Dated: 11th April, 2012

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To,

Sub: Response to diploma in Computer Engineering 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 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 **Computer 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 **Computer 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

Computer Engineering Diploma Holders

<u>Terms of Reference for this Project</u>

'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) Computer/IT Engineering Diploma Holders ………..Nos.
- b) Electronics Engineering Diploma Holders ………..Nos.
- c) Instrumentation Engineering Diploma Holders ………..Nos.
- d) Electrical Engineering Diploma Holders ………..Nos.
- e) Mechanical Engineering Diploma Holders ………..Nos.
- f) Civil Engineering Diploma Holders ………..Nos.
- g) Chemical Engineering Diploma Holders ………..Nos.
- h) Automobile Engineering Diploma Holders ………..Nos.

Table – 1

Preferably this questionnaire needs to be filled up by *those who take work* from *Computer Engineering diploma holders*

	TECHNICAL COMPETENCIES ▪ ***Essential*** means it is core competency and used frequently ▪ ***Not applicable*** means not required in your industry at all.	Essential	Desirable	Rarely used	Not applicable
The student will be able to					
Office Automation					
C1	Develop professional documents using MS-Word.				
C2	Analyse data and graphically represent it using MS-Excel.				
C3	Prepare professional presentations using MS-power point.				
C4	Install, configure and manage Outlook Express for E-mail.				
C5	Work with Internet				
Programming Language					
C6	Develop programs using 'C' language.				
C7	Comprehend the Object Oriented Programming concepts.				
C8	Develop a sample software application using object oriented features of C++.				
C9	Develop a software application using Abstract Window Toolkit (AWT) and Java Applets.				

	TECHNICAL COMPETENCIES ▪ *Essential* means it is core competency and used frequently ▪ *Not applicable* means not required in your industry at all.	Esse ntial	Desi rable	Rarel y used	Not appli cabl e
The student will be able to					
C10	Develop an application software using Visual Basic.				
C11	Develop program to implement computer graphics algorithms				
Database Management System					
C12	Define Database relationships and execute queries to retrieve information from it.				
C13	Establish database connectivity for application software				
C14	Develop normalised Relational Database in ORACLE , SQL server and apply structured query language (SQL) to manipulate and retrieve data for an application				
Web Technologies					
C15	Create sample static web page using basic HTML tags.				
C16	Develop a dynamic web application using C# and ASP.NET technologies.				
C17	Develop a dynamic web application using PHP and MySQL.				
C18	Develop window forms, web forms and manipulate data with ADO. NET				
C19	Generate Crystal Report using VB.NET technology.				
Computer Technologies					
C20	Comprehend the architecture of a computer.				
C21	Comprehend the concepts of data communication				
C22	Carryout test on various combinational circuits.				
C23	Comprehend the management functions of an Operating System.				
C24	Install, configure, administer and manage computer network using Windows and LINUX.				

	TECHNICAL COMPETENCIES ▪ *Essential* means it is core competency and used frequently ▪ *Not applicable* means not required in your industry at all.	Esse ntial	Desi rable	Rarel y used	Not appli cabl e
The student will be able to					
C25	Develop a sample shell script in UNIX.				
	Data Structure and System Design				
C26	Develop programs for various algorithms using linear and nonlinear data structures				
C27	Apply the concepts of system analysis and design for developing software.				
C28	Apply Object Modelling Concepts using Unified Modelling Language.				
	Hardware and Network				
C29	Assemble, Install and trouble shoot computer hardware.				
C30	Comprehend the concept of computer communication, Network and it's aspects of security.				
C31	Install, configure, administer and manage Network Operating system				
C32	Trouble shoot and maintain Network Operating system				
C33	Analyze and procure computing needs of an enterprise				
	Microprocessor and Microcontroller				
C34	Develop 8086 Assembly language programs.				
C35	Establish Interface between 8086 processor and peripheral chips.				
C36	Develop 8051 micro-controller based application.				
	Project				
C37	Identify , design and develop an industry related applications				
	Additional Competencies				
T38	Develop web application using XHTML, Cascading Style Sheet, AJAX and java scripts.				
T39	Develop a window form using VB.NET				

	TECHNICAL COMPETENCIES ▪ *Essential* means it is core competency and used frequently ▪ *Not applicable* means not required in your industry at all.	Esse ntial	Desi rable	Rarel y used	Not appli cabl e
The student will be able to					
T40	Develop an application for mobile devices				
T41	Establish secure computer networks using firewalls				
	Any other additional Technical Competencies				
T42					
T43					
T44					
T45					
T46					
T47					

Table – 2

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

	GENERIC COMPETENCIES ▪ *Essential* means it is core competency and used frequently ▪ *Not applicable* means not required in your industry at all.	Esse ntial	Desi rabl e	Rarel y used	Not appl icabl e
The student will be able to					
G1	Communicate effectively in English in oral and written form with superiors, subordinates and peers				
G2	Manage people at work				
G3	Work as a group leader & as a team member to achieve goals				
G4	Lead group discussions and meetings independently				
G5	Think creatively and apply innovative skills in problem solving				
G6	Take Critical and logical decisions				
G7	Prepare detailed project proposals and reports				
G8	Prepare tender documents & comparative statements				
G9	Use all resources like media, market survey, technical literature etc. to gather information for taking decisions				
G10	Adapt according to the market trends				
G11	Apply basic science skills				
	Any other (Please specify)				
G12					
G13					
G14					
G15					
G16					

State the job functions of engineering diploma holders(Computer Engineering) in the initial five years after joining your organization from the polytechnic

1…………………………………………..
2. …………………………………………..
3. …………………………………………..
4. …………………………………………..
5. …………………………………………..
6. …………………………………………..

7. …………………………………………..
8. …………………………………………..
9. …………………………………………..
10. …………………………………………..
11. …………………………………………..
12. …………………………………………..

Table - 3

List the major Information Technology equipment used in your industry

S. No.	Name of the equipment/Instrument	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	*Example:* 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.

<div align="right">

Dr. Akshai Aggarwal
Vice Chancellor
Gujarat Technological University

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