A Glimpse on Mathematics in BIT
(Department & Research Aspects)

Prof. Seshadev Padhi

Birla Institute of Technology, Mesra

8, September, 2021

About the Department

- The Department of Mathematics was founded in 1956, under the name Department of Applied Mathematics. It started with only undergraduate program offering to engineering students.

- At Present Department runs Ph.D programme, 2-year M.Sc programme in Mathematics and 5-year Integrated M.Sc programme in Mathematics and Computing.

- It has also been actively engaged in organizing conferences, workshops, summer and winter schools, invited lecture series.

About the Department

- It also has initiated organizing seminars (two seminars in each month) aiming at distribution of knowledge about research areas among graduate and Ph.D students.

- The Department is equipped with a modern computer laboratory with latest scientific software such as Matlab, Mathematica, Systat, LINGO, TORA, SPSS, Code Blocks etc.

- Many of the graduate students have gone for higher studies in reputed academic institution within India and abroad.

About the Department

- Our students are getting selected for internship and in-campus / off-campus placement at IIT Bombay, infosys, Wipro, Capital Float, Intutent Incl., Price waterhouse coopers, Mu Sigma, Deloitte, TCS, Azim Premji foundation, SAP Labs, Blackberry, Tredence, Hangout Store. The detailed will be given soon.

- Faculties of the department visit different Institutes of International repute to deliver lectures on their research.

Vision of the Mathematics Department

To become a globally recognized centre of excellence in teaching and research, producing excellent academicians, professionals and innovators who can positively contribute towards the society.

Mission of the Department

1. Imparting strong fundamental concepts to students in the field of Mathematical Sciences and motivate them towards innovative and emerging areas of research.

2. Creation of compatible environment and provide sufficient research facilities for undertaking quality research to achieve global recognition.

Member of BOS:

1.	Prof. S. Padhi,	Dept. of mathematics, BIT Mesra,	Member
2.	Prof. S. K. Jain	Dept. of Mathematics, BIT Mesra,	Member
3.	Prof. S. Chakraborty	Dept. of Mathematics, BIT Mesra,	Member
4.	Prof. S. Konar	Dept. of Physics, BIT Mesra,	Member
5.	Prof. G. K. Panda	Dept. of Mathematics, NIT, Rourkela,	External
6.	Dr. A. P. Ghorai	Dept. of Mathematics, BIT Mesra,	Member
7.	Dr. A. Tandon	Dept. of Mathematics, BIT Mesra,	Member
8.	Dr. P. Kaur	Dept. of Mathematics, BIT Mesra,	Member
9.	Dr. A. Mustaffi	Dept. of CSE, BIT Mesra,	Member
10.	Dr. S. B. Singh	Dept. of Biostat, PSM, RIMS, Ranchi,	External
11.	Nishith Mohan	Dept. of Mathematics, IIT, Mandi,	Member
		Research Scholar	Alumni
12.	Kumar Shivam	Data Scientist	Member
		Flipshope,	Alumni
		Bengaluru, Karnataka 560102	
13.	Nimish Tiwari	IMSc. (mathematics & Computing)	Student
		Student	Member
		5th Year (9th Semester), BIT, Mesra.	
14.	Swapnil Kant	IMSc. (mathematics & Computing)	Student
		Student, Adrosonic, Mumbai	Member

RESEARCH FIELDS:

- Algorithm Analysis
- Statistical Computing
- Computational Solid Mechanics
- Differential Equations
- Difference Equations
- Fractional Calculus
- Theoretical Seismology
- Optimization
- Complex Analysis
- Functional Analysis
- Operator Theory
- Mathematical Modelling and Simulation
- Multiple Criteria Decision Making
- Multiple Objective Decision Making
- Numerical Analysis
- Nonlocal Singular Boundary Value Problems
- Mathematical Modelling of Environmental
- Biological and Ecological Systems
- Cryptography and many more.

