

Dated: 11th April, 2012

To,

Sub: Response to Automobile Engineering diploma programme questionnaire.

Dear friend,

Gujarat Technological University is re-designing the curricula of its diploma engineering programmes 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 programmes at national level.

It has been decided by NITTTR Bhopal and GTU to design the curricula on the outcome/competency-based approach so that passouts 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 **Automobile 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 **Automobile 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
Automobile 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 *Automobile engineering diploma holders*

	TECHNICAL COMPETENCIES	Essen tial	Desir able	Rarely used	Not applic able
	<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. 				
T1	Rectify faults in the automobile engines				
T2	Rectify faults in the automobile transmission system & mechanism, like				
T3	Rectify faults in automobile electrical system (Ignition, starter, battery, lighting system etc.)				
T4	Trouble shoot faults in automobile engine performance.				
T5	Rectify faults in automobile electronic systems				
T6	Troubleshoot automobile air-conditioning & heating systems.				
T7	Maintain Tractors & other farm equipment/ machineries like hitches, implements, etc.				
T8	Maintain hydraulic & pneumatic drives, circuits, pumps etc.				
T9	Use diagnostic tools/ equipment/machine for vehicle maintenance such as Engine Analyzer, Car Scanner, and Exhaust gas Analyser etc.				
T10	Set up and operate wheel balancing and alignment machines				
T11	Calibrate and phasing of fuel injection pump equipment				
T12	Test of fuel injector and nozzles for pressure, spray pattern, timing etc.				
T13	On the basis of analysis select different characteristics of fuels and lubricants.				
T14	Interpret various parameters for controlling of vehicle during motion				

	TECHNICAL COMPETENCIES	Essen tial	Desir able	Rarely used	Not applic able
	<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. 				
T15	Use tools and shop equipment for vehicle body maintenance.				
T16	Use various surface coating devices / equipment.				
T17	Design simple automobile parts using various procedures and softwares like AutoCAD, Solidedge, Pro-E, and Unigraphics etc. for simple applications				
T18	Interpret basic hydraulic & thermodynamics processes / cycles.				
T19	Interpret auto component drawings, auto electrical & electronic circuits & the standards				
T20	Interpret circuit diagrams and specifications of electrical systems given in service manuals of earth moving machinery				
T21	Apply motor vehicle act and government rules & regulations.				
T22	Use safe practices for prevention of environmental policies (pollution, Bharat & Euro norms etc).				
T23	Inspect and prepare the repairing estimate of accidental vehicle and also the insurance issues				
T24	Apply inventory control technique to reduce production cost				
T25	Co-ordinate activities related to transportation, loading & unloading of materials.				
T26	Check the quality of the incoming/in process/ finished parts				
T27	Manage activities related to stacking, storage, preservation of materials.				
T28	Use suitable cutting tools, tooling and material handling equipment during production/ maintenance.				
T29	Set up & operate special purpose machine & equipment like CNC, EDM, gas analyser, boring machines, etc.				
T30	Use CAM software like MasterCAM and Unigraphics etc. for manufacturing applications,				
T31	Use analysis software like CATIA and NASTRAN for simple analysis				
	Any other additional Technical Competencies				
T32					
T33					
T34					
T35					
T36					
T37					

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	Essen tial	Desir able	Rarely used	Not applic able
	<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. 				
G1	Communicate effectively in English in oral and written form with superiors, subordinates and peers				
G2	Manage people at work				
G3	Work as a team member and leader				
G4	Motivate subordinates to achieve targets				
G5	Conduct group discussions and meetings independently				
G6	Use modern management and decision making techniques to solve day to day problems				
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	Plan and execute the assigned work / task in a stipulated time				
G10	Quality consciousness				
G11	Follow Safe practices during working				
G12	Apply cost control techniques				
G13	Use personal protective equipment				
G14	Promote sales of vehicles				
G15	Handle the customers effectively				
	<i>Any other (Please specify)</i>				
G16					
G17					
G18					
G19					
G20					

State the job functions of 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 electrical engineering equipment used in your industry

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

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