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PANJAB UNIVERSITY PHYSICS DEPARTMENT

ACADEMIC AMBIANCE

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Introduction

Panjab University has beautiful complexes geometrically spread up all around for the intellectual and physical fitness of university fraternity. The Administrative Block building in gray cement color was facing the beautiful water pond with lotus flowers on the carpet of green leaves on the water surface; depicting the look of immense beauty. The water fountains in the middle of pond were generating the cool ambiance.

As one moves from administrative building block towards north east; one moves in the world of science consisting building blocks of chemistry, physics, geology, anthropology and zoology departments in one row and building blocks of chemical engineering, mathematics, statistics, instrumentation science and botany departments in the other row. These blocks are inter connected by covered corridor promoting interdisciplinary teaching and research and providing interactive ambiance to students and teachers.

Then there are sports complex and botanical gardens to relax and to do fitness exercises after intellectual work. The entrance in the central library building block amounts to be in intense intellectual ionosphere and if one is tired, one can enjoy the delicious food and indoor games in students center. One can learn the ideals of "truth is God' and "Ahinsa perm dharma" in lotus shape Ghandhi Bhavan and then one can have the glimpses of history of Indian arts and culture in Arts Museum building.

However, if one is walking in the shades of beautiful plants on both the sides of road, one feels as if one is walking in nature in the center of intellectual environment to gain energy to move forward, to learn, to ponder over unknown and to contribute with one's utmost capacity in the domains of science, literature and arts to enrich the knowledge for well-being of all.

Building Block

The grandeur of building block of physics department is shown in Fig. 1. It houses the teaching class rooms, teaching laboratories, the department library and

Figure 1

teachers tea room where the faculty members meet two times in a day to enjoy tea and to discuss physics and administrative issues of the department. Then there are research laboratories of nuclear physics, particle physics, solid state

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physics, atomic spectroscopy and geochronology evenly housed form basement to third floor. The students enjoy the tea and snacks in their canteen near the entrance of physics department. There is spacious parking place for vehicles.

The department consists of very specific research laboratory of variable energy cyclotron. This is one of the oldest proton accelerator machines which is still operative to do nuclear physics and material science experiments.

Knowledge Dispersion

There was Honors School (HS) system of integrated four years teaching to lead to BSc (HS) and MSc (HS) degrees. In the first two years the students were taught physics as major subject and two subsidiary subjects preferably chemistry and mathematics needed to understand physics. In year three students were taught only physics as major course. The course contents were higher than the course contents of MSc-I of other universities. The BSc (HS) students with grades above a certain level were taught one more year for their MSc (HS) degree. The half yearly examinations were held in the month of December and annual examinations in the month of March.

There was nothing like class or caste discrimination among the students and teaching faculty. Each one of them was there on one's own merit. The students were thoroughly trained to work hard and to be disciplined. These well-trained students were excelling in various fields of public and academic lives in the country and abroad.

However, with modern thoughts on education it was argued that the single examination in an academic year may not be justified to examine in detail the level of knowledge of the student. Therefore, semester system of teaching and examination was introduced probably in 1978. The course contents of annual system were reorganized nearly in two equal parts. There were two end semester examinations and one house test in each semester. The final result was the weighted average score of all the four examinations. Certainly, this was the better system to evaluate the students.

When MPhil became pre requisite for lecturer post in colleges, department started MPhil program. This was also pre-PhD advanced course and of more demanding nature from the students. Most of the students in MPhil class were from MSc (HS). These were bright students. Therefore, it was not difficult to manage and to inspire them to work hard. They were well adopting the intricacy of subjects and intelligently responding in the class. Later on they were joining PhD program in the department or going for teaching job in the colleges.

However, when college teachers with limited knowledge of advances in subject were allowed to join this program to get MPhil degree in stipulated time, these courses have to be redesigned to achieve this objective. The MPhil degree lost its competitive spirit.

It was nearly the beginning of 1982; it was decided to start four semesters MSc course for the bright BSc graduates from the colleges. The admissions were merit based. The course contents of core courses were designed keeping in view the back ground of these students in BSc course. In principle MSc (HS) students were better exposed to physics due to the course contents in BSc (HS) and in MSc (HS) than these MSc students.

Then there was National Educational Policy 1986; known as 10+2+3 system. Now the HS

system was extended to 5 years; BSc (HS) degree course of three years duration and MSc (HS) degree course of two years duration. Accordingly MSc courses were also redesigned. With all these constraints two post graduate courses of MSc (HS) and MSc degrees were going on well.

However, it was year 1991 or so, the university administration decided that post graduate degree of same nomenclature be given to the students of both the post graduate classes. The department administrative and academic committees decided that MSc (HS) degree be awarded to all the students. This equality was disheartening to one set of students and an advantage to other set of students.

The academic ambiance in the physics department was very positive. The motive was to help the students; they learn to learn on their own to achieve what they want to achieve in life. The teachers were putting their best to promote the creativity among students and the students had the faith in their teachers. The students were serious in the classrooms as well as in the library to acquire the knowledge. The teacher taught relations were cohesive and of mutual respect. Fig. 2 shows the students working seriously in department library to understand the complexities of basics of physics.

