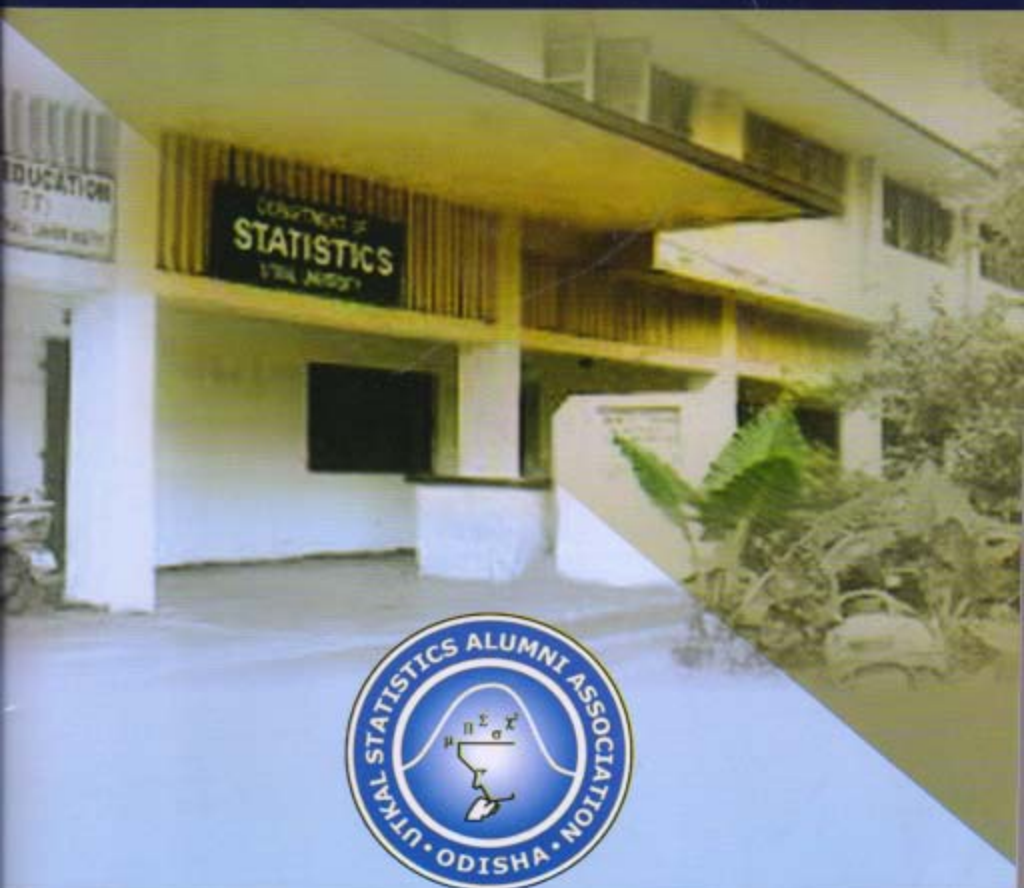


UTKAL STATISTICS ALUMNI ASSOCIATION

-:ଉଷା:-



Post Graduate Department of Statistics, Utkal University, VaniVihar,
Bhubaneswar-751004, e-mail: usaa.uuvv@gmail.com



EDIT

*Editorial board members
thank all contributors for
their timely support and
invaluable contribution.*

How's Stat!

The most popular sporting event, cricket, is now getting more spicy and spectacular, by the ever increasing use of wide variety of Statistics. Player-wise, country-wise, event-wise, and even over-wise statistical records, now speak volumes of 'wonder-application' of Statistics for this game, called cricket. Now a group, imitating the most common word of this game, 'howzaatttt!', has recently started a web-page, 'how-stat!!!!' [www.howstat.com].

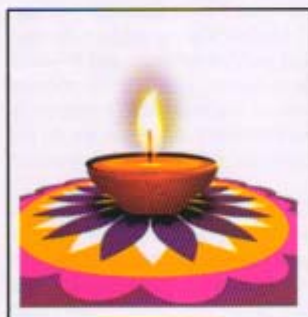
This is just one of the numerous examples to show, how Statistics can be applied in any emerging field, be it popular or practically scientific. This is just to indicate the ever increasing popularity and potential of this grossly neglected subject. As we see the ground realities, in our country, and more particularly in Odisha, it is bit discouraging and depressing. If we accept the definition and evolution of Statistics as a subject (related articles are available in this souvenir), this subject is as old as Mathematics and Physics. But when we compare, at least with the two 'comparable subjects', where is our relative position in Odisha today? We now have Physics Institute or Mathematical Institutes in Odisha, and no formal bodies or societies or activities worth mentioning. Even we do not get enough students even for the exiting departments / colleges. What to talk of research or applications of Statistics for consultancy!!

Time now is not to discuss, on who is to be blamed for (Government / teachers / students / changing societal values?), rather to discuss what we all can do it together, so that things could improve at a faster rate. It took five-decades to start a formal body, like USAA, where people can come and brain-storm. Some of us could possibly feel the real pinch, when we see and learn from our close neighbor / sister like OMS. They could organize academic conferences regularly since last few decades; they could bring out a magazine, to popularize Mathematics, for High School students, they could conduct Math-Olympiads and identify (and groom) Math-genius from Odisha. Time has come, we should think better, bigger and faster.

Objective of this short message is to put forth a few ideas which we could perhaps debate in forthcoming USAA meets, paving ways for more refined thoughts by successful alumni, and more particularly, on how to operationalize and implement the ideas. Articles included in this souvenir, should inspire young alumni to feel proud of this important subject, taking eminent contributors and torch-bearers as their role-models.

Last but not the least, we thank all the contributors and also the EB members for making this a reality.

For all those dear alumni,
who are unfortunately not
with us today....



Obituary

*.....They were great alumni too,
excelling in their own fields, making a
mark in their own pace and space; but
now being missed by one and all of
us, who have assembled here. We very
fondly remember all those great
souls, who have left very untimely.*

*USAA sincerely offers prayers
for eternal peace; May the departed
souls RIP.*

USAA

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CONTENTS

Sl. No.	Subjects	Written By	Page
1.	The Nostalgic Memories	Dr. Jitendriya Sarangi (PG: 1960)	9
2.	Past Remembrances: Some Pages from History	Dr. A. K. P. C. Swain (PG: 1961)	12
3.	My Sweet Memories of my Post Graduate Days in the Department of Statistics	Smt. Kanak Mishra (PG: 1964)	21
4.	Not a Small Gift	Sri Lokanath Sarangi (PG: 1968)	23
5.	Professional Ethics in Statistics	Sri Jogeswar Das (PG: 1974)	27
6.	Role of NSSO in Indian Statistical System	Sri Banshidhar Mahapatra (PG: 1976)	32
7.	Thrills and Spills of University Days: A Stroll Down Nostalgic Memoirs	Dr. Pradip Kumar Tripathy (PG: 1980)	35
8.	History of Statistics	Dr. Niranjan Mishra (PG: 1983)	37
9.	Indian Contribution to Statistics	Dr. Rabi Narayan Subudhi (PG: 1984)	42
10.	Statistics in Business	Sri Susan Das (PG: 1985)	45
11.	Modern Day Applications of Statistics	Sri Prachetas Priyotosh (PG: 1988)	49
12.	Statistical Consultancy and Predictive Analytics	Sri Banshidhar Swain (PG: 1988)	53
13.	Salient Points of Religion Data: 2011 Census	Sri Himansu Sekhar Dutta (PG: 1990)	57
14.	Hospitality in Rural Odisha in the Eyes of National Sample Survey: A Brief Analysis	Dr. Sujata Priyambada Parida (PG: 1995)	60
15.	Application of Statistics in Genome Data analysis and Genetic Markers of Biological Sciences	Sri Kinshuk Charan Nayak (PG: 1995)	67
16.	Statistics Education for Future Managers: Needs, Obstacles and Possible Solutions	Smt. Gitilaxmi Das (PG: 1996)	69
17.	Big Data Analytics: A New Era in Statistical Analysis	Sri Abhilash Das	73
18.	Windo to Statistics	Sri Majoranjan Sen (PG: 2009)	75
19.	Statistics and its Importance	Guru Prasad Dash (PG: 2011)	78
20.	Demography and Development	Basant Kumar Panda (PG: 2014)	82
21.	A Letter of Hope	Sri Kirtiman Gopanayak (PG: 2015)	86
22.	Statistics in Our Everyday Life	Sri Shekhar Das (PG: 2016)	87
23.	List of Members of Utkal statistics Alumni Association		89



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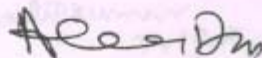
30th December, 2015

Message

It is my pleasure to see that the Utkal Statistics Alumni Association is arranging its Second Alumni Reunion. I congratulate the organizers and convey my warm greetings and felicitations to the Alumni of the Post Graduate Department of Statistics. It is a need of the hour to have a strong and vibrant Alumni Body. I hope the collaborative approach of the Department and the Alumni will no doubt provide quality input not only for growth and development of the Department but also ensure producing quality human resources thereby opening better avenues for the fresh Alumni. In this context, publication of the first issue of the "USAA(@@)" on the occasion of the second Alumni Meet is a welcome step and I must appreciate their endeavor.

I wish the Utkal Statistics Alumni Association will prove its worth by contributing to the cause of the subject matter Statistics, the Statisticians and development of inter personal relationship among members thereby setting an example for others.

I wish publication of the magazine all success.


(Asoka Kumar Das)



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Dr. Pradip Ku. Tripathy
President, USAA

Message

Only a little over few months has passed, since Utkal Statistics Alumni Association was formulated and taken a shape in its new hybrid form. In this period, the growth of "USAA" in, and around the use of Statistics has been remarkable. Rarely indeed this souvenir "(ଭଣି)" found such a wide range of audience in its own fraternity. The extensive interest of the alumni of Department of Statistics, Utkal University has arisen in 2016 in an 'out of box' form and has brought with it the need for publishing a virtuous souvenir. In the coming days, the ubiquity of "(ଭଣି)" is certain to have a profound impact on the ways in which its alumni association is conceived, designed and interacted with. I wish the endeavor success and only success.

*Pradip Kumar
Tripathy*

Dr. Pradip Ku. Tripathy

The Nostalgic Memories

● Dr. Jitendriya Sarangi (PG: 1960)

My association with the Department of Statistics, Utkal University started fifty six years ago and continues till today when I am completing 78 years of age. During this long period of association, I was away in Canada in between 1962 and 1966; in UK in late 1970 and early 1971 as a visiting young scientist to the Universities of Cambridge and London (University College); in Sambalpur University, Burla from mid 1976 till early 1979 as the first Professor and Head of the Department of Statistics. I have retired from the department on 31st December 1997. Since the day of my retirement all the faculty members of the Department barring Prof A K P C Swain, are my students. A visit to the Department is always cordial and refreshing and thus frequent. In 1966, Ph D degree holders in statistics had a great demand from good universities in Canada and USA. I did serve in the teaching faculty of the University of Alberta (Calgary Campus) for one academic year. The taste academic distinction and material comfort

in life was attractive; but the attraction of the home where I was born and brought up, the



Department where I served and which was my Alma mater was much stronger.

I joined the Department as a lecturer soon after completing M Sc in 1960. The Department shifted from Geology-Statistics building of Ravenshaw College to Utkal University campus in Vani Vihar with the commencement of the academic session in 1962. A memory of my few years of service in Ravenshaw College campus is pleasantly invigorating. Prof Sadhu Charan Dash, the founder Professor and Head knew me as a student. Shri Partha Sarathi Mahapatra and Shri Antaryami Mishra who had MA Degree (in Statistics) from Patna

University were my senior colleagues and slightly older than me. I was a bachelor with good health, leaving near the college gate. Prof Das occupied one of the quarters allotted by the college. I lived in a rented house with my brother in law Shri Brundaban Chandra Acharya who was Head of the Geography Department in the College. I had an independent room with a varendah in the first floor. But the house had no electricity. For me, my double-coiled kerosene lamp was a proud possession. Ravenshaw College campus is very safe with minimal security. There were no grills, no collapsible gates and people in the neighbourhood had great regard to all the teachers. I spent long hour in the Department in an ante-room of the room occupied by Prof Das. He gave me the key of his Department room. I could walk up to the college chowk in informal dress and have snacks at the South Indian Hotel or Rasogollas in thatched shop of Madan Sahoo in front of the college. Long hours of study in the Department library was my daily habit. Such was my care free happy life.

When the Department shifted to Vani Vihar in 1962, I had already received Commonwealth scholarship to go to Canada. During the summer vacation, I got married. The scholarship provided for travel and maintenance of my wife in Canada. Since I was decided to leave India in September-October, I did not

move to the campus but stayed with my elder sister in Unit-VI till my departure to Canada. In early October 1962, I was relieved from the Department to go abroad.

By the end of June 1966, I was back to my parent job in Vani Vihar. My father had retired from Government service and stayed in Nageswartangi, Bhubaneswar (Now B.J.B Nagar), in the same house, which I occupy at present. Bhubaneswar, fondly called as new capital at that time had very limited transport facilities. There was no proper road link between Rajmahal chowk and Vani Vihar due to a flowing water channel near Unit IX. The only public bus that I could use for my travel was a bus from Lingraj temple to Vani Vihar via Rasulgarh. I could manage to slightly alter its route so that it plied through Lewis road, near my place of stay. Another bus plied from Lingaraj temple to Convent school chowk via Rajmahal which was later extended upto Unit-IX. Few cycle rickshaws were also on the road. One could cross the water channel near Unit IX wading through the ankle deep water. After about a year and a half, I moved to the University campus and occupied quarter C-22. My stay in C-22 was a happy memorable experience from where I went to Jyoti Vihar in 1976. In January 1979 when I joined Vani Vihar as Professor, I was allotted quarter C-

21. Within a short time, I was allotted quarter B-5, vacated by Prof Basant Kumar Behera, Professor, Zoology. In 1980's, I moved to quarter A-41, a large but poorly maintained facing the highway. I stayed there till my retirement in December 1997.

My experience as a teacher could not have been more pleasant. For a decade from 1966 to 1976, I had very cordial relation with my Professor, Sadhu Charan Dash, a good teacher. His honesty and integrity was exemplary. My loving Guru had health problems and died in harness in 1978. As the founder Professor at Sambalpur University, I had the freedom of choosing my office and teaching staff. For the brief period of my stay there, I had imposing personalities of Prof Bhubaneswar Behera and Prof Dabendra Chandra Mishra as my Vice Chancellors. In Vani Vihar, from January 1979 till the last day of 1997, I had a smooth sailing career as a senior most Professor of the Department for 18 long years. Never did I have any serious differences with my colleagues or my Vice Chancellors. Prof IS Rao and Prof A K P C Swain were my old friends. Even the

junior most teacher had his say in the running of the Department.

As a senior Professor of long standing, I had my full share of student's management, and top University administration. I also had a fair professional recognition from the State and Central Governments, National bodies like UPSC, UGC and many Indian Universities. I lived a life of peace and contentment as I was not ambitious or restive. My only woe, which hunts me even today, is that the subject I taught did not attract bright students in spite of its importance. From around 1983 for about a decade, the Department did get a good number of serious students with good background. They got good placements in Indian Statistical Service, bank jobs and other comfortable positions. But by 1995, all good students opted for technical education. Thus all pure science including Mathematics and Statistics suffered a setback in higher education. Will the situation improve in future?

I believe, it is divine grace which has allowed me to live a peaceful and contented life in good health. I pray for such grace in the future.

**Former Professor of Statistics and
Head of Department of Statistics,
Utkal University.**



Past Remembrances: Some Pages from History

• Dr A K P C Swain (PG: 1961)

Deep gratitude and salute to revered Late Professor Bama Charan Das, eminent Mathematician and the then Principal, Ravenshaw College, Cuttack and Late Professor Prana Krushna Parija eminent Botanist and the then Vice Chancellor Utkal University, who had taken keen interest in opening the Post Graduate Department of Statistics under the Utkal University in 1958. However, the foundation of teaching Statistics in the State was started in 1957 by instituting a one-year Diploma course in Statistics under the auspices of the Utkal University in its Burdwan House building with some part time faculty members and some support from the Rural Economics and Sociology Department of the University.

It was in the month of September 1958, sixteen students got admitted to the Post Graduate Department of Statistics newly established under the Utkal University in the premises of Ravenshaw

College, inside the building of the University Geology Department. Our Department was allotted



with two staff rooms and one seminar room. Both theory and practical classes were being held in the lecture gallery of the Geology Department when geology classes were not there. Dr Chakradhar Mishra, a Master Degree holder in mathematics from Banaras Hindu University and a Ph D Degree holder from the University College of London, who was the Director of the then Bureau of Statistics and Economics, Government of Odisha was kept in charge of the Department for a brief period. Thereafter, Professor Sadhu Charan Dash, Reader in Mathematics of Ravenshaw College

who had returned from Australia after obtaining a A M Degree in Statistics from the Australian National University took over the charge as Reader and Head of the Department of Statistics. Two Lecturers, one Shri Partha Sarathi Mahapatra and other Shri Antaryami Mishra having their Master Degree in Statistics from Patna University were appointed then as the first permanent faculty members of the Department. Shri P S R Haranath who had a Master Degree in Statistics from the Andhra University was appointed as Demonstrator for assisting students in practical Classes. Dr Chakradhar Mishra continued his association with the Department by taking classes in Real and Complex variables as a guest faculty. Besides, Professor M Vaidyanathan, who was attached to the Rural Economics and Sociology Department as a Research Associate was assigned the responsibility teaching Designs of Experiment in the Department. As the subject was introduced in the curriculum for the first time in the State, we did not have much idea about the subject as also our future prospects.

In the initial stage, the Ravenshaw College Administration could not provide requisite facilities to our Department as well as the students. We could not hostel and library facilities because our Department was a University Department. After request from the university, we were provided with all facilities at par with

Ravenshaw College students. The faculty members and we the students had to struggle for availing the basic minimum infrastructure and facilities for our Department as well as the students. We had to struggle for purchasing some Facit and Monoro hand operated calculating machines for the Department for our practical classes.

The syllabus for our PG course was prepared by eminent professors like Prof P K Bose of Calcutta University, Prof D N Lal of Patna University and Prof K Nagbhusan of Andhra University, keeping standard at par with the major universities of the country. The text books prescribed for the course were authoritative and included Advanced theory of Statistics written by Prof M G Kendall, Advance Statistical Methods for biometric research written by Prof C R. Rao, Mathematical Methods of Statistics by Prof Harald Cramer, Sample Survey books written by Prof P V Sukhatme and Prof W G Cochran, Introduction to Mathematical Probability by Prof J Uspensky, Experimental Designs by Prof W G Cochran and Prof G M Cox, Multivariate Analysis by Prof T W Anderson, A First course in Statistics by C E Weatherburn, Mathematics of Statistics by Kenney and Keeping, Introduction to theory of Statistics by Yule and Kendall etc. All our teachers were very good in their assigned topics, but all of them were new to teaching Statistics at post graduate level.

Professor Sadhu Charan Dash, our Head of the Department had no experience in teaching statistics at any level although he was a brilliant scholar and excellent teacher in Mathematics. Professor Das laboured very hard to recapitulate his studies in Australia and Indian Statistical Institute, Calcutta and delivered effectively in the class. His attention was little diverted when the university hesitated to make him Professor. In those days scholars having obtained higher degrees with excellent educational qualifications and capability to teach were not made Professors because of the high standard set in the selection procedure by the University. Even though Dr Chakradhar Mishra had the ability and capability of becoming the Professor of Statistics, his case could not be considered as he did not have stipulated teaching experience. Shri Antaryami Mishra was a very good teacher having thorough knowledge in all branches of statistics having obtained gold medal from the Patna University. Shri Partha Sarathi Mahapatra, who was also from Patna University was a very intelligent teacher, but his attention to teaching was distracted by his special interest in composing music and scripts. In those days the road in front of Geology Department was lined by KRUSHNACHUDA trees giving enough inspiration to Prof Partha Sarathi Mahapatra for his music composition such as “bayasara krushnachuda rang tuma

manda nuhen, ayasara sanginigo sanga tuma manda nuhen..... etc”. His song compositions were sung by his best friend and famous Odissi singer late Akhaya Kumar Mohanty during our times as students. He had very handsome personality, envied by his colleagues in Ravenshaw College. Shri P S R Haranath was a nice gentleman and was very strict in practical classes. He used to collect practical problems from various sources and prepared neat handouts for procedures and was asking us to do necessary computations.

Professor Dash was teaching us Real Analysis, Probability Theory, Multivariate Analysis, and Statistical Inference. In his classes, he was often interrupted by me and Suprasanna Mohanty because of our expectations to know more from him in the subject. Professor Dash had enough patience to tolerate us and was asking us to go to the blackboard next day to explain him and our classmates on our viewpoints and methods of treatment of the subject. This made Professor Dash, not being able to give enough attention to other students who are calmer and did not want to intervene. At the time of teaching, some students, who were also equally intelligent and interested in the subject, did not appreciate such attitude of Professor Dash. On the whole, there were good interactions between students and teachers as regards acquiring knowledge

in the subject. The questions set for the examinations were very tough and mostly from the exercises given in the text books which were little bit difficult to be solved without some expert hints and also solutions were tricky. Most of the students had very hard times in the examination hall to tackle the difficult and tricky questions.

Professor Dash, as the Head, was always concerned with the way the other teachers teach in the class. Sometimes, he was entering the class rooms of lecturers with permission to know the quality of their teaching and also to know the extent of grasp of the students in the class. Professor Vaidyanathan who was teaching us Designs of Experiment as guest lecturer left his assignment, most likely because of the fact that he was not feeling comfortable in teaching his subject in the class. Professor Dash was constantly in touch with the teachers to discuss contents in different text books for the benefit of students. It so happened that Professor Das instructed Prof Antaryami Mishra, who was teaching statistical methods to start afresh the subject with special reference to books of Yule and Kendall, and Kenney and Keeping etc which were excellent for basic understanding. Although Prof Mishra was a genius, he was of non-compromising in nature. However, he left the university job soon and joined as the Statistician in the Directorate of Agriculture and Food

Production, Odisha. While most of the teachers of our time are no more with us now, we cannot forget their love and affection towards us and their contribution to the PG Department of Statistics during its infancy.

Out of all the students among us, Dr Suprasanna Mohanty was a voracious reader trying to understand each and every sentence of the text book and spending hundreds of sheets of paper to write down whatever he learnt from the books and then verifying it from the books.

Dr Jitendriya Sarangi joined us in the 2nd year and was a source of inspiration for all of us. He was very much talented and a brilliant Honours student in mathematics from Ravenshaw college having good exposure in statistics from Calcutta university. I sometimes walked two kilometres to his residence at Nayabazar to understand the proof of Strong law of large numbers, which was not very much understandable to me in the probability class. Another personality was Shri Shiva Charan Behera, who was 4 years senior to us and very intelligent, but mostly a reserved personality. He had a strong memory power and had only two or three note books for his studies and the rest he kept in his memory. Dr Lalit Kumar Pati, a lovable personality, was a great follower of Shri Shiva Charan Behera. Both Shiva Babu and Lalit Babu were in the good book of Professor Dash. Shri Dolagobinda Panda, Dr Gopal

krushna Mishra and Shri Bidyadhar Pattajoshi who were from western Odisha were very nice and intelligent persons with calmer personality and were not talkative like me and Suprasanna. Shri Sashisekhar Hota was a gentleman, who talks very less. Shri Ivaturi Srinivas Rao graduated from Paralakhemundi College with distinction was staying with his brother in the premises of the Chauliaganja Post Office in front of the Ravenshaw College. Although very much mixing, Rao Babu had a language problem as he was not well versed with odia language at that time. He was studious and intelligent, having handsome and quiet personality. At a later stage, Rao Babu became the pillar of the Department of Statistics by virtue of his continuance as faculty member for a long period and his devotion who retired as Professor of Statistics. By turn of events, Rao Babu became a very spiritual man and by the grace Sri Sathya Sai Baba adorned the position of President of Sri Sathya Sai Seva Organisation of Odisha. Next, Shri Premananda Patra who was a honours graduate in geography with mathematics pass was a cool and fine personality. Another two class mates Shri Manoranjan Das and Shri Mina Ketan Behera were quiet and unique personalities. Manoranjan had joined the National Sample Survey Organisation and his present whereabouts are not known to me. Minaketan had been to Germany on

a scholarship and got the opportunity to work with an eminent Professor in Information theory. In Germany, he discovered his inherent talent and excelled in the field of information theory and then landed in McMaster University, Canada as a Professor of repute. I was a Honours graduate in Geography and could not afford to pursue Master Degree outside the State because of financial reasons and landed up in the Post Graduate Department of Statistics. Statistics was never my first choice for higher studies, but forced fascination to study a new subject without planning for the future. In the beginning, I found it little difficult to appreciate the subject because of my unfamiliarity with statistical concepts, which were later on cleared.

Regarding attendance in the class, Suprasanna and I were competing with each other to score the highest percentage of attendance. Our percentage of attendance was above 99.5% all through. We hardly missed a class. Suprasanna and I were competing with each other to see how fast we were operating the facit calculating machine, much to the amusement of our classmates.

The seminar room was well attended by the students after college hours and most of us were discussing with each other on different academic topics. It was for the first time in the history of

Ravenshaw College that the Ganesha Puja was celebrated in our Department with energetic initiative of Suprasanna, who had great organising capacity. During evening hours, we stroll along the road in front of our Department, some of us with informal dresses. Frequently, Professor Dash used to visit the Department in the evening hours during his evening walk to check what we were doing there. Sometimes, he asked us to play Bridge (card game) so that he may choose one of us as his partner while playing with his colleagues. Professor Dash was a nice and simple personality with ingenious brain frequently hindered by illness due to acute and chronic intestinal pain, which marred his appetite for original research. However, he had published few quality research papers in international journals. Professor C R Rao and late Professor D Basu of Indian Statistical Institute (ISI) had deep appreciation of his merit when he pursued certain courses there. His tenacity to do some good research work was such that once he travelled to ISI to convince Prof Basu about the originality in his paper sent for publication in Sankhya, he had no hesitation to learn new techniques of statistical analysis from his students. He had thirst for knowledge and always wanted to teach a difficult topic in a simpler way. I was fortunate enough to have become his colleague for a very brief period before his untimely demise on 5th June 1978. During that period, he

asked me to teach probability theory, which was not a very easy subject for me. When he knew that I have taught strong law of large numbers to the students, he called me to his room and asked how could you teach the subject as I did not cover much in the class? When I told him, there is a very simpler way in Professor C R Rao's Linear Statistical Inference book, he took a pause and asked me to explain him the way. He was very happy when he was satisfied with the approach. This was a unique way of checking the calibre of his junior colleagues. In his opinion, age is no bar to acquire advanced knowledge, even from juniors. In fact, during our student days, he took the help of the students to go deeper into the subject matter.

In the mean time, many years (1958-2015) have passed. The Department was shifted to newly built Vani Vihar Campus of the Utkal University in 1962. Shri Antayami Mishra left the Department towards the last part of 1961 to join under the Agricultural Department, Shri Partha Sarathi Mahapatra left the Department for higher studies at International Institute of Population Studies (IIPS), Mumbai and then went to Michigan University for his Ph D Degree and he never returned to the Department again and ultimately he resigned to avail a UNO assignment in South East Asia. Against the vacancies created by Sri Antaryami Mishra and Shri Partha Sarathi

Mahapatra, Shri I S Rao and Shri Asim Das were appointed as regular Lecturers in the Department. Prior to them Shri Gopal Krishna Mishra had worked as faculty member in the post of a Lecturer for about a year during 1960-61 and Shri Lalit Kumar Pati joined as Demonstrator for a very brief period to take care of practical classes. I had worked for a very brief period in the Department from September 1963 to July 1964, after completion of my Diploma in Agricultural Statistics from Indian Council for Agricultural Research (ICAR). I joined in the Post Graduate Department of Applied Economics, Utkal University in December 1970 after working for nearly six years under the Irrigation and Power Department of the Government of Odisha, during which period I availed training at River Research Institute, Kolkata and Central Water Power Research Station, Pune and higher studies at London School of Economics and Political Science, United Kingdom. My second innings started in the Department of Statistics in March 1977 after Dr Jitendriya Sarangi left the Department to join as Professor of Statistics, Sambalpur University. Professor Sarangi returned back to the Utkal University in 1979 as Professor after the sad demise of Professor Sadhu Charan Das on 5th June 1978 (Savitri Amabasya). Prof Sarangi retired in December 1997. Shri Asim Das, a tall, smart, fine and polished gentleman and

the topper of his batch (1962) who was a faculty member since 1962 left the Department in 1980 for an administrative assignment in a charitable organisation "Orissa Church of God Association". Professor Sadhu Charan Dash, Shri Antaryami Mishra and Dr Partha Sarathi Mahapatra, the founding faculty members are no more with us. I have no knowledge about the present whereabouts of Shri P S R Haranath. In these years, there had been a number academic appointments in the Department, namely; Shri Gopal Krishna Mishra, Shri Lalit Kumar Pati, Shri Vazir Ahmed, Smt Kanak Mishra, Smt Srilekha Das, Shri Lokanath Sarangi, Smt. Minati Mishra, Shri Radha Govinda Mohanty, Shri Lalit Mohan Pattanaik among others who had left the Department for higher prospects in and outside the country. Shri Panchanan Mishra, a long time associate of the Department first as Demonstrator and later as Lecturer is no more with us. He was an interesting personality with eventful career in the university and an ardent devotee of Chess game and Lord Hanuman. After a brief period of retirement, he expired while playing chess game, being excited with a laugh at the success of a game in the precinct of Hanuman Temple near Vani Vihar.

