

**ANNUAL REPORT 2014-2015**  
**DEPARTMENT OF MATHEMATICS**

**1.Introduction:**

The Department of Mathematics was established in 1959 along with the Institute. It offers M.Sc. programme in Mathematics, M. Tech. program in Industrial Mathematics and Scientific Computing [IMSC] and Ph.D. programme. In addition, the Department has taken the responsibility of teaching Mathematics courses to B.Tech., M. Tech. (other than IMSC), Dual Degree in ED, M.Sc. and Ph.D students of the Institute. The department has also signed a MoU for an Exchange Programme with TU Kaiserslautern under the DAAD Exchange Programme Network for 5 years beginning from 2009.

**The major research areas of the department are :**

SI.No	Name of the Course	SI.No	Name of the Course
1	Algebra	17	Graph Theory and Combinatorics
2	Algebraic Geometry	18	Harmonic Analysis
3	Applied Probability	19	Inverse and Ill- Posed problems
4	Approximation Theory	20	Mathematical Logic
5	Automata and its Applications	21	Mathematical Modeling
6	Coding Theory	22	Nonlinear Analysis
7	Combinatorics on words	23	Numerical Analysis
8	Complex Analysis	24	Operator Theory
9	Computational Fluid Dynamics	25	Operations Research
10	Continuum Mechanics	26	Probability Theory
11	Cryptology	27	Stochastic Processes
12	Differential Equations	28	Theory of Codes
13	Differential Geometry	29	Theoretical Computer Science
14	Fluid Mechanics	30	Unconventional Models of Computation
15	Functional Analysis	31	Wavelets and their applications
16	Fractal Geometry		

**2. Academic programmes:**

**2.1. New discipline/branch introduced:**

**2.2. New courses introduced:**

SI. No.	Course No.	Title
1	MA5013	Applied Regression Analysis
2	MA5014	Applied Stochastic Processes
3	MA5221	Tensor Analysis and Applications
4	MA5015	Basic Number Theory
5	MA5016	Ergodic Theory
6	MA5017	Representation Theory
7	MA5220	Integral Transforms and Applications

2.3 New lab(s) established: Nil

2.4 Students on roll as of September 2014+M.S. & Ph.D admission in Jan. 2015:

Programme	I year	II Year	III Year	IV Year	V Year & others	Total
M.Sc.	50	44	2	0	0	96
M.Tech.	15	09	0	0	0	24
Ph.D.	23	10	14	08	03	58
<b>Total</b>	<b>88</b>	<b>63</b>	<b>16</b>	<b>08</b>	<b>03</b>	<b>178</b>

2.5 Endowment prize instituted:

Sl.No	Endowment Prize	Purpose	To be awarded from
1	Smt. Lakshmikutty Amma and Shri A.Krishnakutty Nair Prize- instituted by Retired Proferssor Dr. P.Achuthan	For the best Ph.D thesis in mathematics	From the 2013 conovocation

2.6 Names of Student/Scholar who attended Conference/ /Seminar and Symposia Abroad/India:

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/ Seminar / Symposia / Workshop and Venue	Date	Financial Assistance from
<b>Abroad</b>					
1.	Mr. J. Balasuyambu	MA11D002	Attended the 18 <sup>th</sup> World Multiconference on Systemics, Cybernetics and Informatics (WMSCI 2014), USA	14.07.204 to 18.07.2014	Institute
2.	Ms. Hingu Dharini Ramesh	MA13D002	Attended the 16 <sup>th</sup> International Symposium on Dynamic Games and Applications, Netherland	07.07.2014 to 14.07.2014	Institute
3.	Mr. Kurma Rao Tyada	MA12D003	Presented a paper titled 'Constrained Data Visualization using Rational Quadratic Trigonometric Fractal Interpolation' in "New Directions in Fractal Geometry" Canberra, Australia.	23.00.2014 to 28.11.2014	Institute
4.	Mr. Madhukant Sharma	MA11D003	Attended the 10 <sup>th</sup> AIMS on Dynamical Systems, Differential Equations and Applications, Spain	05.07.2014 to 14.07.2014	Institute
5.	Mr. Mashetti RaviBabu	MA11D001	Attended International conference on "Falling Walls Difference", Germany ( on behalf of Dean I&AR), Berlin	07.11.2014 to 10.11.2014	Institute
6.	Ms. Monisha Roy	MA11D012	Attended the 15 <sup>th</sup> International Heat Transfer Conference, Japan	11.08.2014 to 15.08.2014	Institute
7.	Mr. ReginThangaraj	MA11D005	Presented a paper titled 'On the Metric Dimension of Uniform Fuzzy Graphs' in International Conference on Recent Advances in Pure and Applied Mathematics, Turkey	05.11.2014 to 11.11.2014	Institute