Faculty Details

- **Professors (03)**

1. **Dr. Saral Kumar Jain**
2. **Dr. Soubhik Chakraborty**
3. **Dr. Seshadev Padhi (HOD)**

Adjunct Faculty (02)

1. **Prof. Akrur Behera**
2. **Prof. Dharmendra Kr. Gupta**

- **Associate Professor (02)**

1. **Dr. Peeyush Tewari**
2. **Dr. (Mrs.) Anjana Pradhan Ghorai**

- **Assistant Professors (10)**

1. **Dr. Prabal Datta**
2. **Dr. (Ms.) Prabjot Kaur**
3. **Dr. Abhinav Tandon**
4. **Dr. Randhir Singh**
5. **Dr. (Ms.) Syeda Darakhshan Jabeen**
6. **Dr. (Mrs.) Vandana**
7. **Dr. Farhan Musanna**
8. **Dr. Gautam Singh**
9. **Dr. Dinesh Kumar**
10. **Dr. Subha Sarkar**
11. **Mr. Pawan Kr Shaw (TEQIP)**

Dr. Saral Kumar Jain Professor	Dr. Soubhik Chakraborty Professor	Dr. Seshdev Padhi Professor & Head
		
Qualification: Ph.D **Specialization:** Computational Solid Mechanics, Numerical Analysis, Operations Research	**Qualification: Ph.D** **Specialization:** Algorithm Analysis, Music Analysis Statistical Computing	**Qualification: Ph.D** **Specialization:** Boundary Value Problems, Fractional Differential Equations, Differences Equations, Elliptic Equations

Prof. Akrur Behera
Adjunct Professor

Qualification: Ph.D (Retired Professor, NIT Rourkela)
Specialization: Category Theory, Algebraic Topology, Differentiable Manifolds, Nonlinear Functional Analysis, Fuzzy Sets and Systems (Theoretical Computer Science).

Prof. Dharmendra Kr. Gupta
Adjunct Professor

Qualification: Ph.D (Retired Professor, IIT Kharagpur)
Specialization: Numerical Analysis, Interval Analysis, Constraint Satisfaction Problems, Inventory Control Problems, Data Base Management Systems, Computer Networks, Combinatorial Optimization Problems.

Dr Peeyush Tewari Associate Professor	**Dr. Anjana Pradhan Ghorai** Associate Professor	**Dr. Prabal Datta** Assistant Professor
		
Qualification: Ph.D **Specialization:** Mathematical Modeling, Partial differential equations, Heat Transfer, Image Segmentation	**Qualification: Ph.D** **Specialization:** Theoretical Seismology	**Qualification: Ph.D** **Specialization:** Convective Heat & Mass Transfer, Numerical solution of Boundary layer flow.

Dr. Abhinav Tandon Assistant Professor	**Dr. Prabjot Kaur** Assistant Professor	**Dr. Randhir Singh** Assistant Professor
		
Qualification: Ph.D **Specialization:** Differential Equations and its applications in Ecology, Environment and Biology	**Qualification: Ph.D** **Specialization:** Vendor Selection Problem Inventory Problem Medical Diagnosis	**Qualification: Ph.D** **Specialization:**Nonlinear Local/ Nonlocal Boundary Value Problems, Numerical Methods for Singular Boundary Value Problems, Wavelet Methods, Compact Finite Difference Methods

Dr. Syeda Darakhshan Jabeen Assistant Professor	**Dr. Vandana** Assistant Professor	**Dr. Farhan Musanna** Assistant Professor
		
Qualification: Ph.D **Specialization:** Optimization, Mathematical Modelling and Simulation	**Qualification: Ph.D** **Specialization:** Oblivious Transfer, Private Intersection Set Protocols, Electronic Voting Lattice Based, Cryptography, Image Processing	**Qualification: Ph.D (IIT Roorkee)** **Specialization:** QUANTUM INFORMATION THEORY

Dr. Gautam Singh Assistant Professor	**Dr. Dinesh Kumar** Assistant Professor	**Dr. Subha Sarkar** Assistant Professor	**Mr. Pawan Kr Shaw** Assistant Professor
			
Qualification: Ph.D(IIT Guwahati) **Specialization:** Finite Element Method, Discontinuous Galerkin Method, Singular Perturbation Problems.	**Qualification: Ph.D** **Specialization:** Complex Dynamics (Complex Analysis. **Achievement:** A Narsinga Rao Memorial Prize awarded by IMS (2015).	**Qualification: Ph.D(HRI Allahabad)** **Specialization:** Number Theory, Additive Number Theory, Zero-Sum Problems, Weighted Zero-Sum Problems, Ramsey Theory	**Qualification: Ph.D(Pursuing)** **Specialization:** Fractional Calculus, Fractional Differential Equation.