The blooming youth of the yester years are now in ripe old age with all its manifestations. Our revered colleague and brilliant teacher and very spiritual

person Professor I S Rao left for heavenly abode on 12 November 2012 after prolonged illness. Had he been there, he would have been certainly very happy to find a big gathering of our Alumni in the new Department premises. First batch entrants to the Department Shiva Charan Behera, Radhanath Mohanty, Manoranjan Dash, and Minaketan Behera have untimely left this mortal world. The rest of the first batch of Alumni are leading their life with problems of their own.

I very much cherish our evening outings along the road in front of our Department in Ravenshaw College, flanked by flowery Krushnachuda trees which once impressed and kindled the music composing talent of Late Partha Sarathi mahapatra to provide some hit songs in those days. I do not know whether the said Krushnachuda trees are still there. Even if they are there, do they remember us or at least their lover late Partha Sarathi Mahapatra who perhaps brought them for the first time to Odia music literature. There is nothing to get surprised because this is the go of the world, where everything is temporary. We have come to this world to act for some time to be reflected upon and to be evaluated subsequently. The stage decorations are dismantled after the drama is over, and the memories get deemed. Of course, there is charm and enjoyment in dreaming the past memories.

The Statistics Department has grown over years from a humble beginning. After shifting of the Department from Ravenshaw College to the new campus at Vani Vihar, the Department was allotted space in the newly built Statistics-Anthropology Block, a three storied building. Later on, the Department was shifted to its own complex after Geology Department and Chemistry Department vacated the space for their new buildings. I retired from my university job in February 2001. The history of the Department thereafter will be written by other members depicting the intra-department faculty relations, academic curriculum, teacher-student relation etc.

In my opinion, there is need for fruitful interactions among the persons in teaching profession and also those employed in Government and non-Government organisations and research institutions. There is need for collaboration between the government agencies, industries, corporate sector and the Department of Statistics. Faculty members employed in universities of the State imparting post-graduate courses in statistics should interact among themselves for the improvement of statistics teaching in the State as regards the academic curriculum and contents, and more so for popularisation of the subject. Annual conferences in statistics should be organised and the outcome should be apprised to appropriate

authorities for growth and development of Statistics and the Statisticians. The course curriculum should be designed so as to suit the present day requirement and future prospect of the students. A large number of our senior alumni members have excelled in different fields of applied statistics that can provide requisite input to our endeavour. The library facilities both at the state and university level should be strengthened to enhance the advanced knowledge on recent development of applied statistics for the benefit of students, teachers and practitioners. This is high time now to intervene in these areas so that we shall be able to do justice

to the growth of the subject matter Statistics and safe guard the interest of Statisticians in the State.

I am glad and satisfied to know that most of the alumni are well placed in their sphere. My best wishes to one and all and their family members. May God bless them all. Of course God's will is a random variable with unknown probability distribution. Let us not indulge to explore it but try to see good, be good and do good and leave the rest on the God to play His heavenly dice.

**Retired Professor of Statistics,
Utkal University**



My Sweet Memories of my Post Graduate Days in the Department of Statistics

● Smt Kanak Mishra (PG: 1964)

A few days ago my professor Dr A K P C Swain telephoned me that the Alumni Meet of our department is going to be held on 10th January, 2016 and I have to write an article for the souvenir that is coming out on the occasion. Sir also advised me to write about my student life in the Department and also my teaching experience there in the Department of Statistics, Vani Vihar. At first, I was a little perturbed as I was there a student half a century before and also suffering from memory loss.

The very first thought came to my mind – What should I write and how to begin? But I respect my teacher by writing what he had told me to write. I really don't remember in which month of 1962 I joined the classes. That time the Department Head was Prof Sadhu Charan Dash. The other teachers were Prof Jitendriya Sarangi, Prof I S Rao, Prof Asim Das and Prof Vazir Ahmed (the last two had just

joined). Then Dr Sarangi left U t k a l University for USA and did not return till I finished my M Sc in 1964. Dr



A K P C Swain joined in September 1963. Then Mr Vazir Ahmed left. They were all well behaved and teaching well. In my class, out of 16 students, I was the only girl student. I still remember that I used to sit in a corner silently. But after 3 to 4 months, I became friendly with my classmates. Then, in my sixth year, Smt G Shibakanta joined in fifth year and I got a friend. She was also the only girl student in her class except me. We often went to canteen to have tea etc. In class room also students made fun with each other and we enjoyed. Thus my two years as student passed and I left Vani Vihar.

While studying, I was staying in the ladies' hostel. The hostel means Two University Professor quarters as the hostel building was under construction. In the hostel, I was lucky to have very nice roommate. All other girls there were also good and helping in nature. Both in the college and the hostel my days had passed very nicely and with a lot of fun.

One memorable moment I still remember that Utkal University students had their Annual function when I was in 6th year. A drama was staged by the lady students. I was forced to take a part in it and that too a male role (It was Amadabata by Basanta Kumari Debi and my role was that of the heroine's husband. Along with my man's make up, I was with a suit and tie and so was a little embarrassed). But after the drama was over everybody including the Professors appreciated and also told me that I was looking exactly like a young man. I felt overjoyed.

After my final examination, I left Vani Vihar and came home. A few months after, I received the appointment letter to join as lecturer (on ad hoc basis) at Ravenshaw College, Cuttack. Then after six months due to P S C meeting disturbances I was relieved from there and after few months joined in Statistics Department at Vani Vihar in a leave vacancy post. At that time, all Professors were known to me and I enjoyed maximum freedom there. I myself selected the subjects which I had taught in both classes. I spent my days happily in the Department. Then Orissa Public

Service Commission interview meeting was held and I was selected to join again in Ravenshaw College. I resigned from University and joined the single post in Statistics at Ravenshaw College. But being the single lecturer there, I was frequently going to Vani Vihar to meet my teachers for some works.

Now more than five decades have passed. Many incidents of that time have gone from my memory. After some years, I left my job and settled in West Bengal. Now I have come back to Bhubaneswar to stay permanently and have gone to my Department many times. But when I remember those days, I feel happy and want that time back again.

And one thing I must say that our Department has been expanded with construction of more buildings, taking more students, more teachers and staff etc. being more eminent with better results.

Many of our teachers and friends left the world. I sometimes meet two teachers

Dr A K P C Swain and Dr J Sarangi. Both of them are affectionate and I respect them. May their blessings always stay with us?

Lastly, many thanks to them who have given me the opportunity of expressing some memories of the best period of my life.

Thanking all.

Former Professor of Statistics



Not a Small Gift

- **Sri Lokanath Sarangi (PG: 1968)**

We have read and heard many things of the past and we are also reading and hearing many things of today. Even though nobody has seen tomorrow, the future is always a bundle of hopes. The present day debate, either at individual level or at community level, mostly brings a comparison between the past and the present, where the general perception prevails that our past was glorious enough and the present situation in the social front is going from bad to worse. Somehow, such a thought process pains me. Admitted that there are stray cases of serious injury to the socio-cultural system by selected individuals today, but it should not be generalized. If we open the pages of history, it will reveal grave instances of the past also. By this, neither I like to undermine our past nor do I like to advocate in favour of wrong doers of the present and leave them scot free. On the other hand, my opinion is that while the wrong doers need be seriously dealt with, general opinion should not be formed on

account of limited few. Our younger generation is the hope and aspiration of the future. Our society is



always in the process of civilization and our younger generation will carry it forward. Our prime role at this juncture need be to appreciate their good work, guide them where they deviate with a little bit love so that they can be encouraged and carry forward the civilization in the right direction.

In this context, the question of formation of our Utkal Statistics Alumni Association (USAA) comes to my mind. The Post Graduate Department of Statistics under the Utkal University was opened in 1958 and the first batch of PG Degree holders passed out in 1960. Since then, 56 batches have come out successful. The M Phil course in Statistics

was introduced by the Department in 1997 and 19 batches have come out successful by far. Meanwhile, more than 60 Alumni have received their

Ph D Degree through our Department. It is the felt need of the day to form an Alumni Association of the Department with a view to working for the cause of the subject matter Statistics and the Statisticians as well as nurturing interpersonal relationship among the Alumni. In absence of Alumni Association, we usually try to keep touch with our batch mates and to certain extent with our immediately seniors and juniors that usually diminishes over time.

Despite the felt need to put an Alumni Association in place, we had not taken a step towards its formation until the recent past even though there had been considerable advancement in communication technology and related infrastructure put in place over the last few decades. Thanks to our young generation who have recollected the past glory of the PG Department of Statistics, and remembered their senior Alumni Members during the last year when the idea of forming an Alumni Association was conceptualized and the Utkal Statistics Alumni Association (in short USAA) was formed in 2014. No doubt, the faculty members in the Department and some senior Alumni Members had joined their hands in the process of its formation but it goes without saying that our Alumni Association was formed during a period

when our young brothers and sisters were doing their post graduation in Statistics for the 56th batch (2015) and 57th batch (2016). Among other activities, the First Alumni Meet was held on 25.01.2015 (Sunday) and we shall have our Second Meet on 10.01.2016 (Sunday). Our total Alumni strength at present is more than 2000 inclusive of PG, M Phil and Ph D streams that includes more than 500 women members. Within a short span, it has been possible for us to network more than 1000 Alumni Members through different modes. The networking not only reveals the present whereabouts of our Alumni Friends but the areas of their expertise and excellence. Hope! We shall be reaching all our members in the near future. This is a big achievement for us and the Alumni platform is not a small gift on the part of our young Alumni to our Alumni community as a whole.

No doubt, the young Alumni have formed the Alumni Body without any profit motive. At the same time, I not only appreciate their endeavor but also like to give them something as return gift, whereas, I do not have any thing for them in my hands except little love and some of my past experiences.

At the outset, I want to pass on an advice to them which I had received from my loving teacher Professor Sadhu Charan Dash during my post graduation. He was repeatedly telling us to attempt problems only after having a good grasp over the subject and possessing

fundamental clarity. I subsequently realized that this advice is not only true for class room teaching but also true in everyday life. After leaving the university, one may go for a job or pursue some entrepreneurial activity of his own. The same advice applies to every field. Before attempting a problem, we have to study the system, the process and its environment carefully and acquire good command over the subject matter which will help us in approaching relevant problems with confidence and tackling the same.

Many a time, I recollect my childhood days and laugh to myself. Most of our elders in my village during those days were coming to us to read and write for them as they were not able to do so. Not only we did it for them politely but subsequently we were feeling proud of for the simple reason that we were so called literates whereas they were not. In my fifties, I had to again laugh to myself for the same and similar reason that I was turned illiterate after half a century of my life time. The reason is very simple. In 1995, despite my devotion, sincerity, and workmanship, I could not discharge my responsibilities to the best satisfaction of my administration due to lack of my computer aided output. This was merely because I was a computer illiterate. It stood as a serious problem before me and I took this as a challenge. I sat before my knowledgeable juniors and resolved the bottleneck by possessing some amount

of working knowledge within a reasonable period. By this, I do not mean that everybody shall have to possess computer literacy. On the other hand, I mean everybody has to acquire some amount of working knowledge on the environment where they are required to discharge certain responsibilities, just like a person required to deal with banks should have little bit of financial literacy.

Our teachers have given us knowledge and taught us how to solve statistics related problems under certain ideal or assumed conditions. After leaving the University, we have to enter into real life where our assumptions may not work and we may be faced with different situations which may be hardly of ideal nature. Since we cannot change situations, we have to learn the art and the skill of dealing with problems under the situations before us. As for example, as a Statistician, we may be required to make a system appraisal or to conduct a sample survey in our field of work based on which appropriate policy initiatives are to be taken. It may so happen that the basic background data required for the exercise may not be available or if available, it may suffer from several deficiencies including authenticity. There may be shortcomings in the process of conducting the survey or else the information collected through the survey may suffer from deficiency despite adequate precautionary measures. Involvement of quality man power may be

a problem. The situation may be quite disturbing but the Statistician has to remain cool. One of the basic principles of planning for development “make best use of available resources” is the only solution under such a situation. Doing something under certain limitations is better than doing nothing. Our artisans are burning examples before us. They make nice and beautiful products irrespective of shape, size and quality of raw materials available in hand. Our Alumni Association is an added advantage for us. The Alumni Body is a store house of experts in different fields. Senior Alumni members could be invited to share their knowledge, experience and expertise in their field of work to our young Alumni through workshops and seminars. This will not only enhance their awareness and exposure to different fields but also help them building up their confidence to face challenges in life.

Another aspect crucially important for a Statistician is the manner and nature of presentation of end results of statistical studies and surveys. Despite fulfillment of all requisites, conducting a good survey in a systematic and scientific manner, application of good techniques and our best workmanship, the manner of presentation of the results in the form of a report counts much. Since such reports will be used by the administration or the end users, the report should fulfill their requirement to the extent possible. In

other words, the report should be action oriented and user friendly. As such, the report should be presented in such a manner that (i) it should confirm to the set objectives of launching the study, (ii) it should be complete in itself starting from introduction to conclusion, in other words covering all aspects leaving no scope for any doubt or any question (iii) it should be precise and written in lucid language with due clarity so that it is easily understood (iv) it should be neat and clean, (v) ambiguous, complex and long sentences should be avoided, (vi) results of technical tests and derivations need be explained in layman’s language (vii) the flow in the report need be systematic, (viii) there need be observed consistency, uniformity, chronology, sequence and symmetry throughout the report (ix) the conclusions derived based on findings should lead to taking policy initiatives, (x) it should be released in time, and the many so that the role of a Statistician will be appreciated.

I do not like to go further. However, based on my long years of experience in the field of Planning and Statistics, I may tell our young Alumni that a little bit of love for the subject, sincerity and devotion to duty coupled with good manners, friendly dealings and sportive spirit will keep a Statistician in a pivotal position in the decision making process wherever he works.

**Retired Special Secretary to
Government of Odisha, P&C Department**

Professional Ethics in statistics

- **Sri Jogeswar Das (PG: 1974)**

With increase in freedom and liberalisation on the electronic and print media, academics, industrial activities, non-governmental organisations etc, in our country, which is the largest democracy in the world, of late it has become customary to link monitoring of political decisions to concrete statistical figures. Examples are: Growth in Gross Domestic Product and Per capita Income in the country, employment and unemployment situation in the country, movement of wholesale and retail price indices, literacy and health condition of the population and so on. The statistics thrown up by the statistical agencies are compared against the ground realities observed by the social scientists. It has become a challenge for the statistical organisations to retain their impartiality and independence in the times of strongly politicised discussions on the policies and programmes of the Governments in the background of the results of the statistics. Major statistics producing agencies and

organisations at the national and state level in the country such as the Central Statistical Office, the National



Sample Survey Office, the office of the Registrar General of India, the State Statistics and Economics Bureaus are now in the public eye. With higher level of education and awareness of information, people are more and more critical of the government decision making, relating it to the hard reality and statistical data available through different sources. In these circumstances, importance of having clear ethical rules covering various activities and issues involved in statistics must be emphasised.

Ethics Defined:

The word “ethics” comes from the Greek word “ethos”, which means making

a distinction between good and bad. It refers to good and acceptable conduct which promotes the welfare of individuals and the society at large. A profession is a body of knowledge and practical skills. Professionals exercise certain rights and powers. They enjoy certain measure of autonomy in relation to society's decision making mechanisms. Professionals can make decisions within their respective spheres of expertise without always being bound to decisions by others. However, the rights and powers associated with a profession need to be counterbalanced by certain duties and responsibilities. Professional ethics define rights, powers, duties and responsibilities with a view to creating as coherent a structure as possible. Different professional groups have their professional ethics determined by their respective objectives in relation to the society, government, business life and even individual people. These principles are also applicable to the statistics profession.

Ethics in Statistics Profession:

The statistician's value objective is to provide a comprehensive, unbiased and reliable picture of the society, respecting the right of the sources of information to privacy and data protection and making sure that all customers receive equal treatment. The United Nations Statistical Commission has evolved principles of official statistics. The professional ethics in statistics emanate from these

fundamental principles. Besides, the European Statistics Codes (2005) also influence to a large extent, the ethics of the statistical personnel. These Principles and Codes are summarised as under:

Fundamental Principles of Official Statistics Adopted by United Nations Statistical Commission:

Principle 1: Official statistics provide an indispensable element in the information system of a democratic society, serving the Government, the economy and the public with data about the economic, demographic, social and environmental situation. To this end, official statistics that meet the test of practical utility are to be compiled and made available on an impartial basis by official statistical agencies to honor citizens' entitlement to public information.

Principle 2: To retain trust in official statistics, statistical agencies need to decide according to strictly professional considerations, including scientific principles and professional ethics, on the methods and procedures for the collection, processing, storage and presentation of statistical data.

Principle 3: To facilitate a correct interpretation of the data, statistical agencies are to present information according to scientific standards on the sources, methods and procedures of statistics.

Principle 4: Statistical agencies are entitled to comment on erroneous interpretation and misuse of statistics.

Principle 5: Data for statistical purposes may be drawn from all types of sources, be they statistical surveys or administrative records. Statistical agencies are to choose the source with regard to quality, timeliness, costs and the burden on respondents.

Principle 6: Individual data collected by statistical agencies for statistical compilation, whether they refer to natural or legal persons, are to be strictly confidential and used exclusively for statistical purposes.

Principle 7: Laws, regulations and measures under which the statistical systems operate are to be made public.

Principle 8: Coordination among statistical agencies within countries is essential to achieve consistency and efficiency in the statistical system.

Principle 9: The use by statistical agencies in each country of international concepts, classifications and methods promotes the consistency and efficiency of statistical systems at all official levels.

Principle 10: Bilateral and multilateral cooperation in statistics contributes to the improvement of systems of official statistics in all countries.

European Statistics Code of Practice (May 2005):

Principle 1: Professional independence – the professional independence of statistical authorities from other policy, regulatory or administrative departments and bodies as well as from private sector operators, ensures the credibility of European statistics.

Principle 2: Mandate for data collection - statistical authorities must have a clear legal mandate to collect information for European statistical purposes. Administrations, enterprises and households, and the public at large may be compelled by law to allow access to or deliver data for European statistical purposes at the request of statistical authorities.

Principle 3: Adequacy of resources– The resources available to statistical authorities must be sufficient to meet European statistics requirements

Principle 4: Quality commitment - All ESS members commit themselves to work and cooperate according to the principles fixed in the Quality declaration of the European Statistical System.

Principle 5: Statistical Confidentiality - The privacy of data providers (Households, enterprises, administrations and other respondents) - the confidentiality of information they provide and its use for statistical purposes must be absolutely guaranteed.

Principle 6: Impartiality and Objectivity - statistical authorities must produce and disseminate European statistics respecting scientific independence and in an objective, professional and transparent manner in which all users are treated equitably.

Principle 7: Sound methodology - Sound methodology must underpin quality statistics. This requires adequate tools, procedures and expertise.

Principle 8: Appropriate statistical Procedures - Appropriate statistical procedures, implemented from data collection to data validation, must underpin quality statistics.

Principle 9: Non-Excessive burden on Respondents - The reporting burden should be proportionate to the needs of the users and should not be excessive for respondents. The statistical authority monitors the response burden and sets targets for its reduction over time.

Principle 10: Cost effectiveness - Resources must be effectively used.

Principle 11: Relevance - European statistics must meet the needs of users.

Principle 12: Accuracy and reliability - European statistics must accurately and reliably portray reality.

Principle 13: Timeliness and Punctuality - European statistics must be disseminated in a timely and punctual manner.

Principle 14: Coherence and comparability - European statistics should be consistent internally, over time and comparable between regions and countries, it should be possible to combine and make joint use of related data from different sources.

Principle 15: Accessibility and Clarity - European statistics should be presented in a clear and understandable form, disseminated in a suitable and convenient manner, available and accessible on an impartial basis with supporting metadata and guidance

The professional ethics in statistics are derived from the above fundamental principles and codes. These are based on the key principles of *impartiality, reliability, relevance, statistical confidence, transparency and cost effectiveness* and consist of *obligation to society, obligations to respondents and to individuals and communities described in statistics, obligations to the customers and obligations to funders and employers*.

- Impartial statistics must be produced for the benefit of the society. Statistics must be published, so that it remains in public domain. In order to be beneficial to the society, it must be reliable and relevant and quality must be ensured.
- Data for statistical purposes can be collected both directly from the individuals and communities that

are described in statistics, and indirectly through administrative records. Direct data collection should be resorted to only if necessary data are not available from administrative records. This also suggests that the data available in the administrative records must be reliable and relevant. Cost effectiveness should be paramount in the collection of data. The objective and purpose of the survey or statistics and the ultimate end-use of the information should be specified before the data are collected.

- Where data are collected, it must be made clear to the respondents whether they are required by law to provide the information or it is voluntary. The concept of informed consent should be applied, so that the respondents shall know and understand what they are consenting to give. It is also a good practice to provide feedback to the respondents on statistics that have been compiled on the basis of the data they have provided in earlier surveys.

- The professional statisticians must be responsible for their performance, professional competence, quality and business secrets. In the common interests of the employers, funders and the statistical professionals, the statistical products and services should be of highest possible quality. In case of disagreement, the disputes should be addressed by way of negotiations applying generally accepted scientific and professional principles.

Inculcating Ethics in Statistics in Young Mind:

It is extremely important and necessary that the principles of professional ethics and fundamental principles and good practices relevant to the statistics are made a part of the statistics curriculum in the university and colleges as well as in any training program in statistics. The university teaching faculty must commit themselves to the professional ethics and principles in statistics. As a part of their research activities in the academics, they must collect and compile a compendium of good practices in statistical administration.



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Role of NSSO in Indian Statistical System

- **Sri Banshidhar Mahapatra (PG: 1976)**

Post independence Indian Statistical System took a new shape under the guidance of late Prof. P. C. Mahalanobis, who was appointed by the then Hon'ble Prime Minister Shree Jawaharlal Nehru as Statistical Advisor to Government of India. As our country was going thorough transformation to a new era, exhaustive data from social sector was needed across the length and breadth of our country to formulate its own plans and policies. On the recommendation of the National Income Committee, the **National Sample Survey (NSS)** set-up was formed in the year 1950 under the technical and administrative guidance of Prof. Mahalanobis.

The NSS was then assigned the job of conducting the field work and the Indian Statistical Institute (ISI), Kolkata was assigned the work relating to finalisation of sampling design, schedules of enquiry, writing of instructions, training of field staff, processing of data and finalization of reports. During the year 1970-71, NSS

was reorganized and all aspects of its work were brought under a single Government organisation,



namely the **National Sample Survey Organisation (NSSO)** under the overall technical guidance of its own Governing Council to ensure autonomy in the matter of collection, processing and publication of the NSS data. One of the primary responsibilities of NSSO is to fill the data-gaps at National and State levels in our federal structure of Government.

NSSO, headed by Director General (DG) & Chief Executive Officer (CEO) functions under Ministry of Statistics and Programme Implementation (MoSPI), Government of India and has the following 4 Divisions, situated at Kolkata and New Delhi:

I. Survey Design & Research Division (SDRD): The Survey Design & Research Division headquartered at Kolkata is mainly responsible for planning of the survey, formulation of sampling design, concepts and definitions, drawing up of survey schedules, writing of instructions, preparation of validation & tabulation programme, finalisation of survey results, release of reports and providing technical guidance in sampling techniques to various official agencies and state Directorate of Economics and Statistics (DES).

II. Field Operations Division (FOD): The Field Operation Division is headquartered at New Delhi. While FOD, New Delhi looks after all socio-economic studies, it has a wing at Faridabad known as FOD, Faridabad that exclusively looks after studies relating to agriculture. The Field Operation Division has Zonal, Regional and Sub-Regional offices in all States and Union territories of Indian Union. It is primarily responsible for collection of either primary or secondary data from various sources from the field. Some of the surveys though which field work has been conducted by FOD are as under:

- **Socio-Economic Survey (SE):** It is non-statutory and a major survey of NSS and collected directly from households living in the villages and urban areas. The households are selected in a very scientific manner using various sampling techniques and data collected round wise whose duration is generally one year. Major topics of data

collected are employment – unemployment, consumer expenditure, land holding, livestock, debt – investment and other surveys as desired by various departments of Government of India, Planning Commission and other user agencies.

- **Annual Survey of Industries(ASI):** It is a statutory survey and secondary data is collected by FOD under Collection of Statistics Act 2008 from manufacturing units registered under section 2m(i) and 2m(II) of Factory Act 1948 and Biri & Cigar units registered under Conditions of Employment Act 1960 by Labor Department. Here data collected on fixed and working capital, employee particulars including their compensation, man days worked, raw material consumption, details of production / output, sale and cost of production etc.
- **Improvement of Crop Statistics (ICS):** As Statistics is in the concurrent list, Agricultural Statistics is collected mainly by State Governments. In a small sample of villages, FOD officials supervise the crop enumeration work done by the state primary worker and bring out the technical problems in carrying out the same. Also in a small sample of villages, Area Enumeration Work (AES) is carried out by FOD officials for bringing out improvement in the estimation of cropped area.
- **Data for Consumer Price Index (CPI):** NSSO through its Field Operations

Division regularly collects retail prices from shops / outlets in selected markets located in villages and urban centers for compilation of Consumer Price Index numbers for rural as well as urban areas:

- **Urban Frame Survey:** NSSO conducts Urban Frame Survey (UFS) for providing sampling frame of first stage units in the urban sector regularly from 1972. It forms tinny well defined homogenous pockets to be used as 1st stage units at the time of sampling. Besides its own use, many other Government and non-Government organizations used these blocks for their survey. Every UFS block is updated once in every 5 years.

Besides these regular surveys other Statistical Surveys like Periodic Labor Force Survey (PLFS), Pilot Surveys etc are taken up by FOD as and when required by the Government.

III. Data Processing Division (DPD): The Data Processing Division headquartered at Kolkata is responsible for sample selection and preparation of

sample list. Also it works on multiplier details, pre-data entry, scrutiny of filled-in-schedules, development of software for data entry and verification, scrutiny of error list which include checking of missing records, duplicate records and inconsistent records. Also it checks coverage to ensure completeness of the data file, preparation of trial and final tables and software assistance to State Authorities for processing of state sample data for socio economic surveys.

IV. Coordination & Publication

Division (CPD): The headquarters of the Coordination and Publication Division is at New Delhi. It is responsible for publication of results of various surveys in the form of NSS reports. These NSSO reports are also available for sale. There is a biannual technical journal "SARVEKSHANA" where summary results are published for various surveys. Validated unit level data relating to various surveys of NSSO are also available on magnetic media

(CD-ROM) for sale at nominal price.

Retired from Indian Statistical Service (ISS)

63L toilets made in 8 months: NSSO

Source: Times of India | Nov 27, 2015,



At least 43% of rural households and nearly 90% of urban families reported that they had sanitary toilets.