8.	Mr. Saurabh Kumar Katiyar	MA11D017	Attended the 10 <sup>th</sup> AIMS on Dynamical Systems, Differential Equations and Applications, Spain	05.07.2014 to 14.07.2014	Institute
9.	Mr. Saurabh Kumar Kaityar	MA11D017	Presented a paper titled 'Hidden Variable Fractal Interpolation Functions' in New Directions in Fractal Geometry, Canberra, Australia.	23.00.2014 to 28.11.2014	Institute
10.	Mr. Sharad Dwivedi	MA11D018	Attended the 10 <sup>th</sup> AIMS on Dynamical Systems, Differential Equations and Applications, Spain	06.07.2014 to 14.07.2014	Institute
11.	Mr. Sukendu Ghosh	MA11D021	Presented a paper titled 'Control Strategy for a Double- Diffusive Two Fluid Channel Flow: a Stability Analysis' in 67 <sup>th</sup> Annual Meeting of the APS division of Fluid Dynamics, San Francisco	22.11.2014 to 27.11.2014	Institute
12.	Mr. W.I. Suresh Kumar	MA11D025	Presented a paper titled 'Regulating a Distributed Computing Model via Chomsky Hierarchy' in CMCGS conference at Singapore	25.01.2015 to 26.01.2015	Institute
<b>India</b>					
1.	Mr. Ajoy Jana	MA14D001	Attended workshop on Advance level training programme on Differential Equation, IISER, Trivandrum	25.05.2014 to 15.06.2014	
2.	Mr. Amit Kumar Singh	MA13D015	Attended workshop on 'Advanced Instructional School (AIS) Schemes & Cohomology" at Kozhikode	01.12.2014 to 19.12.2015	
3.	Ms. Ankita Sharma	MA10D002	Attended the conference on International Federation of Automatic Control-2014, IIT Madras	24.08.2014 to 29.08.2014	
4.	Ms. Arundathi Krishnan	MA12D007	Attended the workshop on Advanced Instruction School in Operator Theory at ISI, Bangalore	31.05.2014 to 22.06.2014	
5.	Ms. Asrifa Sultana	MA11D009	Presented a paper titled 'Fixed Point Theorem for Mizoguchi- Takahahi Contraction on a Matrix Space Endowed with a Graph and Applications' at Indian School of Mines (ISM), Dhanabad	27.12.2014 to 30.12.2014	
6.	Mr. R. Balakrishnan	MA10D012	Presented a paper titled 'A Northcott type Mequality for Buchs Baum – Rim Coefficients' at National Conference on Commutative Algebra and Algebraic Geometry, IIT Guwathi	05.02.2015 to 09.02.2015	
7.	Ms. Geetanjali Chattopadhyay	MA13D017	Attended the workshop on Finite Element Methods for Navier-Stokes Equations, IISC, Bangalore	08.09.2014 to 12.09.2014	
8.	Mr. Komandla Mahipal Reddy	MA13D003	Presented a paper titled 'A Novel Approach to Surface Interpolation: Marriage of Coons Technique and Univariate Fractal Functions' at IIT Roorkee	19.12.2014 to 26.12.2014	

9.	Mr. Kurma Rao Tyada	MA12D003	Presented a paper titled 'Constrained 2D data Interpolation using Rational Cubic Fractal Functions' at IIT Roorkee	21.12.2014 to 23.12.2014	
10.	Mr. Kurma Rao Tyada	MA12D003	Presented a paper titled 'Positivity Preserving Rational Cubic Trigonometric Fractal Interpolation Functions' at Haldia Institute of Technology, West Bengal	06.01.2015 to 10.01.2015	
11.	Mr. Kurma Rao Tyada	MA12D003	Presented a paper titled 'Partially Bounded Rational Cubic Trigonometric Fractal Interpolation Surfaces over a Plane' at Amrita Vishva Vidhyapeetham, Coimbatore	10.01.2015 to 12.01.2015	
12.	Mr. Lavy Koilpitchai	MA13D019	Attended the workshop on Advanced Instruction School in Operator Theory at ISI, Bangalore	01.06.2014 to 22.06.2014	
13.	Mr. Mohan Kumar Malik	MA13D021	Attended the workshop on Annual Foundation Schools- II, Kozhikode, Kerala	01.05.2014 to 28.05.2014	
14.	Mr. Mohan Kumar Mallick	MA13D021	Attended workshop on ISL Numerical Analysis (2014) at Panjab University, Chandigarh	09.06.2014 to 28.06.2014	
15.	Ms. Monisha Roy	MA11D012	Attended the workshop on Finite Element Methods for Navier-Stokes Equations, IISC, Bangalore	08.09.2014 to 12.09.2014	
16.	Ms. Poorna Pushkala	MA13D008	Attended the workshop on 'Advanced Instructional School (AIS)- Schemes & Cohomology' at "Kerala School of Mathematics", at Kerala School of Mathematics, Kozhikode, Kerala	01.12.2014 to 19.12.2014	
17.	Ms. N. Poornapushkala	MA13D008	Attended the seminar on 'Geometry' at ISI Bangalore	26.02.2015 to 28.02.2015	
18.	Ms. Raisa Dsouza	MA13D005	Attended the workshop on Annual Foundation School par-2, Kerala School of Mathematics, Kozhikode, Kerala	30.04.2014 to 28.05.2014	
19.	Ms. Raisa Dsouza	MA13D005	Attended the workshop on 'Advanced Instructional School (AIS) Schemes & Cohomology' at Kerala School of Mathematics, Kozhikode, Kerala	01.12.2014 to 19.12.2015	
20.	Mr. S.Rajesh	MA10D009	Presented a paper titled 'Chebyshev Centers and Fixed Point Theorems' at NIT Karnataka	18.12.2014 to 19.12.2014	
21.	Ms. Samprita Das Roy	MA14D016	Attended the workshop on 'Variational Methods' and the conference on "Recent Advances in Differential Equations" at TIFR, Bangalore	12.12.2014 to 17.12.2014	
22.	Ms. Sangita Jha	MA14D017	Attended the International conference on 'Applications of Fractals and Wavelets' at Amrita School of Engineering, Coimbatore	10.01.2015 to 11.01.2015	

