

WINDS OF CHANGE: A CASE STUDY

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Education entrepreneurs are a new breed of innovators whose characteristics and activities lead to the transformation—not merely the slight improvement—of the traditional education system. This case study captures the growth of PES Institute of Technology (PESIT), now PES University, a distinguished technical institute with humble beginnings in 1988. It ranks among the top engineering schools in India today. This case study is an attempt to capture the educational entrepreneurship of Prof. D. Jawahar (fondly known as DJ), Pro Chancellor PES University, which was instrumental in the growth of PESIT. The case study also attempts to dwell on the competencies that are demonstrated by the educational entrepreneur Prof. D. Jawahar in strategic problem solving; data-driven planning and decision making; effective leadership and motivation; identification of priorities; and techniques of persuasion, influence, and negotiation that has led to transformation of delivery of technical education. These competencies may act as guidelines for the scores of those institutions aspiring to be in the major league.

Keywords: Education, Entrepreneurs, Competencies, transformation, leadership, Delivery

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THE DAWN OF AN ACADEMIC INSTITUTION OF EXCELLENCE

Late afternoon on the 5th February, 2013, Prof. D. Jawahar, CEO, PES Institute of Technology, had just heard that the Honorable Governor of Karnataka, India had given assent to the PES University Act, 2012. Prof. D. Jawahar was jubilant to hear the news and quickly in his official chamber, began to look at the challenges ahead of him. PES Institute of Technology was affiliated to Visvesvaraya Technological University (VTU) and now had move away from being a constituent college, to a separate university. The responsibility was enormous; the credibility of the new university had to be established in a short span to satisfy all the stakeholders. Prof. D. Jawahar also knew that some stakeholders were critical of this new development. Prof. D. Jawahar understood the enormous responsibility he carried on his shoulders, but was not deterred because he had faced such challenges all along the process of building PES Institute of Technology from scratch.

PES institutions had a humble beginning in 1972, in a rented gymnasium in Bangalore, with just 40 students. Dr. M. R. Doreswamy, founder of PES institutions established the Pre-University College in 1972. With his untiring commitment and single minded dedication he made it a success in the local community. This was followed up with introduction of several other courses namely Bachelor of Commerce (1980), Diploma of Pharmacy (1982), Polytechnic (1983) & Bachelor of Science (1984). He started with Bachelor of Engineering (1988), Bachelor of Business Management (1994), Master of Computer Applications (1997), Master of Business Administration (1997) and the Master of Science – Microbiology (1998) under PES Institute of Technology.

THE WAY FORWARD

In 1991, Prof. D. Jawahar returned to India from US and started managing the performance of PESIT, an institution his father Dr. M. R. Doreswamy started in 1988. PESIT was far from being a favored destination for students. The student intake of PESIT was through a state government conducted entrance test known as Common Entrance Test (CET) and the ranking of PESIT was abysmal, out of the 56 Technical (engineering) Schools in Karnataka, PESIT was ranked 54!!

Prof. D. Jawahar looked at the how PESIT was ranked at the CET and decided that the only way forward was to move up the CET ranking. His first challenge was to attract quality faculty to teach at the PESIT. Prof. D. Jawahar realized that students were attracted to the institution on the basis of faculty who were teaching in the institution. He made of list of well known faculty in the field of engineering and technology and called on them to join PESIT. His efforts paid off and he was able attract some renowned faculty members to PESIT. Having got good faculty into PESIT

was the first step in the process of institution building. The next step was the implementation of Student Academic Support Program (SASP). This program was initiated to improve results in the university exams of students enrolled. Teachers focused on teaching methodologies that help them to improve students' examination results. The results of the first few initiatives improved enrollment to 60%; results to 70%, but placements were 0%.

THE ACTION PLAN

The next step was to improve the teaching learning process. Prof. D. Jawahar realized the huge gap existing between the processes at PESIT and any top engineering school in the world. He knew that improved processes will enhance the teaching and learning experience, hence the student quality. He initiated CWQIP, Campus-wide Quality Improvement Program (akin to companywide quality improvement program). CWQIP's main purpose was to frame quality processes so as to increase the effectiveness of each of the stakeholders while rendering/receiving services. CWQIP had 6 pillars

1. Classroom Management

- a. Course Information: All the information on each of the courses to be made available to the students before the actual start of the classes.
- b. Teacher's evaluation: A formal feedback mechanism which involves appraisal of a teacher. Generally a teacher is appraised on ART (Administration: 20%, Research: 40% & Teaching: 40%) parameters. An important input in the teacher's appraisal was the students' feedback in which the students rated their teachers on various parameters like teaching effectiveness, clarifying doubts raised by the students, coverage of the syllabus etc.
- c. Progress report Services: Student and parents were provided with a consistent progress report of their wards through online monitoring system called e-sims later changed to GEMS.