Sample NSSO-Data, as recently published in Times of India

CLEAN DRIVE

PROGRESS OF SWACHH BHARAT MISSION (MAY-JUNE)

63.01 lakh household latrines built since the launch of the mission	45.3% houses in rural areas and 68.8% in urban areas have sanitary toilets
93.9% rural household in rural areas and 99% in urban areas have access to water for toilets	95.6% households in rural and 98.7% in urban areas report usage of toilet by all members
55.4% households in rural areas and 8.9% in urban areas defecate in open	



Source: NSSO findings.





Thrills and Spills of University Days: A Stroll Down Nostalgic Memoirs

• **Dr Pradip Kumar Tripathy** (*PG: 1980*)

Utkal Statistics Alumni Association (USAA) will surely be recorded in the annals of history of modern Odisha as one of the organised Associations. For the first time, there is a positive atmosphere all over the state and expectations of the students and alumni about magnitude of subject 'Statistics' in academics and governance are indeed great. USAA has given a new hope to our students. It is pertinent to note that there was hardly any resistance from a few pretty senior alumni who have spared their invaluable time for the cause of USAA. We owe to each of them. USAA is only to sustain the hope of our alumni and euphoria that they have vision to make this 'Statistics mission – a way forward to future'.

USAA talks about connecting old friends. It is always immensely pleasurable experience when you meet your class mates of University days. One year back in the same January, we, a small group of alumni got together after

years & years of time in our department premises. Some of them have crossed 50 by then, some 60 and a few 70. The



venue was in front of the same class room where we grab for a treasury chair to listen to our teachers. We could barely recognise half of them. But a few of us have become so close after a year that it is difficult to believe. We were not even in touch with each other all those years. Thanks to social platforms like Face Book and those sincere, dignified and committed alumni.

USAA was born when some realised that 'Statistics' has been relegated to the attic, where nobody takes notice of it. Things did not change, though we were changed. Being a 'Statistician' was simply

a status symbol. Not many possessed it. Rather it wanes unfortunately to a 'talk show'. Initially it lost the technology race and fell from grace with Thak-Thak calculators but later 'desktops' aid in usurping its position.

We especially look forward through USAA with chanting "Bikas Mantra" like 'chalo age age' as like as in the early days of morning 'Binaka Geetmala' by Ameen Sayani addressing (bhaiyo our behno' utho).

USAA has not become a manufactured rebellion, rather an outburst to evolve the potency of the wisdom of Statisticians. It has to come out as a science of Data and Decisions. USSA campaign orchestrated by a section of the Honourable Statisticians, led its way to opening of Statistics Honours at +3 level in some lead colleges, opening the 'pandora's' box of Asst Directors and Statistical Investigators, quite dead locked for many years. So far so good, but there are several road blocks in its reforms. The time taken to clear the 'NET' is to be cut down to the absolute minimum by state level 'SET' exam. Ironically NET in mathematical sciences (not in statistics) is a stumbling block that does not enable the young statistics alumni to clear it. However, USAA needs to derive the benefit of business by introducing SET in Statistics instead of squabbling over marathon get together.

USAA expressed concern to the government, the belligerent provocation of Statisticians. Once, our Hon'ble Vice Chancellor said, 'I wonder how Statistics is squeezed between Science and Arts. For some time, Statistics saw the risk of losing its credibility in the context of drops in number of "ISS (Indian Statistical Service)" selected from Odisha. Agreed, there was low perception developed due to it. But, perception matters for development and there lies a need to bridge this gap. Now DST-PURSE financed for strengthening research infrastructure. Many things are in offing. The "incredible USSA" that has now worked well should not turn in any way to "Incredulous USSA".

Ideally, USAA should emerge as the major intellect supplier of our statistics students. Indeed, effort has been initiated by a few noted alumni. USAA has one of the largest technically qualified people, is certainly in a position to sustain the Government efforts in Monitoring and Evaluation of development programmes. USAA has much to share. USAA has the expertise and willpower. It could well be the knowledge basket of Statistics in Odisha.

The knowledge and skills needed to tackle the many challenges confronting USAA members happen to be dispersed among a large number of professionals. The challenge is to devise creative ways in this platform for these knowledge and skills to be tapped, utilised and delivered to those members who need it.

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History of Statistics

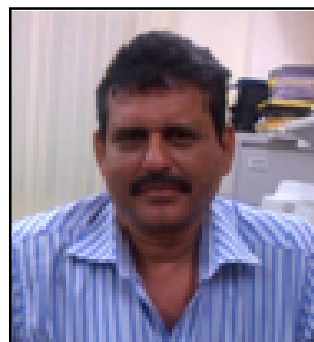
- Dr Niranjan Mishra (PG: 1983)

Introduction:

By the 18th century, the term “Statistics” designated the **systematic collection** of demographic and economic data by states. For at least two millennia, these data were mainly tabulations of human and material resources that might be taxed or put to military use. In the early 19th century, collection intensified and the meaning of “Statistics” broadened to include the discipline concerned with the collection, summary and analysis of data. Computers then produce simple, accurate summaries, and allow more tedious analyses, such as those that require inverting a large matrix or perform hundreds of steps of iteration, that would never be attempted by hand.

In the 19th century, Statistics increasingly used **probability theory**, whose initial results were found in the 17th and 18th centuries, particularly in the analysis of **games of chance** (gambling). By 1800, astronomy used probability models and statistical theories, particularly

the **method of least squares**. Early probability theory and statistics was systematized in the 19th century.



Statistical reasoning and probability models were used by social scientists to advance the new sciences of **experimental psychology** and sociology, and by physical scientists in **thermodynamics** and **statistical mechanics**.

Unlike mathematics, Statistics had its origins in public administration. The ideas of statistical testing have considerable overlap with decision science. The term Statistics is derived from the Latin word **statisticum collegium** (Council of State) and the Italian word **statista** (Statesman or Politician). The German **Statistik**, first introduced by Gottfried Achenwall (1749),

originally designated the analysis of data about the State, signifying the “Science of state” (then called **political arithmetic** in English). It acquired the meaning of the collection and classification of data generally in the early 19th century. It was introduced into English in 1791 by **Sir John Sinclair**. When he published the first 21 volumes titled **Statistical Account of Scotland**.

Thus, the original principal purpose of **Statistik** was data to be used by Governmental and (often centralized) Administrative bodies. The first book to have ‘Statistics’ in its title was “contributions to vital statistics” (1845) by Francis G P Nelson, actuary to the Medical Invalid and General Life Office.

Origins in Probability Theory:

The use of Statistical methods dates back to least to the 5th century BCE. The historian **Thucydides** in his **history of the Peloponnesian war** describes how the Athenians calculated the height of the wall of **platea** by counting the number of bricks in an un-plastered section of the wall sufficiently near them to be able to count them. The count was repeated several times by a number of soldiers. The most frequent value (in modern terminology - the **mode**) so determined was taken to be the most likely value of the number of bricks. Multiplying this value by the height of the bricks used in the wall allowed the Athenians to determine the height of the ladders necessary to scale the walls.

In the Indian epic, the **Mahabharata** (Book 3: The story of Nala) - King Rituparna estimated the number of **fruits** and **leaves** (2095 fruit and 50,000,000 - five crores-leaves) on two great branches of a **Vibhitaka tree** by counting them on a single twig. This number was then multiplied by the number of twigs on the branches. This estimate was later checked and found to be very close to the actual number. With knowledge of this method Nala was subsequently able to regain his kingdom.

The Arithmetic Mean, although a concept known to the Greeks, was not generalized to more than two values until the 16th century. The invention of the decimal system by **Simon Stevin** in 1585 seems likely to have facilitated these calculations. This method was first adopted in astronomy by **Tycho Brahe** who was attempting to reduce the errors in his estimates of the locations of various celestial bodies.

The idea of the **median** originated in **Edward Wright's** book on navigation in 1599 in a section concerning the determination of location with a compass. Wright felt that this value was the most likely to be the correct value in a series of observations.

The birth of Statistics is often dated to 1662, when **John Graunt**, along with William Petty, developed early human statistical and **Census** methods that provided a framework for modern

demography. He produced the first **life table**, giving probabilities of survival to each age. His book ***Natural and political observations Made upon the Bills of Mortality*** used analysis of the **mortality** rolls to make the first statistically based estimation of the population of London. Hess knew that there were around 13,000 funerals per year in London and that three people died per eleven families per year. He estimated from the Parish records that the average family size was 8 and calculated that the population of London was about 3,84,000. Laplace in 1802 estimated the population of France with a similar method.

The mathematical foundations for the subject heavily drew on the new probability theory, pioneered in the 16th century in the correspondence amongst **Georama Cardano**, **Pierre de Fermat** and **Blaise Pascal**. **Christian Huygens** (1657) gave the earliest known scientific treatment of the subject. In his book **Bernoulli** introduced the idea of representing complete certainty as one and probability as a number between zero and one.

Simpson discussed several possible distributions of error. He first considered the **Uniform distribution** and then the discrete symmetric **triangular distribution** followed by continuous symmetric triangle distribution. **Roder Boskovic** in 1755 based in his work on the shape of the earth proposed in his book that the true value of a series of

observations would be that which minimizes the sum of absolute errors. In modern terminology this value is the median. The first example of what later became known as the normal curve was studied by **Abraham de Moivre** who plotted this curve on November 12, 1733. De Moivre was studying the number of heads that occurred when a 'fair' coin was tossed.

In 1761s, **Thomas Bayes** proved **Bayes' theorem** and in 1765 **Joseph Priestley** invented the first **timeline** charts. **Pierre-Simon Laplace** (1774) made the first attempt to deduce a rule for the combination of observations from the principles of the theory of probabilities. He represented the law of probability of errors by a curve and deduced a formula for the mean of three observations. Laplace in 1774 noted that the frequency of an error could be expressed as an exponential function of its magnitude once its sign was disregarded. This distribution is now known as the **Laplace distribution**. Lagrange proposed a **parabolic distribution** of errors in 1776. Laplace in 1778 published his second law of errors wherein he noted that the frequency of an error was proportional to the exponential of the square of its magnitude. This was subsequently rediscovered by **Gauss** and is now best known as the **normal distribution** which is of central importance in Statistics. Lagrange also suggested in 1781 two

other distributions for errors - a **Raised Cosine distribution** and a **logarithmic distribution**.

In 1786 **William Playfair** (1759-1823) introduced the idea of graphical representation into Statistics. He invented the **line chart**, **bar chart** and **histogram** and incorporated them into his works on economics, the ***Commercial and Political Atlas***. This was followed in 1795 by his invention of the **Pie Chart** and **Circle Chart** which he used to display the evolution of England's imports and exports.

Carl Friedrich Gauss, a mathematician developed **the method of least squares** in 1809. The term probable error - the median deviation from the mean - was introduced in 1815 by the German astronomer **Frederik Wilhelm Bessel**. **Antoine Augustin Cournot** in 1843 was the first to use the term median for the value that divides a probability distribution into two equal halves.

Adolphe Quetelet (1796-1874), another important founder of Statistics, introduced the notion of the "average man" as a means of understanding complex social phenomena such as **crime rates**, **marriage rates**, and **suicide rates**.

Development of Modern Statistics:

Although the origins of Statistical theory lie in the 18th century, advances in probability, the modern field of statistics only emerged in the late 19th and early 20th

century in three stages. The first wave, at the turn of the century, was led by the work of **Sir Francis Galton** and **Karl Pearson**. The second wave of the 1910s and 20s was initiated by **William Gosset**, and reached its culmination in the insights of **Sir Ronald Fisher**. This involved the development of better experimental models, hypothesis testing and techniques for use with small data samples. The final wave emerged from the collaborative work between **Egon Pearson** and **Jervy Neyman** in the 1930s.

The original logo of the **Royal Statistical Society** founded in 1834 and **Florence Nightingale**, its first female member, pioneered the application of statistical analysis to health problems. The Oxford scholar Francis Ysidro Edge Worth's first paper on Statistics (1883) explored the law of error (normal distribution), and his ***Methods of Statistics*** (1885) introduced an early version of the t-distribution, the **Edgeworth expansions**, the **Edge worth series**, the method of variate transformation and the asymptotic theory of maximum likelihood estimates.

The Norwegian **Anders Nicolai Kiaer** introduced the concept of **stratified sampling** in 1895. **Arthur Lyon Bowley** introduced new methods of data sampling in 1906 when working on social statistics. Bowley's key innovation consisted of the use of **random sampling** techniques. Sir

Francis Galton's contributions to the field included introducing the concepts of **standard deviation, correlation, regression** etc. He found that many of these could be fitted to a normal curve distribution. In 1901, with **Walter Weldon**, founder of **biometry**, and Galton, **Karl Pearson** founded the journal ***Biometrika*** as the first journal of Mathematics, Statistics and Biometry. He also founded the **statistical hypothesis testing theory, Pearson's chi-squared test** and **principal component analysis**. In 1911, he founded the world's first University Statistics Department at **University College of London**.

The second wave of mathematical statistics was pioneered by Sir **Ronald Fisher**. His most important publications were his 1916 seminar paper "**The Correlation between Relatives on the Supposition of Mendelian Inheritance**" and his classic 1925 work **Statistical Methods for Research workers**. His paper was the first to use the statistical term, **Variance**. Over the next seven years, he pioneered the principles of the **design of experiments** and elaborated his studies of ANOVA. He developed computational algorithms for analyzing data from his balanced experimental designs. In addition to ANOVA, Fisher named and promoted the method of **maximum likelihood** estimation. His

article "On a distribution yielding the error functions of several well-known Statistics (1924)" presented **Pearson's Chi-squared test** and **William Gosset's 't'** in the same framework as the **Gaussian distribution**, and his own parameter in the ANOVA Fisher's Z-distribution. The 5% level of significance appears to have been introduced by Fisher in 1925. Fisher stated that deviations exceeding twice the standard deviation are regarded as significant.

Other important contributions at this time included **Charles Spearman's rank correlation coefficient**. **William Sealy Gosset**, the English Statistician, introduced Student's t-distribution, a continuous probability distribution useful in situations where the sample size is small and population standard deviation is unknown. **Egon Pearson** (Karl's son) and **Jerzy Neyman** introduced the concepts of "Type II" error, power of a test and confidence intervals. Jerzy Neyman in 1934 showed that stratified random sampling was in general a better method of estimation than purposive (quota) sampling.

[References from various internet sources.]

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Indian Contribution to Statistics

● Dr Rabi Narayan Subudhi (PG: 1984)

Statistics is now applied in almost every field and every subject, which includes Engineering, Medical and Physical Sciences, Agriculture and Fisheries Sciences, Social Sciences and Management. From theoretical Statistics to applied and official Statistics, each of its sub-fields has its own innovative and original research outputs. Many Indians have such famous contributions, for which we get global appreciation. It is really a great feel-good factor to note that many Indians have world famous contributions in Statistical theory and Applied Statistics. Like many historical, epoch-making contributions in the field of Mathematics (particularly in Geometry, Trigonometry, Algebra and other branches of Mathematics), Indian contributions to Statistical theory and applications is really immense and note worthy, even now. Though there are many notable contributions (and

contributors), among them, two legendary figures would undisputedly top the list of such Indian



contributions. They are **P C Mahalanobis** and **C R Rao**.

P C Mahalanobis: (1893-1972)



Prasanta Chandra Mahalanobis, who founded the famous Indian Statistical Institute (ISI) in 1932, and its reputed scholarly journal '**Sankhya**' (likes of Biometrika), had lots of original

contributions, in the fields of Applied Statistics and Sampling. He had close academic interactions with the likes of Sir R A Fisher, H Hotelling, J B S Haldane and Djordge Kostic. Among many others, his pioneering work on (Mahalanobis') residual-distance statistic, better known as "**Mahalanobis D^2 statistic**" is notable. It measures the distance of a multi-variate variable (un-known sample set) from a known unit. It is slightly different from Euclidean distance.

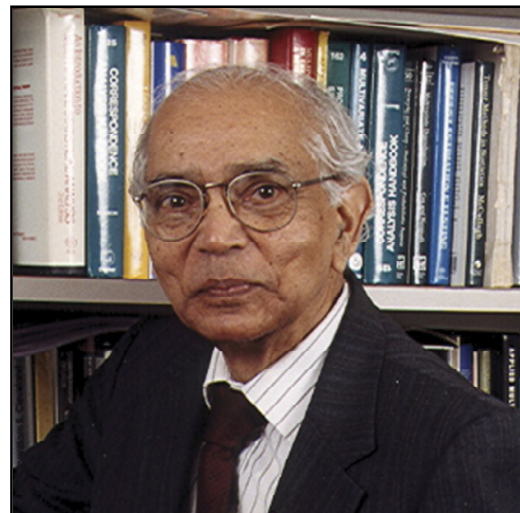
Mahalanobis developed this in 1930, to study the 'racial likeness' (or similarity). This distance measure could be used to answer the questions like: "Are the Anglo-Indians more similar to the upper castes of Bengal than to the lower castes?, Did the Jabel Moya people (of Sudan) arise from dynastic and pre-dynastic Egyptian, and Nubian peoples or from people of the aneroid stock? How different are the metabolic characteristics of normal persons, chemical diabetics and overt diabetics as determined by a total glucose tolerance test and how to make a diagnosis? On the basis of remote sensing data from a satellite, how do you classify various tracts of land by vegetation type, rock type, etc.?" [G J McLachlan, 1999].

Mahalanobis distance is widely used in cluster analysis and classification techniques. He also contributed in many diverse fields like Anthropometry, Quantitative-Linguistics etc. He applied statistics in Anthropology, Meteorology, and Agricultural Sciences etc. His contributions in the Planning Commission,

in the early years of independent-India are note worthy. He suggested methodological reforms in Census methods, Crop and agricultural statistics and other issues, under Five Year Plan coverage. He was an ardent follower of Rabindranath Tagore, and worked for / under him in Viswabharati, Shantiniketan.

Indian Government now celebrates his birth day (on June 29) as the **National Statistical day**.

C Radhakrishna Rao (C R Rao)



Born on September 10, 1920.

Calyampudi Radhakrishna Rao (popularly known as C R Rao), the other legendary contributor, is an Indian-American Mathematician and Statistician, still active (at the age of 93), in research and research guidance. He was one among the first few persons of the world to get M A in Statistics (which was preceded by an M Sc in Mathematics from Andhra University). He later on did his Ph D (under the guidance of Sir R A Fisher) and D Sc from Cambridge University. He

has served many leading Universities like, University of Pittsburg, Pennsylvania State University, ISI, University at Buffalo etc. He has received many prestigious awards from USA, UK and India which includes United States' Medal of Science (highest award of USA for lifetime achievement in the field of scientific research) and 37 honorary doctoral degrees. (The 37th degree came last year, from New York State University). He was instrumental in the establishment of Statistical Institute for Asia and Pacific, Tokyo.

Cramer-Rao bound and Rao-Blackwell theorem are some of his best known discoveries, in the field of Statistics (particularly related to Theory of Estimation). These are for checking the quality of 'estimators'. An unbiased estimator which achieves this (Cramer-Rao) lower bound is said to be (fully) efficient. This bound, popularly known as CRB, states that the variance of any unbiased estimator is at least as high as the inverse of the Fisher information.

A road, near IIIT Hyderabad (India), has been named in his honor (as Prof C R Rao Road) and a research Institute is in operation in India, **C R Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIMSCS)** [visit web at: <http://www.crraoaimscs.org/>].

Both the legendary figures have been awarded with '**Padma-vibhusan**' award by Govt. of India.

Initiatives should be taken by the scholars and teachers of Statistics-fraternity, to see if their great works can be cited / used in the research of their fields. Attempts should also be made to compile other notable contributions in one such conference or other academic events. We in Odisha, should also think of remembering and felicitating eminent Mathematician and Statisticians of Odisha, in forum like USAA or OMS or ORSI. It is now a great opportunity before USAA to make the 'missed-opportunities' a reality, at least for the new generation.

[Note: The author fondly remembers his personal interaction with Prof C R Rao (and his caring wife), during one international conference, in 2010.]

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Statistics in Business

- Sri Susan Das (PG: 1985)

Introduction:

To be competitive, business must design quality into products and processes. Further, they must facilitate a process of never-ending improvement at all stages of manufacturing. A strategy employing statistical methods, particularly statistically designed experiments, produces processes that provide high yield and products that seldom fail. Moreover, it facilitates development of robust products that are insensitive to changes in the environment and internal component variation. Carefully planned statistical studies remove hindrances to high quality and productivity at every stage of production, saving time and money. It is well recognized that quality must be engineered into products as early as possible in the design process. One must know how to use carefully planned, cost-effective experiments to improve, optimize and make robust products and processes.

Business Statistics is a science that assists to make business

decisions under uncertainties

based on some numerical and measurable scales. Decision making process must be based on data, neither on personal opinion nor on belief.



Data are only crude information and not knowledge by themselves. The sequence from data to knowledge is: **from Data to Information, Information to Facts, and finally, Facts to Knowledge**. Data becomes information when it becomes relevant to your decision problem. Information becomes fact when the data can support it. Fact becomes knowledge when it is used in the successful completion of decision process. The following figure illustrates the statistical thought process based on data in constructing statistical models for decision making under uncertainties.

Knowledge is more than knowing something technical. Knowledge needs wisdom, and wisdom comes with age and experience. Wisdom is about knowing how something technical can be best used to meet the needs of the decision-maker. Wisdom, for example, creates statistical software that is useful, rather than technically brilliant.

The Devil is in the Deviations:

Variation is inevitability in life! Every process has variation. Every measurement, every sample! Managers need to understand variation for two key reasons. First, they can lead others to apply statistical thinking in day to day activities and second, to apply the concept for the purpose of continuous improvement. The science of statistics will provide you with hands-on experience to promote the use of statistical thinking and techniques to apply them to make educated decisions whenever you encounter variation in business data. You will learn techniques to intelligently assess and manage the risks inherent in decision-making. Therefore, remember that: **Just like weather, if you cannot control something, you should learn how to measure and analyze, in order to predict it, effectively.**

If we have taken statistics before, and have a feeling of inability to grasp concepts, it is largely due to your former non-statistician instructors teaching

statistics. Their deficiencies lead students to develop phobias for **the sweet science of statistics**. In this context, the remarks made by Professor Herman Chernoff, in *Statistical Science*, Vol. 11, No. 4, 335-350, 1996 is relevant: **“Since everybody in the world thinks he can teach statistics even though he does not know any, I shall put myself in the position of teaching biology even though I do not know any”**

Plugging numbers in the formulas and crunching them has no value by themselves. One should continue to put effort into the concepts and concentrate on interpreting the results.

Even, when a small size problem is solved by hand, it is advisable to use available computer software and web-based computation to do the same. This is just an example for to show as how to question the formulas rather than memorizing them. In fact, when trying to understand the formulas one does not need to remember them, they are parts of brain connectivity. Clear thinking is always more important than the ability to do a lot of arithmetic.

While looking at a statistical formula the formula should talk to us, similar to a musician while looking at a piece of musical-notes hears the music. It is, therefore, a big question as to how a Statistician will acquire the ability similar to that of a musician.

The objectives for this course are to learn statistical thinking; to emphasize more data and concepts, less theory and fewer recipes; and finally to foster active learning using, e.g., the useful and interesting web-sites.

What is Business Statistics?:

In this diverse world, no two things are same and exact. A Statistician is interested in both the **differences** and the **similarities**, i.e. both patterns and departures.

The actuarial tables published by insurance companies reflect their statistical analysis of the average life expectancy of men and women at any given age. From these numbers, the insurance companies then calculate the appropriate premiums for a particular individual to purchase a given amount of insurance.

Exploratory analysis of data makes use of numerical and graphical techniques to study patterns and departures from patterns. The widely used descriptive statistical techniques are: Frequency Distribution Histograms; Box and Whisker and Spread plots; Normal plots; Cochran (odds ratio) plots; Scatter grams and Error Bar plots; Ladder, Agreement and Survival plots; Residual, ROC and diagnostic plots; and Population pyramid. Graphical modeling is a collection of powerful and practical techniques for simplifying and describing inter-relationships between

many variables, based on the remarkable correspondence between the statistical concept of conditional independence and the graph-theoretic concept of separation.

The controversial "Million Man March on Washington" was in 1995 demonstrated the size of a rally can have important political consequences. March organizers steadfastly maintained the official attendance estimates offered by the U S Park Service (300,000) were too low. Is it?

In examining distributions of data, one should be able to detect important characteristics, such as shape, location, variability, and unusual values. From careful observations of patterns in data, one can generate conjectures about relationships among variables. The notion of how one variable may be associated with another permeates almost all of statistics, from simple comparisons of proportions through linear regression. The difference between association and causation must accompany this conceptual development.

Data must be collected according to a well-developed plan if valid information on a conjecture is to be obtained. The plan must identify important variables related to the conjecture and specify how they are to be measured. From the data collection plan, a statistical model can be formulated from which inferences can be drawn.

Statistical models are currently used in various fields of business and science.

However, the terminology differs from field to field. For example, the fitting of models to data, called calibration, history matching, and data assimilation, are all synonymous with parameter estimation. That's why we need Business Statistics. Statistics arose from the need to place knowledge on a systematic evidence base. This required a study of the laws of probability, the development of measures of data properties and relationships, and so on.

The main objective of Business Statistics is to make inference (prediction, making decisions) about certain characteristics of a population based on information contained in a random sample from the entire population, as depicted below:

Business Statistics is the science of 'good' decision making on the face of uncertainty and is used in many disciplines such as financial analysis, econometrics, auditing, production and operations including services improvement, and marketing research. It provides knowledge and skills to interpret

and use statistical techniques in a variety of business applications. A typical Business Statistics course is intended for business majors, and covers statistical study, descriptive statistics (collection, description, analysis, and summary of data), probability, and the binomial and normal distributions, test of hypotheses and confidence intervals, linear regression, and correlation etc.

Business statistics is a scientific approach to decision making under risk. In practicing business statistics, we search for an insight, not the solution. Our search is for the one solution that meets all the business's needs with the lowest level of risk. Alternatively, with the proper data gathering and analysis, business statistics can turn a situation of threat to opportunity. While business statistics cannot replace the knowledge and experience of the decision maker, it is a valuable tool that the manager can employ to assist in the decision making process in order to reduce the inherent risk.

Professor, ASBM, BHOLA, Bhubaneswar



Modern Day Applications of Statistics

- Sri Prachetas Priyotosh (PG: 1988)

Statistics is a reliable means of describing accurately the values of economic, political, social, psychological, biological, and physical data that serves as a tool to correlate and analyze such data. The work of the Statistician is no longer confined to gathering and tabulating data, but is chiefly a process of interpreting the information. The development of the “Theory of Probability” has increased the scope of statistical applications. Much data can be approximated accurately by certain probability distributions and the results of probability distributions can be used by analyzing statistical data. Probability can be used to test the reliability of statistical inferences and to indicate the kind and amount of data required for a particular problem.

Kinds or Branches of Statistics:

Statistics may be divided into two main branches; such as Descriptive Statistics and Inferential Statistics.

(1) Descriptive Statistics:

Descriptive statistics deals with collection

of data, its presentation in various forms, such as tables, graphs and diagrams and finding averages and other



measures which would help drawing some conclusion on the information collected..

For Example: Industrial statistics, population statistics, trade statistics etc. Businessmen make use of descriptive statistics in presenting their annual reports, final accounts, bank statements.

(2) Inferential Statistics: Inferential statistics deals with techniques used for analysis of data, making the estimates and drawing conclusions from limited information taken on sample basis and testing the reliability of estimates.

For Example: Suppose we want to have an idea about the percentage of illiterates in our country. We take a sample from the population and find the proportion

of illiterates in the sample. This sample proportion with the help of probability enables us to make some inferences about the population proportion. This study belongs to inferential statistics.

Importance of Statistics in Different

Fields: Statistics plays a vital role in every fields of human activity. Statistics has important role in determining the existing position of per capita income, unemployment, population growth rate, housing, schooling, medical facilities etc. in a country. Now Statistics holds a central position in almost every field like Industry, Commerce, Trade, Physics, Chemistry, Economics, Mathematics, Biology, Botany, Psychology, Astronomy etc. enabling wide application of statistical techniques. Now we discuss some important fields in which statistics has its common use.

(i) Business:

Statistics has a wide range of application in business management. A successful businessman must be very quick and accurate in decision making. He should know his customers' requirements and behaviour and accordingly produce his goods and services for sale. Statistics helps businessman to plan production according to the taste of its costumers, the quality of the products can also be checked more efficiently by using statistical techniques. So all the activities

of the businessman based on statistical information fetches good result. He can make correct decision about the location of business, marketing of the products, financial resources etc.