23.	Mr. Sanjeev Singh	MA12D004	Attended the International Conference on 'Geometric Function Theory and its Application' at IIT, Kharagpur	18.12.2014 to 21.12.2014	
24.	Mr. Saurabh Kumar katiyar	MA11D017	Presented a paper titled 'Quintic Hermite Fractal Interpolation in a Strip: Preserving Co-positivity' at IIT Roorkee	23.12.2014 to 23.12.2014	
25.	Mr. Saurabh Kumar katiyar	MA11D017	Presented a paper titled 'Towards a Unified Methodology for Fractal Extension of Various Shape Preserving Spine Interpolants' at Haldia Institute of Technology, Haladia, India	05.01.2015 to 10.01.2015	
26.	Mr. Saurabh Kumar Katiyar	MA11D017	Presented a paper titled 'Smooth Fractal Interpolation with Function Scalings' at Kannur, Kerala	22.01.2015 to 24.01.2015	
27.	Mr. S.Selva Raja	MA13D024	Attended workshop on Annual Foundation Schools- II, Kerala School of Mathematics, Kozhikode, Kerala	01.05.2014 to 01.06.2014	
28.	Mr. Sharad Dwivedi	MA11D018	Presented a paper titled 'On Stability of Steady – states for a Two- Dimensional Network model of Ferromagnetic Nanowires' at IIT Roorkee	21.12.2014 to 23.12.2014	
29.	Mr. Somnath Bera	MA12D015	Presented a paper titled 'Sum of Parikh q-matrices and q- ambiguity' at International conference on Optimization, Computing and Business Analysis for Sustainable Development, Central university of Rajasthan, Ajmir	20.02.2015 to 22.02.2015	
30.	Mr. B.N. Suhas	MA11D020	Attended the workshop on 'Advanced Instructional School (AIS) Schemes & Cohomology' at "Kerala School of Mathematics", Kozhikode, Kerala	01.12.2014 to 19.12.2015	
31.	Mr. Sukhendu Ghosh	MA11D021	Visited TIFR, Hyderabad for Research collaboration with Prof. Rama Govindarajan	01.12.2014. to 07.12.2014	
32.	Mr. Sukhendu Ghosh	MA11D021	Presented a paper titled "Stability Analysis of a Gravity Driven Miscible Two-Fluid flow: role of wall Slip", in IUTAM on Multiphase Flows with Phase Change and Challenges and Opportunities, held at IIT, Hyderabad	08.12.2014 to 11.12.2014	
33.	Mr. Sukhendu Ghosh	MA11D021	Presented a poster on "Destabilizing Role of wall slip on the absolute Instability of Double-Diffusive two-fluid channel flow" at IUTAM on Multiphase Flows with Phase Change and Challenges and Opportunities, held at IIT Hyderabad	08.12.2014 to 11.12.2014	
34.	Mr. Sukhendu Ghosh	MA11D021	Presented a paper titled "Linear Stability of Asymmetric Channel Flow with Wall slip: Poiseuille type " at NITK, Surathkal, India.	18.12.2014 to 20.12.2014	
35.	Mr. Surendra Kumar Sharma	MA11D023	Attended advanced level Training programme & CIMPA, at IISc, Bangalore	22.06.2014 to 21.07.2014	

2.7 **Names of students/scholars who won outside prizes and awards:** Nil.

2.8 **Name of Students/Scholars who won Institute Convocation/Institute Day Prize:**

Sl.No	Name of the Student /Scholar	Roll No.	Name of Prizes	Name of Donor
1.	Mr. P.Viswanathan	MA10D001	Best Ph.D Thesis in Mathematics 2014	Smt. Lakshmikutty Amma and Shri A.Krishnakutty Nair Prize

3. **Faculty and their activities:**

3.1. **Faculty:**

Name and Qualifications	Major area of specialization (only 3 areas)
<b>PROFESSORS:</b>	
Prof. Arindama Singh, Ph.D. (IIT Kanpur)	Logic, Numerical Analysis
Prof.S.H.Kulkarni, Ph.D. (IIT Bombay)	Functional Analysis and Numerical Analysis
Prof. S. Ponnusamy ,Ph.D. (IIT Kanpur)	Complex Analysis, Function Spaces, Special functions and Conformal Geometry
Prof. R. Radha, Ph.D. (IMSC Chennai)	Harmonic Analysis, Wavelets, Time-Frequency Analysis
Prof. R. Rama, Ph.D. (Anna University)	Formal Language & Automata Theory / Molecular computing
Prof. Y.V.S.S.Sanyasiraju, Ph.D. (IIT Madras)	Computational Fluid Dynamics
Prof. Satyajit Roy, Ph.D. (IISc. Bangalore)	Convective Heat and Mass Transfer, Computational Fluid Dynamics
Prof. K.C. Sivakumar, Ph.D. (IIT Madras)	Functional Analysis and Mathematical Programming
Prof. Subrahmanyam. P.V., Ph.D. (IIT Madras)	Non-linear Analysis- Fixed point Theory & Functional Equations, Fuzzy sets, Summability Theory
Prof. S. Sundar, Ph.D. (IIT Madras)	Computational Fluid Dynamics, Numerical Analysis for Partial Differential Equations, Mathematical Modeling
Prof. M.Thamban Nair, Ph.D. (IIT Bombay)	Applicable Functional Analysis: Spectral approximation, Operator equations, Inverse & Ill-posed problems.
Prof. R. Usha, Ph.D. (IIT Madras)	Fluid Dynamics
Prof. P. Veeramani, Ph.D. (IIT Bombay)	Fixed Point Theorems and their Applications to Problems in Optimization and Best Approximation, Fuzzy Set Theory
Prof. V. Vetrivel, Ph.D. (IIT Madras)	Non-Smooth Optimization, Fixed Point Theory, Complementarity problems
<b>ASSOCIATE PROFESSORS:</b>	
Dr. A.K.B. Chand, Ph.D. (IIT Kanpur)	Fractals, Approximation Theory and Wavelets
Dr. Chidella Srinivasa Rao, Ph.D. (IISc. Bangalore)	Non-linear Differential Equations
Dr. S.R. Manam. S R , Ph.D. (IISc Bangalore)	Applied Mathematics