Awards/Achievement by the Faculty Members:-

- **Seshadev Padhi :** Received BOYSCAST Award (2004, DST Govt. of India), Editor of Functional Differential Equations.
- **Dr. Soubhik Chakraborty :** Received National Award for Teaching Excellence (Mathematics) given by Indus Foundation at Indo-American Education Summit and Expo 2013 held in Hyderabad on Feb 2-3, 2013.Received Best Academic Researcher Award 2013 given by Association of Scientists, Developers and Faculties in Pondicherry on Dec 30, 2013
- **Dr. Prabjot Kaur :** Received VIVA, 2017

Sponsored projects:

1. **Principal Investigator:** Prof. Soubhik Chakraborty
   Title of the Project: Analyzing the structure and performance of Hindustani classical music through statistics
   Project Funding Agency and Type: UGC Major Research Project
2. **Principal Investigator:** Prof. S. Padhi
   Title of the Project: Periodic Solutions of Functional Differential equations in Population Dynamics
   Project Funding Agency and Type: NBHM
3. **Principal Investigator:** Prof. S. K. Jain
   Title of the Project: Transient Analysis of Laminated Composite Plates by Finite Element Method
   Project Funding Agency and Type: All India Council for Technical Education
4. **Principal Investigator:** P. Kaur,
   Co- Principal Investigator : Prof. S. K. Jain
   Title of the Project: A Decision Support System for Intutionistic Fuzzy Set Approach to Vendor Selection Problem
   Project Funding Agency and Type: UGC Major Research Project

Projects Applied

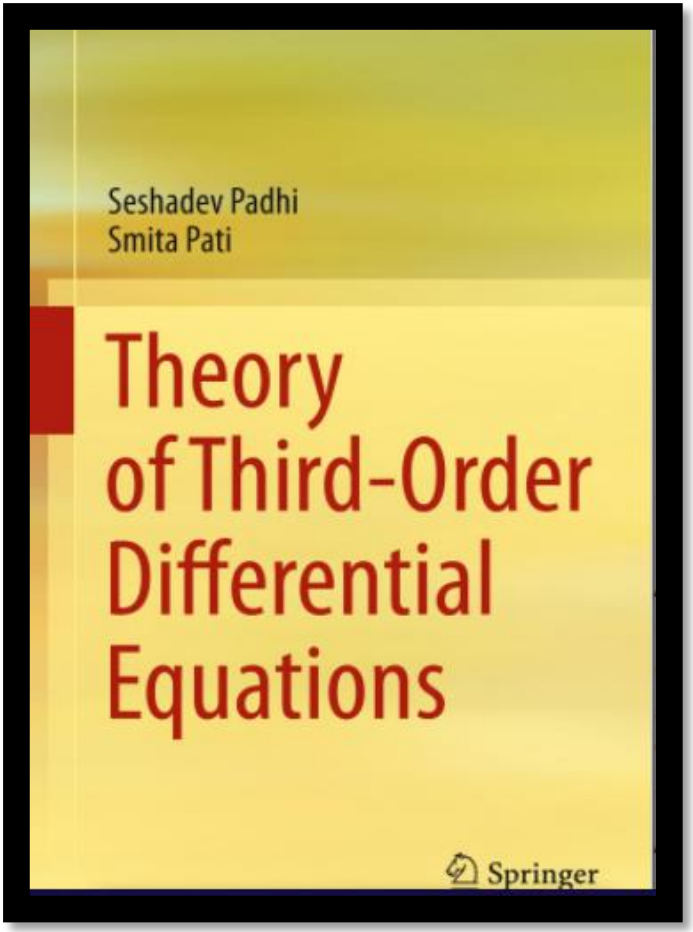
1. Music Therapy in COVID-19 Pandemic
2. Music Plagiarism Detection Through Similarity Analysis
3. Sentiment Analysis of Music Using Machine Learning and Statistics

