School of Statistics, D. A. University,  
Vigyan Bhawan, Khandwa Road, Indore, India 452017

**15 Year Plan (2005-2020)**

The current global trend amongst students seeking admission to graduation is the tilt away from basic Sciences, especially in the mathematical streams. (HT 20th July 2008). This fact is reaching alarming levels in the education scenario of Madhya Pradesh. This has resulted in declining number of admissions in the Post graduate courses in mathematical sciences. This is a serious problem that needs to be addressed immediately at all hierarchy levels.

At the grass root level, we have made some efforts in the past few years, which has resulted in a moderate foundation that will form the basis of our future plans. We now present a brief sketch of the direction in which the department has been working in the past few years, which will be a major factor in deciding upon our future plans.

**(A) Institute –Industry Relationship Through Student Projects:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Rivolta</td>
<td>5. Ruchi Soya</td>
<td>6. Pinnacle Industries</td>
</tr>
</tbody>
</table>

**(B) Co-curricular activities:**

1. Organization of Workshops and Invited Talks

**(A) Organized Workshops**

*(i) A two day Faculty Development Program on “Enhancing Data Analytical Capabilities through SPSS” was organized at School of Statistics, DAVV, Indore. in March 2007 (March 6 and 26 2007) in collaboration with the giant software company SPSS South Asia, Bangalore which was Attended By 120 faculty, research scholars and students from Indore, Ujjain,
Dewas, Burhanpur and also from U.P. Free trial CD’s of the software were made available to the participants. **Beneficiaries:** Participants from various disciplines like Management, Engineering, Life Sciences, Arts, Nursing, Mathematical Sciences etc. attended the workshop. This has imparted knowledge of handling the currently most popular Statistical software which is mandatory / desirable qualification for every field of research involving Statistical tools and high profile employment. This has also enhanced the contemporariness and practical aspects of the syllabus and bettered job opportunities for the students.

(ii) A one day workshop on the Statistical software package SYSTAT was held on 9th December 2007 in collaboration with Cranes Software company, Bangalore. Statistics faculty from 9 different colleges and University Teaching Departments actively participated in the workshop and discussed the various aspects of the software package.

(B) Organized Invited talks by renowned statisticians.

Organized English speaking and personality development workshops for students.

(C) Placements:

In the past, students have been placed in
State administrative services:
- SDM, DSP, Forest Services.
Insurance Sector, Banks, NICNET
Teaching:
- University and Colleges in India, US, Middle East.

Current trend: catching up with the current job scenario, apart from the administrative services and teaching jobs, students are also being absorbed at

**Current Placements:**
Our school can boast of high placement rate at *initial five figure salaries* consistently for the last three years. The demand of students from the school in the multinational companies has witnessed a rapid and sustained growth. Fresh pass-outs are mostly getting jobs in multinational companies as Statistical/financial/bio analysts.

**Financial Companies:** As Risk Analyst/Financial analyst: In Multinational finance companies and banks: Like HSBC, First American, Cashedge, Kotak Mahindra, Greenfields, GenPact, Hexaware, eBay, Adventity, Fullerton etc.

Software Companies: SPSS, SAS, HP HCL, TCS, Wipro KPO

Bio Informatics Companies: Apticraft Systems.

Salary ranging from Rs.1.8 - 10 lakhs per annum

Teaching in Colleges, University departments and schools: IIPS (DAVV), M.B. Khalsa college, Malwa Institute, Vaishnav Institute of management, ILVA College, Sanghvi Institute

**Risk Analyst/ Financial analyst:** In Multinational finance companies and banks: Like HSBC, First American, Cashedge, Kotak Mahindra, Greenfields, GenPact, Hexaware, eBay, Adventity, Fullerton etc.

Statistical investigator through U.P.S.C
(D) Research since 2005:

The faculty members of the department has published many papers in national and international journals of repute and presented papers in national and international conferences in the fields of Design of Experiments, Bioinformatics and Operations Research.

(i) Design of Experiments:

Ph. D. Awarded: Two students were awarded Ph. D. Degree in 2005 and 2006 under Dr. Shakti Banerjee

1. Constructions of 3-resolvable nested 3-designs and 3-wise balanced designs.

   [(With Sarita Rudra and Sanpei Kageyama), Australasian Journal of Combinatorics, Volume 33(2005), Pages 77-86].