<b>ASSISTANT PROFESSORS:</b>	
Dr. Arijit Dey, Ph.D.	Algebraic Geometry
Dr. R. Balaji, Ph.D. (IIT Madras)	Linear Algebra and Optimization
Dr. A.V. Jayanthan, Ph.D. (IIT Bombay)	Commutative Algebra and Algebraic Combinatorics
Dr. Kalpana Mahalingam, Ph.D. (Univ. of South Florida, Tampa)	Theory of codes, DNA Computing, Combinatorics of words
Dr. Kunal Krishna Mukherjee, Ph.D.	Operator Algebras
Dr. N. Narayanan, Ph.D. (IMSC, Chennai)	Graph Theory: Graph Colouring, Structural and Extremal Graph Theory, Probabilistic Combinatorics, Discrete Mathematics
Dr. Neelesh S. Upadhye, Ph.D. (IIT Bombay)	Probability Theory and applications
Dr. Santanu Sarkar, Ph.D. (ISI, Kolkata)	Cryptology & Computational Number Theory
Dr. Sarang S. Sane, Ph.D. (TIFR, Bombay)	Commutative Algebra, Homological Algebra, Algebraic K-theory, Algebraic Geometry
Dr. A.J. Shaiju, Ph.D. (IISc, Bangalore)	Game Theory, Systems and Control Theory
Dr. Shruti Dubey, Ph.D. (IIT Kanpur)	Nonlinear Analysis of Functional differential equations, Mathematical Study of Ferromagnetic systems
Dr. Sounaka Mishra, Ph.D. (ISI, Kolkata)	Discrete Mathematics, Approximation Algorithm, Combinatorial Optimization
Dr. Suhas Jaykumar Pandit, Ph.D. (ISI Bangalore)	Geometric group theory and low dimensional topology
Dr. V. Uma, Ph.D. (IMSC Chennai)	Topology and Geometry of Toric Varieties and Related Spaces
Dr. W.B. Vasantha, Ph.D. (RIASM Chennai)	Group Theory, Application of Algebra, Fuzzy Algebra and Linear Algebra
Dr. T.E. Venkata Balaji, Ph.D. (CMI, Chennai)	Algebraic Geometry and Commutative Algebra
<b>INSPIRE FACULTY:</b>	
Dr. Srilakshmi Krishnamoorthy Ph.D. (Sheffield University, UK)	Number Theory, Arithmetic Algebraic Geometry, Elliptic Curves, Modular Forms and Galois Representations
<b>VISITING FACULTY:</b>	
Dr. Nathann Cohen (LRI, Orsay, France) 01.12.2014 to 31.01.2015	Hyper Graph, Graph Theory and SAGE
Dr. Arun Kumar (IIT Bombay) 01.01.2015 to 31.12.2015	Subordinated Stochastic Processes

Dr.Pierra Fima (CAEN univesity, France) 12.01.2015 to 11.07.2015	Operator Algebra
<b>INSTITUTE PDF:</b>	
Dr. Symphony Chakraborty 01.04.2013 to 02.12.2014	
Dr. Pabitra Barik 16.09.2014 to till date	

3.2. **Short-term Courses/ Workshops/ Seminars/ Symposia /Conferences organized by the faculty members:**

Sl. No.	Coordinator(s)	Title	Period
<b>Workshop:</b>			
1	Prof. Arindama Singh	APU-RMS workshop for School Teachers	08.08.2014 to 09.08.2014
2	Prof. Arindama Singh	APU-RMS workshop for School Teachers	18.10.2014 to 19.10.2014
3	Dr. T.E.Venkata Balaji and Dr. A.V.Jayanthan	Annual Foundation School - I funded by National Center for Mathematics	1.12.2014 to 27.12.2014
<b>Conference:</b>			
1	Prof. Satyajit Roy	National Symposium on Mathematical Methods and Applications (NSMMA 2014)	22.12.2014
2	Prof. S.Sundar	International Conference on Mathematical Modeling and Computer Simulation	8.12.2014 to 10.12.2014
3	Dr. Neelesh S.Upadhye	FORAYS-2015	01.03.2015

3.3. **Short-term Courses/ Workshops/ Seminars/ Symposia/ Conferences/ Training attended by the faculty members in Academic institutions and Public Sector Undertakings:**

Sl. No.	Name of faculty	Title	Institution	Period
<b>Seminar:</b>				
1.	A. V. Jayanthan	Hilbert Basis Theorem and Beyond	St. Berchmans College, Changanassery, Kerala	15.10.2014 to 17.10.2014
2.	Dr. Srilakshmi Krishnamoorthy (INSPIRE-Faculty)	Sage Days 60 in Chennai	I.M.Sc. Chennai	14.08.2014 to 17.08.2014
3.	Dr. Srilakshmi Krishnamoorthy (INSPIRE-Faculty)	From the Generalized Fermat Equations to Hilber Docular forms with Prescribed Inertia Types	Sheffield Univesity, U.K	16.12.2014