(ii) Economics:

The role of Statistics in economics is no less. Economics largely depends upon statistics. National income accounts are multipurpose indicators for the economists and administrators. Statistical techniques are used for preparation of these accounts. In the research of economics, statistical methods are used for collection and analysis of data and testing relevant hypothesis. The relationship between supply and demand is studied only by means of statistical techniques. Imports and exports, inflation rate, per capita income are few examples which require good deal of statistical data and good knowledge of statistics.

(iii) Mathematics:

Statistics plays a central role in almost all natural and social sciences. The methods of natural sciences are most reliable but conclusions drawn from them are only probable, because they are based on incomplete evidence. Statistics helps in describing these measurements. The large number of statistical methods like probability averages, dispersions, estimation etc. is used in mathematics.

(iv) Banking and Insurance:

Statistics has its prime role in banking and insurance. The banks and insurance companies make vast use of statistics for a number of purposes. They work on the principle that customers depositing their money should not withdraw it at the same time. They earn profits out of deposits by lending the deposits for development purposes and at the same time earning interest. They use statistical approaches based on probability to estimate the numbers of depositors and their claims for a certain day even.

(v) Administration:

Essentiality of Statistics for Administration and Police initiatives of a Country or a State needs no elaboration. Different policies, plans and programmes of a Government are based on Statistics. Statistical data are now widely used in taking all administrative decisions. Suppose, Government wants to revise the pay scales of employees in view of an increase in cost of living, statistical methods will be used to determine the rise in the cost of living index. Preparation of federal and provincial government budgets mainly depends on statistics as it helps in estimating the expected expenditure and revenue from different sources. So, Statistics is treated as the eyes and ears of the State Administration.

(vi) Audit and Accounts:

Accounting is impossible without exactness. But for decision making purpose, much precision is not essential rather than approximation. A decision on approximation is only possible based on past observations and sound knowledge of statistics. The correction of the values of current assets is made on the basis of the purchasing power of money or the current value of it. In auditing, sampling techniques are commonly used. An auditor determines the sample size of the books of records to be audited within a reasonable error.

(vii) Natural and Social Sciences:

Statistics plays a greater role in almost all natural and social sciences. Statistical methods are commonly used for analyzing the experimental results, testing their significance in Biology, Physics, Chemistry, Mathematics, Meteorology, Commerce, Sociology, Business, Public Administration, Communication and Information Technology etc.

(viii) Astronomy:

Astronomy is one of the oldest branches of statistical study; it deals with the measurement of distance, sizes, masses and densities of heavenly bodies by means of observations. During these measurements errors are unavoidable. So, most probable measurements are estimated by using statistical methods.

Some Utilities of Statistics:

- It helps in providing a better understanding and exact description of a phenomenon of nature.
- It helps in proper and efficient planning of a statistical inquiry in any field of study.
- It helps in collecting an appropriate quantitative data.
- It helps in presenting complex data in a suitable tabular, diagrammatic and graphic form that gives easy and clear comprehension.
- It helps in understanding the nature and pattern of variability of a phenomenon through quantitative observations.
- It helps in drawing valid inferences, along with a measure of their reliability about the population parameters from sample data.

Certain topics having “statistical” in their name but relate to manipulations of probability distributions rather than to statistical analysis. Those are Actuarial Science, Astrostatistics, Business Analysis, Chemo Metrics, Econometrics, Environmental Statistics, Epidemiology, Geo Statistics, Machine Learning, Operations Research, Population Ecology, Psychometric, Quality Control, Quantitative Psychology, Reliability Engineering, Statistical Finance, Statistical Mechanics, Statistical Physics, Statistical Signal Processing, Statistical Thermodynamics etc.

Lawyer, Odisha High Court



Statistical Consultancy and Predictive Analytics

- **Sri Banshidhar Swain (PG: 1988)**

Statistical Consultancy is, by nature, based on the two fundamental disciplines of applied statistics: 'data analysis' and 'probability calculus'. But, too often, a statistical consultant, especially in industry, reviewing a finished project is confused. Although his / her contribution is recognized as a break-through added value, he / she probably only used simple statistical methods. What made the contribution so valuable for the customer? The real added value of a statistical consultant is his power to structure a problem (one might also say, reality) in a specific way. This distinguishes our view on problems from all other disciplines. This is what is meant by 'Statistical Structuring'.

Statistical consultants often provide bespoke statistical analyses tailored specifically to the requirements of their clients. This means that the techniques used will often differ from one project to another (especially when working with clients from a variety of different sectors). As it is unlikely that all of these techniques

will have been covered by undergraduate and postgraduate studies, 'on the job' learning can sometimes be necessary.



The role of a statistical consultant can be varied. Consultants are responsible for liaising with clients, delivering statistical analysis and research, and for providing statistical training, advice and support. An undergraduate degree in Statistics or Mathematics with a substantial component of Statistics is the minimum requirement to become a statistical consultant. Many statistical consultants will also have an M Sc Degree in Statistics.

Some statistical consultants may also have a Ph D Degree in Statistics. Whilst this is not a requirement to becoming a statistical consultant, it does

provide additional skills in research and teaching. Statistical consultants need to continue their personal and professional development. Working directly with clients not only requires statistical expertise, but strong personal and professional skills, including time management, the ability to work in a team and effective communication. It is also unlikely that all of the statistical techniques required to carry out client projects will have been covered by undergraduate and postgraduate studies. Many of these skills and techniques will be learnt 'on the job' with the help and guidance of a mentor.

Salaries can vary and often depend on the size and nature of the company or organization that you work in. Statistical consultants will usually start their career working as part of a team with more experienced Statisticians to mentor and guide them. There are various roles in IT industry for Data analysis available. With more experience a statistical consultant may expect to progress to a more senior role within a company with the opportunity to mentor more junior colleagues and project manage larger client deliverables. Depending on the size and opportunities available in the company, there may also be the possibility of moving into a management role with line management responsibilities (including developing more junior staff) and other business responsibilities.

Due to the nature of the job, the more applied courses are the most applicable to becoming a Predictive Analytics consultant. They also need to acquire various skills on statistical packages. Predictive Analytic software packages like IBM SPSS are very much used in software industry. Few relevant software are also available which can be downloaded and be used for learning.

In USA, due to rising medical cost and this is the principal reason why a clinical decision support system is used by Health care Insurance companies. Two popular Statistical Packages - Products Impact Analysis (IA) and Impact Pro (IP) are used. Impact Analysis is a decision support application that includes nine analytic modules designed to provide information on provider network performance, the prevalence and costs of different diseases, healthcare process outcomes, and the trends in cost and use of services.

First interaction usually involves a lot of listening. Statistical Consultants try to get a thorough understanding about the research needs before making any suggestions. After this initial discussion, everything depends on your needs. Some clients just need advice and guidance; for them, three or four meetings may be sufficient. There are others who are looking for in-person working sessions; for them, we provide more in-depth

assistance. They also do full data analysis and reporting for clients, as per need.

The start of a typical project will often involve liaising with a client to define its scope. For example, does the client require advice so that they can carry out analysis themselves or would they like you to analyze their data for them? At this stage it is common to write up a detailed proposal of the work including what data will be required, the methods that will be used, the deliverables and the timeline for completion. Once the project has started the consultant will carry out the analysis, advice or training in the agreed time frame. Effective communication is an essential part of the role and a Consultant must ensure that any client reports or presentations are clear, concise and intelligible and do not contain any unnecessary technical detail. On the whole, the length of a project can vary significantly from anything between 1-2 days to many months.

Few s/w Packages Available for Free Download:

JASP – A free software alternative to IBM SPSS Statistics with additional option for Bayesian methods

PSPP – A free software alternative to IBM SPSS Statistics

ADaMSoft – a generalized statistical software with data mining algorithms and methods for data management

ADMB – a software suite for non-linear statistical modeling based on C++ which uses automatic differentiation

Chronux – for neurobiological time series data

CBEcon – web-based econometrics and statistical software

DataMelt (DMelt)– Java-based statistical analysis framework for scientists and engineers. It includes an IDE

DAP – free replacement for SAS

ELKI a software framework for development of data mining algorithms in Java

GNU Octave – programming language very similar to MATLAB with statistical features

gretl – gnu regression, econometrics and time-series library

Mondrian – data analysis tool using interactive statistical graphics with a link to R

OpenNN – A software library written in the C++ programming language which implements neural networks, a main area of deep learning research.

OpenMx – A package for structural equation modeling running in R (programming language)

Pandas – HPC data structures and data analysis tools for Python in Python and Cython (statsmodels, scikit-learn)

Perl Data Language – Scientific computing with Perl

Ploticus – software for generating a variety of graphs from raw data

R – free implementation of the S (programming language) Programming with Big Data in R (pbdR) – a series of R packages enhanced by SPMD parallelism for big data analysis

R Commander – GUI interface for R

Rattle GUI – GUI interface for R

Revolution Analytics – production-grade software for the enterprise big data analytics

RStudio – GUI interface and development environment for R

Salstat - menu-driven statistics software

Scilab – uses GPL-compatible CeCILL license

SciPy – Python library for scientific computing that contains the stats sub-package which is partly based on the

venerable |STAT (a.k.a. PipeStat, formerly UNIX|STAT) software scikit-learn - extends SciPy with a host of machine learning models (classification, clustering, regression, etc.)

statsmodels - extends SciPy with statistical models and tests (regression, plotting, example datasets, GLM, time series analysis, ARMA, VAR, Non-parametric statistics, ANOVA, empirical likelihood)

SOFA Statistics – desktop GUI program focused on ease of use, learn as you go, and beautiful output

Stan (software) – open-source package for obtaining Bayesian inference using the No-U-Turn sampler, a variant of Hamiltonian Monte Carlo. It's somewhat like BUGS, but with a different language for expressing models and a different sampler for sampling from their posteriors

Statistical Lab – R-based and focusing on educational purposes

**Working in IBM Global Services,
Bangalore**



Salient Points of Religion Data: 2011 Census

- Sri Himansu Sekhar Dutta (PG: 1990)

The Registrar General and Census Commissioner, India has released the data on Population by Religious Communities of Census 2011. The distribution is total population by six major religious communities namely, Hindu, Muslim, Christian, Sikh, Buddhist, Jain besides “Other Religions and Persuasions” and “Religion not stated”.

The data are released by sex and residence up to sub-districts and towns. Total Population in 2011 is 121.09 crores; Hindu 96.63 crores (79.8%); Muslim 17.22 crores (14.20%); Christian 2.78 crores (2.30%); Sikh 2.08 crores (1.70%); Buddhist 0.84 crores (0.70%); Jain 0.45 crores (0.40%), Other Religions & Persuasions (ORP) 0.79 crores (0.70%) and Religion Not Stated 0.29 crores (0.20%).

The proportion of Hindu population to total population in 2011 has declined by 0.70 percentage point (PP); the proportion of Sikh population by 0.20 PP and the Buddhist population by 0.10 PP

during the decade 2001-2011. The proportion of Muslim population to total population has increased by 0.80



PP during the said period. There has been no significant change in the proportion of Christians and Jains.

The growth rate of population in the decade 2001-2011 was 17.70 %. The growth rate of population of the different religious communities in the same period was; Hindus: 16.8%; Muslim: 24.60%; Christian: 15.50%; Sikh: 8.40%; Buddhist: 6.10% and Jain: 5.40%.

The population of Hindus comprised 79.8% per cent of the total population of 121.09 crores, compared to 80.45 per cent of the total population in 2001. In absolute terms, however, the Hindu population increased 16.80 percent from 82.76

crores to 96.63 crores during the period (2001-11).

The share of Muslims in the population has risen 80 basis points (one basis point is one-hundredth of a percentage point) from 13.40 per cent in 2001 to 14.20 per cent with some border states showing a high increase. This decadal increase in share, however, is lower than the 1.70 percentage points increase registered in the previous decade, 1991-2001.

In absolute terms, the number of Muslims increased 24.40 per cent to 17.18 crores from 13.8 crores during the period 2001-11.

The share of Hindus over the previous five decades, between 1951 i.e. post-partition and 2001, dropped 3.65 percentage points from 84.10 per cent to 80.45 per cent of the total population. Again in absolute terms, the Hindu population more than doubled (172 per cent increase) from 30.36 crores to 82.75 crores during the 50 years till 2001. The drop in share of Hindus, due to a steady dip in the rate of growth of the Hindu population, comes on the back of rising education and income levels of the majority community.

The share of other religious groups like Sikhs and Christians in the total population remained steady at a little over 2.00 per cent each, roughly in the same range as in the 2001 census.

The Census 2011 data shows that since independence, the share of Hindus has dropped by 5.75 percentage points while the share of Muslims has risen by slightly more than 4.00 percentage points. According to the 1951 census, Hindus comprised 84.10 per cent of the population post partition, after the inflow of Hindus from Pakistan and the outflow of Muslims at partition changed in the country's demography. Hindus comprised just about 66.00 per cent of the population of India before partition.

Few salient points of the Religion data of 2011 Census are given below for ready reference of researchers and development planners:

- Share of Hindus in the total population has declined by 2.10 percentage points, from 80.45 percent in 2001 to 78.35 percent in 2011. The share of Hindus in India's population has shown the sharpest dip in a decade since independence and has dropped below 80.00 per cent.
- Muslim population grew by 24.40 percent against the national average of 17.70 percent.
- The gap between the growth of Muslims and the national average is nearly 38.00 percent.
- In 2001, the gap between the growth of Muslims and the national average was somewhat lower at 36.80 percent.

- The rate of growth of Hindus has declined about 20.00 percent below national average.
- The share of Muslims has increased by 0.80 percentage points, between 2001-2011, 1991-2001 and 1981-1991.
- Share of Muslims was 11.80 percent in 1981, 12.60 percent in 1991 and 13.40 percent in 2001 and 14.20 percent in 2011.
- In 60 years from 1951 to 2011, the share of Muslims has increased from 10.50 percent to 14.20 percent.
- Muslims are 34.20 percent of population of Assam, which is 3.20 percentage points higher than their share of 30.90 percent in 2001
- It is widely believed that un-uniform application of family planning and illegal migration are responsible for such a phenomenon.

Source: RGI releases, Census 2011 data on Population by Religious Communities

**Section Officer, Indian Statistical Institute,
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Hospitality in Rural Odisha in the Eyes of National Sample Survey: A Brief Analysis

- Dr Sujata Priyambada Parida (PG: 1995)

Introduction:

Indian culture always conducts the Sanskrit quotation “*Atithi Devobhava*” (i.e. **guest is equivalent to God**) which is a part of the “code of conduct” for Indian society. Indians like to serve various types of tasty local foods to their guests according to their abilities. As per traditional hospitality, Indians never ever let a guest go away unfed from their home. As soon as the guest arrives, the women of the household serve him / her water and then ask any preferences for food or drink irrespective of the financial condition of the household. Similarly observation of different traditional ceremonies is essential for each Indian household. Although Odisha is one of the poor states, it is always ahead to observe different traditional ceremonies or festivals like Raja parba, Ratha Yatra, Nuakhai, Durga puja and Dola (Holi) etc. To serve food to guests in ceremonies are the common tradition of Odisha.

This analytical paper contains some brief analysis on the habit of the households of rural Odisha



observing ceremonies by serving food to guest and serving food to non-household members as it reveals from NSS 68th round central and state samples combined data on household consumer expenditure.

Data Description and Sources:

The present study is based on state and central samples combined data on Household Consumer Expenditure Survey (Sch1.0-type1) of NSSO (National Sample Survey Office) surveyed during its 68th (2011-12) round. The central sample raw data set is from NSSO, Government of India and the state sample raw data set is

from Directorate of Economics & Statistics, Government of Odisha. These two data sets contain the information MPCE (monthly per-capita consumer expenditure) based on MRP (Mixed Reference Period), ceremonies observed by serving meals to non-household members and number of meals served to the non-household members during a month by each sample households are used for the study. For further analysis, these two data sets have been combined using certain statistical methodology.

Methodology and Tools Used:

(a) Pooling procedure:

For pooling two different sample data, the study follows a procedure¹ where pooled estimate at stratum level has been calculated as the weighted average of central and state sample estimates with number of primary units as weights at stratum level. The two data sets of state and central sample with multipliers are combined. Then pooled multiplier is calculated using the following equations.

$$M'_{ki} (s) = M_{ki} (s) \times [n_k (s) / [n_k (c) + n_k (s)]] \text{ and}$$

$$M'_{ki} (c) = M_{ki} (c) \times [n_k (c) / [n_k (c) + n_k (s)]]$$

Where

$M'_{ki} (s)$ = Pooled multiplier for i th village of k th stratum of state sample.

$M'_{ki} (c)$ = Pooled multiplier i th village of k th stratum for central sample.

$M_{ki} (s)$ = state sample multiplier for i th village of k th stratum.

$M_{ki} (c)$ = central sample multiplier for i th village of k th stratum.

$n_k (s)$ = No. of sample villages in k th stratum in state sample.

$n_k (c)$ = No. of sample villages in k th stratum in central sample

(b) Formation of Economic-Classes:

For this study, the entire rural Odisha is distributed among five economic classes based on MPCE of rural households. The economic classes are the pentile classes representing the 20%, 40%, 60%, 80% and 100% points of distributions. Pentile classes have been made using MPCE of the sample households of the data set. These five economic classes are named as lower, lower middle, middle, upper middle and upper classes for the study.

(c) Measures of Inequality:

The device "LORENZ CURVE" has been used to measure the class wise inequality in living standard, serving meals to non-household members and observing ceremonies by the rural households of Odisha. A graphical representation of inequality distribution is called as Lorenz curve. On the graph, a straight diagonal line represents perfect equality of the expenditure distribution; the Lorenz curve lies below it showing the inequality distribution.

Results and Analysis:

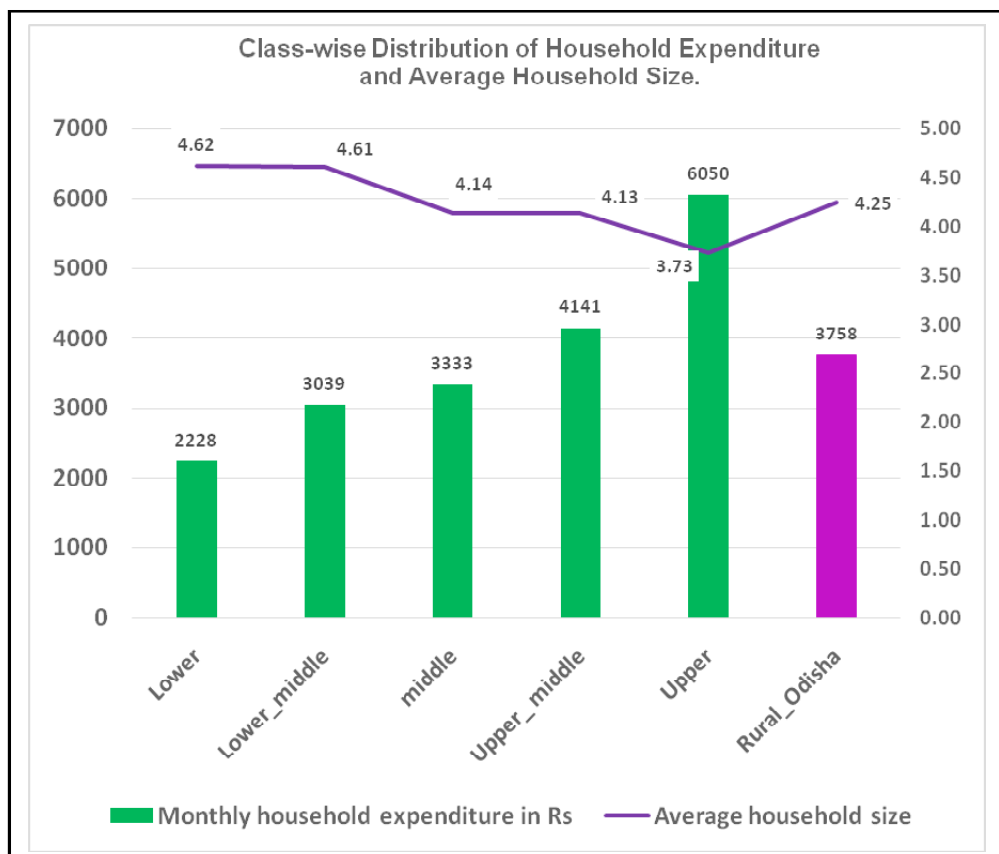
(i) Basic Features of Living Standard:

The following Table:1 and the Figure: 1 represent the class wise living standards of rural Odisha by two important parameters i.e monthly household expenditure and average household size in five different economic classes.

Table: 1

Class Category	Monthly HH Expr(in Rs)	Average HH size
Lower	2228	4.62
Lower middle	3039	4.61
middle	3333	4.14
Upper middle	4141	4.13
Upper	6050	3.73
Rural Odisha	3758	4.25

Figure:1



It is observed from Figure: 1 that bottom three economic classes are below the rural Odisha average in case of monthly household expenditure per household. On an average one rural household of Odisha is spending Rs.3758/- per month while in upper and lower classes it is Rs.6050/- and Rs.2228/- respectively. But in case of household size, the order is just reverse i.e decreasing from upper to lower classes.

It is also observed from the Lorenz Curve in Figure: 2 that the inequality in monthly expenditure is more in upper classes. Figure: 3 represents the share of each economic classes in total expenditure of Odisha. The share of expenditure of upper two classes is more than 50% of total expenditure. The share is significantly less for bottom three classes.

Figure: 2
(Lorenz Curve showing inequality distribution of expenditure in five economic classes)

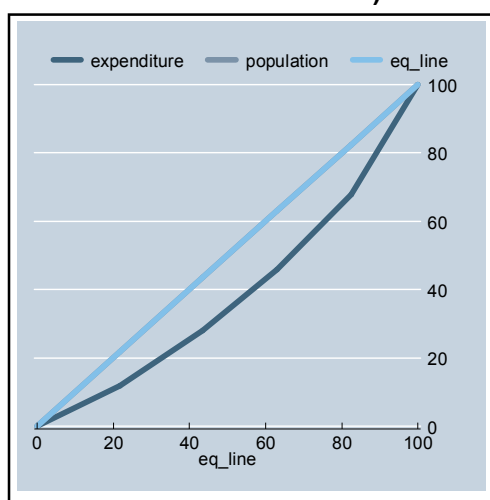
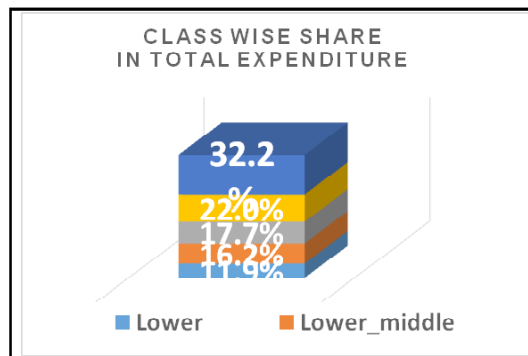


Figure: 3



(ii) Serving of Meals to Non-Household Members:

This part of study represents the habits of hospitality of rural households of Odisha by serving meals to non-household members i.e outsiders (including guests) in a month irrespective of their economic conditions. The analysis is based on the number of meals served by a rural household to the non-household members during a month.

From the Figure: 4, it is noticed that a rural household serves 4 meals to the non-household members in a month. In upper classes it is highest which is obvious, but the same is almost equal in lower classes. For lower middle, middle and upper middle classes, the figures are around 3 and 2 in case of lower class. It can be clearly stated that a poor class household also serves at least 2 meals to non-household members in a month. Figure: 5 represents Lorenz Curve showing inequality in serving meals to non-household members among five economic classes. The inequality is very high in upper class than lower and middle classes which is obvious.

Figure: 4

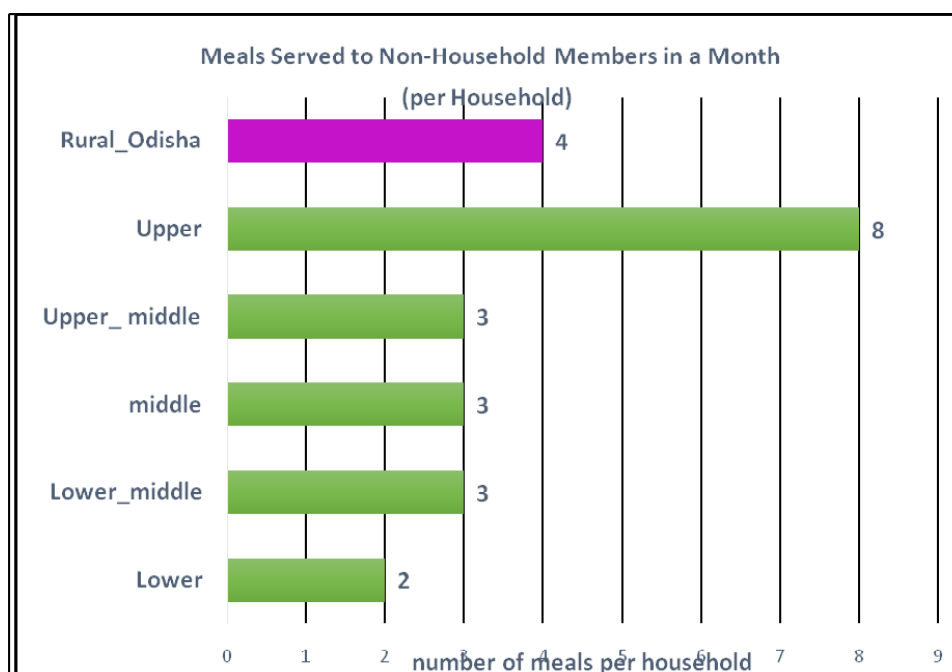
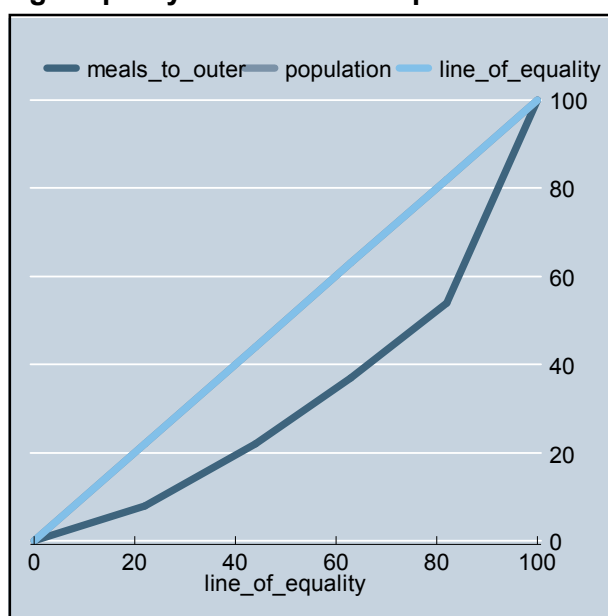


Figure: 5

(Lorenz curve showing inequality distribution of expenditure in five economic classes)



Celebration of Ceremonies by Serving Meals to Guests:

As per NSS definition, a household is said to celebrate a ceremony if meals are served to guests. From the Table: 2, it is seen that ***in each 100 households one household must observe ceremony*** in rural Odisha.

Table: 2

Category	Percentage
Households without ceremony	99
Households with ceremony	1
Rural Odisha	100

Figure: 6

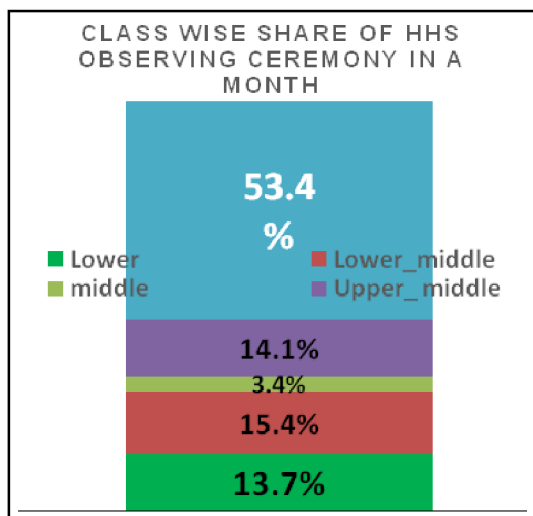


Figure: 6 presents the distribution of households observing ceremonies in different economic classes. The share of upper class is more than 50% which is somewhat obvious. But the lower two poor classes are also observing ceremony as

like as upper middle class. The share of middle class is minimum.