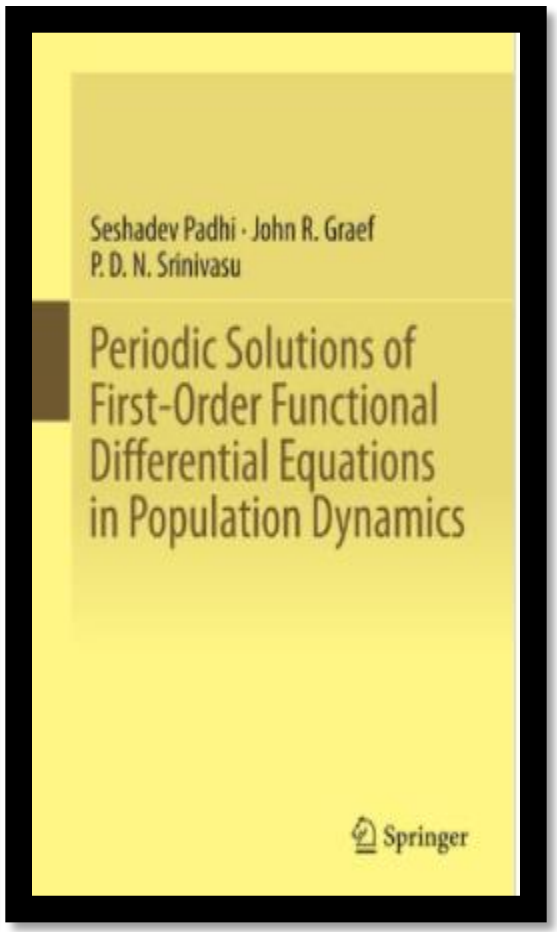
In addition to the above, we have applied for another project titled as under:-

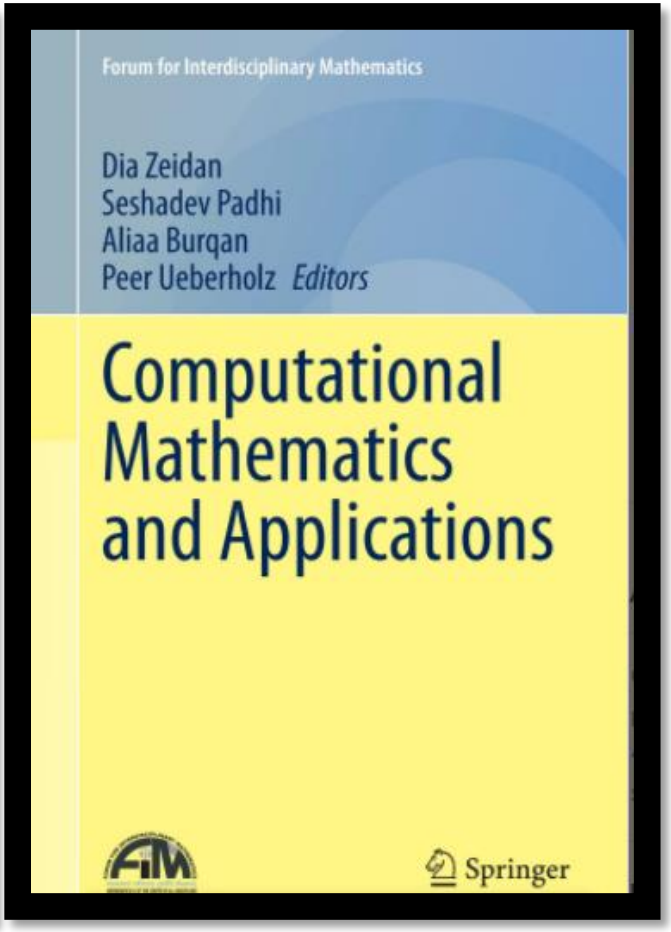
Hindustani Raga Analysis Using Statistical Musicology

This is under NM_ICPS TIH on Data Science, ISI Kolkata (funding agency DST). The budget is 36 lakhs approx.

Book Published:







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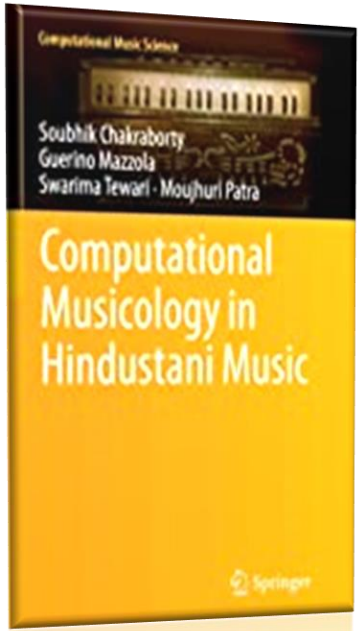