4.	Dr. Srilakshmi Krishnamoorthy (INSPIRE-Faculty)	Non-archimedean Construction of Elliptic Curves and Rational Points	Sheffield Univesity, U.K	7.12.2014
5.	Dr. Srilakshmi Krishnamoorthy (INSPIRE-Faculty)	Asymptotic Growth of Some Knot Invariants	Sheffield Univesity, U.K	17.12.2014
6.	Dr. Srilakshmi Krishnamoorthy (INSPIRE-Faculty)	Groups of Power Series under Substitution and Automorphisms of Curves	I.M.Sc.,Chennai	22.01.2015
<b>Conference:</b>				
1.	Dr. Shruti Dubey	International Congress of Mathematicians, (ICM 2014)	Coex, Seoul, Korea	13.08.2014 to 21.08.2014
2	Dr. A. V. Jayanthan	Edge ideals: A Connection between Graph Theory and Commutative Algebra.	Saiva Bhanu Kshatriya College, Aruppukottai	05.01.2015 to 06.01.2015
<b>Short term Course:</b>				
1	A. V. Jayanthan	Refresher Course for College Teachers	Kerala School of Mathematics, Kozhikode	08.01.2015 to 11.01.2015

#### 3.4. Special Lectures delivered by the faculty in other Institutions:

Sl. No	Name of faculty	Topic of Lecture	Institution	Date
<b>PROFESSOR:</b>				
1.	Prof. Arindama Singh	Linear Algebra	Ramanujan Institute of Advanced Studies in Mathematics	31.05.2014
2.	Prof. Arindama Singh	GPU Scientific Computing	LNMIIT, Jaipur	09.08.2014
3.	Prof. Arindama Singh	Linear Algebra (12 lectures)	MTTS, IIT Guwahati	23.06.2014 to 05.07.2014
4.	Prof. Arindama Singh	Cardinality of Sets	IISER, Trivandrum	27.08.2014
5.	Prof. Arindama Singh	What is a Real Number?	APU-RMS Workshop, Chennai	08.08.2014
6.	Prof. Arindama Singh	What is Pi?	APU-RMS Workshop, Chennai	09.08.2014
7.	Prof. Arindama Singh	a) What is infinity? b) The limit process.	APU-RMS workshop for school teachers, Chennai	18.10.2014 to 19.10.2014
8.	Prof. Arindama Singh	Vector Spaces (Six lectures)	Ramanujan Institute, Chennai	07.11.2014 to 09.11.2014
9.	Prof. Arindama Singh	Logic and Set Theory	Institute of Mathematical Sciences, Chennai	28.11.2014

10.	Prof. S.H. Kulkarni	Banach Algebras ( 3 lectures)	National Institute of Technology Karnataka, Surathkal, Mangalore	03.06.2014 to 05.06.2014
11.	Prof. S.H.Kulkarni	Banach Algebras	M.S. University, Tirunelveli	17.09.2014 to 18.09.2014
12.	Prof. S. H. Kulkarni	Numerical Linear Algebra	Ramanujan Institute of Advanced Study in Mathematics	19.11.2014
13.	Prof. S.H.Kulkarni	Null Space Theoram	IIT-Kanpur	27.11.2014
14.	Prof. S.H.Kulkarni	Singular Value Decomposition and Applications	Mohammad Sathak College of Arts and Science, Chennai	16.12.2014
15.	Prof. S.H.Kulkarni	The Null Space Theorem	International Conference on Linear Algebra and Applications at Manipal University	18.12.2014 to 20.12.2014
16.	Prof. Y.V.S.S. Sanyasiraju	Incompressible Flow Simulations using local RBF Gridfree Scheme with Optimized Parameter	Andhra University, Visakhapatnam	03.04.2014 to 04.04.2014
17.	Prof. Y.V.S.S. Sanyasiraju	Linear Systems and Numerical Solutions of Ordinary Differential Equations (8 lectures)	MANIT, Bhopal	09.06.2014 to 14.06.2014
18.	Prof. Y.V.S.S. Sanyasiraju	Numerical Analysis using SCILAB	Ethiraj College for Women, Chennai	02.02.2015
19.	Prof. Y.V.S.S. Sanyasiraju	Research Methodologies	Madanapalli Institute of Technology and Sciences, Madanapalli	21.02.2015
20.	Prof. Y.V.S.S. Sanyasiraju	Incompressible flow Computations with ECHO scheme	KL University, Vijayawada	26.03.2015
21.	Prof. Y.V.S.S. Sanyasiraju	An Introduction to Finite volume Method	Sri Ramakrishna College of Engineering, Coimbatore	21.03.2015
22.	Prof. Y.V.S.S. Sanyasiraju	Higher order Compact and Semi- Compact Schemes" and "HOSC to Incompressible flow problems	South Asian University, New Delhi	13.03.2015 to 17.03.2015
23.	Prof. Y.V.S.S. Sanyasiraju	Grid-free Computations with Multi- quadric RBF	Bishep Heber college, Trichy	05.01.2015 to 07.01.2015
24.	Prof. Y.V.S.S. Sanyasiraju	Linear Algebra using MATLAB	Ramanujan Institute, University of Madras	24.11.2015 to 25.11.2015

