

Design of the Structure of Technology Universities (DSTU)



A Joint Research Project of the

Post-graduate Center

for

Technology Education, Public Policy and Universities of the 21st Century,

Post-graduate Center

for

Governance Systems in Businesses, Industries,
Universities, Hospitals, NGOs and Governments

and

GTU SKILLS COUNCIL ON HUMAN RESOURCE STUDIES
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1.0 Introduction:

Technical education in the fields of engineering, pharmacy, computer science and business studies is regulated by All India Council of Technological Education. In every state, the State Governments have set up Technology Universities. The Technology University of every state works to provide quality education and develop research activity in the four fields.

All of these technology Universities are state universities to which all the technology Colleges, within their jurisdiction have been affiliated.

Though every technology Universities has been set up through its own Act, passed by the respective legislature and though every technology University is funded by its respective state government, basically the Universities are working according to the system initiated through the Wood's Education Despatch of July 1854 and implemented on January 24, 1857, when University of Calcutta was set up.

The structure of 1857 has been replicated in about 400 Universities, without major changes. Meanwhile China in 1985 set up, at Shanghai Jiao Tong University (SJTU), a Center for World-Class Universities. The studies at the Center have helped Chinese Universities to leap frog to world class levels, while Indian University system has continued to languish. While in 1985, Indian and Chinese Universities were nearly at the same level, QS ranking of 2011 showed that the best University of China is ranked at 22, while the best of India is at rank 218.

In 2011, GeorgiaTech set up a Center for 21st century Universities (C21U) with a mandate to maintain a 100 year vision of change in higher education. C21U is trying to create a new architecture, which will be able to couple closely the success of a University with the success of the society and which can provide meaningful measures of success of a University¹. "It seeks to have a real-world impact on curriculum, students, faculty and programs."² Appendix 1 shows the research projects, taken up by C21U. These studies will be useful to the Universities all over the world. Under DSTU, GTU will also like to begin research projects on areas of particular interest to GTU and the Universities in India.

GTU is a University, which is building its structure. The Act does provide the framework and has given clearly the responsibilities of the Vice-Chancellor and the Registrar. The University bodies of Academic Council and the Finance Council have been created in accordance with the Act. One Director had been appointed, when the need for appointing an acting VC arose. Twenty two Deans have been appointed by using the authority provided to the VC in the Act. The first short-term task of DSTU is to develop the full structure of GTU so that it may not bogged down by the structure built in 1857 for an era, whose needs were different. The structure of GTU, its officers and its various

¹<http://www.cc.gatech.edu/sites/default/files/C21U%20Overview.pdf>

²<http://www.cc.gatech.edu/research/21stcenturyuniversities>

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bodies should be so designed that these may help it fulfill its vision. The needs of the 21st century, the expectations from a technology University and the direction, which India and the world are taking will all influence the evolution of the University. DSTU, as a continuing project, may help GTU to develop and grow in the right directions and to continuously change and improve itself. But the first few steps of DSTU may prove to be of great importance since these may help the University set up the first structure from which it may progressively be able to evolve and serve its objectives.

2.0 About Gujarat Technological University (GTU):

GTU is a relatively new technology University, which caters to the entire field of engineering, pharmacy, business studies (MBA programs) and Computer Applications (MCA) in Gujarat. All the Colleges in the above fields in Gujarat have been affiliated to this University by the Government of Gujarat.

Today the University has about 3,50,000 students, a large number of Master's programs and a robust doctoral program. It has about 500 Colleges affiliated to it.

We are probably the University with the largest post-graduate program in the world. We are determined that starting from this academic year, each one of the Master's and doctoral thesis at GTU should become world-class and we are taking a number of steps to achieve this result. Thus at the 'Research Week' of 12th to 21st April 2012, 194 doctoral students from GTU's four fields and 2152 Master's students of engineering and pharmacy presented their research work for review by experts in an open forum. During the Week, 43 Workshops on different areas of research were also organized. This innovation won wide praise from the experts, who had assembled. A professor from another technology university wrote that he would also try to persuade his University to follow the great idea.