2. A method of construction of resistant resolvable 3-designs without repeated blocks.


   Impact Factor 0.088

3. Constructions of nested pairwise efficiency and variance balanced designs.


   Impact Factor 0.167

(ii) Bioinformatics:

1. “Interpretation Support for multistage MS: A mathematical method for theoretical generation of glycan fragments and calculation of their masses.”, N Sanjib Meitei

*Cited in Journal of Proteome Research, USA (Impact factor 6.91) and included in reputed libraries: CFG( Consortium for functional glycomics), British Library etc.*

(iii)Operations Research:

1. **Effect of declining selling price: profit analysis for a single period inventory model with stochastic demand and lead time**” Snigdha Banerjee* and N Sanjib Meitei

   *Journal of the Operational Research Society (2009), 1—9 . IMPACT FACTOR 0.784*


6. “An Inventory Model for Repeated Product Life Cycle Type Demand with Pricing And Partial Backlogging”, Snigdha Banerjee and Ashish Sharma

Presented at International conference on decision science and technology for globalization, IMT Ghaziabad 2-4 January 2008


8. “Optimal Procurement, Pricing and Marketing Policy for an Inventory Model with Two Market Segments “, Ashish Sharma and Snigdha Banerjee

Presented at International conference on Statistics & its applications in or, computer science & management/life sciences, Jan 10-12, 2008, Nagpur

9. “An inventory model for items with three-parameter Weibull distribution deterioration”, Swati Agrawal and Snigdha Banerjee

Presented at International conference on Statistics & its applications in or, computer science & management/life sciences, Jan 10-12, 2008, Nagpur
10. “A Stochastic Inventory Model With Random Lead Time And Trend In Demand”,

Snigdha Banerjee and N. Sanjib Meitei:

Presented at The Fourth International conference of the Forum for Interdisciplinary
Mathematics held at IIT, Chennai, India 6-8 January 2007.

11. “Inventory Model With General Seasonal Demand and Time-dependent Partial
Backlogging”, Snigdha Banerjee and Ashish Sharma.

Presented at the International Conference on Statistical Science, OR & IT in conjunction
with the XXVI Annual Convention of the Indian Society for Probability and Statistics during
7th -9th January, 2007 at Tirupati.

Details of Post-graduate Teaching & Research profile/ plans of
the Department for next few years.

The output of the department in various areas till now, has paved the way for further
advancement and expansions in various directions. With more teaching staff, we would be
able to start several job oriented certificate courses for industries, insurance sector etc. For
example:

New Courses:

0M. Phil (Statistics) will commence from July 2009

Other Courses proposed

1Considering the activities of the department in the fields of Applied Statistics and
computer software, and the growing demand of Statisticians in multinational financial and
insurance companies, the department plans to

2(a) Start a postgraduate course “M.Tech. in Applied Statistics and Computer
Applications.” For this, the department would like to employ faculty on Contract Basis
from industries and fields of Bioinformatics, Software development
3 (b) Conduct short term certificate courses on Applications of Statistics in Biology, Social Sciences, Business, Industries, etc

4 (c) Continue to hold short-term courses in statistical software packages in association with software companies. This would enhance data based research work.

5(d) Continue good research work in the fields of Bioinformatics, Design of experiments and Operations research

6(e) Start Consultancy for Computational facilities for research workers, and help Govt. Departments with Official Statistics.

7 The last four would help in enhancement of Applications of Statistics in Data Based Research

**Proposals for New Courses and Establishment of Consultancy Cell:**

There is continued demand for well-qualified statisticians and Operational Researchers/management scientists in a wide range of industries and business, as well as in local state and central government and its associated services. One reason for this demand is the need for greater and deeper understanding of statistical and Operational Research/management science methodologies in today's business, with technology providing ever increasing amounts of data to be processed and interpreted. These programmes aim to meet this need by imparting an awareness of the usefulness and applicability of modern statistical and Operational Research/management science technology and of the software-based skills that nowadays give ready access to them. These would be introduced in a phased manner, with due weight age given to the contemporary trend and requirement.