25.	Prof. Y.V.S.S. Sanyasiraju	Incompressible flow Computations using Infinitely smooth RBFs with Optimum Shape Parameter	SV University, Tirupati	22.07.2014
26.	Pros. Satyajit Roy	Mixed Convection flows within tilted Square Cavity using Heatlines and Entropy Generation concepts	AITS(Autonomous) Rajampet , Andhra Pradesh	10.01.2015 to 11.01.2015
27.	Pros. Satyajit Roy	Analysis of Natural and Mixed Convection flows within Square Cavity using heatlines concepts	Thiagrajar college , Madurai, Tamilnadu	12.03.2015 to 13.03.2015
28.	Prof. K.C.Sivakumar	1. Linear Optimization and its Applications 2. Farkas' Lemma and its Applications	Theivanai Ammal College for Women	20.09.2014
29.	Prof. S. Sundar	Mathematical Modeling	Department of Mathematics, IIT Guwahati	19.06.2014 to 21.06.2014
30.	Prof. S. Sundar	Computational Methods for Fluid Flow	National Institute of Technology, Jamshedpur	26.06.2014
31.	Prof. S. Sundar	Thinking with Mathematical Models: Basic Themes	IISER, Thiruvananthapuram	18.12.2014
32.	Prof. S. Sundar	Understanding the Porosity Effect of Glass Fiber Insulation through Multi scale Models	GVP College of Engineering, Madhurawada	22.12.2014 to 23.12.2014
33.	Prof. S.Sundar	Mathematics Transcending Theories	MOP Vaishnav College, Chennai	12.01.2015
34.	Prof. S.Sundar	Recent Trends in Mathematics	St. Jones College, Tevara, Kochi	17.01.2015
35.	Prof. S.Sundar	Recent Advances in Applied Mathematics	St. Philomenas College, Mysore	23.01.2015
36.	Prof. S. Sundar	Mathematical Modeling & Simulated reality - A case study in textile process	Sastra university	14.02.2015
37.	Prof. S. Sundar	GPU Scientific Computing for Flow Problems	SIET college, Chennai	07.02.2015
38.	Prof. S. Sundar	Computational PDE and Numerical Simulation	Sarada Vilas College, Mysore	20.02.2015
39.	Prof. S.Sundar	Shape Optimization - An Introduction	LIAS-GSVP, Vizagapatnam	16.03.2015
40.	Prof. M. Thamban Nair	Basics of Hilbert Space Theory (4 lectures)	NIT, Karnataka	02.06.2014 to 04.06.2014

41.	Prof. M. Thamban Nair	Ill-Posed Problems	Kannur University, Kerala	05.06.2014
42.	Prof. M. Thamban Nair	Compact Operators in Applicable Analysis	ISI, Bangalore	19.06.2014 to 21.06.2014
43.	Prof. M. Thamban Nair	Some Interesting Consequences of Elementary Geometry	SSN College of Engineering"	25.07.2014
44.	Prof. M. Thamban Nair	On solution of Linear Equations	IISER-Trivandrum	16.10.2014
45.	Prof. M. Thamban Nair	On solving ill-posed Integral Equations	IIST-Trivandrum	17.10.2014
46.	Prof. M. Thamban Nair	On solving ill-conditioned systems	Brennen College Thalassery, Kerala	31.10.2014
47.	Prof. M. Thamban Nair	Understanding Infinity	DST-INSPIRE- talk at SRM University	29.12.2014
48.	Prof. P. Veeramani	Chebyshev Centers, Fixed point Theorems and best Proximity point Theorems	Kamaraj University, Madurai	21.08.2014
49.	Prof. P. Veeramani	Compact Operators	M.S. University, Tirunelveli	16.09.2014
50.	Prof. P. Veeramani	Analysis and Applied Maths	NIT- Trichy	28.11.2014
51.	Prof. P. Veeramani	The Role of Best Approximation Theory in the Study of Fixed Point Theorems	Don Bosco College, Kannur, Kerala	23.01.2015
52.	Prof. P. Veeramani	Applications of Fixed Point Theorems	Shivaji University, Kolhapur	29.01.2015 to 30.01.2015
53.	Prof. P. Veeramani	Topology and Fuzzy Metric Spaces	Sree Saraswathi Thiyagaraja College, Pollachi	06.02.2015
54.	Prof. P. Veeramani	LUB Axiom, Zorn's Lemma and their Applications	Avanasilingam University for Womens, Coimbatore	13.02.2015
55.	Prof. V. Vetrivel	On non-smooth, non-linear Programming	Government Polytechnic College, Nagapattinam	28.02.2015
56.	Prof. V. Vetrivel	Lagrange Multipliers and non- smooth Analysis	Thiagarajan College of Arts and Science, Madurai	12.03.2015
<b>ASSOCIATE PROFESSOR:</b>				
57.	Dr. A.K.B. Chand	An introduction to Fractal Functions and Surfaces	Utkal University, Bhubaneswar, Odisha	18.03.2015

58.	Dr. Chidella Srinivasa Rao	Green's Functions and Applications	NIT, Warangal	08.01.2015 to 09.01.2015
<b>ASSISTANT PROFESSOR:</b>				
59.	Dr. Arijit Dey	Vector Bundles of Curves	ISI, Kolkata	24.01.2014 to 6.01.2015
60.	Dr. A.V. Jayanthan	A basic introduction to Number Theory	Goa University, Goa	26.05.2014 to 07.06.2014
61.	Dr. A.V.Jayanthan	Edge Ideals: A Connection between Commutative Algebra and Graph Theory	Saiva Bhanu Kshatriya College, Aruppukottai, Tamil Nadu	05.01.2015
62.	Dr. Santanu Sarkar	Stream Cipher	ISI, Delhi	21.03.2015
63.	Dr. Suhas Jaykumar Pandit	ISL on Geometric Topology	BHU, Varanasi	10.07.2014 to 18.07.2014
64.	Dr. T.E.Venkata Balaji	Topology (12 lectures)	Annual Foundation School, Dept., of Maths, IIT-Madras	01.12.2014 to 27.12.2014
65.	Dr. T.E.Venkata Balaji	Fascination of Numbers	Hindu Senior Secondary School, Triplicane, Chennai	22.12.2014
66.	Dr. T.E.Venkata Balaji	Riemann's Zeta: The Most Mysterious and Important Function in Mathematics	FORAYS-2015, , Dept., of Maths, IIT-Madras	01.03.2015
67.	Dr. T.E.Venkata Balaji	Geometry of the Real Line	NPTEL Workshop, Amrapali Group of Institutions, Haldwani	23-08-2014
68.	Dr. Srilakshmi Krishnamoorthy (INSPIRE-Faculty)	On Sign Changes for almost Prime Coefficients of Half-integral Weight Modular Forms	Sheffield University, U.K	02.12.2014