2. Performance Incentives:

- a. Scholarship Awards: Deserving students were awarded with scholarships.

This initiative of PESIT has become a huge success today. Presently top 20% of the students are being awarded with Prof MRD scholarship, comprising 25% of their total tuition fee waiver. This year this amount was equivalent to INR 10.2 million. Few organizations have also instituted

merit Scholarships at PES University, prominent among them are SAP Student Scholarship, Meritor Scholarship, Cognizant foundation Student Scholarship.

- b. Student Assistantships: Students were allowed assistantships under a professor at the Campus at a nominal incentive.
3. Industry Institute Interface: Objective was to provide practical exposure to students and enhance the quality and quantity of placements. Recently PESIT has established “Lean Manufacturing Consultancy cell” (Only one of its kind in India by a department, recognized by Ministry of MSME Govt. of India) and an incubation centre also recognized by the ministry.
4. Bridge Course and Technical activities
 - a. Equipping student with soft skills through Personality Development Programs
 - b. Imparting technical skill set including C++/VLSI/Advanced Microprocessor etc
 - c. Technical Fests like Techniche, Vistas, Manitec
5. Student mentoring systems.
6. Audit Team: PESIT formulated Department of Strategic initiatives, headed by Dr. B. N. Balaji Singh, mainly for monitoring compliance in processes through regular audits.

The result of this initiative was that enrollment improved to 80%; results in the university exams to 75% and placements were up to 10%.

RESPONDING TO MARKET DEMAND

Indian economy was on an upswing and having laid the foundation of strong processes. Prof. D. Jawahar wanted to focus on enhancing the quality of students and placements. He knew that quality of students and placements are interdependent factors. Good placements will increase the quality of input student and with better student intake the placement scenario will improve further. Hence the next initiative was focused on improving placements and the quality of students through Total Student Development program (TSDP). He initiated this by consulting Dr B N Balaji Singh, then executive director NTTF. Both of them decided to meet the HR Managers of different organizations to understand the requirements of the industry. After having sufficient meetings with corporate leaders and HR managers they understood that the biggest challenge was employability skills i.e. graduate students lacked both the technical knowhow and soft skills

required to excel at work. They knew that the employability skills can only be improved by imparting training and not more knowledge.

To make students more employable, Prof. D. Jawahar decided to launch PPR, Placement Process Reengineering (a term coined in line with BPR, Business process re-engineering, a very familiar term in Corporate India, revered by most of the HR managers). PPR was designed as an initiative to provide industry ready students to corporate India. The plan was to train the students of Bangalore City (not only PESIT) in employability skills and then present them to the companies for a final recruitment and selection process. This was an astute decision, because the training, if successful, would generate a lot of positive Word of Mouth for PESIT in both corporate world and academia. To make PPR a success, Prof. D. Jawahar and Dr. B. N. Balaji Singh organized a get-together of HR Managers at a 5 star premium hotel property, ITC Windsor Manor, and presented their plan to them. The HR managers were supportive of the plan and assured recruitment of deserving candidates.

Prof. D. Jawahar decided to go ahead with this initiative with a controlled group of students. Dr V. Krishna, Professor of Mechanical Engineering Department, was selected as a coordinator for this program. 40 students were selected for the training after a brief aptitude test and an interview. They were imparted with C++ training by Mr Vijayan, a renowned authority on C++, and soft skills training by Dr. B. N. Balaji Singh. The training was conducted in line with the expectations of the corporate and at the end of the training different events like debates, declamations; group discussions were conducted to showcase the impact of training. Few HR managers readily accepted to be the part of the judge's panel for this event. The event was a mammoth success and HR managers, true to their promise, not only appreciated the skills of the students but also recruited the deserving students to their organizations. The event generated a lot of positive WoM for PESIT and proved to be a good brand building exercise.

This initiative improved enrollment to 100%; results to 80%; and placements to 50%.