GTU is continuously organizing seminars, workshops and conferences to encourage research and to bring our researchers in active contact with the researchers from outside the University. Our Faculty Development Programs are organized at each and every week-end, at multiple places in the state. GTU may be today the University with the largest number of such activities being organized as compared to any University.

The University has started getting recognized for its pursuit of excellence. It has won seven different awards for being the best university in different aspects of its working. The largest HR company of Germany has decided that for the purpose of its recruitment of engineers, it would come to GTU only since it feels that GTU is the best technology University in India. The company has conducted interviews and is proposing to offer a salary package of Rs 27 lakhs per year to 50 of our graduates, belonging to our very first cohort of students.

GTU Innovation Council is the most active Innovation Council in the country. Last year, it was able to send 50,000 students to the industries during the summer. About 500 industry leaders are members of 25 of its Committees (called GTU Innovation Sankul committees) and work jointly with Principals/

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Directors of Colleges/ Institutes for enhancing the industry-institute inter-action. As of today, the Final Year students of engineering are working on 17,000 projects, based on industry's problems. We expect many patents to be filed by May 2012, when these projects are presented for evaluation at the Final examination.

On 25th June 2011, GTU established Skills Council in Marketing, Skills Council in Human Resources & Organisational Structures and a Skills Council in Financial Services. The Councils have 27 Sectorial Panels, each of which is co-chaired by a senior professional from the industries/ businesses and a Director of an Institute/ College of Business Studies. The Skills Councils have been designed to help the Colleges develop immersion studies for students for GTU's new Global MBA program, which was started in August 2011.

According to the GTU plans, it should have 12 Post-graduate Research Centers by the end of the academic year 2012-13. Each of the Research Centers is designed to nurture the research students and become an open forum for intellectual inter-action with the society and the world. Reputed academicians, business professionals and researchers from other institutions from all over the world may come to the GTU Centers for delivering learned talks or for study.

During this year, we propose to invest Rs 47 crores in procuring equipment for the research laboratories in pharmaceuticals, mobile computing and wireless technologies and VLSI Design and Embedded systems, according to the budget approved by our Board of Governors on 29th March 2012. GTU is determined to ensure that our researchers do not suffer due to second-rate research laboratories.

GTU believes that technology can create a better quality of life and that quality education in technology can help eliminate poverty. We hope that GTU's graduates will build a new India, which may stand for a more harmonious and more humane world.

3.0 The First Task of DSTU:

DSTU will design the Organizational Structure for GTU so that it may be able to serve its intended objectives effectively.

Objectives of Research Proposal³:

- 1) To develop a system of Governance by which GTU is able to integrate education, training and research in its four disciplines namely Engineering, Pharmacy, Management and Computer Application at the level of Diploma, Degree, Post Graduation and Research.
- 2) To identify those organizational components which are needed to pursue the objective of GTU and to monitor its activities related to admission, education, training, research, industry interaction, inter institute collaboration and international collaborations.

³From a 2-page Discussion Paper developed for GTU by Professor Satinder Kumar and Dr Shweta Patel.

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- 3) To sensitize the members in all the institution at all the level and to encourage them to put in their best efforts in making GTU a World Class Technological Institution.

Research Methodology³

Data Collation will be take place in three phases:

Phase 1: (a) Studying and developing a document for the current organization structure at GTU

: (b) Studying and preparing a document about organization structures prevailing in other technological institutes in India and abroad.

Phase 2: Suggesting an organizational structure of GTU for its governance in future.

4.0 Conclusion:

GTU has about 16,000 Master's students and 54 Doctoral students in the field of Business Studies. It has many faculty members, who are studying the area of Human Resources and Organizational Structures. Eight Sectoral Panels of the Skill Council on Human Resource Studies and Organizational Structures (set up by GTU on 25th June 2011) have many senior professionals as members. Hence GTU is well-positioned to take up the study for designing the Organizational Structure for Technology Universities.

GTU's Post-graduate Center for Technology Education, Public Policy and Universities of the 21st Century had started its first activity in January 2011. Thereafter it has been conducting a large number of Faculty Development Programs. But its own organizational structure is to be created during 2012-13. Jointly with the GTU's Post-graduate Center for Governance Systems in Businesses, Industries, Universities, Hospitals, NGOs and Governments, it should be able to develop relationship with other Centers, which are studying the Universities of the 21st century and initiate research projects of the kind given in Appendix 1. Such research will ensure that GTU will always be able to meet new challenges and continue to remain relevant for the needs of the society.

