"> ▪ <i>Essential</i> means it is core competency and used frequently ▪ <i>Not applicable</i> means not required in your industry at all. 	<i>Essential</i>	<i>Desirable</i>	<i>Rarely used</i>	<i>Not applicable</i>
G7	Use all resources like media, market survey, technical literature etc. to gather information for taking decisions				
G8	Prepare detailed project proposals and reports for identified products/services.				
G9	Prepare tender documents & comparative statements				
G10					
G11					
G12					
G13					
G14					

State the job functions of Electronic & Communication Engineering diploma holders in the initial five years after joining your organization from the polytechnic

- | | |
|---------|----------|
| 1. | 7. |
| 2. | 8. |
| 3. | 9. |
| 4. | 10. |
| 5. | 11. |
| 6. | 12. |

Table - 3

List the major Electronic & Communication Engineering equipment & Application Softwares used in your industry

S. No.	Name of the Equipment/Instrument/Software	Broad type/rating/specifications
1		
2		
3		
4		
5		
6		
7		

Table - 4

State the career growth opportunity for an average engineering diploma holder

Designation	<i>Example:</i> Junior Engineer (or Technician)					
Years of Experience required to reach the position	at Entry Level	After 3 years	After 6 years	After 10 years	After 15 years	After 20 years

Do you think that industrial training must be provided to the students as an integral part of the curriculum? Yes / No.

a) If yes, for how many months? One/ Two/ Three/ Six
Months.....

b) If yes, in which semester/s the industrial practical training need to be included?

Signature:.....

Name & Designation of person responding:.....

Phone:

Mobile

Email:

Thank you very much for your valuable responses.

Dr. Akshai Aggarwal
Vice Chancellor
Gujarat Technological University