### 3.5. Visits abroad by faculty:

Sl. No.	Name of faculty	Country Visited	Date	Purpose of visit	Funding from
1.	Prof. R. Rama	United State of America	15.07.2014 to 18.07.2014	18 <sup>th</sup> World Multiconference on Systemics, Cybernetics and Informatics (WMSCI 2014)	Institute
2.	Prof. K.C.Sivakumar	Germany	08.06.2014 to 12.06.2014	23 <sup>rd</sup> International Workshop on Matrices and Statistics	Institute
3.	Prof. S.Sundar	Germany	01.10.2014 to 21.10.2014	Visiting Professor Technische Universität Kaiserslautern	Institute

4.	Dr Arjit Dey	Berlin, Germany	18.05.2014 to 06.09.2014	Take up EFP Research Fellowship awarded by the IMU Berlin Einstein Foundation (EFP)	Institute
5.	Dr. Shruti Dubey	South Korea	13.08.2014 to 21.08.2014	International Congress of Mathematicians (ICM 2014)	Institute
6.	Dr. Srilakshmi Krishnamoorthy (INSPIRE-Faculty)	United Kingdom	01.12.2014 to 21.12.2014	Research collaboration with Dr. Neil Dummigan, attend the Conference 'Knot Theory, Number Theory and Connections and delivered Seminar talks at Sheffield Univesity	DST-INSPIRE Fund

### 3.6 Honours and Awards obtained by faculty:

#### a. Session's Best Paper Award

Sl. No	Name	Titale of the paper	Conference/Workshop
1	Prof. R. Rama and Mr. Bala Suyambu	New CA Based Image Encryption-Compression Scheme Using Wavelet Transform	18 <sup>th</sup> World Multiconference on Systemics, Cyberneties and Informatics held in USA

#### b. Honour

Sl. No.	Name of faculty	Name of Award	Awarded by	Awarded for	Date of award
1	Prof. M.Thamban Nair Prof. Arindama Singh Prof. S.H.Kulkarni & Prof. R.Radha	-	-	Web course on Functional Analysis	16.10.2014
1	Prof. Y.V.S.S.Sanyasi Raju	Plaque of thanks and Appreciation	Director, IIT-Madras	NPTEL web based course on Computation Fluid Dynamics for Turbomachinery	16.10.2014
2	T. E. Venkata Balaji	Plaque of thanks and Appreciation	Director, IIT-Madras	Creation of the NPTEL video course on Riemann Surfaces	16.10.2014

### 3.7. Books, Monographs Video courses authored/co-authored:

Sl. No.	Name of faculty	Title	Publisher	Author/ Co-author
<b>Books:</b>				
1.	Prof.M.Thamban Nair	Calculus of One Variable	Ane Books Pvt. Ltd., July 2014	M.Thamban Nair
2.	A. K. B. Chand, P. Viswanathan and M. A. Navascues	A New Class of Rational Quadratic Fractal Functions with Positive Shape Preservation	Springer Proceeding in Mathematics and Statistics, Volume 92, pp. 283-301,2014, ISBN: 978-3-319-08104-5	Author:- A. K. B. Chand, Co-author:- P. Viswanathan and M. A. Navascues

3.	A. K. B. Chand and N. Vijender	C1 -Rational Cubic Fractal Interpolation Surface Using Functional Values	Springer Proceeding in Mathematics and Statistics, Volume 92, pp. 349-367, 2014, ISBN: 978-3-319-08104-5	Author :- A. K. B. Chand Co-author:- N. Vijender
4.	P. Viswanathan and A. K. B. Chand	On Fractal Rational Functions	Springer Proceeding in Mathematics and Statistics, Volume 92, pp. 369-382, 2014, ISBN: 978-3-319-08104-5	Author :- A. K. B. Chand Co-author:- P. Viswanathan
5.	P. Viswanathan and A. K. B. Chand	A New Class of Rational Cubic Fractal Splines for Univariate Interpolation	Springer Proceeding in Mathematics and Statistics, Volume 91, pp. 103-120, 2014, ISBN: 978-81-322-1951-4	Author :- A. K. B. Chand  Co-author:- P. Viswanathan
6.	A. K. B. Chand	Mathematics and Computing 2013 (Chapter -8)	Springer, 2014, ISBN: 978-81-322-1951-4	Author:- A. K. B. Chand Co-author:- P. Viswanathan
7.	Dr. A. K. B. Chand	Fractals, Wavelets and Their Applications (Chapter - 18)	Springer, 2014, ISBN: 978-3-319-08104-5.	Author:- A. K. B. Chand Co-author:- P. Viswanathan and M. A. Navascues
8.	Dr. A. K. B. Chand	Fractals, Wavelets and Their Applications (Chapter -22)	Springer, 2014, ISBN: 978-3-319-08104-5	Author- A. K. B. Chand Co-author: N. Vijender
9.	Dr. A. K. B. Chand	Fractals, Wavelets and Their Applications (Chapter-23)	Springer, 2014, ISBN: 978-3-319-08104-5	Author:- A. K. B. Chand Co-author:- P. Viswanathan