Conclusion:

In spite of having a lot of natural resources, Odisha is always counted as one of the poor states in India. Also Odisha is famous for observing traditional festivals and ceremonies. The people of Odisha are habituated with this celebration by making it as part of their living style. In this study the habits of celebration by serving meals to guests in all five economic classes i.e. from poorest to the reach (lower to upper) have been reflected. The following conclusion can be derived in brief.

- One rural household of Odisha is spending Rs.3758/- per month while in upper and lower classes it is Rs.6050/- and Rs.2228/- respectively. But in case of household size the order is just reverse i.e decreasing from upper to lower classes. The share of expenditure of upper two classes is more than 50% of total expenditure.
- A rural household serves 4 meals to the non-household members in a month. For lower middle, middle and upper middle classes the figures are around 3 and 2 in case

of lower class. More clearly it can be stated that ***a poor household also serves at least 2 meals to non-household members in a month.*** While observing ceremony, the lower two poor classes are as like as upper middle class. The share of middle class is minimum.

- It can be concluded that in rural Odisha, traditional ceremonies are observed by the households irrespective of their economic condition. This may be due to their respect to culture and tradition and thinking of hospitality to guests as hospitality to God.

Asst Director, Directorate of Economics
and Statistics, Odisha:



Footnotes

1. procedure of B.S. Minhas and M.G. Sardana published in
2. 'Sarvekhsana
3. (July-Sept90)

Application of Statistics in Genome Data Analysis and Genetic Markers of Biological Sciences.

- Sri Kinshuk Charan Nayak (*PG: 1995*)

Now a day, due to advancement of in genome sequencing technology high throughput data generation has become cheaper and affordable. However, extracting information and hidden trend from large-scale data is not easy and understandable for many people working in laboratory of biomedical sciences. So, application of statistics is required to analyse, summarize and interpret these data. In this regard, a new area of biological sciences has taken birth and called bioinformatics. It is an interdisciplinary science and adds expertise from biology, information technology and statistics.

In bioinformatics, multivariate statistical methods are extremely useful for analysis of genome-wide data, particularly which involves multifactor issues. These methods have ability to

compress the data in a meaningful and managed form. Data in such formats and derivatives assist in



visualizing complex interactions or variables in a more systematic way and helps to identify hidden trends, which generally do not results from conventional methods of data analysis. These methods have become essential central tools in studies of data analysis for fingerprinting, metabolomics, phylogenetics, codon usage, microarray and mass spectroscopy etc. Codon-usage analysis can provide insights into the functional categories and histories of genes in a genome. Many genomes have a signature

codon usage that is representative of the typical genes of that genome. The codon usage bias was found in wide range of organisms. Since organisms evolve, their codon usage pattern is an intriguing matter. The area of codon bias has been applied in the improvement of the yield of the desired product and expression of functional proteins in heterologous hosts through codon optimization. Now this has become an important area of biomedical and biotechnological research. Data reduction techniques like Correspondence Analysis (COA), Principal Component Analysis (PCA), Factor Analysis (FA) and Regression analysis were used for identifying significant interacting variables.

Multivariate analysis such as like principal component analysis was among first statistical methods used to extract information from genetic markers. It has proved to be a very efficient method for the analysis of genetic variability in human genetics, conservation and adaption studies. Multivariate analysis can address and resolve complex questions like identification of adaptation by linking genetic variability to environmental data (Barker et al., 1986; Angers et al., 1999).

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Statistics Education for Future Managers: Needs, Obstacles and Possible Solutions.

● Smt Gitilaxmi Das (PG: 1996)

Introduction:

When dealing with the training of future executives in the field of statistics, it is necessary to make a distinction between industry-based positions and management-based ones. Indeed, contrary to engineers, most managers do not handle personally the complex statistical issues they are confronted with. Yet, they must master the fundamentals of statistics as well as the rationale behind the main statistical tools and methods: they should be in a position to, first, formulate relevant questions, and, second, to interpret the solutions provided by Statisticians.

This paper will first present illustrations of a few problems that our students are likely to encounter in their professional life. It will then expose the difficulties of teaching statistics in management schools. Lastly, it will review

possible solutions, in the light of the latest pedagogical research and technology development.



Statistical Issues Confronting Managers:

“The core strategic issue in all corporate structures is mastery of information. This competitive advantage can be measured on the basis of two criteria: on the one hand, the available quantity of reliable information; on the other hand, the business firm’s ability to understand and interpret it”, says François Morinière, Giraudy-Viacom1’s General Manager. It is not uncommon for businesses to fail to make full use of the mass of data that is available to them; moreover, whenever the available

information happens to be processed by Statisticians, results may not be taken properly into account in the field.

Laurent Sellier, the top Financial Officer at Papeteries du Limousin (Smurfit Group2) states that tools must first and foremost be operational, and that, all too often, there exists a wide cultural gap between Managers and Statisticians. Many businesses are content with the use of basic statistics (the calculation of averages, ratios, linear correlation), whereas more sophisticated statistical methods would have yielded more relevant results.

Statistics certainly provides much insight in many corporate questions and issues, particularly in the field of data analysis (market surveys, the positioning of products, brand image surveys,) and in the field of modeling (how to measure the impact of an advertising campaign; how to design an indicator to detect the possible cash difficulties of customers). One should note that two different types of reactions arise from these two fields of applications;

- Managers might be attracted by the apparent simplicity of some results; yet, a lack of statistical knowledge (particularly as concerns the underlying tools) may lead these managers to interpret the available data incorrectly. (Dassonville and Hahn, 2000).

- Managers might a priori reject models because of their mathematical aspects, and prefer to resort to more intuitive methods (see the case of bank employees, described by Noss and Hoyles, 1996) when these models often turn out to be no more complex to utilize than data-analysis methods.

Training would be Managers in Statistics:

Quite often, the teaching of statistics in management programs is designed in the framework of standard classes involving both the acquisition of new knowledge and its implementation. It is to be noted that European countries (particularly Germany, Italy, Spain and France) tend to focus more than the USA on mathematics and to propose exercises which are linked more closely to theory. In our opinion, given the high stakes involved in the relation between managers and statistics, the teaching of Statistics should be designed and implemented along the following lines: to allow future Managers to master such competencies as the identification and formulation of statistics-based problems, the analysis and interpretation of results. Such a program should meet two requirements:

- Acquisition of the fundamentals of statistics,
- Acquisition of methods, each of which could, on the one hand, illustrate a given management field and foster self-learning in same-

approach problems, and, on the other hand, reach the above-mentioned goal.

Under these circumstances, it is not an easy task to design a training program in Statistics for future Managers. Several reasons may explain this. In a management program, Statistics suffers from two elements, which are related to the ambiguity of its status. Statistics is perceived as hybrid between mathematics, an abstract concept, and reality. Moreover, it is difficult to position it in relation to management courses such as finance, marketing or HRM. This ambiguous status is all the more detrimental to Statistics as our institutions are geared to students whose academic background is quite varied. So, in our schools of management, students have an unfocused picture of Statistics.

In order to reach its goals, a program should allow students to overcome the "epistemological anxiety" (Wilenki, 1997) they feel when faced to statistical concepts whose legitimacy they question. It should also help students master the complexities of reality in fields of application. Our paper proposes to explore two avenues which may help meet the two objectives.

Contribution of Technology:

The first avenue could be that of integrating new information and communication technologies into the program. This is precisely what we have been experimenting with since 1994 in our school of management, adapting to the

latest development in the field. In 1995, existing technology principally allowed developing off-line multimedia programs; that is why we designed then a CD-ROM geared to the teaching of PCA (Dassonville, 1997). The test of this pedagogical tool showed that this new approach, based on dynamic graphical representations, eased, by demystifying it, the introduction to the field, yet did not foster more effective appropriation of those concepts. Besides, when the program was used in self tuition mode, students felt disconnected from the class environment; they expressed the wish to benefit by personalized tuition, in the form of tutoring sessions. (Dassonville and Hahn, 2000).

The experimentation we are currently conducting with an intranet e-learning platform which associates multimedia course material, personalized tuition, as well as virtual, synchronous classes, will undoubtedly yield more information on the contribution of new technologies to this course.

Contribution of In-Company Experience (Co-op Year):

The second avenue we have considered is to make fuller use of the co-op experience now being gained by students attending French business schools. What we are aiming at is actually to blend two different approaches which in turn imply two different relationships with knowledge: namely, in business firms *the value of knowledge is judged on the basis of its practical contribution*, whereas

in institutions of learning knowledge is pursued for its own sake (Geay, 1994). It is interesting to note that in our institutions, a growing number of students develop a utilitarian type of relationship with knowledge. They are no longer willing to pursue knowledge for its own sake.

Integrating these two approaches is no easy task, since the wide gap between theory and field practice has long been known (see, in particular, Lave, 1998, Hahn 2000), even though it is generally accepted that such endeavors might ease the understanding of concepts. (see, in the field of mathematics, Boero et al., 1995; Boaler, 1994; Nunes 1993). Confronting our students to problems extracted from the business world generally fails to help them make sense of the concepts presented in class. In fact, once they have been presented in class, all so-called “real life” illustrations cease to be “real life” (Sierpiska, 1995). Our students tend to believe that the only credible corporate events and situations are those that can be observed within business organizations themselves.

Gérard (1999), Geay and Sallaberry (1999) showed the positive effects of “problem formulation” techniques, that is the formulation, by the students themselves, of the problems related to their own acquisition of knowledge. Thus, the introduction of a co-op year should help overcome the hurdle of the emotional commitment of students to the activity,

since it is directly linked to professional life. This commitment is necessary to the appropriation of knowledge. Ongoing research confirms the interest of this approach in management education (Besson, Delplancke and Hahn, 2001).

Conclusion:

Devising an effective program to teach statistics to future managers is a complex endeavor. Even though we have no ideal solution to propose today, we are convinced that we should not limit ourselves to presenting students with a number of “recipes” in order to interpret the data produced by “technological black boxes” (Keitel et al., 1993), but should provide them with insight and in-depth knowledge in the field.

We have advocated the exploration of two avenues which, in our opinion, converge. Indeed, in learning situations which closely link class contact and field experience, it is essential to rely on IT, not only in order to adapt to the individual needs of all students, but also in order to shorten the distance, both geographical and pedagogical, between institutions of learning and businesses. Designing a program to teach statistics to would be Managers also constitutes a major challenge for Statisticians themselves: cooperation and trust between Corporate Managers and Statisticians are bound to promote and affect the jobs of Corporate Statisticians.

**Asst Professor, ASBM, BHOLA,
Bhubaneswar**

Big Data Analytics: A New Era in Statistical Analysis

• Sri Abhilash Das (PG: 2005)

Big data analytics is the process of examining large data sets containing a variety of data types i.e. big data to uncover hidden patterns, unknown correlations, market trends, customer preferences and other useful business information. The analytical findings can lead to more effective marketing, new revenue opportunities, better customer service, improved operational efficiency, competitive advantages over rival organizations and other business benefits. Big data analytics has captured the imagination of many organizations especially in the field of statistical analysis and to make its way to the strategic desk in a relatively short time. Data becomes big data when its volume, velocity or variety exceeds the abilities of IT systems to ingest, store, analyze and process it. Big data analysis is a continuum, not an isolated set of activities. Development of an integrated architecture for big data

analysis makes it easier to perform various types of activities and to move the data



among these components. The critical components include Data class, Analytics, Tools and technology, Infrastructure and Implementation.

The primary goal of big data analytics is to help companies make more informed business decisions by enabling data scientists, predictive modelers and other analytics professionals to analyze large volumes of transaction data, as well as other forms of data that may be untapped by conventional business intelligence (BI) programs. That could include Web server logs and Internet click-stream data, social media content and

social network activity reports, text from customer e-mails and survey responses, mobile-phone call detail records and machine data captured by sensors connected to the Internet of Things. Some people exclusively associate big data with semi-structured and unstructured data of that sort, but consulting firms like Gartner Inc and Forrester Research Inc also consider transactions and other structured data to be valid components of big data analytics applications.

Tools for analyzing Big-data:

There are five key approaches to analyze big data and generating insights:

- **Discovery tools** are useful throughout the information lifecycle for rapid, intuitive exploration and analysis of information from any combination of structured and unstructured sources.
- **Business Intelligence tools** are important for reporting, analysis and performance management, primarily with transactional data from data warehouses and production information system,
- **Database Analytics** include a variety of techniques for finding patterns and relationship in data.
- **Hadoop** is useful for processing data to identify macro trends or find interrelation of information such as identifying the outliers.

- **Decision Management** includes predictive modelling, business rules and logical course of action based on the current context.

Although major innovations in analytical techniques for big data have not yet taken place, one anticipates the emergence of such novel analytics in the near future. For instance,

real-time analytics is likely become a prolific field of research because of the growth in location-aware social media and mobile apps. Since big data are noisy, highly interrelated, and unreliable, it is likely lead to the development of statistical techniques more readily apt for mining big data while remaining sensitive to the unique characteristics. Going beyond samples, additional valuable insights could be obtained from the massive volumes of less 'trustworthy' data. Big data has increased the demand of information management specialists in that Software AG, Oracle Corporation, IBM, Microsoft, SAP, EMC, HP and Dell have spent more than \$15 billion on software firms specializing in data management and analytics. In 2010, this industry was worth more than \$100 billion and was growing at almost 10 percent a year: about twice as fast as the software business as a whole. It seems like, after SAS analytics and Business Intelligence, Big data Analytics will create a niche for its own in the world of statistical analysis in the next decade.

**Assistant Professor-QT & Operation,
Mahendra Institute of Management and
Technical Studies, Bhubaneswar**

Window to Statistics

● **Sri Manoranjan Sen** (*PG: 2009*)

As 2013 ended, the International year of Statistics drew to a close, but the buzz of statistics and data continues to flood the news like never before. From controversies over national security data mining to Nate silver's precise election predictions to discussions about the analysis of big data, Statistics increasingly influence our lives, and as citizens, we need to be educated about what is at stake. The demand for statistically literate citizens has grown; Jobs related to Statistics are expected to increase by about 27 percent during this decade, according to US Bureau of Labour Statistics.

To respond to this surge in attention to Statistics in society, it is crucial that we foster data literacy in our population, starting at a relatively early age. Teachers, the gatekeepers of the knowledge transmitted to our young people, must be able to teach students how to navigate the

data world. If not in our schools, then where are individuals expected to acquire the knowledge needs to be



statistically literate? And if teachers are the key, they themselves must understand statistics and learn the content and pedagogy for how to teach the subject at different levels. The initiative of states to develop and adopt the common core state standards in mathematics promises a leap forward for promoting statistics education in public schools.

Investigating and learning statistical skills is beneficial to students not just they are in the common core, but because they are the key to their future understanding of business, government, and the news. Any students graduating from college

hoping to enter the job market will be more competitive if he or she has statistical reasoning skills. A 2011 report by the McKinsey Global Institute entitled “Big Data: The next frontier for innovation, competition, and productivity “ asserts that, by 2018, the United States will be short of 140,000 to 190,000 people with analytical skills, in addition to 1.5 million managers and analysts with the ability to use data to drive decisions.

Students wanting to pursue jobs at companies like Netflix, Amazon, WhatsApp and face book or more traditional businesses such as insurance or real state, will be at an advantage if they understand how statistical models can be used to tailor advertising and consumer incentives, or compute insurance premiums based on credit scores and other variables. Understanding of making models an outcome as a function of other variables while dealing with variability is a topic addressed in the common core, starting in 8th grade and continuing through high school.

At a more basic level, individuals need to be able to view charts and tables in the news and understand how to extract pertinent information from them. Even reading seemingly simple statements can be enhanced by a person’s statistical knowledge

Comprehending certain information on a daily basis requires statistical knowledge that students should acquire in school through the successful implementation of the common core. However, even as our society moves forward in emphasizing statistics in the classroom, very few teacher-preparation programs require any statistics courses. During their training to teach at the elementary level, future educators in most states take somewhere between one and three math courses that typically contain one small chapter dedicated to Statistics.

Teachers who are already teaching may have no training in statistics at all. Professional development is a must, and districts should be dedicating resources to prepare teachers for understanding and teaching statistics in the spirit of the common core. Teachers, like all others need statistical knowledge to have active role in teaching. In addition, teachers need to be skilled in the pedagogy to relate statistical topics to common core subjects, when necessary.

To respond to all these issues, Statisticians and Statistics educators are to write on Statistics Education for Teachers and also to set outlines for Statistics that teachers of different grades need to know. For example, among other topics, high school teachers should be

able to formulate statistical questions, make comparisons between distributions of variables, and understand how to quantify and explore relationships between two variables. To report, slated to come at the end of 2015 will provide a statistics road map for teacher-preparation programs and districts will enable students to become data literate. It will be imperative that teacher-preparation and professional development programs respond appropriately by expanding and adjusting curricula to address the recommendations put forth in the report. For example, teachers at all levels should have the opportunity to carry out statistical

investigations by posing questions to their students and collecting the appropriate data to answer these questions, and then work with their students to analyze the data accordingly.

If public education fails to respond to societal needs, student's inequity will only grow. Those with more resources will find ways to ensure their children are ready to navigate a world filled with statistics, while others will be cut out of high-level jobs and opportunities, stranded on the other side of the digital and technological divide.

**Ph D Scholar, PG Dept of Statistics,
Utkal University**



Statistics and its Importance

- **Guru Prasad Dash (PG: 2011)**

Discipline of Statistics:

Statistics as a subject of collection and use of various kinds of data can be traced much earlier in India. Kautilya's Arthashastra (321 to 296 B C), one of the greatest treatise of economics, indicates a system of census and data collection relating to agriculture, population and other economic activities, covering villages and towns. In addition, the concept of cross-checking and validation by independent agents was very much part of the data collection system. Evidences in the writings of Huen Tsang of seventh to early eighth century and Ain-i-Akbari by Abul Fazal show enough empirical basis for handling administration and politics. Essentially, the basic statistical system remains with the Government. Modern statistical information system was developed by the British with the objective of collecting taxes and does not meet with the developmental and administrative needs of the society to a large extent. The commercial and

business information systems were developed primarily for accountants and do not serve the



purpose of management. Hence, the statistical system has to reorient to meet the developmental, administrative and management needs of the society. Practitioners of Statistics have to play an important role in achieving this objective.

Statistics Pervades Daily Life:

- We all live within statistical environment. Starting from the newspapers in the morning to TV reports in the evening, we are surrounded by various statistical figures. We very often come across data about our economy in some form or other like: India's population rose to 1.21 billion over the last 10 years,

an increase by 181 million, according to the Census 2011; India's GDP increased by 8.5% in 2010–11; Inflation was about 7% in February this year, deposits of scheduled commercial banks was up by 14.6% in February, 2012 over a year ago etc. How are these numbers generated? All these figures are themselves part of statistical measurements. There are elaborate statistical systems to collect detailed data and compile them to generate aggregate figures.

- Statistics gives a better understanding and provides exact description of a phenomenon of the nature. Through an appropriate framework of data collection and well-organized and scientific inquiry in any field of life, it helps in presenting complex information in a suitable tabular, diagrammatic and graphic form for an easy and clear comprehension, and helps in drawing valid inference about the population parameters from sample data. If a problem can be properly formulated and measurement of data can be generated, whether it arises in physical, biological, social sciences or any other discipline, statistical tools can be designed to provide a scientific solution. Thus, it is widely recognized that the proper use of statistics is a key element of scientific enquiry. At this stage, it can be emphasize that

quality and integrity of data is the most important element in the success and utility of statistics.

Uses of Statistics:

Few examples will some idea on the uses of statistics. It plays an important role in decision making in different sectors of the economy. In agriculture it helps in deciding the plant varieties, combination of fertilizer, pesticides, densities, soil qualities and growth of output. India's statistics exploration started with anthropological experiment. Without the help of statistics, proper planning and policy initiatives in any development sector is not possible, be it a business or an economic activity. Performance measurement in education including IQ is a statistical measurement. Use of statistics in psychological behavior is known as psychometric. Examination of climate change and environmental studies are effectively done by statistical data analysis of weather and environment. One of the simple applications of statistics is to estimate the number of fish in a pond, using random sampling and suitable statistical (hyper geometric) distribution. Does the data support genetic theories of inherited characteristics? What is the pattern of rainfall? What are the important risk factors for heart disease? Any marketing strategy is based on some statistical sample study. Is education attainment related to income and health? The Duckworth-Lewis method

implemented in limited over cricket is a statistical method. There are many more examples of the uses of statistics...

Misuses of Statistics:

- Statistics has also been misused and there has been considerable debate about how to understand or respond to the misuse of statistics. After all, who hasn't heard of the famous phrase, "There are three kinds of Lies: Lies, Damned Lies and Statistics", which is variously attributed to Benjamin Disraeli, Alfred Marshall, Mark Twain and many others. To understand what is meant by "misusing statistics," it is important to describe the role of statistics in the scientific method and relate the concept of "misuse" to other ethical concepts, such as "misconduct" or "incompetence" or "negligence." Some misuses of statistics can be considered misconduct, although most misuses should be viewed as negligence or deficits of competence.
- Misuse of statistics comes from spurious correlation and such relation is attributed to type of cause and effect phenomenon. In most cases, a common variable, most importantly "time" works as a link. As another example, number of people watching TV serials and number of buffaloes may register a high correlation. If one tries to link them and finds a causal

relationship is simply absurd. It is easy to get carried away. One of the prime misuses of statistics is finding a strong relationship between two variables when actually such correlation is spurious. However, exploration of such behavior has also led to path breaking developments in econometrics. For example, most of the macroeconomic series have strong time trend and thus have strong correlation. Prima facie one may suspect the existence of spurious correlation. However, further exploration in such relationships led the foundation of the concept of co-integration. If two variables have a common trend, then there may be possibility of a long-run equilibrium relationship between them. This statistical finding opened up a new dimension of modern economics and CWJ Granger was awarded Nobel Prize in economics on this in 2003.

Conclusion:

A question arises, as to why a quotation like "Lies, Damned Lies, and Statistics" as mentioned earlier is made about the subject of statistics. It is necessarily because of lack of adequate information illiteracy among us. Information literacy, which most of us misunderstand, is the third generation of literacy. The first generation of literacy is when you know how to read and write.

The second generation of literacy is when you are computer literate. But it is not enough to be just first or second generation literate. When transiting to a knowledge society, it is critical for all of us to be information literate or be third generation literate. And, one of the purposes of statistics is to bring about information literacy in the society. If that does not happen, statistics will be misused to prove or disprove anything and the subject of statistics will bear the burden of ridicule. So, it is up to all of us, the teaching community, the students and

practitioners alike, to redirect our efforts towards spreading information literacy in the society. Institutions associated with teaching and training of statistics have a greater role to play in that regard, and I am confident that students, teachers and practitioners of statistics can shoulder the responsibility in spreading information literacy in the society. And this will be our greatest service to the memory of “Mahamana” and as well as to the discipline of Statistics.

**Research Scholar, SEOCS, IIT
Bhubaneswar**



Demography and Development

- **Basant Kumar Panda (PG: 2014)**

Indian Prime Minister Sri Narendra Modi while addressing an Indo-American gathering from Madison Square Garden, New York City of US told, India has three main strengths which are called as the three D's which lead to development are Democracy, Demography, and Demand. According to him the country which have 65% population below 35 year, i.e. the labour force, what more we need for development.

First of all, I like to describe the definition of demography and development. Demography is the statistical study of human populations – their size, composition and distribution across place – and the process through which populations change. Births, deaths and migration are the 'big three drivers' of demography, jointly producing population stability or change. A population's composition may be described in terms of basic demographic

features – age, sex, family and household status – and by features of the population's social and economic context –



ethnicity, religion, language, education, occupation, income and wealth. The distribution of populations can be defined at multiple levels (local, regional, national, global) and with different types of boundaries (political, economic, and geographic). Demography is a central component of societal contexts and social change.

Development, as mentioned by the world development report (1992) is about improving the well being of people, raising living standard and improving education health and equality of opportunity. So,

development not only deals with the economic but also with the social development. A national report submitted by Government of India world summit on social development Copenhagen, 1995 elaborates the concept of development. It says that development means the literacy, education, good health, food and nutrition security and drinking water, easy availability of health facilities etc.

As we know, the development of demography as a social science subject in India is a new to everyone. Since the first of human settlement, India occupies the 2nd position in population behind China but it was always ignored by Indian intelligentsia since start of 20th century for two causes. One of which is the freedom struggle and another is the population growth was not so high. But if we see the statistics, India has 5 fold its population since 1901 i.e. from 235 million in census 1901 to 1210 million in census 2011. We are going to be the citizen of the most populous country in the world very soon. In this time, we have various debates about the population as a problem or aspect for India. There are various optimistic, pessimistic, and neutral views regarding this matter.

So, first of all, I want to produce a latest picture of demography of India. India is the 2nd largest populous country in the

world (17.5% of global population) over the 2.4% of surface area. In census 2011 the various demographic data are below. According to the census reports of Indian Census 2011, the population of India is 1,210,854,977 with 623,724,248 males and 586,469,174 females. The total literacy rate in the country at present is 74.04%. The density of population is 382 persons per sq km. In regards to sex ratio, at present, there are 943 females on average per 1000 males and the child sex ratio is 914 females per 1000 males.

If we really analyse the picture of last 68 years i.e. since independence, how many steps we go forward in the field of demography? How much we are concerned about the population? This is really a great question in the mind of every Indian. We achieve some demographic target by reducing mortality and fertility but this is not satisfactory. Some of our neighbouring countries are in better position as compared to us. I don't want to say we are not achieving any development but we have to go further. Since the demography should be a great focus in 21st century as with the development world midway through an uncertain effort to reach the Millennium Development Goals by 2015, population issues will be central to the success or failure of six of the eight goals.

Some statistics which will clarify the India's progress towards the achievement of millennium development goals as compared to China is presented below.

Indicators	India	China
Population (July 2014)	1,236,344,631	1,355,692,576
Birth Rate	19	12
Death Rate	7	7
Population	1.25	0.44
Growth Rate		
Urbanisation	31.3	50.6
HDI	0.586	0.719
Life Expectancy	70	75
GDP (2013)	1.83 trillion USD	9.24 trillion USD
Expr on Health	3.9% of GDP	5.2% GDP
Literacy Rate	73%	95%
BPL Popn (%)	32.7%	NA
TFR	2.4	1.6
IMR	40	10
MMR	178	37
HIV / AIDs (people)	2.085 million	780000
CPR	54	84
Dependency Ratio	51	37

Sources: Various sources like census, UN estimate, NFHS etc.

Fourteen years have passed since the UN Millennium Declaration enunciated a bold vision and established concrete targets by placing before the World the Millennium Development Goals, which are aimed at saving and improving the lives of many around the globe. In India, there has been considerable emphasis on all the MDGs and the nation has witnessed significant progress towards achieving the MDGs, with some targets already having been met well ahead of the 2015 deadline.

If we are thinking about the 18 targets of MDG, 15 targets are not fulfilled. Out of the MDG goals, the most serious is the child mortality and maternal mortality, which are the two important goals. But if we see any national level data, we are far behind it. Our IMR target is 28 / 1000 live births but we achieve 40 / 1000 live births and maternal mortality is 178 now which is targeted to 100 per 100000 births. And if we think about the other goal we also lack behind poverty, disease, international relation, health, sanitation and hygiene. One of the most important News had come after in the census 2011 was that the **“user of mobile phone is more than the no of toilet user”**. So, this is the situation of India. If we consider human development index (globally India's position: 136) we are also sure about the matter. All indicators like sex ratio, women autonomy, unemployment, TFR, per capita income, net enrolment ratio, hunger index,

contraceptive prevalence rate, and different disease prevalence rate are behind the national target. If we discuss about our state of Odisha, our position is not encouraging in the development front.

In this context, we have to consider the emerging demographic patterns and its opportunities and challenges for India. It investigates the specificities in the demographic transition in terms of various demographic parameters and the lack of homogeneity in the transition across states in the country. It presents some opportunities that can arise from having demographic changes, particularly the demographic dividend and inter-state migration to overcome labour shortage in some parts. At the same time, there are serious challenges in the form of enhancing human capital development, addressing the issue of skewed sex ratio, and the possible rise in social and political unrest and conflicts.