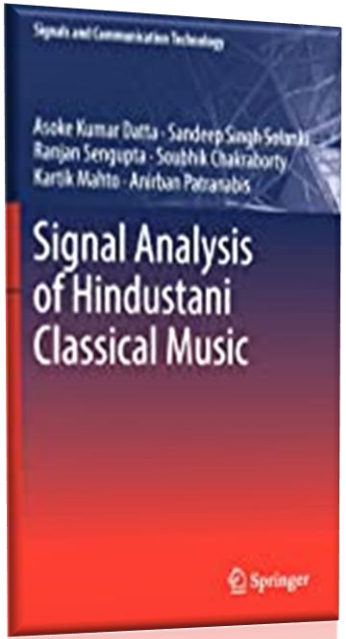

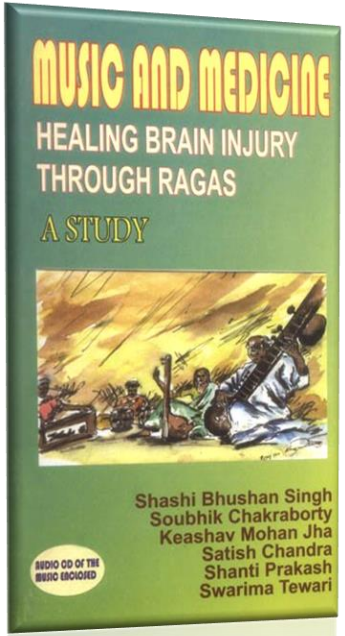

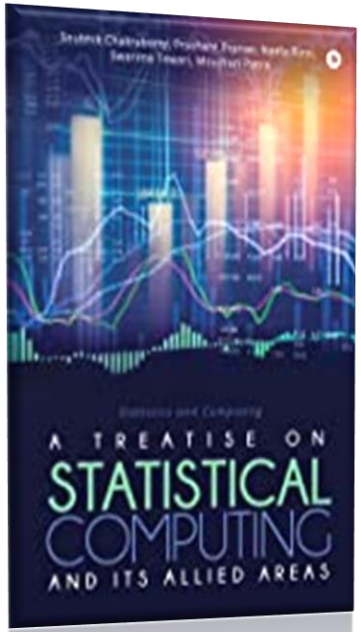

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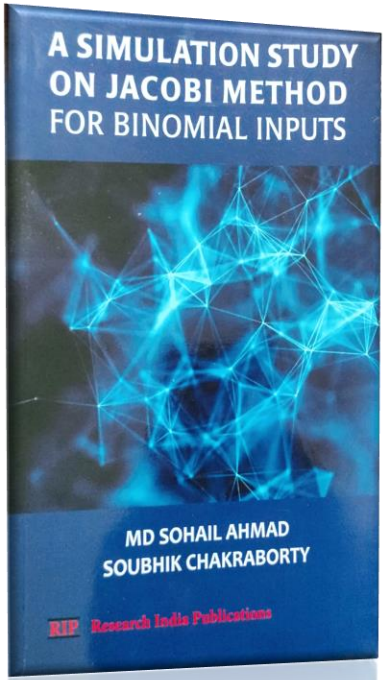