Figure 2

Knowledge Creation

The faculty members were engaged in research activities and they were working hard with their PhD students to obtain substantial research output. The research students were coming to do research and teachers were also training them to be an innovative researcher. The PhD thesis was the byproduct of these efforts. The quality of research work was very competitive with available human and financial resources. The faculty members and research students were publishing their research papers in reputed journals. The best practice was that the senior faculty members were very supportive to younger faculty members to create competitive knowledge.

The faculty members were also having collaborative research program with research laboratories in USA, Russia, Australia and European countries. In these days I also worked in Orsay, Canberra and Duisburg universities. There was nearly perfect ambiance of doing and learning science in these universities. The core courses were advanced and the students were involved in innovative instrumentation. The teaching and research ambiance in physics department was also competitive with above foreign universities in those days.

At the same time CSIR, DAE and other research institutions were also looking forward to collaborate in research projects of their interest in physics department. Therefore these institutions were also supporting the research projects of the department by providing financial assistance for research equipments, research personal and technical staff to accomplish the research project and to upkeep the research laboratories. In this process the department was getting enough grants from UGC, CSIR and

DAE for scientific dynamics of the department.

The department was well recognized for its teaching and research activities in three major areas; Theoretical and Experimental Nuclear Physics, Particle Physics and Solid State Physics. There were also two important research sections of Atomic Spectroscopy and Geochronology. The seminars, symposium and workshops in nuclear physics, particle physics and solid state physics were regularly held. Figs. 3, 4 and 5 show the students observing the stars and celestial installations in night, students working in research laboratory trying to create new knowledge and students interacting in the poster session of the symposium.

This was very exciting environment for research work in the department. The department was also getting the special grants under Special Assistance Program (SAP) and Center for Advanced Studies (CAS) programs of UGC to increase the faculty strength to strengthen teaching and research laboratories. The teachers

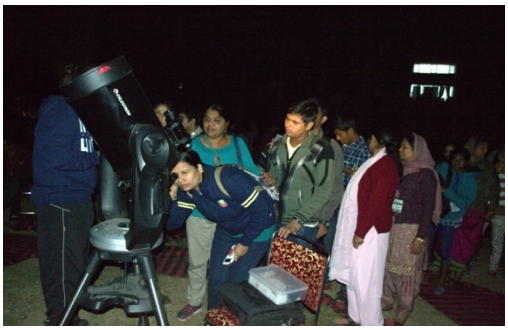

Figure 3

Figure 4

Figure 5

and students were working till late in the evening, on weekends and even on holidays. This was the period when the department was growing fast upward.

The faculty strength became nearly forty-two which was evenly distributed in strength and in specialization in the major areas of academic activities. The faculty members were writing the research projects to generate resources for the academic dynamics of the department. The existing infrastructure facilities were being provided to young faculty members for their growth in research work in each group and to each individual.

The PhD students were moving to other universities and research institutions on teaching and research positions. Many students were going abroad for postdoctoral fellowship. This was very flourishing period for the research dynamics in the department. I also enjoyed working, contributing and getting encouraged.

Academic Eminence

Prof. Yash Pal, former UGC Chairman, Prof. K.N. Pathak, and Prof. A.K. Grover, former Vice chancellors of Panjab University, Prof. Satya Prakash, former Vice Chancellor of Jiwaji University Gwalior, Dr. Manjit Singh, former Director TBRL, Chandigarh Dr. P.D. Gupta, former Director of RRCAT, Prof. A.K. Sood,

Principal Scientific Advisor to Govt. of India and Prof. Tankeshwar Kumar, Vice Chancellor of Central University, Mahendragarh, are few eminent Alumni of physics Department.

Prof. Satya Prakash, Prof. M.M. Aggarwal, Prof. S.K. Tripathi and Dr. Lokesh Kumar are included in Stanford University's list of "World Top 2% scientists based on career long data and / or single year impact 2020 and 2022. Prof. Jasbir Singh and Prof. Vipin Bhatnagar are among the top scientists according to DST report based on citations.

Physics Association

This is the creativity platform of physics students. They write essays on contemporary topics of physics, hold debates, organize cultural activities, and hold outdoor and indoor sports competitions and so on to explore other dimensions of talent of physics students. The spectacular dance show of physics students is shown in Fig.6

Figure 6

Differentiation

Yes, with the implementation of rotation of Headship and Merit Promotion Scheme some aberrations erupted in but still the sizable strength of faculty members continued their spirit of commitment and dedication for quality teaching and research. The national and international research collaboration programs continued.

With the implementation of reservation policy religiously the difference in the adoptability of course contents among students became visible. As the students cannot be retained due to fix number of intake of new students the course contents of HS were reorganized that all the students get their degrees within the stipulated time. The competitive graduation system of BSc (HS) and MSc (HS) got changed.

When these students joined PhD program, it was hard to train them to achieve the international competitive level of research particularly in physics within a period of 3-4 years to create significant new knowledge. This affected the contents of PhD thesis and the quality of publications.

With the implementation of roster system of appointment most of the posts remain vacant due to nonavailability of qualified faculty members. Further with the retirement of senior faculty members the faculty strength reduced to nearly half the strength that of the sanctioned posts. The guest faculty is accomplishing the obligatory duty to teach the students in the class rooms and laboratories. But it does not bring in the teacher – taught relations of mutual confidence to learn and to create knowledge. Now a lecturer is sure to be professor within a span of minimum time period. This may dilute the competitive academic ambiance; may be an unhealthy index for academic institution.

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