Changes in the size and structure of human populations are conventionally modelled and projected by stratifying the population by age and sex. Here we have to present new approaches, which use multidimensional demographic methods to add educational attainment as a third dimension in studying population dynamics. Virtually in all societies, better-educated adults have lower mortality rates and their children enjoy better chances of survival. Almost universally too, women with higher levels of education have fewer children, through choice and higher

access to birth control. Because of these pervasive differentials, scenarios of potential improvement in education have significant implications for future population growth. The projection of future educational attainment distributions is of significant interest in its own right as well, as education has a great influence on almost every aspect of progress in human development.

Demographics are of key importance to development, but this link is often ignored. Debates about population policy are stirring, with columnists and academics arguing about what lies ahead if global population challenges aren't actively integrated into policy and planning processes. Population, "the study of people using the tool of demography" is now appearing across development discourse, with policy implications that reach far beyond family planning and reproductive health. Population is undeniably important, but how, for whom, and under what consequences is a complex story.

It may be concluded with quotes about demography by Dan Smith as "we encounter each other, we see our demographic diversity of background, race, ethnicity, belief and how we handle that diversity will have much to say about whether we will in the end be able to rise successfully to the great challenge we face today and in future".

**Continuing Master in Population Science
in IIPS, Mumbai**

A Letter of Hope

- **Sri Kirtiman Gopanayak (PG: 2015)**

Dear Sir / Madam,

I hope you are at the best of health and success. It's our honour that you are our Alumnus. It will be a matter of privilege for me if you are kind enough to read this letter with an open mind. I am writing this as one of the recent batch of students, who are admitted to the Department and the hundreds more who would join this family tomorrow. I want to bring to your attention, the most pressing issues, concerning us today. I believe that we are looking at a possible demotivation among present and future students, amidst competition in today's job / employment market. It is really high time to have introspection, as to why the employability of students is negligible. Why nobody these days, from our Department, is cracking NET, ISS or any competitive exam, related to our subject. I think we must have sufficient research projects, to motivate young students for analytical and applied thinking. We must also honestly introspect, whether our Department is at least at par with Statistics Department of other Universities? Hardly any student is ready for a career in Statistics.

Our Alumni is perhaps the best among the rest of the Departments in this University but our Department not. This anybody can feel and say. What can then be done to make a turn around?

Sir / Madam, this august body, gathering today in Department's history,

now faces a difficult but achievable task. I hope, the solution is **not** about only advising the students about value of hard work and self study. I am not



intelligent enough to know the reasons why, but you all are. Let's find out collectively, on what should be done, how it is to be done. What I feel personally here is that, importance of our Department (or this subject) might decrease further, if there is no employability of our students. Quality Education and Employability is every student's right. And solving this crisis is not a question of prestige; it is a question of our Department's survival.

This message, a clarion call, is to all our honourable Alumni and Reputed Statisticians. I trust Utkal Statistics Alumni Association is not just a get-together of old students; it's a responsible organization of hope and aspirations, dedicated to the future of our Department. I request earnestly to kindly think of this challenge and have some feasible solution, in the best interest of my little brothers and sisters.

Thank You for your time...

**Presently continuing M Phil Course in
Statistics under the Utkal University**

Statistics in Our Everyday Life

● Sri Shekhar Das (PG: 2016)

First of all, I express my obligation to all the Alumni Members and the Executive Members to have given me a chance to express my thought through this article. It is my great pleasure and a great opportunity for me to write few words in the USAA Souvenir. According to 'Yull and Kendall', "statistics is quantitative data affected to a marked extent by multiplicity of causes". To some extent, according to my knowledge, this is a bookie definition. The real definition given by an efficient Statistician is that "statistics is all our endeavors". We all use statistics in our everyday life. Most people don't realize how essential statistics is. Our daily life is surrounded by the products of statistics.

We brush our teeth. The fluoride in the toothpaste was studied by scientists using statistical methods to carefully assure the safety and effectiveness of the ingredient and the proper concentration. The toothpaste was formulated through a series of designed experiments that determined the optimal formulation

through statistical modeling. The toothpaste production was monitored by statistical process control to ensure quality and consistency, and to reduce variability.



The attributes of the product were studied in consumer trials using statistical methods. The pricing, packaging and marketing were determined through studies that used statistical methods to determine the best marketing decisions. Even the location of the toothpaste on the supermarket shelf was the result of statistically based studies. The advertising was monitored using statistical methods. The purchase transaction became data that was analyzed statistically. The credit card used for the purchase was scrutinized by a statistical model to make sure that it wasn't fraudulent. So, statistics

is important not just for toothpaste, but for a gamut of activities, products and their whole process. Every product we consume, every service we use, every activity we choose has passed through a process of statistical reasoning. Yet many of us are not aware of the same as it is just an embedded part of the process. Statistics is useful in all walks of life where ever we look..

Why Now? What's New about Statistics?:

Statistics is an emerging discipline that has rapidly adapted to current challenges.

In today's era of big data, where the computer and network are everywhere and everything can be measured, we need statistics to make that data useful.

To learn how a process behaves, we need to conduct experiments. And now we have ways of designing those experiments so that we learn the most from a limited number of experimental runs.

To estimate the models, we need tools to refine and validate the models, and the state of the art has much improved for this in the last few years.

Also, we have much better tools to use the models to optimize processes and make them robust with respect to variation.

Statistical software, like JMP, becomes the interface to harness statistical methods. Statistics is not easy, and using the computer can be a challenge. So, we view our job as making the experience, the workflow, of analyzing data as easy, as comfortable and as powerful as possible.

Do We really Trust Statistics? Different Statistics say Different Things:

Statistics must be used with due care. We need good data, and enough of it. Controlled experimental data is best. Selection and confounding biases can easily corrupt the analysis if we don't pay attention to the process that created the data. When we go about doing statistics ourselves, we need to learn the problems that can happen. We need to think through the analysis carefully.

**Continuing 6th year PG Course,
PG Department of Statistics,
Utkal University**





LIST OF MEMBERS OF UTKAL STATISTICS ALUMNI ASSOCIATION

Sl.	Name	Contacts	Sl.	Name	Contacts
BATCH-1960			BATCH-1964		
1	Jitendriya Sarangi	#	28	Mukul Kumar Bal	#
2	Suprasanna Mohanty	#	29	Kshetra Mohan Satapathy	#
3	Dolagovinda Panda	#	30	Nagendra Nath Dash	#
4	Gopal Krishna Mishra	#	31	Kanak Mishra	#
5	Mina Ketan Behera		32	Sarat Chandra Dash	#
6	Manoranjan Dash		33	Rajanikanta Dash	
7	Siba Charan Behera		34	Pramod Kumar Mishra	#
8	Radhanath Mohanty		35	Kulamani Sukla	
9	Sashi Sekhar Hota	#	36	M V Appa Rao	
10	Lalit Kumar Pati	#	37	Upendra Nath Sarangi	
11	Premananda Patra	#	38	Shyama Sundar Tripathy	
12	Dillip Kumar Ray	#	39	Mrutyunjaya Mishra	
13	Bidyadhar Pattajoshi		40	Yal Murti Satyanarayan Rao	
BATCH-1961			41	Prafulla Kumar Senapati	
14	A K P C Swain	#	42	Ajit Kumar Maity	
15	I Srinivas Rao		BATCH-1965		
16	Bhabani Prasad Mohanty	#	43	T Vijaya Kumar	
17	M Bhaskar Rao	#	44	Alamsethi Venkat Madhav Rao	
18	Upendra Nath Patra		45	Basanta Kumar Mishra	
BATCH-1962			46	Chekuri Eswar Raju	
19	Asim Das	#	47	Prakash Chandra Samal	
20	Md Vazir Mohemmed	#	48	Jaminikanta Mohanty	
21	AZF Rub		49	Ramveer Singh Singla	
22	Padma Lochan Nayak		50	Balukeswar Sar	
23	Bhaskar Chandra Mahapatra	#	51	T R Rao	
BATCH-1963			52	Salil Kumar Chakraverty	
24	Sachindra Kumar Swain		53	S S Narayanswami	
25	Jugal Kishore Acharya	#	54	Banipada Ray	
26	Sisir Mahapatra		55	P Arthur Vidyasagar	
27	Arun Kumar Mohanty		56	Pramoda Chandra Patnaik	
			57	Udaya Nath Rout	#

Sl.	Name	Contacts	Sl.	Name	Contacts
58	Prasant Trikamji Rathod		103	Sudipta Ranjan Das	
59	Madhabananda Sahoo		104	Bikram Kishore Jena	
60	Anjali Sirkar		105	Surendra Kumar Panda	
61	Fayajuddin Khan			BATCH-1967	
62	Debi Prasad Misra		106	Srilekha Das	
63	Satyanarayan Vemparala		107	Kamalakanta Ghosh	
64	Rabindra Sahoo		108	Mukunda Prasad Das	
65	Siba Prasad Rath		109	Madhab Chandra Biswal	
66	Samir Ballav Ghose		110	Shyam Sundra Mallik	
67	Dinesh Ch Mohapatra		111	Basanta Kumar Patnaik	
68	Samir Kumar Gupta		112	Nilamani Das	
69	Rama Krishna Raut		113	Indumati Mishra	
70	Narendra Kumar Mahana		114	M S N Murty	
71	Dwarikanath Nayak	#	115	Prabir Kishore Sanyal	
72	Subash Chandra Panda		116	Sankar Prasad Agrawalla	
73	Rabindra Mohan Senapati		117	Dwarikanath Mishra	
74	Nirmal Singh		118	Rankanidhi Tripathy	
75	Piyusha Ranjan Parija		119	Suniti Kumar Das	
76	Kaulamani Sahoo		120	Nadia Chand Bala	
77	Lingaraj Lenka		121	Atala Bihari Lenka	
78	Rama Chandra Maharana		122	Dhruba Charan Mohanty	
79	Samareswar Mohanty		123	Ashok Kumar Sengupta	
80	Durgadas Mohanty		124	Varghese Chacko	
81	Rabindra Prasad Mohanty	#	125	Paritosh Mishra	
	BATCH-1966		126	A Mahapatra	
82	A Satyanarayana		127	Raurendranath Satapathy	
83	N Ramamurty		128	Hemanga Sundar Mahata	
84	Amiya Krishna Chanda		129	Purna Chandra Mahapatra	
85	Kamalakanta Sinha			BATCH-1968	
86	Sreedhar Bhuyan		130	Hemanta Kumar Rout	
87	Arun Kumar Ghosh		131	Dinanath Dutta	
88	Prabodh Ch Jena		132	Ratnala Tankadhar Rao	
89	G Sibakanta		133	Prasanna Kumar P M	
90	Rama Chandra Patnaik	#	134	Basanta Kumar mohanty	#
91	Aquil Manzar Hasan		135	Suresh Chandra Tripathy	#
92	Sahukari Rabindranath Choudhury		136	Lokanath Sarangi	#
93	Ram Kamal Parmanik		137	Bijoy Kumar Dutta	
94	Muhammed Shabuddin		138	Pravat Kumar Rath	
95	Varkey V		139	Shyam Sundar Basu	
96	Birendra Narayan Tripathy	#	140	Prasant Kumar Muzumdar	
97	Chandra Kumar Dash		141	Suruchi Kumari Jena	#
98	Rabinarayan Mishra		142	Sisir Kumar Kanungo	
99	Debi Prasanna Tripathy	#	143	Ramakanta Ray	
100	Srikar Bhol		144	Prabina Kumar Mohanty	#
101	Ambika Prasad Tripathy		145	Kumar Gauraba Chandra Deb	
102	Narayan Ch Pal		146	Purusottam Sahoo	#

Sl.	Name	Contacts	Sl.	Name	Contacts
BATCH-1969			190	Subhransu Kumar Misra	
147	Padmanav Valid		191	Paramananda Singh	
148	Rabindra Kumar Mohanty	#	192	Dilip Sahu	
149	Minati Mishra		193	Jayanti Priyadarsini	
150	Sudhansu Sekhar Mishra	#	194	Ashok Kumar Mohanty	
151	N Babu Rao		195	Ramesh Chandra Das	
152	B H Sankarlal		196	Chittaranjan Gayan	
153	Kamal Lochan Sarangi	#	197	Debabrata Sen	
154	Suda Venkateswar Rao		198	Suniti Jena	#
155	Kalandi Bhanja	#	BATCH-1971		
156	Jagannath Mohapatra		199	Md Quamruzaman	#
157	Prasanna Kumar Das		200	Vempara Subba Rao	
158	Pramod Kishore Pradhan	#	201	Deba Kumar Chatterjee	
159	Pravat Kumar Rath		202	Naba Kishore Sahu	
160	Krishna Prasad Ghose		203	Bijaya Kumar Barik	
161	Shahed Hashim		204	Bichitrnanda Mohanty	#
162	Gopal Krishna Bansuri		205	Sudhansu Bhusan Mohapatra	
163	Kamala Kanta Sahoo	#	206	Chandi Dasmahapatra	
164	Nibhanapudi Bhaskara Rao		207	Ajaya Kumar Parida	
165	Prasanta Kumar Dasmahapatra		208	Suryanarayan Tenneti	
166	Premananda Mohanty		209	Biraja Sankar Mishra	
167	Panchanan Prasad Mishra		210	Bijaya Narayan Nayak	
168	Gayadhar Swain		211	Prasanta Kumar Das	
169	Kuntala Kumari Das	#	212	Manoj Mohanty	
170	Chadaram Tateswar Rao		213	Sabae Belua	
171	Debabrata Sen		214	R Routray	
BATCH-1970			215	Rita Patnaik	
172	Sukamal Das		216	K B Rao	
173	Pitambar Pradhani		217	Salila Patnaik	#
174	Bhabani Sankar Das		218	Prafulla Kumar Mishra	#
175	Ramesh Ch Mahapatra		219	N C Hangra	
176	Purnendu Kumar Patnaik		220	D S Rao	
177	R V Ramaoorthi		221	Narayan Das	#
178	Harekrushna Patra		222	Subash Chandra Biswal	#
179	Bijaya Ketan Mahapatra	#	223	Sachidananda Biswal	
180	Biranchi Narayan Mahapatra		224	Prasanna Kumar Rath	
181	Subodh Chandra Mishra		225	Sahadev Sahani	
182	Dipak Kumar Mitra	#	226	Subrat Patnaik	
183	Srikanta Rath		227	G V Raman	
184	Kshirod Kumar Mishra		228	Shyama Prasanna Rath	
185	Sudhir Kumar Mandal		229	Munindra Chandra Mishra	#
186	Atank Bhanjan Kar		230	Bhabani Prasad Mishra	
187	Sayed Mansur Ali		231	Subhendu Kumar Samal	
188	Akshyaya Kumar Nanda	#			
189	Umakanta Khuntia	#			



Sl.	Name	Contacts	Sl.	Name	Contacts
BATCH-1972			275	Manamohan Barik	
232	Meera Rani Singh		276	Chintamani Jena	
233	Pramoda Mahapatra	#	277	Bana Bihari Swain	
234	Bilasa Chandra Mahapatra		278	Mamata Mahapatra	
235	Charak mishra	#	279	Rajkumar Sahoo	
236	Jadav Brajabandhu		280	Chintamani Sahoo	
237	Shyamal Kumar Roy		281	Satyendranath Parida	
238	Ananda Kumar Palit		282	Bishnu Charan Mishra	
239	Lalit Mohan Patnaik		283	Kuanra Majhi	
240	Siba Prasad Das		284	Madhusmita Sen	
241	Biswa Mohan Mishra		285	Kunja Bihari Mohanty	
242	Swapn Kumar Roy		BATCH-1974		
243	Symon John Sanatan		286	Surendra Kumar Parida	#
244	Subramanian Chandramouli Swaran		287	Krushna Chandra Behera	
245	Bibhuti Bhusan Mishra	#	288	Padmanav Sashani	
246	Janaki Ballav Pattanaik		289	Pyari Mohan Mohanty	
247	Annapurna Senapati		290	Bhabesh Sen	#
248	Jagannath Murty Gadepati		291	Ashok Kumar Mohanty	
249	Niranjan Mohanty	#	292	Hossain Khan	
250	Krupasindhu Maharana		293	Sukanta Kumar Sahoo	
251	Abhimanyu Jena		294	Kshitish Prasad Patnaik	
252	Sarat Kumar Mahapatra		295	Shankar Prasad Dash	
253	Harekrushna Swain		296	Dillip Kumar Nayak	
254	Bhaba Sankar Bera		297	Harekrishna Sahoo	
255	Jagamohan Mohapatra		298	Harihar Mohapatra	
256	Kanakadri Sastrysuni		299	Harish Gupta	
257	Ratnabati Devi	#	300	Satyabrata Das	
258	Tulasi Manjari		301	Udayanath Maharana	
259	Prafulla Kumar Dash	#	302	Elabanta Rath	#
BATCH-1973			303	Pravakar Mohapatra	
260	Sudhansu Sekhar Ghosh		304	Manas Ranjan Mohanty	
261	Sk Ataur Rahman		305	Choudhury Pradhan	
262	Sanjaya Kumar Dwibedi		306	Nilamani Satapathy	#
263	Madan Mohan Kar		307	Jogeswar Das	#
264	Krutibas Dutta		308	Banchhanidhi Patri	
265	Uma Sankar Mishra		309	Judhistira Behera	#
266	Meenakhi Devi		310	Archana Mohapatra	
267	Srikanta Mahapatra		311	Durgesh Nandini Roy	#
268	Bijaya Kumar Pradhan	#	312	Ivaturi Hariprasad Rao	
269	Biraja Sankar Mishra		313	Keshab Chandra Rath	
270	Niranjan Parida		314	Bhabani Sankar Mahapatra	
271	Rajendra Narayan Sahoo		BATCH-1975		
272	Sangram Keshari Mahapatra		315	Bhagabat Sethy	#
273	Ratnakar Senapati		316	Gopinath Jena	#
274	Nimain Ch Sahani		317	Umakanta Nayak	

Sl.	Name	Contacts	Sl.	Name	Contacts
318	Dhruba Ch Khuntia	#	362	Pradyumna Kumar Patnaik	
319	Sudarsan Panda		363	Lokanath Sahoo	#
320	Sankar Prasad Hazar		364	K A S S V Kameswar Rao	
321	Bairagi Ch Sahoo		365	Malay Bhusan Sen	
322	Gopabandhu Mishra	#	366	Sunil Kumar Mohanty	
323	Mahendra Prasad Sahu		367	Sudarsan Dash	#
324	Nagendranath Panigrahi		368	Abhiram Choudhury	#
325	Girish Chandra Pal	#	369	Dasarathi Nayak	
326	Rajkishore Das		370	Raj Laxmi Panda	#
327	Arati Nayak		371	Mihir Kumar Das	
328	Jagabandhu Pradhan		372	Rabindranath Swain	
329	Ajaya Kumar Jena		373	Bharat Chandra Swain	
330	Bijoy Kumar Sahoo		374	Indira Mishra	
331	Bimal Prasad Agrawalla		375	Prasanna Kr Mohanty	
332	Akhil Ranjan Dash		376	Kishore Kumar Das	
333	Swapn Kumar Bhattacharjee		377	Devyani Chandi Prasad	
334	Dileswar Pradhan		378	Khageswar Nayak	
335	Asribad Mohanty		379	Ramakanta Rath	
336	Manorama Patnaik		380	Satya Ranjan Pradhan	
337	Malaya Kumar Nanda	#	381	Manoranjan Das	
338	Madhu Sudan Bhanja	#	382	Pravakar Nayak	
339	Ramakrushna Mohanty		383	Tapan Kumar Mitra	
340	Srustidhar Dey			BATCH-1977	
341	Ashalata Patra		384	Sunanda Kumari Patnaik	#
342	Jaya Krishna Patnaik		385	Dhirendra Kumar Das	#
343	Bimbadhar Patra		386	Kailash Chandra Nayak	
344	Minati Mishra		387	Somanath Chakrabarty	#
345	Naba Kumar Jagdev	#	388	Paramananda Pradhan	#
346	Pradeep Kumar Mishra		389	Dhananjaya Mohanty	#
347	Bhaskar Chandra Mishra	#	390	Ranganath Das	
348	Banamali Mahanta		391	Rabindra Kumar Das	
349	Saroj Kumari Nanda		392	Niranjan Samantaray	
	BATCH-1976		393	Radharanjan Mohanty	
350	Krushna Chandra Baliarsingh		394	Ratan Singh	
351	Hara Mohan Routray	#	395	Radha Gobinda Mohanty	
352	Swarna Manjari Patnaik		396	Jagannath Rana	
353	Debikinkar Bhanj		397	Tibikram Behera	
354	Banshidhar Mahapatra	#	398	Kshetramohan Sethi	
355	Bhabagrahi Swain		399	Upendranath Sahoo	
356	Manamohan Dalbehera	#	400	Jyoti Ranjan Patnaik	#
357	Gitapati Mohanty		401	Sudhansu Kumar Rath	
358	Prasanna Kumar Mohanty		402	Parsuram Sahoo	
359	Girija Sankar Tripathy		403	Durga Prasanna Mishra	
360	Rabi Narayan Panigrahi		404	Maheswar Satapathy	
361	Narendra Mohan Patnaik		405	Pradyumna Kr Satapathy	

Sl.	Name	Contacts	Sl.	Name	Contacts
406	Rama Ranjan Senapati	#	450	U C Beuria	
407	Sanjukta Mohapatra		451	N C Kar	
408	Nilachakra Mishra		452	J N Kar	
409	Bhanu Sankar Routray		453	M M Rathor	
410	Sanatan Mishra		454	U Mohanty	
411	Sarat Chandra Senapati	#	455	N Pani	
412	Pratap Kumar Mishra		456	Pradeep Kumar Dash	#
413	Bhagabati Biswal		457	Usharani Mishra	
414	Puspanjali Mohanty		458	Siba Narayan Mahapatra	
415	Bhagyadhar Ojha		459	Ambika Prasad Nanda	
416	Rati Ranjan Nanda	#	460	Subash Chandra Lenka	
417	Lalit Kishore Mishra		461	Bikram Keshari Ray	
418	Apurba Kumar Hari		462	Pradyumna Kishore Ray	
419	Arup Kumar Palit		463	Jitendra Kumar Mohanty	
420	Durga Ch Beuria		464	Subodh Kumar Biswar	
421	Bonod Chandra Mohanty	#	465	Saileswar Pradhan	
422	Nirupama Mahapatra	#	466	Shribatsa Lanchhan Dash	
423	Biswanath Sahoo	#	467	Nataraja Mishra	
424	Prativa Patnaik		468	Hrushikesh Mishra	
	BATCH-1978		469	Sabita Patnaik	
425	S K Mahapatra		470	Umesh Chandra Sahoo	
426	Abhaya Kumar Barik		471	Trilochan Pal	
427	S Behera			BATCH-1979	
428	M Mohanty		472	Tusar Ranjan Mohanty	#
429	M K Jena		473	Subash Chandra Rath	#
430	P K Sahani		474	Kartikeswar Baral	#
431	M Barik		475	Gati Prakash Mohapatra	
432	K C Mahanta		476	Pradyumna Kumar Mishra	#
433	S P Sahoo		477	Indrani Dasgupta	#
434	B Barik		478	Santosh Ku Mohanty	
435	B P Das		479	Padmashree Chattopadhyaya	#
436	D K Das		480	Sahadev Mahanta	
437	B P Parida		481	Radhashyama Patra	
438	C S Bhargava		482	Dasarathi Sahoo	#
439	D K Sengupta		483	Rajani Raman Nanda	
440	Ratan Singha		484	Antaryami Panda	
441	S S Das		485	Lakshman Ku Padhi	
442	H Behera		486	Susumna Mishra	#
443	A K Sahoo		487	Sanghamitra Kanungo	
444	S Samal		488	Shradhanjali Mohanty	#
445	H F Raheman		489	Latamani Dei	
446	B Tripathy		490	Paramananda Nayak	#
447	Sarat Kumar Satapathy		491	Gobind Ch Biswal	
448	G C Mishra		492	Mahesh Ch Sahu	
449	Prafulla Kumar Jena		493	Reeta Pati	#

Sl.	Name	Contacts	Sl.	Name	Contacts
494	Prafulla Ku Sahu		538	Gopabandhu Rath	#
495	P Nagabhusan Patra		539	Bibhuti Bhusan Tripathy	
496	Ranjan Kumar Nayak		540	Akshyaya Ku Panda	#
497	Ashok Kumar Mishra		541	Tapan Kumar Biswal	
498	Bijaya Kumar Das	#	542	Jagabandhu Sethi	
499	Kamalini Patnaik (Mohanty)		543	Anuradha Das	
500	Trilochan Swain		544	Uma Sankar Kanungo	
501	Uma Sankar Behera		545	Ranjit Kumar Das	
502	Jaya Jagabandhu Patra	#	546	Duryodhan Pradhan	
503	Chittaranjan Panda		547	Pramod Kumar Das	
504	Biswanath Behera		548	Sunil Kumar Padhi	
505	Bibhuti Bhusan Pradhan		549	Renuka Devi	#
506	Bijaya Kumar Mahapatra		550	Ratnakar Behera	#
507	Gaurang Chandra Panda		551	Panchanan Dash	#
508	Akshay Kumar Nayak		552	Smarajit Patnaik	#
509	Debidutta Mishra		553	Sabrat Kumar Parida	#
510	Debi Prasad Mishra		554	Rasid Khan	
511	Srikanta Mahapatra		555	Prafulla Kumar Parida	#
512	Paramananda Singh	#	556	Sanjoy Kumar Roy	
513	Dhruba Charan Pradhan	#	557	Prafulla Chandra Behera	
514	Dibakar Mahapatra		558	Subhakanta Patnaik	#
515	Sura Narayan Sahoo	#	559	Ashok Mishra	
516	Pramila Kumari Mohanty		560	Shyama Sundar Sethi	
517	Manjushree Acharya		561	Alaka Pati (Das)	#
518	Anjali Mishra		562	Hemanta Kumar Nayak	
519	Adwaita Chandra Dhar		563	Indira Mishra	#
520	Mithu Dasgupta		564	C Jagannath Rao	
521	Jugal Kishore Mohanty	#	565	Anjan Kumar Jena	#
522	Pradip Kumar Pati		566	Subrat Roy	
523	Mohini Mohan Parida		567	P R L Rao	
BATCH-1980			568	Pradip Kumar Tripathy	#
524	Sanghamitra Patnaik		569	Jayanti Das (Patnaik)	
525	Kodandadhar Sahoo	#	570	Ranjita Dash	#
526	Rup Kumar Patnaik	#	571	Soumya Ranjan Pradhan	
527	Manoj Kumar Das		572	Santosh Kumar Mishra	#
528	Iswar Prasad Mohanty	#	573	Krushna Prasad Burma	#
529	Korda Harihar Rao	#	574	Samir Ranjan Rath	#
530	Kanchan Bhola		575	Saswati Harichandan	#
531	Ajit Kumar Parija		BATCH-1981		
532	Sanghamitra Ghosh		576	Narayan Chandra Pani	#
533	Sachidananda Satapathy	#	577	Mohan Sundar Sahoo	
534	Arun Kumar Panda	#	578	Sanjay Kumar Panda	
535	Rama Krishna Mohanty	#	579	Avaya Kumar Kanungo	
536	Gagan Bihari Satapathy		580	Upendra Kumar Biswal	
537	Sujit Ranjan Pradhan		581	Hemanta Kumar Patnaik	