Prof. D. Jawahar recognized the impact of good placements in a top engineering school. He designated Dr. K. S. Sridhar as the Head of Placements at PESIT. Dr.Sridhar is a man with excellent oratory skills and a charismatic personality. With Prof. D. Jawahar's help and guidance he transformed placement scenario at PESIT. The next initiative for the growth of PESIT is being characterized by continuous focus on placements and initiating "Industry on Campus Program". Industry on Campus Program (IOCP) involved engagement with industry so as to increase the Projects, internships, hands on learning experience of the students. As a part of IOCP, Prof. D. Jawahar and his team launched the following programmes:

1. ISD/T (Infrastructure for Software Development/Training)

In this scheme reputed organizations in Bangalore were encouraged to set up their main/extended offices in the state of the art PESIT campus at a nominal rent. In return the organizations were expected to expose PESIT students to their projects through seminars and hands on experience. Quite a few organizations showed keen interest in this initiative and some reputed organizations like Kshema Technologies, Edurite, Campus Logic, Televital etc signed an MOU with PESIT for ISD/T scheme. This opened new avenues for fruitful engagement with the industry.

As an extension Prof D. Jawahar has set up a R & D lab entitled CORI (Crucible of innovation and research) on the campus engaging the best of talent from leading labs in India where active research is being carried out. The multidisciplinary research focus at CORI includes:

- ✓ Satellite Technologies
- ✓ Signal Processing
- ✓ Center for Research and Engineering in Sensors Technologies
- ✓ Embedded Systems Engineering
- ✓ Advanced Composites Research Centre (ARC)
- ✓ Centre for Automobile Research & Engineering (CARE)

2. Projects/Internships/seminars/conferences/workshops

Students' engagement with the industry was crucial for the success of IOCP. Students were encouraged to intern with premier MNCs so as to improve on their practical exposure. Seminars, conferences and workshops from the industry regarding the latest trends were conducted on a regular basis and the gap between the academia and industry was bridged significantly. Further a centre called Ordell Ugo is set up on campus to encourage research by students during spare time wherein 100 projects can be taken up at a time. The students have produced world class projects which have been published /presented. These measures helped in improving enrollment to 100%; results to 85%; placements to 80%.

PESIT was growing and the management team was expanding. Prof. D. Jawahar was looking out for an academic stalwart who understands the processes and has a charisma to run the institution as a Principal of PESIT. Dr. K.N. Balasubramanya Murthy was selected for this position. Dr. Murthy has B.E. from Mysore University and M.E. from IISC, Bangalore. He finished his Ph.D. from IIT Madras and spent 6 months in US at New Mexico State University, Las Cruces on a project. His entry into the PESIT family further bolstered the strength of the management team. Later, Dr Murthy was chosen as first Vice Chancellor of PES University.

Dr. Murthy entry marked the next phase of initiatives focused on quality research. During this phase the number of Doctorates on the campus increased from 7 to 117. PESIT encouraged publications; this initiative helped faculty to publish in International Journals and National Journals. The number of publications in International Journals was 76 and National Journal was 101 by the end of 2012 and PESIT had applied for 5 patents. PESIT collaborated with leading Schools, universities and companies across the world and launched student exchange programs.

PESIT has introduced computer based on line tests, all lectures are captured live on video from each class room to be available to students (later on to general public).

As a result of these initiatives today:

- PESIT is ranked #1 in Karnataka by DataQuest
- PESIT is ranked 4th in Placements in India according to DataQuest
- PESIT is placed 7th on the list of India's most trusted educational institutes by TRA
- PESIT is in the list of top 25 M.Tech colleges in India by CareerIndia.

FUTURE DREAM TO BE A WORLD CLASS PLAYER IN THE EDUCATION FIELD

Prof. Jawahar aspired to make PES University among the top 10 Universities in India by 2020. He believed that this was possible by focusing on third intervention called SPIRIT which had 6 key parameters, namely:

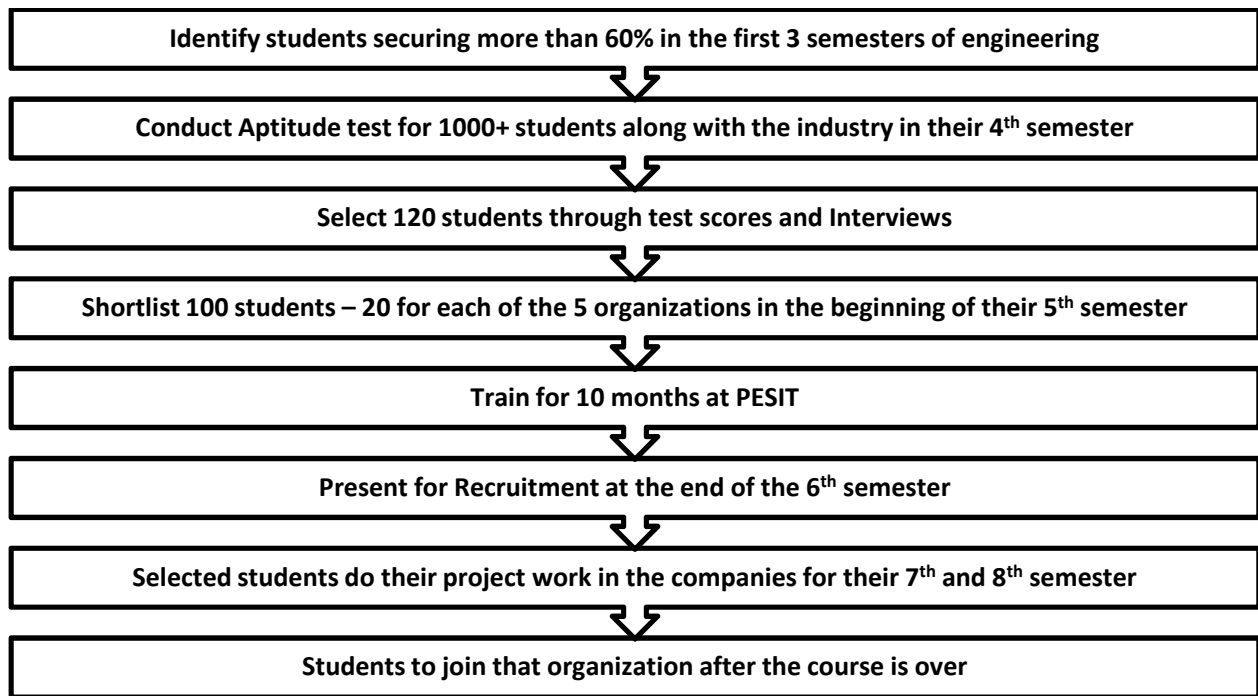
- Students
- Process
- Identity
- Research
- Infrastructure
- Teachers

With all these initiatives PESU wants to be a global player in the education field.

ANNEXURES

ANNEXURE 1

PPR Framework



ANNEXURE 2: STUDENT CLUBS AT PESIT

- ✓ Sequitur : Annual science fest organized by the students of Science and Humanities Department.
- ✓ Celesta : College cultural day.
- ✓ Vistas : National-level management fest.
- ✓ Conquistador : The Annual High School Quizzing Championship for the Dr. M R Doreswamy Trophy for Quizzing Excellence.
- ✓ Ayana : A 24-hour hackathon organised by the students of Department of Computer Science.
- ✓ Aatmatrisha : The annual intercollegiate techno-cultural fest of PESIT
- ✓ Samarpana :An annual event dedicated to the martyrs of our nation.
- ✓ HashCode : A 24-hour hackathon organised by Student Nokia Developer Community.
- ✓ DebSoc - The Debating Society of PES University.
- ✓ Nautanki - The college's official dramatics and film making team.
- ✓ PES Talkies - Pesit's exclusive club for intellectual discussions.
- ✓ Ninaada - Indian cultural forum
- ✓ Fantom - Western music band
- ✓ Trance - Western Contemporary dance troupe.
- ✓ Ducks - Hiking and mountain climbing club
- ✓ The Quotient Quiz Club - The official quiz club of PESIT.
- ✓ Team Haya - Formula racing team.
- ✓ Team Aeolus - Aero-design team.
- ✓ Pixels - Photography Club.
- ✓ Eclat- Annual magazine by and for the students.
- ✓ Homebrew Club-A Club dedicated to helping bring people who love hardware and work on hardware together.
- ✓ PES Open Source community- The group working on promoting the use of Free and Open source software.
- ✓ Student Nokia Developer- A community working towards researching and developing apps/games for Nokia Devices.
- ✓ Papyrus- Monthly newsletter by students.
- ✓ RCP - Rotaract Club of PES University- Team committed for 'Enlightening Human Lives' by undertaking various Social Responsible Activities.
- ✓ PES E-Cell - organisation run by students that aims at manifesting the latent entrepreneurial spirit of students. According to an estimate there are close to 15 start ups run by students of PESIT