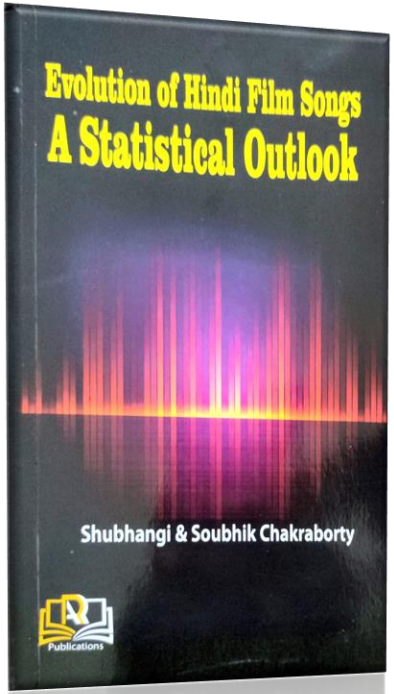

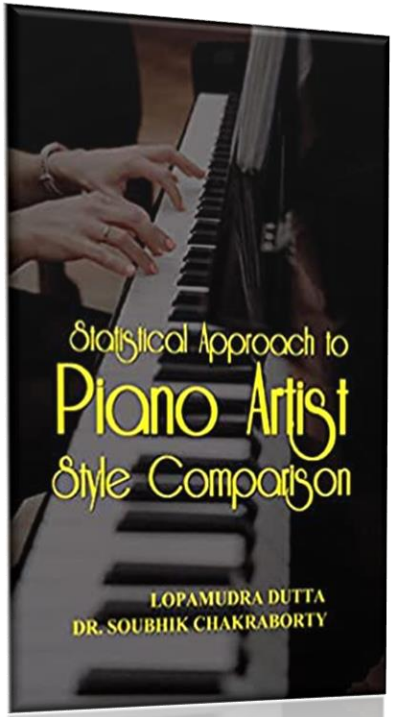

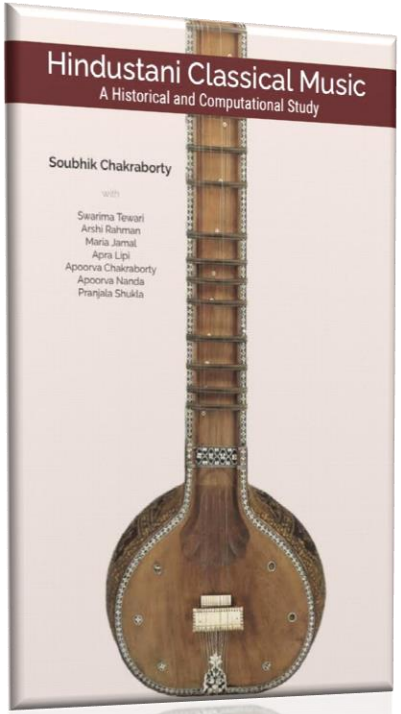

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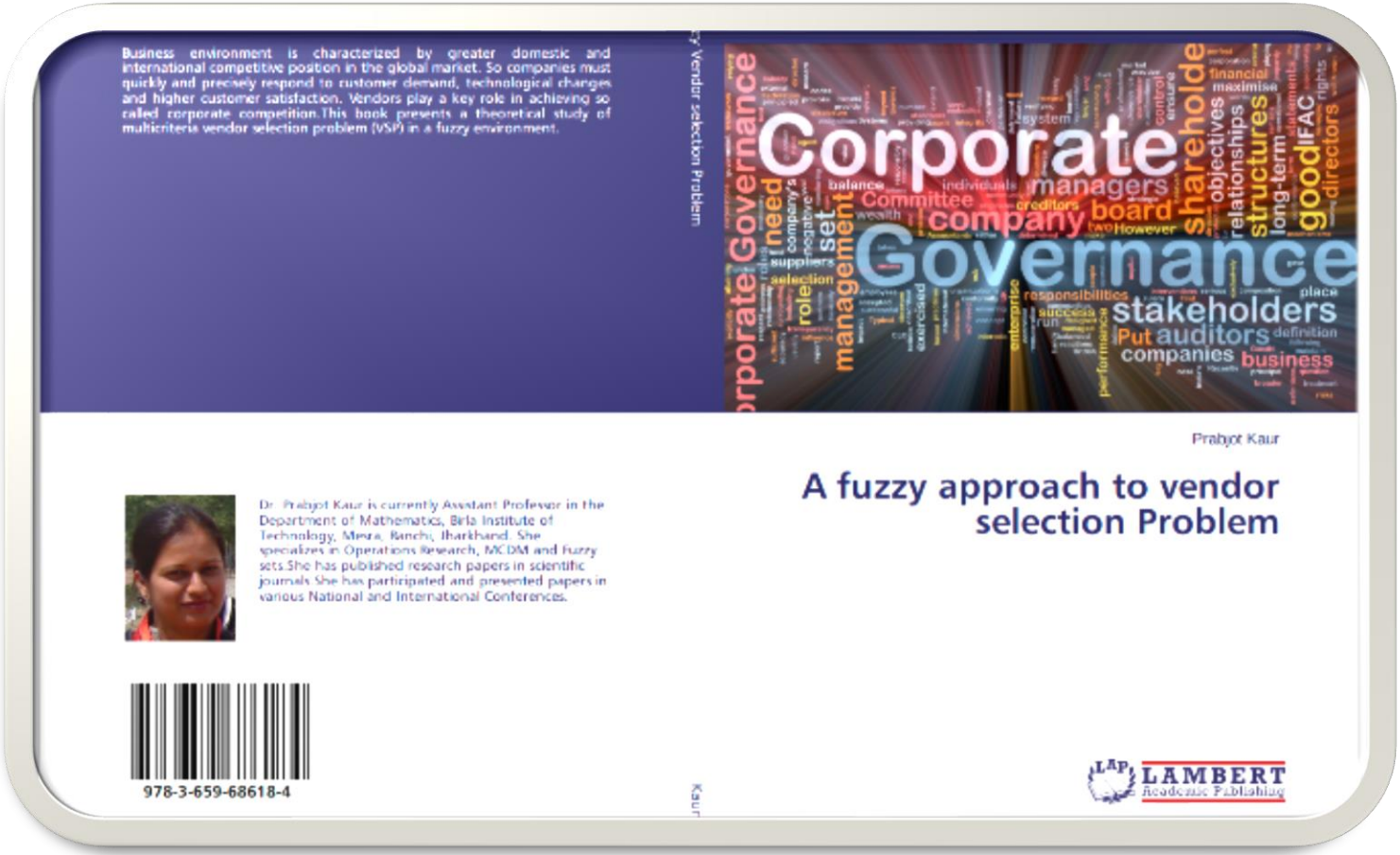
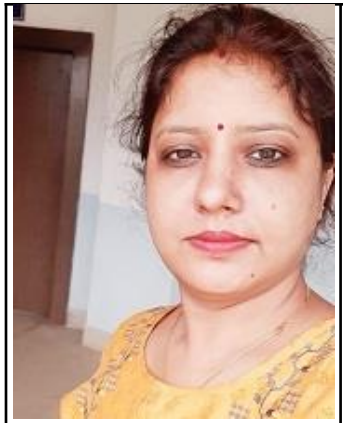
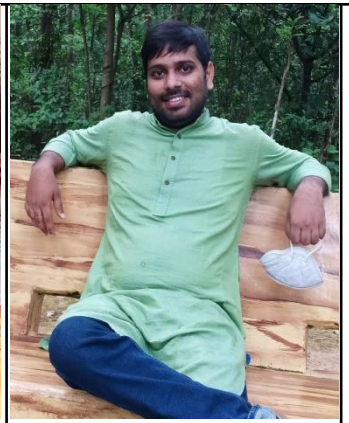