Sl.	Name	Contacts	Sl.	Name	Contacts
582	Saroj Kumar Satapathy	#	BATCH-1982		
583	Ramesh Chandra Sarangi	#	629	Debashree Mohanty	
584	Benudhar Jena	#	630	Girish Chandra Pati	
585	Pravati Devi	#	631	Surama Sundari Sarangi	
586	Sandhyarani Bhuyan	#	632	Sagarika Kar	
587	Sitaram Mahanta	#	633	Bishnu Charan Das	
588	Arun Kumar Dobai		634	Srinibas Panda	
589	Babaji Charan Barik		635	Sk Mukhtaryl Hossain Hazari	
590	Ranjana Kar	#	636	Padmanav Barik	
591	Sanjaya Kumar Kuntia		637	Upendra Kumar Biswal	
592	Nipupama Panda	#	638	Surendra Narayan Kar	
593	Prabas Kumar Satapathy		639	Bimal Kumar Das	
594	Manmath Nath Senapati		640	Saroj Kumar Nanda	
595	Sudhansu Sekhar Mishra		641	Binodini Sahu	
596	Ranjan Kumar Sahoo		642	Banamitra Jena	
597	Mrinal Kanti Das		643	Manasa Ranjan Patnaik	
598	Khageswar Mohanty		644	Siba Prasad Mallick	
599	Surendra Kumar Dash	#	645	Jamini Bhusan Patnaik	
600	Sridhar Behera		646	Ratan Kumar Patra	
601	Mahesh Kumar Maharana	#	647	Suresh Chandra Paikray	
602	Nirajan Pati		648	Manjula Das	#
603	Krupasindhu Das		649	Bhabani Charan Rath	
604	Kadukula Madhusudan Rao		650	Krushna Chandra Pradhan	
605	Rajat Kumar Pradhan		651	Pradipta Kumar Parida	
606	Manmath Kumar Samantaray	#	652	Haripada Bhuyan	
607	Chitaranjan Ray		653	Manoj Kumar Sahoo	
608	Ajay Kumar Patnaik		654	Shriranga Charan Sahu	
609	Bhagyadhar Rout		655	Anil Kumar Rout	
610	Prafulla Chandra Dash	#	656	Pratima Mishra	
611	Debapriya Shashank Sekhar Nishak	#	657	Prakash Chandra Behera	#
612	Gauranga Charan Dash	#	658	Saroj Kumar Mohanty	
613	Janaki Subudhi		659	Biswanath Das	
614	Rajendra Kumar Sarangi		660	Amulya Kumar Singhsamanta	
615	Muralidhar Swain		661	Tajunisha Begum	#
616	Giridhari Majhi		662	Srikanta Sharma	#
617	Gibinda Chandra Jena		663	Bishnu Mohan Panda	
618	G Mulli Rao		664	Sribatsa Lanchhan Das	
619	Ramesh Chandra Das		665	Kamakshya Prasanna Mishra	#
620	Purna Chandra Pattojoshi		666	Mada Mohan Mandi	
621	Deeptimayee Mohanty	#	667	Pramod Kumar Nayak	
622	Sima Das		668	Krishna Prasad Jena	
623	Archana Manjari Sahoo		669	Abhimanyu Sahoo	
624	Swarnaprava Mahapatra		670	Anita Swain	
625	Ananta Charan Sarangi	#	671	Nutan Nayak	
626	Babrubahan Swain	#	672	Baby Satapathy	
627	Pallav Mahapatra		673	Kabita Mohanty	
628	Swarnalata Das	#			

Sl.	Name	Contacts	Sl.	Name	Contacts
674	Umakanta Patra		719	Meera Mohanty	
675	Manasa Kumar Acharya		720	Minati Ray	
676	Biswamitra Das		721	Indumati Devi	#
BATCH-1983			722	Bankim Chandra Sahoo	#
677	C Vijaya	#	723	Annada Kanta Mishra	
678	Sankarsana Mohanty		724	Purnima Dey	
679	Ramesh Chandra Dash		725	Aliva Mohanty	
680	Smrutirekha Mahapatra		726	Diptimayee Mishra	
681	Jagannath Dash		727	Sisir Ranjan Nayak	
682	Gobinda Charan Sahoo		BATCH-1984		
683	Anadi Charan Das	#	728	Puspanjali Swain	#
684	Dolagovinda Mohanty		729	P V Chandiprava	
685	Niranjan Mishra	#	730	Usharani Agarwal	
686	Laxmikanta Barik		731	Swarup Kumar Panda	#
687	Kapila Prasad Das		732	Baikuntha Chandra Nayak	
688	Madhumita Mohanty		733	Purna Chandra Guru	#
689	Kunja Behari Panda	#	734	Amitav Mujumdar	
690	Braja Sundar Pradhan		735	Rama Chandra Mahanta	
691	Kahnu Charan Jena		736	Dillip Kumar Sahoo	#
692	Jyotsnamayee Patnaik		737	Pravat Kumar Sarangi	#
693	Puspalata Tripathy		738	Susil Kumar Samal	
694	Antaryami Mohanty		739	Rabi Narayan Subudhi	#
695	Gokul Charan Jena		740	Debasmita Dhir	
696	Bhabagrahi Sahoo	#	741	Tapan Kumar Mishra	#
697	Suprema Kanungo		742	Krushna Chandra Swain	
698	Akshya Kumar Jena		743	Pradeep Kumar Mishra	
699	Manorajan Mishra		744	Partha Pratim Mandal	
700	Bibhuti Bhusan Barik		745	Dillip Kumar Mandhata	#
701	Satya Narayan Swain		746	Rabindranath Samantaray	
702	Ratnakar Puhan		747	Balunkeswar Mishra	
703	Kumari Kasturi Mahapatra		748	Susmita Das	
704	Bhanja Kishore Swain		749	Pravas Kumar Mishra	
705	Santosh Kumar Patnaik		750	Swapna Khuntia	
706	Prafulla Kumar Swain		751	Susanta Mishra	
707	Dusmanta Bihari		752	Bibhuti Bhusan Nayak	
708	Samir Kumar Dalal		753	Lakshmikanta Mohanty	
709	Bansidhar Nayak		754	Kajal Mahapatra	
710	Basanta Kumar Rout		755	Manoj Kumar Rout	
711	Nirupama Mohapatra	#	756	Kartika Chandra Panda	#
712	Gopa Chatopadhyaya		757	Sanjeeta Das	
713	Kanhu Charan Satapathy		758	Himansu Sekhar Giri	
714	Puspalata Gupta		759	Pramod Kumar Muduli	
715	Swarnalata Mishra	#	760	Manashree Mishra	
716	Arup Kumar Sahoo		761	Ashok Kumar Dash	
717	Akshyaya Kumar Nanda		762	Mihira Kumar Biswal	#
718	Bibhu Ranjan Pani		763	Ashokananda Maharana	

Sl.	Name	Contacts	Sl.	Name	Contacts
764	Srikanta Kumar Dash		808	Hemanta Kumar Jena	
765	Dillip Kumar Pradhan		809	Ramesh Chandra Das	
766	Gagan Bihari Mahapatra		810	Debendra Mohanty	
767	Bikram Kumar Singh	#	811	Amar Mahapatra	
768	Ashok Kumar Mohanty		812	Bibe Ranjan Das	
769	Supriya Das		813	Prasanna Kumar Srichandan	
770	Sabita Mahapatra		814	Sambhu Dayal Agrawal	
771	Bijayalaxmi Panda		815	Swapan Kumar Chandra	
772	Santilata Panda		816	Kedar Kumar Swain	
773	Jayashree Mishra		817	Malaya Kumar Pati	
774	Bijaya Gobinda Dasmahapatra	#	818	P Kalimani	
BATCH-1985			819	Nandita Mittra	
775	Manoranjana Mohanty	#	820	Radhagobinda Das	
776	Pramod Kumar Mahapatra		821	Lalitendu Das	
777	Bimal Kishore Rath		822	Renubala Samantaray	
778	Sudhansu Sekar Mahapatra		823	Pradipta Kumar Tripathy	
779	Maheswar Das		824	Hrushikesh Mahapatra	
780	Tapaswini Mishra		825	Tapan Kumar Biswas	
781	Kalpana Das		826	Arun Kumar Mohanty	
782	Manasi Ray		827	Itilata Patnaik	
783	Ranjit Kumar Sarangi		BATCH-1986		
784	Sanjib Kumar Satapathy		828	Rupnarayan Sahoo	
785	Sukruti Rath		829	Manoj Kumar Mahanta	
786	Ajaya Kumar Swain		830	Kailash Chandra Pani	#
787	Bibhudendra Mohanty		831	Gauranga Charan Sahoo	
788	Minati Prusty		832	Durga Charan Sahoo	
789	Md Feroz Khan	#	833	Sujata Das	#
790	Sephali Parija		834	Prasanna Mahapatra	
791	Ramesh Chandra Das		835	Madhumita Sahoo	
792	Ghanashyama Rath		836	Susmita Sahoo	
793	Rita Das		837	Kartika Chandra Rout	
794	Gangadhar Panda		838	Jagatananda Sahoo	
795	Muktikanta Panda	#	839	Devasis Das	
796	Suchitra Dasmahapatra		840	Dillip Kumar Patnaik	
797	Susan Das	#	841	Subrat Mahapatra	
798	Swapan Kumar Mahapatra		842	Bijaya Bhusan Nanda	#
799	Kalpana Jena		843	Biranchi Narayan Mahapatra	
800	Pradeep Kumar Mishra		844	Laxminarayan Prusty	
801	Manas Ranjan Mohanty		845	Dillip Kumar Dash	
802	Pradeep Kumar Jangid		846	Prahallad Nayak	
803	Nilima Dei		847	Ananda Chandra Nayak	
804	Saswati Das		848	Prakash Chandra Sahoo	
805	Ashutosh Tripathy		849	Amitav Kali	
806	Rajmahendri Mishra		850	Namita Senapati	
807	Sridhar Sahoo		851	Basanta Kumar Sarangi	

Sl.	Name	Contacts	Sl.	Name	Contacts
852	Prabin Kumar Panigrahi	#	896	Braja Kishore Mahapatra	
853	Mihir Ranjan Mohanty	#	897	Gautam Some	
854	Madhuchhanda Beuria		898	Diptendu Bagchi	
855	Gopal Krishna Routray		899	Anup Kumar Karmakar	
856	Malatilata Dei		900	Annapurna Patri	
857	Pradip Samantaray		901	Kalpana Panda	
858	Girija Prasad Das		902	Subash Chandra Nath	
859	Abhimanyu Rout		903	Saroj Kumar Jena	
860	Kailash Chandra Sahoo		904	Mahesh Prasad Lenka	
861	G Kamaraj Dora		905	Satya Narayan Patel	
862	Tanuja Chhotray		906	Upendra Kumar Jena	
863	Ambika Prasad Mohanty		907	Braja Kishore Das Adhikari	
864	Jayashree Acharya		908	Gopal Chandra Pruseth	
865	Sandhya Dash		909	Santanu Kumar Sahoo	
866	Archana Ray		910	Sarojananda Mishra	
867	Purak Pradhan		911	Alok Kumar Panda	
868	Muktar Alli Khan		912	Susandhyarani Das	
869	Suresh Chandra Biswal		913	Mihir Ranjan Saran	
870	Jibanananda Patnaik		914	Ramesh Chandra Das	
871	Sarojini Routray		915	Sasmita Panda	
872	Signdha Pail		916	Digambar Panda	
873	Padmalaya Dash		917	Bhagyalaxmi Mohanty	
874	Pradip Kumar Patnaik		918	M Radharani	
875	Pratima Nayak		919	Bigyanananda Mohanty	#
876	Radha Mohan Jena		920	Nityananda Nath	#
BATCH-1987			921	Mamata Kanungo	
877	Dash Saradalaxmi		922	Byomokesha Patra	#
878	Dhal Kumudini		923	Akshyaya Ku Nayak	
879	Nitish Kumar Mohanty		924	Nirupama Jena	
880	Rabindra Behera		925	Sudhashree Nayak	
881	Bhaskar Chandra Mallick		926	Sasmita Mishra	
882	Soumendra Ku Mohanty		BATCH-1988		
883	Sanjukta Maharana		927	Harihar Maharana	
884	Akshyaya Ku Routray	#	928	Basudev Mohanty	#
885	Rama Narayan Nayak		929	Kaluri Venkat Jagannadh Rao	
886	Pradip Kumar Biswal		930	Purnendu Kumar Hota	
887	Gotipalli Nagesh		931	Shishir Kumar Singh	
888	Jyoti Kishore Nayak		932	Prafulla Kumar Nayak	
889	Purna Chandra Soren		933	Prachetash Priyotosh	#
890	Pravat Kumar Padhy		934	C Srinivas	
891	Ninima Mohanty		935	Prafulla Chandra Mishra	#
892	Sanjuktarani Mishra		936	Bharati Kansal	
893	Sandip Kumar Mahapatra		937	Jitendra Kumar Dalai	#
894	Dillip Kumar Kha		938	Prachetananda Rath	
895	Janmejaya Mohanty		939	Khirod Kumar Mishra	

Sl.	Name	Contacts	Sl.	Name	Contacts
940	Ishu Kumar Chandrakar		984	Maithili Singha	
941	Madhuchhanda Mahapatra		985	Ratnakar Barik	
942	Sanjaya Kumar Sahoo	#	986	Pradeep Kumar Hota	
943	Ranjan Kumar Sahoo	#	987	Manas Ranjan Dash	
944	Maitreyi Nanda (Satapathy)	#	988	Adyapada Tripathy	
945	Madan Mohan Behera		989	Shyama Sundar Panigrahi	
946	Bijaya Kumar Nayak		990	Pradeep Kumar Sahu	
947	Minati Prava Jena	#	991	Binod Bihari Das	
948	Bibhu Prasad Panda		992	Kailash Chandra Sahu	
949	Pankaj Baran Samal		993	Anil Kumar Mittal	
950	Manjushree Raj		994	Prasanta Kumar Puhan	
951	Bansidhar Swain	#	995	Ajaya Ballav Ray	
952	Bijaya Kumar Sahoo	#	996	Baishnab Charan Pradhan	
953	Sanjit Kumar Das		997	Amulya Kumar Parida	#
954	Dipak Parida		998	Bijaya Kumar Mohanty	
955	Suresh Chandra Tripathy	#	999	Manoj Kumar Behera	
956	Sujata Pradhan		1000	Sumanta Kumar Mahapatra	
957	Sanjuktarani Mishra		1001	Utpal Kanti Das	
958	Ashok Kumar Sahoo	#	1002	Anita Kumari Padhi	
959	Nalini Prava Sahoo		1003	Suresh Chandra Das	
960	Raghav Chakraverthi		1004	Prabina Mahapatra	
961	Trilochan Mahapatra		1005	Pournamasi Panda	#
962	Sanjaya Kumar Nanda		1006	Manjubala Baral	
963	S Vani Ramani		1007	Prakash Kumar Biswal	
964	Tapan Kumar Baral	#	1008	Satyapriya Tripathy	
965	Reena Behera (Sahoo)		1009	Subash Chandra Tripathy	
966	Alaka Tripathy		1010	Mamun Mohanty	
967	Jharashree Mohapatra	#	1011	Jyotsna Devi	
968	Jyotsna Mohanty		1012	Madhumita Sen	
969	Kalpana Panda		1013	Mihir Ranjan Rout	
970	Minakshi Tripathy		1014	Saroj Kumar Das	
971	Rifat Jahan Begum	#	1015	Madhulita Tripathy	
972	Jyoti Sankar Tewari		1016	Dillip Kumar Praharaj	
	BATCH-1989		1017	Shankar Prasad Dash	
973	Chinmayee Nayak			BATCH-1990	
974	Bulbul Poddar		1018	Pritichand Patnaik	
975	Sachidananda Pati		1019	Pranati Das	
976	Sunanda Nanda		1020	Kalpana Mishra	
977	Madhumita Mohanty		1021	Nirupama Mahapatra	
978	Anita Pani		1022	Santosh Kumar Dhall	
979	N Jayashree		1023	Kishore Kumar Jena	
979	Indugu Naga Santosh		1024	Sachidananda Pati	
980	Mukti Kanta Sukla		1025	Akshyaya Kumar Hota	
981	Mayadhar Das		1026	Tarun Kumar Nayak	#
982	Pabitra Mohan Dwibedy	#	1027	Anil Kumar Patnaik	
983	Rama Krushna Mishra	#			



Sl.	Name	Contacts	Sl.	Name	Contacts
1028	Debajeet Kar		1072	Srimanta Singh	
1029	Pradip Kumar Mishra		1073	Ajaya Kumar Sahoo	
1030	Rajib Lochan Acharya		1074	Niharika Mahapatra	
1031	Aswini Kumar Dash	#	1075	Enila Patnaik	
1032	Swetapadma Acharya		1076	Piyusha Kumar Mohanty	
1033	Jamuna Kumari Meher		1077	Ritesh Kumar Biswal	
1034	Bata Krushna Prasad Singh Deo		1078	Pratap Kumar Nayak	
1035	Rasmi Rekha Sahoo		1079	Smita Nayak	
1036	Biswaranjan Samal		1080	Sourendra Kumar Udgata	
1037	K Rabi Kumar	#	1081	Antaryami Roul	
1038	Prasanta Kumar Mallick		1082	Manoj Kumar Sahoo	
1039	Subash Chandra Mallick	#	1083	Raghunath Panda	
1040	Ajaya Kumar Mallick		1084	Manas Kumar Pal	#
1041	Minaketan Jena		1085	Abhiram Behera	
1042	Radhakanta Nayak	#	1086	Hemanta Kumar Singh	
1043	Damodar Mohanty		1087	Ajaya Kumar Mishra	
1044	Bharat Bhusan Parida	#	1088	Namita Lall	
1045	Minakshi Prusty		1089	Nirmal Kumar Pradhan	
1046	Siva Prasad Varanasi		1090	Kabita Samal	
1047	Bijayananda Das		1091	Subrat Kumar Mishra	
1048	Ranjeeta Mallick		1092	Janaki Sudha Indragranth	
1049	Smita Sahoo		1093	Anup Kumar Mallick	
1050	Damayanti Maharana		1094	Dushasan Prusty	
1051	Meena Rani Patra		1095	Sanjaya Kumar Nanda	
1052	Kulamani Rout	#	1096	Susanta Kumar Nayak	
1053	Tapas Ranjan Paramanik		1097	Hemanta Kumar Rout	
1054	Narendra Kumar Rout		1098	Srujaya Kumar Swain	
1055	Pranjna Rath		1099	Ellipse	
1056	Ramendu Rath		1100	Sanjukta Dash	
1057	Himansu Sekhar Dutta	#	1101	Swapnarani Mahapata	
1058	Ramarani Sikdar		1102	Sujata Sahoo	
1059	Susmita Das		1103	Sunita Dwivedy	
1060	Minati Mishra		1104	Anita Rani Mukherjee	
1061	Asha Dash		1105	Swastida Pal	
BATCH-1991			1106	Minati Samantsinghar	
1062	Alok Gadnayak		1107	Geetanjali Acharya	
1063	Mousumi Mukherjee		1108	Utpal Kumar Panigrahi	
1064	Rita Mohanty		BATCH-1992		
1065	Arun Kumar Otta		1109	Pravat Kumar Mahapatra	
1066	Srimanta Mohanty		1110	Ashok Kumar Bisoyi	
1067	Debabrata Ghosal		1111	Ajaya Kumar Mishra	
1068	Lallan Srivastava		1112	Upendra Kumar Swain	
1069	Biswajit Sundaray		1113	Sisir Ranjan Mishra	
1070	Dillip Kumar Pradhan		1114	Surya Narayan Tripathy	
1071	Alok Kumar Pal		1115	Tapan Kumar Lenka	#



Sl.	Name	Contacts	Sl.	Name	Contacts
1116	Pranab Kumar Swain	#	1161	Ruchika Singh	
1117	Rina Kumari Behera		1162	Diptirekha Patnaik	
1118	Ganeswar Sahoo		1163	Biswanath Lenka	#
1119	Ramitabala Behera		1164	Mallikarjuna Ravishankar S	
1120	Mandakini Sahoo		1165	Sanjit Kumar Swain	#
1121	Rukhshna Begum		1166	Ramesh Chandra Samal	
1122	Debabrata Mahapatra		1167	Anupama Patri	
1123	Babita Sahoo		1168	Lalit Narayan Das	#
1124	Anjana Acharya		1169	Kailash Chandra Choudhury	#
1125	Bibhu Prasad Mishra		1170	Rasmi Pratihari	
1126	Kirti Prasanna Mishra		1171	Sujata Palar	
1127	Tarun Kumar Patnaik		1172	Sivadatta Das	
1128	Sumanta Kumar Sethy		1173	Premananda Rout	#
1129	Jadumani Sethy		1174	Kalandi Biswal	#
1130	Keshab Charan Sethy		1175	Saroj Kumar Sethy	#
1131	Rasmi Rajguru		1176	Nirmal Kumar Tudu	
1132	Alaka Pradhan		1177	Dhanurdhar Sethy	
1133	Pravat Kar		1178	B Pradipta Kumar Patro	
1134	Bharati Nanda		1179	Ayuta Padhy	
1135	Om Prakash Mahapatra		1180	Soumya Ranjan Acharya	
1136	Mahesh Ranjan Samal		1181	Pramod Kumar Das	
1137	Pranati Behera		1182	Yayanta Kumar Parida	
1138	Arjun Charan Biswal	#	1183	Ratnakar Sahoo	
1139	Ganapati Sial		1184	Manidatta Ray	#
1140	Susanta Datta Behera		1185	Gyana Ranjan Satapathy	
1141	Radhanath Sahoo		1186	Bijayalaxmi Mahapatra	
1142	Bijaya Kumar Khuntia		1187	M Saishree	
1143	Elina Mohanty		1188	Rabindra nath Jha	
1144	Purusottam Sahoo		1189	Ratikanta Swain	
1145	Aparna Saha		1190	Amulya Kumar Maharana	
1146	Sanghamitra Das		1191	Anjana Kumar Nayak	
1147	Rajashree Mahapatra		1192	Surath Kumar Khuntia	
1148	Partha Sarathi Parida		1193	Rankanath Maharana	
1149	Narayan Mishra	#	1194	J Sailaja	
1150	Praharaj Ujjaini Nada		1195	Hrusikesha Baral	
1151	Sunita Subudhi		1196	Mousumi Das	
1152	Swarnamayee Sarangi		1197	Parinita Parija	
1153	Jyotirmayee Mishra		1198	Golak Chandra Samal	
1154	Anusuya Satapathy		1199	Swarupa Padhy	
1155	Pratap Kumar Mishra		1200	Surendra Kar	
1156	Dipali Rajaguru		1201	Nirupama Das	
1157	Rajendra Kumar Sahoo		1202	Mita Deb Goswami	
1158	Sandhyarani Mahapatra		1203	Shashirekha Satapathy	
BATCH-1993			1204	Kallali Das	
1159	Smrutikanta Nayak	#	1205	Bibhuti Bhusan Mahapatra	
1160	Sandeep Chatterjee		1206	Debasis Das	

Sl.	Name	Contacts	Sl.	Name	Contacts
BATCH-1994			1252	Pranita Dash	#
1207	Sanjukta Manik		1253	Prativa Sahu	
1208	Puspashree Routray		1254	Nirupama Panda	#
1209	Debi Prasad Mishra		BATCH-1995		
1210	Siba Shankar Mohanty		1255	Durgabati Sahoo	
1211	Manoj Kumar Sahoo		1256	Tapan Kumar Dash	
1212	Jyoti		1257	Sudhir Kumar Sahoo	
1213	Suprava Kumari Das		1258	Aditya Kumar Rath	
1214	Siba Prasad Mallik		1259	Subal Kumar Jena	
1215	Sarangadhar Patra		1260	Sanghamitra Jena	
1216	Chinmayee Bepari		1261	Sashmita Sahoo	
1217	Shashi Sekhar Nishank	#	1262	Sarita Sahoo	
1218	Sanatan Sethi		1263	Sandhyarani Sahoo	
1219	Bibhu Kalyan Lenka		1264	Ajaya Kumar Nayak	
1220	Santeeta Mohanty		1265	Subha Laxmi Mishra	
1221	Lopamudra Patnaik		1266	Abhijit Sinha	
1222	Swarupa Das (Mishra)	#	1267	Subhadra Mohanty	
1223	Sanghamitra Senapati		1268	Baikunthanath Sahoo	
1224	Sarita Sahoo		1269	Pabitra Mohan Panda	
1225	Sasmita Mishra		1270	Akshyaya Kumar Biswal	
1226	Sankarsan Sahoo		1271	Benudhar Sethy	
1227	Umakanta Sethi		1272	Gopal Chandra Naik	
1228	Dambarudhar Patra		1273	Lajee Thomas	
1229	Amulya Kumar Samal		1274	Diptimayee Chhotray	
1230	Pramod Kumar Mohanty		1275	Shiba Prasad Hansda	
1231	Alokesh Pattanaik	#	1276	Pramod Kumar Behera	
1232	Nalini Prava Sahoo		1277	Prayag Prasad Mishra	
1233	Sharat Kumar Sahoo		1278	Sujata Priyambada Parida	#
1234	Prasanta Kumar Senapati		1279	Bibekananda Pani	
1235	Milu Acharya		1280	Raj Laxmi Mishra	
1236	Bhaba Krushna Mohanty		1281	Subhalaxmi Dash	
1237	Biranch Narayan Bhramarbararray		1282	Padmakshi Dash	
1238	Mamata Das		1283	Kinshuk Charan Nayak	#
1239	Suresh Kumar Dash		1284	Satyabrata Satapathy	
1240	Sunita Pati		1285	Prakash Chandra Sethy	
1241	Rajashree Das		1286	Nandita Panigrahi	
1242	Nihar Ranjan Das		1287	Soubhagya Ranjan Satapathy	
1243	Prakash Ranjan Patnaik		1288	Dayanidhi Maharana	
1244	Biswanath Panda		1289	Debasmita Behura	
1245	Srinibas Mishra		1290	Moola Kamala	
1246	Prakash Chandra Pattanayak	#	1291	Sk Imtiyaz Ali	
1247	Manoj Kumar Sethy		1292	Minatilata Sahoo	
1248	Kishore Chandra Sukla		1293	Pravat Kumar Singh	
1249	Rachita Ray		1294	Brahma Prakash Mohanty	
1250	Manoswini Harichandan		1295	Adhir Kumar Tarai	
1251	Smrutirekha Ray				



Sl.	Name	Contacts	Sl.	Name	Contacts
1296	Sumitra Acharya		1340	Sasmita Panda	
1297	Pradeep Kumar Mallik		1341	Saubhagyalaxmi Das	
1298	Srinibas Mishra		1342	Satya Narayan Mohanty	
1299	Tusar Kanta Ghana		1343	Ananda Kumar Rout	
1300	Biswajit Mallik		1344	Sukanta Kumar Mahapatra	
BATCH-1996			BATCH-1997		
1301	Pratap Kumar Mishra		1346	Sweeta Sahoo	
1302	Sucharita Patra		1347	Namita Sahoo	#
1303	Prajanananda Tripathy		1348	Priyadarsee Mishra	#
1304	Archana Mishra		1349	Rashmirekha Mohanty	
1305	Suchismita Sahoo		1350	Samir Nag	
1306	Lekha Rani		1351	Anuradha Pati	
1307	Amiya Kumar Mohanty		1352	Debesh Kumar Nanda	
1308	Chaitali Pal		1353	Srabani Nayak	
1309	Mihir Prasad Mohanty		1354	Ganesh Chandra Kund	#
1310	Rebatikanta Senapati		1355	Alok Kumar Mangaraj	#
1311	Girija Sankar Mishra		1356	Rajib Kumar Samal	
1312	Jagannath Aray		1357	Bikram Keshari Mohapatra	#
1313	Nilashis Mohanty		1358	Prathapani Ravi Kumar	
1314	Soumya Singh Satapathy		1359	Debasmita Behura	
1315	Gourang Charan Behera		1360	Jasmita Pani	
1316	Tapan Kumar Sahoo		1361	Suvaprada Sarangi	
1317	Ranjan Kumar Palai		1362	Dadhi Baman Mohapatra	#
1318	Prasant Kumar Sethy	#	1363	Manoranjan Dhall	
1319	Biswaranjan Jena		1364	Satish Mallik	
1320	Jyoti Narayan Mohapatra		1365	Sangeetarani Shukla	
1321	Laxmidhar Behera		1366	Rama Krushna Montry	
1322	Rajesh Kumar Mohanty		1367	Gopabandhu Behera	
1323	Santosh Kumar Khilar		1368	Prafulla Kumar Pradhan	
1324	Pradeep Kumar Mishra		1369	Nilachala Sethy	
1325	Sima Singh		1370	Pitha Charan Hansdah	
1326	Satish Chandra Naik		1371	Manas Prasad Hembaram	
1327	Daman Soren		1372	Nirod Ranjan Das	
1328	Jayaram Tudu		1373	Rabi Narayan Lenka	#
1329	Deepak Kumar Mahapatra		1374	Manasa Ranjan Mishra	
1330	Biswanath mallick		1375	Chinmayee Mohanty (Patnaik)	#
1331	Sukanta Kumar Murudi		1376	Parijat Kar (Satapathy)	#
1332	Pravat Tarai		1377	Mitali Madhusmita Satapathy	
1333	Lalit Kumar Parida		1378	Debajani Patnaik	
1334	Smaranika Mohanty		1379	Sasmita Mishra	
1335	Debendra Kumar Mallik		1380	Snehamayee Samal	
1336	Gitilaxmi Das	#	1381	Asutosh Pradhan	
1337	Smita Mahapatra		1382	Bijaya Kumar Sethi	
1338	Pradosh Kumar Swain		1383	Pravat Kumar Bhoi	#
1339	R N Srinivas Rao				