ANNEXURE 3

PES University has a built up area of 86,473.11 Sq Mts. The areas of different blocks are mentioned below:

Sl. No.	Description	Total (Sq. M)
1	'A' Block	10,925.667
2	'B' Block	6,000.000
3	'C' Block	2,392.322
4	'D' Block	2,641.38
5	Tech Park	11,826.227
6	Panini Block	12,076.324
7	'G' Block	7,110.207
8	General Work Shop	2915.59
9	Food Court	890.657
10	MM Block	2089.276
11	Mess Block	1,189.105
12	I.H.Block	4,835.49
13	Entrance Block	499.00
14	New Hostel Block	7991.00
15	New Hostel Block Annex	1497.00
16	IT Block	2761.21
17	Girls Hostel	4181.00
18	Central Security Office	67.85
19	Multi Level 2 Wheeler parking & Research Labs (Nokia Lab, Cisco Lab & Social computing Lab and Canteen	3856.00
20	Physics & Chemistry Lab	212.40
21	Fitting and Foundry Lab	161.40
22	Sewage Treatment Plant (STP)	354.00
	Total	86,473.11

ANNEXURE 4

Library Details

Books	89,915
E-Books	16,165
Print Periodicals	350
E- Journals	6,197
Bound Volumes	3,263
Project Reports	1,414
CD-ROMs	6,711
Total Library Area in sq m	422 sq m
Reading Room seating capacity	250
Reprographic Facility	Available
No. of Multimedia PCs and Digital Library facilities	22/Available
Library Networking	Yes Done
Current Annual Budget	INR 7.5 million

Annexure-5

Patent Filed

#	Applicant Name	Title	Patent Filled on	Application No.
1	Dr.Roshan Makam	Protein Structure Prediction	29.01.2014	402/CHF/2014
2	Dr.Roshan Makam	A Process of production and extra-cellular secretion of lipids	12.09.2013	5134/CHE/2013
3	Dr.Niranjan Krupa	A Monitoring Device for Measuring and Mapping Physiological and Psychological Parameters	25.10.2013	4808/CHE/2013
4	Dr.C.S.Ramesh	A Plunger used for briquetting tool plunger application, a composition and a method for coating the composition onto the plunger	06.01.2014	6054/CHE/2013
5	Dr.J.Manikandan	Digital Circuit Emulation and Simulation using support vector machine (SVM) Classifiers	09.07.2014	3410/CHE/2014

Annexure 6

PESIT/PESU - MoU's signed with University & Industry

#	UNIVERSITY	Contact Person
1	Knowledge Incubation for Technical Education (KITE) Centre, IIT, Hyd	Director, IIT Hyderabad
2	GE India Technology Centre Private Limited Bangalore – 560 066.	Mr.Sukla Chandra, General manager GE Global Research
3	NOKIA Coroporation Finland	Mr.Chidambaran K, Director Sowmya B, Project Mangaer
4	EMC Data Storage Systems (India) Pvt. Ltd Bangalore – 560048.	Mr.Shrinivas Kulkarni Head – Business Finance & Mr.Arumugam Saravanan, SVP and MD
5	Bournemouth University, Poole BH12 5BB, UK	Prof.John Vinney, Vice-Chancellor
6	Axiom Research Lab Private Limited, Noida - 201301, India	Mr.Rahual Narayan, Team Lead
7	MANN AND HUMMEL FULTER Pvt., Ltd., Bangalore – 560 058.	Mr.Thomas Luck, Director, Service Center, NHIN & Mr.Kumar Ramaiah, Manager – IF Eng.
8	Binghamton University, State University of New York, NY 13902, USA	Amanda E Bailor, Dr. Hari
9	Emerging Vehicle Technologies LLC (EVT) Georgia 30071, USA	Mr.Richard Harmel Director, EVT
10	ECD Global, Bangalore.	Mr.Kiran Shanmugam, CEO
11	Aspect Ratio Engineering Services Private Limited Bangalore – 560085.	Mr.Govindarajan Viswanathan, CEO
12	Innovent Engineering Solutions Pvt. Ltd, Bangalore – 560 038.	Mr.B.Sivasubramaniaan, CMD
13	DISA India Limited, Peenya II Phase, Bangalore – 560058.	Mr.Viraj Naidu, Managing Director
14	Conceptia Software, BSK III Stage, Bangalore – 560085.	Mr.Anil Das N T, MD and CEO
15	Rapid Global Business Solutions India (P) Ltd. Hosur Road, Wilson Garden, Bangalore – 560 027.	Mr.Alok. Purohit Director