Our Research Scholar:

				
Divya Mahendru (PHD/AM/10001/16) **Guide: Prof. S. Padhi** **Area: Fractional Differential Equations**	**Nitish Kumar Guru (PHD/AM/10051/16)** **Guide: Prof. S. K. Jain** **Area: Computational Solid mechanics**	**Julee Shahni (PHD/AM/10001/18)** **Guide: Dr. Randhir Singh** **Area: Numerical Methods for Singular Boundary Value Problems**	**Shazia Sabir (PHD/AM/10051/18)** **Guide: Dr. Vandana** **Area: Cryptography**	**Dhirendra Sharma (PHD/AM/10001/19)** **Guide: Dr. S. D. Jabeen** **Area: Optimization Algorithm**

Our Research Scholar:

				
Sweta Kumari (PHD/AM/10051/19) **Guide: Dr. S. D. Jabeen** **Area: Non-Linear Optimization**	**Raghavendra Bansal (PHD/AM/10001/20)** **Guide: Dr. Abhinav Tandon** **Area: Mathematical Modelling**	**Yashavant Kumar (PHD/AM/10002/20)** **Guide: Dr. Vandana** **Area: Cryptography and Image Processing**	**Shasanka Dev Bhuyan (PHD/AM/10003/20)** **Guide: Dr. A. P. Ghorai** **Area: Mathematical Modelling**	**Supriya Chauhan (PHD/AM/10051/20)** **Guide: Dr. Prabjot Kaur** **Area: Operation Research**

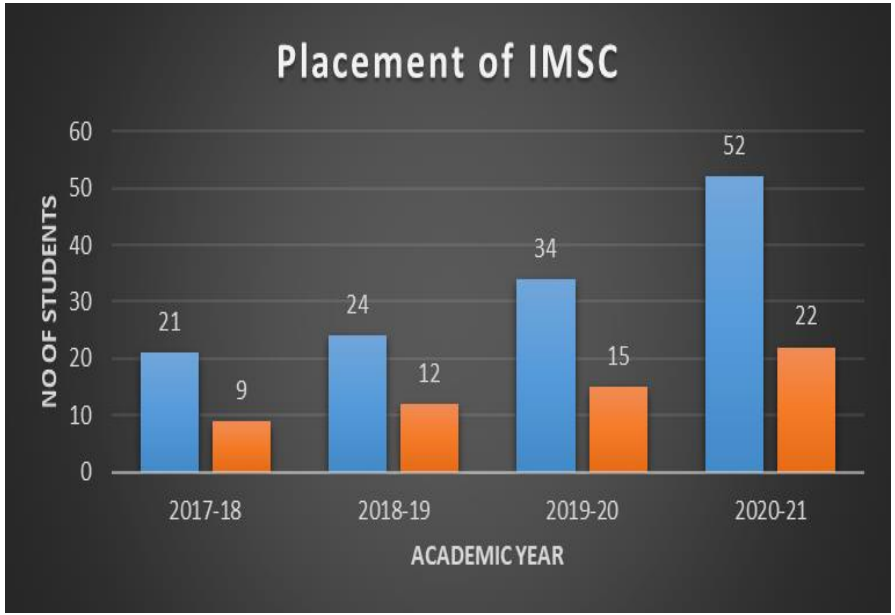
Our Research Scholar:

			
Prince Kumar (PHD/AM/10001/21)	**Kumari Divya (PHD/AM/10002/21)**	**Nirupam Sahoo (PHD/AM/10003/21)**	**Nikita Saha (PHD/AM/10004/21)**
Guide: Dr. Prabjot Kaur **Area: Operation Research**	**Guide: Dr. Prabjot Kaur** **Area: Optimization technique**	**Guide: Dr. Randhir Singh** **Area: Numerical Methods for Differential and Integral Equations**	**Guide: Dr. Randhir Singh** **Area: Numerical Analysis**

Our research students awarded several awards in various conference and research conclave. Three of our Ex Ph.D. scholars are successful in publishing books in Springer.

Placement of IMSC Students (On Campus: Last 5 Year Data):

	Placement Report		
Programme	Registered students	Placed	Average salary(in Lakhs)
2017-18	21	9	7.17
2018-19	24	12	6.1
2019-20	34	15	8.19
2020-21	52	22	7.8



List of Recruiter:

ADROSONIC IT Consultancy Services Pvt Ltd
Byjus
Byjus - BDA
Cognizant
Crisil
Deloitte Consulting India Pvt Ltd
Fastenal
Fastenal India Sourcing, IT & Procurement Pvt Ltd
Futures First Info Services Pvt. Ltd
IITian's PACE
Infosys
Infosys Ltd.
Lowes India Services
NathCorp
Novartis
Pricewaterhouse Coopers (Pwc)
PWC
Utkarsh S.F.Bank
Vedanta
Wipro
Wipro Turbo and many more.

Our Students in foreign university : (Research)

- Madhumita Paul:

  University of North Corolina, North Coronila, USA

  Area: Operator Theory
- Aditi Basu Bal:

  Florida State University, USA

  Area: Statistics
- Satyam Narayan Srivastava:

  Ariel University, Israel

  Area: Differential Equation

Recent Students in foreign university : (MS Program)

- Abhishek Roy:

  University of Minnesota, Twin Cities, USA

  MS in Data Science

- Vishal Subedi:

  University of Minnesota, Twin Cities, USA

  MS in Statistics

Achievements of our IMSC & MSC Students (Startups)

- **Four students of the Mathematics department are working to build their own Ed-tech venture, from the year 2020.**

  Hritik Shubham - IMH/10064/17

  Utkarsh Mishra - IMH/10051/17

  Ashok Priyadarshi - IMH/10084/17

  Nagendra Kumar - IMH/10029/17

FLOXUS

Floxus is trying to build a complete ecosystem for the all-around development of not only college students but anyone who wants their career in the Tech field.

Achievements: - 5000+ students trained ,

4 corporate partners,

5+ corporate training,

5+ corporate projects delivered

Recently, they have got a good amount of sponsorship for their future work (above 24 Lakhs). Many students, from different institutions started internships in FLOXUX.

Recent Student Achievement:

- **Vivek Nigam selected for Google Summer of Code 2020 Program to work for European Organization for Nuclear Research (CERN) :** Vivek Nigam had been selected for Google Summer of Code 2020 Program to work for European Organization for Nuclear Research (CERN) for three months starting from 1st June 2020 to August 2020

Our New Computer Lab:

Recent Activity in Department:

- **One STP:**

  Student Training Program on Future Skill "Data Science & Analytics", August 1-31, 2020.

- **Two International Seminar:**

  1. Mathematics Seminar on Science & Engineering Application (SEA-2021), Feb 12-13,2021

  2. Seminar on Application of Statistics in Sciences & Engineering(ASSE 2021), March 5-6, 2021.

- **One International Conference:**

  Virtual International Conference on Soft Computing, Optimization, Theory and Applications (SCOTA 2021), March 26-27, 2021.

Recent photo of International Seminar & Conferences:

Thank You