Sl.	Name	Contacts	Sl.	Name	Contacts
1384	Ashish Ranjan Ray		1428	Purna Chandra Mahari	
1385	Srikanta Das		1429	Monalisa Patnaik	#
1386	Sujata Acharya		1430	Sasmita Mishra	
1387	Dibyalochan Das	#	1431	Pratap Rudra Dev	
1388	Sidhartha Sankar Jena	#	1432	Ashok Mahapatra	
1389	Sonali Samantaray		1433	Debabrata Panda	
1390	Karunakar Muduli	#	1434	Sitanshu Sekhar Mishra	#
1391	Priya Ranjan Dash	#	1435	Anamika Patnaik (Kanungo)	#
1392	Sangeeta Sarangi	#	1436	Rasmi Ranjan Das	
1393	Dharanidhar Mallik				
1394	Manoj Kumar Sahoo				
	BATCH-1998			BATCH-1999	
1395	Shree Kanungo	#	1437	Manjushree Rout	
1396	Sambit Kumar Das	#	1438	Monalisa Mahapatra	
1397	Amruta Shree Mishra		1439	Raj Kumar Das	
1398	Mitrabinda Das		1440	Sambit Rath	
1399	Lusmita Patra		1441	Sudipta Choudhury	
1400	Gitanjali Chhotray		1442	Pyari Mohan Nanda	
1401	Minati Rout		1443	Santanu Kumar Mahapatra	#
1402	Rehana Begum		1444	Sunita Mall	#
1403	Shreeballav Sahoo	#	1445	Dipika Jena	
1404	Ajaya Kishore Das	#	1446	Manas Ranjan Mohapatra	#
1405	Santanu Kumar Baral	#	1447	Janaki Behera	
1406	Bhanumati Behera		1448	Jaya Krushna Sahoo	
1407	Kumudini Jena		1449	Rajkishore Behura	#
1408	Sanjibani Sudha Behera	#	1450	Akshyaya Kumar Jena	
1409	Mahasmita Tripathy		1451	Khirod Chandra Barik	
1410	Srikanta Patnaik		1452	Chinmayee Mishra	
1411	Debesh Kumar Nanda		1453	Subhashree Nayak	
1412	Rajanikanta Soboro		1454	Rasmitabala Sahoo	
1413	Jaya Narayan Trailokya Nath		1455	Mousumi Dash	
1414	Subal Charan Behera		1456	Archana Panigrahi	
1415	Mamata Prabha		1457	Manasi Masanta	
1416	Prasanta Kumar Mishra		1458	Susmita Behera	
1417	Rasmita Patra		1459	Khageswar Sahoo	
1418	Sanghamitra Sahoo		1460	Jayashree Jena	
1419	Vempala Pratima		1461	Chandan Hajuri Mohanty	#
1420	Satyabrata Senapati		1462	Sasmita Samal	
1421	Kailash Chandra Patra	#	1463	Pitambar Baral	
1422	Priti Ranjan Majhi	#	1464	Venkat Raman Behera	
1423	Iswar Chandra Sethy		1465	Surendra Sethy	
1424	Raja Prasad		1466	Prakash Ranjan Mahapatra	#
1425	Bipin Bihari Sethy		1467	Prakash Kumar Tripathy	#
1426	Manoj Kumar Patra		1468	Bijaya Mishra	#
1427	Basudev Mohanty		1469	Mamata Pradhan	
			1470	Nagesh Kumar Parida	
			1471	Jayantibala Patnaik	



Sl.	Name	Contacts	Sl.	Name	Contacts
1472	Purna Chandra Mahari		1516	Srikanta Mallik	
1473	Ashok Kumar Patnaik		1517	Dillip Kumar Mallik	
1474	Satya Shovan Nayak		1518	Jayashree Rout	
1475	Anuradha Patra		1519	Laxmidhar Behera	
1476	Sanjit Kumar Mohanty	#	1520	Simita Srichandan	
1477	Manju Seremseti				
1478	Kamali Paramguru			BATCH-2001	
1479	Monalisa Sahoo		1521	Jyoti Ranjan Satapathy	
	BATCH-2000		1522	Sonalika Mohanty	#
1480	Manisha Mohanty		1523	Sonali Subudhi	
1481	Prativa Khuntia		1524	Aswini Kumar Das	#
1482	Puspashree Swain		1525	Swagatika Parida	
1483	Santosh Kumar Prusty		1526	Nirmal Kumar Sahoo	#
1484	Manoranjan Pallai	#	1527	Anita Das	#
1485	Bidyutlata Swain		1528	Manoj Kumar Sarangi	#
1486	Sourindra Mohan Chand	#	1529	Banishree Panda	
1487	Debika Mohapatra	#	1530	Tapan Kumar Mallik	#
1488	Manorama Swain (Parida)	#	1531	Sudhir Ranjan Swain	#
1489	Parbati Charan Mahapatra	#	1532	Sanjib Kumar Panda	#
1490	N Harikrishna		1533	Parikhita Khatua	#
1491	Prajna Dipti Sahoo		1534	Anupama Rath	
1492	Shakti Prasad Dash	#	1535	Nibedita Parida	
1493	Gitanjali Behera		1536	Akshyaya Kumar Panigrahi	
1494	Gopal Chandra Mohanty		1537	Goutam Kumar Singh	#
1495	Arun Kumar Sahoo	#	1538	I M Sheena	
1496	Rohit Kumar Sahoo	#	1539	Bimal Kumar Kesh	
1497	Deba Dullal Das	#	1540	Aparajita Gajendra Mahapatra	
1498	Banishree Behera (Sahoo)		1541	Nibedita Nath	
1499	Duryodhan Jena	#	1542	Premananda Biswal	
1500	Khitish Chandra Mohanty	#	1543	Sasmita Rout	
1501	Rasmi Ranjan Das		1544	Ratikanta Das	
1502	Satya Ranjan Panda		1545	Pratima Narayan Deo	
1503	Samir Ranjan Nayak		1546	Sambit Kumar Mishra	#
1504	Bijaya Kumar Behera		1547	Manas Ranjan Kar	#
1505	G Gopinath Patro		1548	Hiran Kumar Sethy	#
1506	Lingaraj Mallik		1549	Ruby Priyadarsini	
1507	Reena Mahapatra			BATCH-2002	
1508	Soudamini Acharya		1550	Annad Aparajita Parida	
1509	Rachna Jain		1551	Harekrushna Sutar	
1510	Khitiswari Mishra	#	1552	Suwendu Kumar Das	
1511	Nibedita Behera		1553	Debasis Nayak	#
1512	Pranati Das	#	1554	Puja Priyadarsini	
1513	Umesh Chandra Majhi		1555	Malaya Mohanty	
1514	Bibhuti Bhusan Mallick	#	1556	Kiranabala Sahoo	
1515	Rabi Narayan Ghadai	#	1557	Dipankar Das	

Sl.	Name	Contacts	Sl.	Name	Contacts
1558	Satyapriya Mohanty		1600	Nibedita Sahoo	
1559	P Suchitra Achari		1601	Manmayee Mahapatra	#
1560	Emani Indu	#	1602	Jitendra Swain	#
1561	Nihar Ranjan Das	#	1603	Ayesh Kanta Ruot	#
1562	Ram Narayan Mallik		1604	Anima Bag	#
1563	Alekh Prasad Das		1605	Saubhagyalaxmi Mohanty	
1564	Susanta Kumar Nayak		1696	Nibedita Khilar	
BATCH-2003			1607	Sarbeswar Majhi	#
1565	Sailaxmi Sahoo	#	1608	Bagmita Mahapatra	#
1566	Sujata Pradhan	#	1609	Saurav Mohanty	
1567	Dipanita Sahoo	#	1610	Lilabati Moharana	#
1568	Manoranjana Das		1611	Ashutosh Pradhan	
1569	Buddala Shyam		1612	Sujata Lenka	
1570	Manisa Sahoo	#	1613	Ipsita Mishra	#
1571	Srivastav Rakshya		1614	Meghajit Si	
1572	Priyadarsini Mishra		1615	Banapriya Mallik	#
1573	Sanghamitra Padhy	#	1616	P Bharat Kumar	
1574	Partha Sarathi Mohapatra	#	1617	Jagannath Samanta	
1575	Laxmipriya Mishra		1618	Chitta Ranjan Biswal	
1576	Binaya Kumar Nayak	#	1619	Deepak Kumar Nath	
1577	Sachidananda Patra	#	BATCH-2005		
1578	Rajat Kumar Mohanta	#	1620	Sachidananda Ojha	#
1579	Pratap Kumar Sahu	#	1621	Tapan Rana	
1580	Ajaya Kumar Mansingh	#	1622	Akshyaya Kumar Sahoo	#
1581	Reena Ojha	#	1623	Swadhina Ketan Rout	#
1582	Pabitra Mohan Jena	#	1624	Biswanath Samal	
1583	Monalisa Kar	#	1625	Samar Keshari Paltasingh	#
1584	Pareesh Kumar Patnaik		1626	Bibhuti Bhushan Choudhury	#
1585	Suryakanta Bhuyan	#	1627	Nibedita Khilar	
1586	Amulya Prasad Nayak	#	1628	Bismita Prusty	
1587	Emani Indu	#	1629	Laxmidhar Patra	#
BATCH-2004			1630	Jagabandhu Dash	
1588	Rupali Subudhi	#	1631	Ranjana Mishra	
1589	Madhusmita Tripathy		1632	Bhabani Sankar Nayak	#
1590	Rajalaxmi Sahoo	#	1632	Subash Chandra Behera	
1591	Jayanta Kumar Patel	#	1634	Abhilas Dash	#
1592	Manasi Nayak		1635	Siva Prasad Behera	
1593	Monalisa Prusty		1636	Rosalini Rout	
1594	Chinmaya Mishra	#	1637	Rasmita Ojha	
1595	Ranghu Nandan Puan		1638	Sai Santoshini Khuntia	
1596	Mahabir Prasad Behera		1639	Shrabani Malla	
1597	Ranjulata Sahoo	#	1640	Nachiketa Mishra	
1598	Anil Kumar Mishra	#	1641	Sephali Mahapatra	
1599	Rupesh Kumar Mahanta		1642	Satya Sankar Ray	
			1643	Deepak Kumar Sahoo	#



Sl.	Name	Contacts	Sl.	Name	Contacts
1644	Badrinath Mishra	#	1688	Lucy Bharadwaj Parija	#
1645	Hira Punyatirtha Swain	#	1689	Suchismita Mohanty	#
1646	Umakanta Patnayak		1690	Nihar Mahapatra	#
1647	Susanta Kumar Paikray		1691	Satyabrata Sahoo	#
1648	Golak Chandra Behera	#	1692	Lalit Kishore Moharana	
1649	Sasmita Sahu	#	1693	Minati Behera	#
1650	Mahendra Kumar Kar		1694	Rasmi Tripathy	#
1651	Ranjan Kumar Sethy		1695	Lopamudra Mohanty	#
1652	Susanta Kumar Sarangi		1696	Sunita Goudo	#
1653	Jasasmita Pani		1697	Suchitra Sahoo	#
1654	Ivarani Behera		1698	Atmaram Senapati	
1655	Prasanta Kumar Biswal		1699	Biswajit Ray	#
1656	Shradhanjali Barik		1700	Rajesh Kumar Sahoo	#
1657	Shakti Ranjan Patra	#		BATCH-2007	
1658	Sushree Sangita Rout		1701	Sanghamitra Mishra	#
1659	Sukumari Rout		1702	Manojram Das	#
1660	Prabhu Prasad Priyadarshi	#	1703	Sharmilarani Pradhan	#
	BATCH-2006		1704	Susmita Panda	
1661	Sujata Sahoo	#	1705	Dipti Prakash Sahoo	#
1662	Jitendra Nayak		1706	Snigdharani Swain	#
1663	Bismita Prusty		1707	Chinmayee A Mahanta	#
1664	Sujata Das	#	1708	Rupali Rupasmita Jena	#
1665	Anindita Das		1709	Subhashree Choudhury	
1666	Arabinda Palai	#	1710	Ipsita Mohanty	#
1667	Tusar Kanti Mahapatra	#	1711	Sriballabha Panda	#
1668	Monalisa Prusty		1712	Sarojini Padmini Sipun	#
1669	Sanghamitra Samal		1713	Prasanti Behera	#
1670	Pradyumna Kumar Parida		1714	Madhsmitta Das	#
1671	Ratnakar Mahamansingh		1715	Ambika Prasad Sahoo	
1672	Snigdharani Dalai	#	1716	Lokanath Badatya	#
1673	Jalandhara Maharana		1717	Bijayalaxmi Sahoo	#
1674	Rosalin Mishra		1718	Subhalaxmi Kar	
1675	Radhanath Samal	#	1719	Saroj Kumar Mahapatra	
1676	Priyambada Muduli		1720	Subhransu Sekhar Senapati	#
1677	Pratap Mallik	#	1721	Subrat Kumar Dehury	#
1678	Jyotirmayee Sahoo		1722	Kanooru Venkat Laxmi	
1679	Madhusmita Panda	#	1723	Chinmayee Devi	
1680	Bhabani Mallia	#	1724	Priyanka Priyadashini	#
1681	Subhendu Rath		1725	Sasmita Mohanty	#
1682	Milli Samal		1726	Prakash Mohanty	#
1683	Shiv Narayan Mohapatra		1727	Devi Reddy	
1684	Mrutyunjaya Dhala Samanta	#	1728	Pranati Samantaray	#
1685	Madhusmita Samantaray	#	1729	Biswa Bhusan Mishra	#
1686	Laxmipriya Samantaray		1730	Rojalin Sahoo	#
1687	Indramani Behera		1731	Bhagyalata Bindhani	



Sl.	Name	Contacts	Sl.	Name	Contacts
1732	Satyabrata Das	#	1775	Sidhartha Sankar Swain	#
1733	Manoranjan Mohapatra	#	1776	Lingaraj Sahoo	#
1734	Abhinaba Mahapatra	#	1777	Jayashree Singh	#
1735	Prasanta Kumar Mahapatra	#	1778	Shakti Priya Sahoo	#
1736	Tapan Kumar Swain		1779	Radharani Mohapatra	#
1737	Bhaktilata Sahoo		1780	Satya Narayan Mohanty	
1738	Bulu Mohamty	#	1781	Usharani Panda	#
1739	Biswaranjan Jena		1782	Parsuram Nayak	#
1740	Rashmirekha Pradhan	#	1783	Bikash Das	#
BATCH-2008			1784	Shishir Kumar Pradhan	#
1741	Sasmita Swain	#	1785	Manasi Sasamal	
1742	Sayeeda Yasmeen	#	1786	Minalini Garabadu	#
1743	Prajna Paramita	#	1787	Shushree Anindita Mohanty	#
1744	Pritikanta Panda	#	1788	Prabhash Das	
1745	Subhashree Sahoo	#	1789	Sidhartha Mishra	#
1746	Rosalin Mishra		1790	Sunita Jena	#
1747	Durga Narayan Sahoo	#	1791	Avilipsa Pallai	#
1748	Uttam Keshari Harichandan	#	1792	Sanu Kumar Gupta	
1749	B Gouri Sailaja	#	1793	Manoranjan Sen	#
1750	Jagadish Chandra Rout	#	1794	Puspita Singh	#
1751	Pabitra Kumar Panda		1795	Ananta Prasad Rout	#
1752	Ranjita Nayak	#	1796	Soumya Ranjan Sethy	#
1753	Tapasi Acharya	#	BATCH-2010		
1754	Barsa Rani Jee	#	1797	Subhashree Sahoo	#
1755	Swagatika Das	#	1798	Dipika Das	#
1756	Sanjib Kumar Das		1799	Debasis Mohanty	#
1757	Srikanta Panda		1800	Prangya Paramita Pradhani	#
1758	Biswajita Sahoo		1801	Lalatendu Samal	#
1759	Bhagabat Prusti	#	1802	Pujarani Baral	
1760	Pramod Kumar Sahoo		1803	Jayabrata Dash	#
1761	Padmaja Sahoo	#	1804	Alok Kumar Parida	#
1762	Haladhar Sabar	#	1805	Dipika Samal	#
1763	Sunil Chandra Sarangi	#	1806	Sunil Kumar Sahoo	#
1764	Pravat Kumar Jena		1807	Bhabani Sankar Mohanty	#
1765	Jameswar Senapati	#	1808	Shreyashree Patnaik	#
1766	Biswabhusan Pradhan		1809	Kalpataru Maharana	#
1767	Lopamudra Mohanty	#	1810	Suresh Chandra Pradhan	#
1768	Debasis Panda		1811	Saraswati Hansdah	#
1769	Chinmaya Kumar Das	#	1812	Makadam Jyoti Praksh Mishra	#
1770	Laxmi Prava Dhall	#	1813	Subhrakanta Pradhan	#
1771	Rasmita Satapathy		1814	Shushree Sangita Das	#
1772	Aparna Tripathy	#	1815	Monalisha Sahoo	#
BATCH-2009			BATCH-2011		
1773	Janmenjaya Mishra	#	1816	Sushree Sarita Parida	#
1774	Nirupama Sahoo	#	1817	Rasmi Ranjan Barik	#

Sl.	Name	Contacts	Sl.	Name	Contacts
1818	Ajaya Kumar Jena	#	1862	Namita Rani Mall	#
1819	Jainendra Kumar Mishra	#	1863	Kishore Chandra Pradhan	#
1820	Rohit Panda	#	1864	Bibekananda Panda	#
1821	Silva Salonika Patnaik	#	1865	Prativa Mishra	#
1822	Priyambada Rout	#	1866	Brusabhanu Aich	#
1823	Chinmayee Khelar	#	1867	Atiya Kumar Samal	#
1824	Shradhanjali Mahapatra	#	1868	Sadyasnata Das	#
1825	Smruti Ranjita Dalabehera	#	1869	Asharani Panda	#
1826	Bhagyabati Lenka	#	1870	Chitrasen Rout	#
1827	Manoj Kumar Behera	#	1871	Pravat Kumar Kar	#
1828	Smruti Ranjan Pradhan	#	1872	Soumya Satyabrata Pradhan	#
1829	Abhijit Mohanty	#	1873	Suryakanta Behera	#
1830	Tanuja Das	#	1874	Balaram Jena	#
1831	Satya Bhusan Tarai	#	1875	Payal Patnaik (Mohanty)	#
1832	Guru Prasad Dash	#	1876	Chinmayananda Mishra	#
1833	Raj Kumar Sahoo	#	1877	Jhadeswar Pallai	#
1834	Om Prakash Rath	#	1878	Madhusmita Patra	#
1835	Shiba Prasad Mishra	#	1879	Sadananda Meher	#
1836	Elora Mahapatra	#			
1837	Chinmayee Gahan	#		BATCH-2013	
1838	Nitin Kumar Jena		1880	Sujata Sukla	#
1839	Suprava Pani	#	1881	Prasanta Sahoo	#
1840	Bhabesh Kumar Rout		1882	Abhipsa Mohanty	#
1841	Ansuman Jena	#	1883	Sanghamitra Nayak	#
1842	Sarita Panda	#	1884	Chirasmitta Rout	#
1843	Rasmi Ranjan Dash	#	1885	Manojit Mohanty	
1844	Sunil Chandra Sarangi		1886	Haris Chandra Basantia	
1845	Rangadhar Mallik		1887	Rabindra Ku Padhan	
1846	Om Krishnaditya Narayan Jena	#	1888	Pravat Kumar Dalai	
1847	Debashis Duary	#	1889	Prafulla Ghadai	
	BATCH-2012		1890	Bhakti Ranjan Pillai	#
1848	Arijit Basak	#	1891	Pravat Das	#
1849	Birendra Deheri	#	1892	Manasa Kumar Mahapatra	#
1850	Santoshini Behera	#	1893	Snigdharani Sahoo	
1851	Srinibas Sahoo	#	1894	Sankarsan Das	
1852	Kundan Mahapatra	#	1895	Subhashree Subhasmita	
1853	Rabi Narayan Sahoo	#	1896	Aneel Kumar Dasbarma	#
1854	Srikanta Behera	#	1897	Abinash Pradhan	
1855	Nalini Prava Behera	#	1898	Bijayalaxmi Pradhan	
1856	Binapani Dalei	#	1899	Kali Prasad Barik	
1857	Upasana (Mohanty)	#	1900	Anil Kumar Sahoo	#
1858	Nibedita Sahoo		1901	Anshuman Nayak	
1859	Suprava Bahinipati	#	1902	Shivram Kuar	#
1860	Samir Kumar Parida	#	1903	B Chandrabati	
1861	Prangyajyoti Pradhan	#	1904	Bijaya Kumar Das	
			1905	Charan Sasmal	#



Sl.	Name	Contacts	Sl.	Name	Contacts
1906	Mahnoj Kumar Routray	#	1948	Srabani Nayak	#
1907	Puspalata Nayak		1949	Deepak Kumar Behera	#
1908	Abhisek Bothra		1950	Sushree Sangeeta Supkar	#
1909	Sangram Kishore Rout	#	1951	Rasmirekha Sahoo	#
1910	Jyotirmayee Satapathy		1952	Kirtiman Gopanayak	#
BATCH-2014			1953	Abhisek Mishra	#
1911	Nilamadhav Pradhan	#	1954	Susanta Kumar Sahoo	#
1912	Saikat Ghosh	#	1955	Sushil Kumar Das	#
1913	Kapil Kumar Gupta	#	1956	Sarthak Kumar Jena	#
1914	Dillip Kumar Sahoo	#	1957	Goutam Khosla	#
1915	Biswaranjan Rout	#	1958	Jagabandhu Sanbarsia	#
1916	Brijesh Kumar Jha	#	1959	Aisuriya Nayak	#
1917	Upendra Kumar Sahoo	#	1960	Rasmiranjan Manik	#
1918	Shruti Sagar Pattanaik	#	1961	Dibya Kasturi Pattanayak	#
1919	Piyush Pattnaik	#	1962	Ajit Kumar Dalai	#
1920	Srikant Samantray	#	1963	Silan Srichandan	#
1921	Diptimayee Behera	#	1964	Sonalika Sahoo	#
1922	Sunil Kumar Jena	#	1965	Ajit Kumar Baral	#
1923	Itishree Nayak	#	1966	Nabin Krishna Mohanty	#
1924	Sandeep Kumar Patra	#	1967	Nilachal Jena	#
1925	Rakesh Behera	#	1968	Mitrabhanu Barik	#
1926	Abhiram Samantara		1969	Pritipadma Sahu	#
1927	Bhubaneswari Swain (Patra)	#	1970	Rahul Kumar Agrawal	#
1928	Bhabatosh Pani	#	1971	Anurakta Samantaray	#
1929	Dinesh Kumar Pallai	#	1972	Manomaya Bala	#
1930	Rajesh Kumar Nayak	#	1973	Pradeep Kumar Parida	#
1931	Sikandar Murmu	#	1974	Pradyumna Kumar Sahoo	#
1932	Suvashri Suvadarsini	#	BATCH-2016		
1933	Subhadarsan Behera	#	1975	Debasis Pradhan	#
1934	Basanta Kumar Panda	#	1976	Pragyan Priyadarsini Patnaik	#
1935	Nihar Ranjan Dash	#	1977	Prajna Paramita Panda	#
1936	Ramakanta Jena	#	1978	Sushri Swagatika Dash	#
1937	Sucharita Swain	#	1979	Bikash Karna	#
1938	Gouri Sankar Sahoo	#	1980	Shubham Meher	#
1939	Ganesh Chandra Panda	#	1981	Rashmita Mundari	#
1940	Satya Narayan Sabat	#	1982	Lelin Hedenja	#
1941	Shakti Swarup Das	#	1983	Subhasmita Singh	#
1942	Preetish Anand	#	1984	Sindhusmita Nayak	#
BATCH-2015			1985	Pratibha Pati	#
1943	Bishnupriya Mohanty	#	1986	Gouri Moharana	#
1944	Swagatika Das	#	1987	Subhashree Nayak	#
1945	Etishree Priyadarsini	#	1988	Anmol Dalai	#
1946	Sunita Sahoo	#	1989	Dharitree Mangaraj	#
1947	Gayatri Bala Patra	#	1990	Manaswini Patra	#
			1991	Mousumi Acharya	#



Sl.	Name	Contacts	Sl.	Name	Contacts
1992	Soumya Ranjan Nayak	#	2025	Shobhamaya Das	#
1993	Debabrata Dash	#	2026	Sangram Kumar Mohapatra	#
1994	Bibhuti Bhusan Behera	#	2027	Vijeta Nayak	#
1995	Soubhagya Kumar Bagh	#	2028	Prabhupada Jena	#
1996	Sumitra Kisku	#	2029	Soumya Ranjan Nayak	#
1997	Gunjan Kumar	#	2030	Bhagaban Sahu	#
1998	Sarbadamana Sahoo	#	2031	Pradipta Kumar Barik	#
1999	Durga Madhab Prasad	#	2032	Utkal Keshari Mohapatra	#
2000	Chudamani Meher	#	2033	Umakanta Sahoo	#
2001	Bedajyoti Kar	#	2034	Subhadra Priyadarshini	#
2002	Kundan Kumar Nayak	#	2035	Narendra Kumar Panda	#
2003	Subrat Kumar Bhatia	#	2036	Sanjaya Kumar Dhal	#
2004	Shekhar Das	#	2037	Sushree Sangita Mishra	#
2005	Muna Mohanty	#	2038	Prangya Routray	#
2006	Pabitra Kumar Panda	#	2039	Priyanka Mahapatra	#
	BATCH-2017		2040	Abhajit Parida	#
2007	Soumya Ranjan Dehury	#		M.Phil /Ph D / Faculty	
2008	Chinmayee Barsha Mandal	#	2041	Pradeep Kumar Malla	
2009	Arpita Mohanty	#	2042	Santosh Kumar Dey	
2010	Susmita Mahapatra	#	2043	Bijayinee Mahapatra	#
2011	Raja Kishore Sahoo	#	2044	Sushovon Jena	#
2012	Laxman Kumar Kisku	#	2045	Minati Sahu	#
2013	Nandita Nandi	#	2046	Mahendranath Mishra	#
2014	Shaswat Mahapatra	#	2047	Arjuna Prasad Mishra	
2015	Susmita Kerketta	#	2048	Anil Kumar	
2016	Nihar Ranjan Panda	#	2049	S V Rangacharilu	
2017	Sangita Lakra	#	2050	Alpana Srivastav	
2018	Ipsita Sahoo	#	2051	Kunudini Dash	
2019	Sakti Prasad Behera	#	2052	Nachiketa Acharya	#
2020	Narendra Budek	#	2053	Ankita Singh	#
2021	Sushma Sinku	#	2054	Srichandan Mishra	#
2022	Sushree Pallavi Swain	#	2055	Laxmikanta Raju	#
2023	Priyanka Bastia	#	2056	Prafulla Kumar Swain	#
2024	Satya Prakash Sahoo	#			

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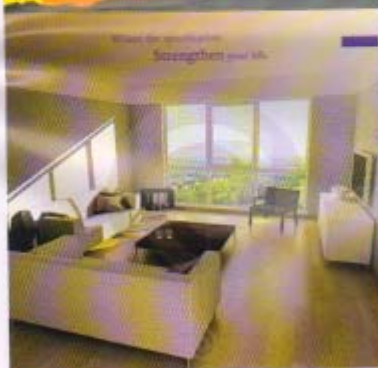


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