#	UNIVERSITY/COMPANY	Contact Person
1	National Taipei University of Technology, Taiwan	Mr.Leehter Yao , President
2	Indian Institute of Technology - Bombay	Prof.Devang Khakhar, Director, IIT-Bombay
3	Dalhousie University, Halifax, Nova Scotia, Canada	Dr.Carolyn Watters, Vice President Academic and Provost
4	Nanhua University, Taiwan (R.O.C)	Dr.Lin, Tsong-Ming, President
5	Missouri University of Science and Technology, USA	Mr.Warren K Wray, Vice Chancellor for Global and Strategic Partnerships, MUST
6	North Dakota State University, ND 58102. U.S.A	Mr.Lisa Haunk, Director, Office of Global Outreach
7	Principal Secretary to Government, Education Department Government of Karnataka	Dr.Bharat Lal Meena, Additional Chief Secretary to Government Education Department (Higher Education)
8	ENTI Innovations PVT Ltd, Bangalore – 560 051.	Dr.Ranga Raddy, CEO & Founder
9	Mission Aerospace Foundation of India, Bangalore – 560 001.	Mr.Arunakar Mishra, Director & Member of Governing Board
10	Peenya Industries' Association, Peenya Industrial Estate Bangalore – 560 058.	Sri D T Venkatesh, President
11	MAGMA Engineering Asia Pacific Pvt Ltd, Hyderabad	Mr.Mohamed Ismail Khan, Sales Manager India - Sigmasoft
12	Siemens Technology & Services Private Limited, Mumbai	Dr.Mukul Saxena, Senior Vice President & Heand Corporate Research & Technologies – India

ANNEXURE 7: Growth in student Intake Y-o-Y

#	Year	Departments										
		ME	ECE	CSE	MFG	ISE	TCE	BT	EEE	CE	MCA	MBA
1	1988-89	40	40	40	-	-	-	-	-	-	-	-
2	1989-90	40	40	40	-	-	-	-	-	-	-	-
3	1990-91	40	40	40	-	-	-	-	-	-	-	-
4	1991-92	40	40	40	-	-	-	-	-	-	-	-
5	1992-93	60	60	60	30	-	-	-	-	-	-	-
6	1993-94	60	60	60	30	-	-	-	-	-	-	-
7	1994-95	90	90	90	30	-	-	-	-	-	-	-
8	1995-96	90	90	90	30	-	-	-	-	-	-	-
9	1996-97	120	90	90	60	-	-	-	-	-	-	-
10	1997-98	120	100	100	60	-	-	-	-	-	30	40
11	1998-99	120	100	100	60	60	-	-	-	-	45	40
12	1999-2000	60	120	120	30	60	60	-	-	-	60	60
13	2000-2001	60	120	120	30	90	90	-	-	-	60	60
14	2001-2002	90	120	120	-	120	90	-	-	-	90	60
15	2002-2003	90	120	120	-	120	90	30	-	-	90	90
16	2003-2004	90	120	120	-	120	90	30	-	-	90	90
17	2004-2005	120	120	120	-	120	90	60	-	-	120	120
18	2005-2006	120	120	120	-	120	90	60	-	-	120	120
19	2006-2007	120	120	120	-	120	120	120	60	-	120	120
20	2007-2008	120	120	120	-	120	120	120	120	-	120	120
21	2008-2009	120	120	120	-	120	120	120	120	-	120	120
22	2009-2010	120	120	120	-	120	120	120	120	-	120	120
23	2010-2011	120	120	120	-	120	120	120	120	-	120	180
24	2011-2012	180	120	180	-	120	120	120	120	-	120	180
25	2012-2013	180	120	180	-	120	120	120	120	120	120	240
26	2013-2014	180	120	180	-	120	120	60	120	120	120	240
27	2014-2015	180	120	180	-	120	120	60	120	120	120	240

*Intake for Bachelors of Hotel Management, Bachelor of Business Administration and M.Tech courses are not included

- ME: Mechanical Engineering
- ECE: Electronics and Communication Engineering
- CSE: Computer Science Engineering
- MFG: Manufacturing Engineering
- ISE: Information Science Engineering
- TCE: Telecommunication Engineering
- BT: Bio Technology Engineering
- EEE: Electrical and Electronics Engineering
- CE: Civil Engineering
- MCA: Master of Computer Applications
- MBA: Master of Business Administration