**(A) New Courses**

1 M.Tech in **Applied Statistics and Computer Applications**

A course (M.Tech in **Applied Statistics and Computer Applications**) is proposed which will focus on the following emerging areas with ample job/consultancy opportunities at present and in future.

- Bioinformatics
- Statistical methods for clinical trials
- Financial and Risk Analysis
- Industrial Statistics
- Operations Research
2. Certificate course in:
   - Statistics in Financial analysis
   - Statistics for Bio- Informatics
   - Statistics for Actuarial Sciences
   - Industrial Statistics: Quality Control and Operations Research
   - Planning and data analysis for Research

4. 5 Year Integrated M.Sc. Course.

5. Consultancy: With slightly better infrastructure and manpower facilities, we would like to start consultancy services.

For this, the infrastructural requirements would be:
   - At least one room for consultancy service
   - One hall for exhibiting the past work done.
   - Statistical Software Packages

**Funds Required**

Details of funds requested for 5 years along with phasing for each year. The grant as proposed above will be utilized for the following activities, work and items:

(A) Purchase of software, computers, LCD projector, and printer:

For modernization of teaching facility, modern presentation equipments which enable quick dissemination of the knowledge available are required. The school has only one ceiling mounted LCD projector and requires at least two more projectors.
This being a School of Statistics, computer forms the backbone of the laboratory and the core requirement for research. At present, there are 10 computers in the department. However, most mathematical/statistical software packages like Mathematica, MATLAB, SAS/SPSS/SYSTAT/S Plus, along with their Toolkits, Some Antivirus programmes etc are also required. Some of these programs require high speed computers with more RAM and Disk space. LAPTOP computers are also required for convenience in carrying out the work at various institutes where the particular software is not accessible to the researcher.

Purchase of software packages is essential, since

(i) It is expected of any student with post graduation in Statistics to be well versed with the latest software.

(ii) Research, especially in the fields requiring large and complicated computations as in Operations Research, require sophisticated software packages.

(B) Renovation of laboratory.

Some renovation in the laboratory was last undertaken in 1996-97. At present, the M.Sc. laboratory and the research labs need major renovations and complete overhauling as they lack the basic requirements:

(i) Proper air-conditioning , split AC,

(ii) False ceiling,

(iii) Appropriate furniture like almirah, filing cabinets,

(iv) Proper flooring, paints on walls, etc.

(v) Television to provide access to country wide classrooms, and Edusat

(vi) Up gradation of a room to Seminar/meeting room with proper presentation facilities.
Apart from these, the basic amenities for researchers like washrooms, potable water are also inadequate and need to be provided, which may cost approximately Rs. 3 Lakhs.

<table>
<thead>
<tr>
<th>Sr.No./Items Name</th>
<th>Total FE Cost</th>
<th>Total INR Cost (Budgeted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Equipment (Name of each Equipment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. LCD Projector</td>
<td>Rs. 1.5 Lakhs</td>
<td></td>
</tr>
<tr>
<td>2. Computers, Printers, scanner, UPS</td>
<td>Rs. 20 Lakhs</td>
<td></td>
</tr>
<tr>
<td>B. Infrastructure Facilities (Books, Renovation of Labs etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Purchase of Books for advanced research and teaching</td>
<td>Rs. 20 Lakhs (4 Lakhs Per year)</td>
<td></td>
</tr>
<tr>
<td>2. Purchase of research papers</td>
<td>Rs. 5 Lakhs (1 Lakh Per year)</td>
<td></td>
</tr>
<tr>
<td>3. Upgradation/ Renovation of Laboratories</td>
<td>Rs. 25 Lakhs</td>
<td></td>
</tr>
<tr>
<td>4. Purchase of Licensed Software</td>
<td>Rs. 45 Lakhs (Rs. 9 Lakhs per year)</td>
<td></td>
</tr>
<tr>
<td>C. Networking &amp; Computational Facilities etc.</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>D. Maintenance of Equipment</td>
<td>Rs. 5 Lakhs (1 Lakh per year)</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Rs. 121.5 Lakhs</strong></td>
<td></td>
</tr>
</tbody>
</table>

Dr. Shakti Banerjee  
(Co-Ordinator IQAC, School of Statistics, DAVV)  
Dr. Snigdha Banerjee  
(Head, School of Statistics, DAVV)