Teaching Activities Performed by Dr. Ranjan Kumar Jana

Teaching Experience: **16 years 5 months** (as on April 2020)

At Visva-Bharati Taught **Optimization Techniques** to 3rd year B.Sc. Honors Students at **Visva-Bharati (A Central University)** during odd semester of 2004-05.

At SAC (ISRO) Assist **Energy Balance Model & General Climate Model** Practical to **M. Tech.** Students under Centre for Space Science and Technology Education for Asia and the Pacific (Affiliated to United Nations) at **Space Application Centre (ISRO), Ahmedabad** during even semester of 2005-06.

At Nirma University Served as **Lecturer / Assistant Professor** from 01.02.06 to 06.12.06 at **Nirma University**, Sarkhej Gandhinagar Highway, Ahmedabad-382481, Gujarat, INDIA.
Taught **Engineering Mathematics-I, II, III, IV and Discrete Mathematics.**

At SVNIT, Surat Serving as **Assistant Professor** from **07.12.2006** to till date at Sardar Vallabhbhai National Institute of Technology (SVNIT, Ichchhanath, Surat-395007, Gujarat, INDIA.

Taught **Engineering Mathematics-I, II, III and Discrete Mathematics** for **UG** students.

Taught **MM 102:** Mathematics-II, **MAMA 114:** Foundation Course in Mathematics-II, **MM 202:** Principle of Scientific Computing in C, **MM 210:** Fundamental of Computers and C Programming, **MS 213:** Numerical Analysis, **MM 304:** Discrete Mathematics, **MM 320:** Mathematical Methods, **MM 406:** Higher Transcendental Functions, **MM 407:** Optimization Techniques, **MM 511:** Advanced Operations Research for **PG** students.

At IIIT, Surat **Invited** to teach **AS 105:** Engineering Mathematics and **AS 205:** Discrete Mathematics for **UG** (B. Tech.) students of **Indian Institute of Information Technology (IIIT), Surat** in 2017-18, 2018-19 and 2019-20 sessions.

Courses Introduced/Designed for UG/PG Curriculum

UG (B. Tech.) programme (Old scheme) Following Courses were prepared by me for UG (B. Tech.) programme which was approved in Curriculum development workshop and later on by Senate:

MH203: DISCRETE MATHEMATICS
MH 210: ENGINEERING MATHEMATICS III
ASM 310: FUZZY SETS THEORY
ASM 320: PARTIAL DIFFERENTIAL EQUATIONS
ASM 330: INTEGRAL TRANSFORM AND INTEGRAL EQUATIONS

UG (B. Tech.) programme (New scheme) As a Member of the Committee for Syllabus Development / Revision for Mathematics courses related to Applied Mathematics & Humanities Department(AMHD/863 dated 09.03.2019)), following 08 courses were designed:

MA 101: Mathematics-I
MA 112: Mathematics-II
Mathematics-III for MED, CED, CHED, EED, ECED, COED
Discrete Mathematics for COED.

PG (M. Tech.) Programme

Following Course was introduced for M. Tech. in Transportation Engineering and Planning of Civil engineering Department of SVNIT.

MM 611: DECISION MODELS IN MANAGEMENT

PG Programme (Integrated M.Sc.) (Old scheme)

SVNIT is the first NIT to start Five year integrated M.Sc. Programe in Mathematics in 2007. Following Eighteen Courses was prepared by me. All of them were approved in Curriculum development workshop and later on by Senate.

MM 101: MATHEMATICS-I
MM 102: MATHEMATICS-II
MM 210: FUNDAMENTALS OF COMPUTER PROGRAMMING
MM 202: PRINCIPLE OF SCIENTIFIC COMPUTING IN C
MM 204: LINEAR ALGEBRA
MS 213 : NUMERICAL ANALYSIS
MS 215: INTRODUCTION TO LINEAR ALGEBRA
MM 303: CLASSICAL MECHANICS
MM 305: ORDINARY DIFFERENTIAL EQUATION
MM 302: COMPLEX ANALYSIS
MM 304: DISCRETE MATHEMATICS
MM 312: FUZZY SETS THEORY
MM 314: INTEGRAL TRANSFORMS
MM 406: HIGHER TRANSCENDENTAL FUNCTION
MM 407: OPTIMIZATION TECHNIQUES
MM 505: NUMBER THEORY
MM 510: ADVANCED OPERATIONS RESEARCH
MM 550: ADVANCED INTEGRAL TRANSFORMS

PG Programme (Integrated M.Sc.) (New scheme)

As a Member of the Committee and Personal Level, following courses were revised / designed:

MAMA 103: Foundation Course in Mathematics-I
MAMA 114: Foundation Course in Mathematics-II
MA 320: Mathematical Methods
MA 407: Optimization Techniques
MA 511: Advanced Operations Research