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Appendix 1

GeorgiaTech Center for 21st century Universities (C21U)

Some of the research projects¹, which have been taken up by C21U are as follows:

- Social networks for expanding the reach and effectiveness of student-faculty interactions
- Open blogging platforms for facilitating student interactions
- Massively open online courses (MOOCs) as alternative learning environments for certain Disciplines
- Artificial intelligence, online social filtering, and search technology for augmenting human advising
- Predictability in the undergraduate curriculum: technology for helping students plan to graduate on time.
- Trend analyses for cost/value tradeoffs in selecting a college or university
- A dashboard for tracking the health of the research pipeline at American universities
- Evaluating commercial CRM models for enhancing the online course experience
- Quality clusters and self-accreditation
- Case studies of disruptive market forces and transformational change in higher education
- Comparative studies of curriculum change in the Unites States and Asia
- Tailoring Open CourseWare Repositories for accredited programs

¹<http://www.cc.gatech.edu/sites/default/files/C21U%20Overview.pdf>

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Appendix 2

Center for Technology Education, Public Policy and Universities of the 21st century

GTU has a young faculty, with a large majority of faculty members having chosen to become teachers during the last few years. GTU today needs 17,000 faculty members. By 2013, it would need 27,000. Today the shortfall is severe. Tomorrow the shortages could shackle all progress. GTU is, therefore, making a major effort to provide in-service training through a large number of Faculty Development Programs. However such programs, mounted with the help of visiting faculty, must lead to a coherent structure, which can not only provide help to the young faculty by way of making available the best of pedagogical methodologies but also lead through studies and research towards developing new pedagogies, appropriate for learning processes in technology education at Universities in India and the world.

GTU has worked with Professors Farrokh Mistree, Patricia Hardré, Amy Bradshaw and Zahed Siddique of the University of Oklahoma to conduct a highly successful 3-day workshop on Experiential Learning on 8th -10th January 2011.

During 2010-11, GTU organized the biggest faculty development program in the country. During 2011-12, GTU has been working to make it even more intensive.

GTU has organized a number of programs on various aspects of pedagogy with the help of faculties from National Institute of Technical Teacher Training and Research, Bhopal. A number of faculty development programs by taking the help of faculties from IITs and IIMs and other well-known professors have also been arranged.

GTU is signing an MoU with WIPRO's Mission 10x in May 2012. The Mission will conduct a program for the Directors of GTU institutions in June 2012. WIPRO-Mission 10 X's Faculty Development Programs (FDPs) have been organized at Marwadi Complex at Rajkot on 27th June- 1st July 2011 and on July 4-8, 2011 at LDCE, Ahmedabad.

GTU plans to set up a National Center of Excellence for Technology Education, Public Policy and Universities of the 21st century. Its objectives are as follows:

1. The Center will study the pedagogy of technology education and work with the Faculty to ensure that GTU becomes a leader in learning Outcomes.

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2. The Center will study the methods of assessment of Learning Outcomes at a Course level, at a professorial level, at a departmental level and at an institutional level.
(NAAC calls the process at the Institutional level as Academic Audit.)
3. The Center will study new methodologies of learning by using ICT in innovative ways.
4. The Center will study policies for technology education, methods and structures of policy formulation and develop the metrics of success for policies.
5. It will have a Department of Studies of Excellence in Universities all over the world.
(Example: Center for World-Class Universities (CWCU) set up by Shanghai Jiao Tong University, Shanghai, China)
Reference: <http://gse.sjtu.edu.cn/EN/centers.htm>
6. It will study what a University of the 21st century should look like. (Example: Center for 21st Century Universities set up by GeorgiaTech (Georgia Institute of Technology)).
Reference: <http://www.gatech.edu/newsroom/release.html?nid=63221>.
7. The Center will create a program in Engineering and Public Policy.
*References: <http://stsc.berkeley.edu/>, <http://web.mit.edu/tpp/www/>,
http://www.epp.cmu.edu/graduate/faq_contacts.html*