Research Supervision

Ph. D. Students Guidance (12)

Completed 03

1. **Jignesh P. Chauhan**: *Some Aspects of Mittag-Leffler Function and Fractional Differential Equation Models.* (Date of notification 26.02.2018)

2. **Bhumika V. Maheshwari:** *Some Studies on Extended Hypergeometric Functions.* (Date of notification 22.02.2019)

3. **Rakesh L. Das:** *Production and Procurement based Inventory Models under Imprecise Environment.* (Date of notification 05.04.2019)

Thesis Submitted 01

4. **Hiren S. Lekhadiya**: *Satellite Data Assimilation of Extreme Rainfall Events through WRF Model.*

Ongoing PhD 08

5. **Radharaman Roy** (from December 2016) working on *Hypergeometric Functions*

6. **Ankit Pal** (from July 2017) working on *Special Functions*

7. **Dhawal J. Bhatt** (from November 2017) working on *Approximation Theory*

8. **Abir Bhattacharya** (from July 2018) working on *Special Functions*

9. **Rituparna Mondal** (from July 2019) working on *Operations Research*

10. **Ekadashi Das**(from July 2019) working on *Operations Research*

11. **FarhatBanu H. Patel**(from July 2019) working on *Special Functions*

12. **Animesh Mondal**(from January 2020) working on *Supply Chain Management in Imprecise Environment*

M.Sc. Students Guidance for Master dissertation: 22

Completed: 18

1. **Abhishek Shah:** *Equivalence between 4d-Var and Kalman Filter and Comparison with an Ensemble Kalman Filter.*

2. **Shivani Shreya:** *An Introduction to Visual Cryptography.*

3. **Hitesh Bansu:** *Inventory Problems with different type of Demands.*

4. **Rakesh Das:** *Comparison of Firefly Algorithm with Particle Swarm Optimization and Genetic Algorithm and Solution of some Linear Programming Problems*

5. **Hiren Lekhadiya:** *Introduction to Different Optimization Techniques and Information Retrieval*

6. **Heral Kevrani:** *Hotel Inventory management using Linear Programming.*

7. **Ankit Agarwal:** *Some Study on Time series Analysis and Forecasting.*

8. **Hinal Solanki:** *Comparison of LPP and Lingo with Genetic Algorithms for Inventory Problems*

9. **Tejan Vadher:** *Computational Aspects of Hypergeometric Functions*

10. **Simran S. Narang:** *Mathematical Approach to Study Bicycle Sharing System for Surat City*

11. **Timilan Mandal:** *A Study on Geometrical Significance of Fractional Calculus*

12. **Shweta More:** *Some study on Game Theoretic Applications*

13. **Parth Sartanpara:** *Some Study on Project Cost Analysis as Application of PERT and CPM*

14. **Punit Yadav:** *Some Studies on Eigen Values of Strum-Liouville Problem*

15. **Salim Mohamd: Studies on Stochastic Optimal Control Problem**

16. **Khilan Sakariya:** *Some Heuristic Approach to Solve Travelling Salesman Problem*

17. **Ravi Tanti:** *Mathematical Inequalities*

18. **Hiral Brahmbhat:** *Wavelet Transform in Image Processing*

Ongoing: 04

19. **Thekku Veettil Abhijith** working on *Game Theory*

20. **Gowri R Chandran** working on *Cryptography*

21. **Khobragade Vaibhav Jaydeo** working on *Mathematical Modeling*

22. **Praveen Kumar** working on *Operations Research*

Students Guidance for Internship: 12

Summer Internship: 11

1. **Hiren Lekhadiya**: *Information Retrieval* (2012).

2. **Nikhil Choksi:** *Game Theory* (2012).

3. **Divyang Gor:** *PERT and CPM* (2012).

4. **Vidhi Patel:** *Application of Transportation Model for deriving optimal supply route pattern for Textile Manufacturers in Surat* (2013).

5. **Snehal Patel:** *Introduction to Numerical Weather Prediction* (2013).

6. **Karan Patel:** *A study on Replacement Models* (2015).

7. **Hinal Solanki:** *Multi-objective Assignment Problems* (2016).

8. **Rakesh Ranjan:** *Calculus and Analytic Geometry* (2016).

9. **Nagesh Sahu:** *A study on Integral Transforms* (2017).

10. **Aash Makana:** *Methods to solve non linear equations* (2019).

11. **Vaibhav Gupta:** *Some studies on Least Squares, B-Splines and Fourier approximation* (2019).

Winter Project: 01

12. **Ramkumar Radhakrishnan:** *Perturbation Technique on Eigen Value Problems*

(2019). [1]

[1] **Last updated on April, 2020**