### 3.8. Fellowships of Academies and Professional Societies:

### 3.9 Journal Editorial Boards:

Sl. No.	Name of faculty	Position (Editor/Member)	Journal Name
1.	Prof. S.Ponnusamy	Editor-In-Chief	Mathematics Newsletter
2.	Prof. S.Ponnusamy	Managing Editor	Journal of Analysis
3.	Prof. S.Ponnusamy	Associate Editor	Bulletin of Malaysian Mathematical Sciences Society
4.	Prof. S.Ponnusamy	Editorial member	Journal of Classical Analysis
5.	Prof. S.Ponnusamy	Vice-President and Editorial member	Indian Academy of Mathematics

6.	Prof. S.Ponnusamy	Editorial member	Mathematical Analysis (The Scientific World Journal, Hindawi)
7.	Prof. S.Ponnusamy	Editorial member	Conference papers in Mathematics (Hindawi)
8.	Prof. S.Ponnusamy	Editorial member	Issues of Analysis (Russian)
9.	Prof. S.Ponnusamy	Editorial member	Ilorin Journal of Science (Nigeria)
10.	Prof. Satyajit Roy	Advisory Committee member	The Journal of Indian Academy of Mathematics
11.	Prof.S.Sundar	Editorial Board Member	Journal Indian Academy of Mathematics
12.	Prof. M.Thamban Nair	Editorial member	Journal of Analysis & Number Theory

4. **Design and Development Activities:** Nil

4.1. **Brief and specific details of Process/Instruments/Equipment/ Software designed and developed:**Nil

4.2. **New facilities added or major equipment procured:** Nil

4.3. **Patents:** Nil

5. **Research and Consultancy:**

5.1 **Sponsored Research Projects: (on going & new)**

Sl. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
1.	Analysis and Computation of Optimal Strategies in N-person Differential Games	3 years from 08.07.13	DST	3.132	A. J. Shaiju (PI), Ch. SrinivasaRao
2.	Evolutionary Games with continuous Strategy space	3 years from 22.07.13	NBHM	3.295	K. S. MallikarjunaRao , A. J. Shaiju (Co-PI)
3.	A Network of Ferromagnetic Particles	3 years from 18.7.2011	IC & SR	5.00	Dr. Shruti Dubey
4.	Development of Theory of Fractal Rational Splines and Applications in CAGD	3 years from 1.09.2011	DST	15.07	Dr. A.K.B. Chand Dr. G. Saravana Kumar (ED)



5.	Involution codes : Application to DNA strand design	3 years from 7.2.12	NFSC	5.00	Dr. Kalpana Mahalingam
6.	Compound Negative Binomial Approximations and its Applications	3 years from 4.12.12	NFSC	5.00	Dr. Neelesh S. Upadhye
7.	Intersection Edge Colourings and Axiom.charac. of Geodesics	3 years From 10.09.2013	NFSC	5.00	Dr. N. Narayanan
8.	Finite Element Methods for Parameter Identification Problems in Elliptic Partial Differential Equations		DST	12.13	Prof. M.Thamban Nair
9.	Exploring Graph Products via Commutative Algebra	11.02.2015 To 10.02.2016	Center for IC & SR, IIT Madras	9.00	A. V. Jayanthan (PI) N. Narayanan B. V. Raghavendra Rao

5.2 **Industrial Consultancy projects: (on going & new)- Nil**

5.3 **RBIC projects: (on going & new) -Nil**

5.4 **Retainer Consultancy: (on going & new) -Nil**

5.5 **Exchange programme with other Universities including Institutions/Universities under MOU;-Nil**

5.6 **Faculty members participation with other institution under MoU: Nil**

5.7 **Research Publications of the faculty members & research scholars:**

1. **Total No. of papers published in Refereed National Journals** : Nil
2. **Total No. of papers published in Refereed International Journals** :34
3. **Total No. of papers presented in National Conferences** : Nil
4. **Total No. of proceedings presented in International conferences** : 20

**Details:**

a) **In Refereed National Journals:**

b) **In Refereed International Journals:**

<b>Sl. No.</b>	<b>Name of the faculty and Research scholar</b>	<b>Title of the paper</b>	<b>Name of the Journal</b>
1.	Arindama Singh and M. Ravibabu	On Refined Ritz Vectors and Polynomial Characterization	Computers and Mathematics with Applications, 67 (2014) 1057-1064
2.	Arindama Singh and M.K. Raut	A survey on Computing prime Implicants and Implicates in classical and Non-classical Logics	International J. Computer Systems Science and Engineering,, 2 (2014) 1-11
3.	M. Thamban Nair	A unified treatment for Tilehonor regularizations using a general stabilizing Operator.3	Analysis and Applications vol.13,no.2/2015, 201-215
4.	A.K.B. Chand and P. Viswanathan	A C1-Rational Cubic Fractal Interpolation Function: Convergence and Associated Parameter Identification Problem	Acta Applicandae Mathematicae DOI:10.1007/s10440-014-9882-3
5.	A. K. B. Chand P. Viswanathan and M. A. Navascues	Fractal Perturbation Preserving Fundamental Shapes: Bounds on the Scale Factors	Journal of Mathematical Analysis and Applications, DOI: 10. 1016/j. jmaa.2014.05.019
6.	A. K. B. Chand and N. Vijender	Shape preserving affine Fractal Interpolation Surfaces	Non-linear Studies, 21(2), 175-190, 2014.
7.	Shruti Dubey and Madhukant Sharma	Solutions to Fractional Functional Differential Equations with Nonlocal Conditions	Fract. Calc. Appl. Anal., Vol. 17, No 3(2014), pp. 654-673
8.	A.K.B.Chand Maria Antonia Navascues P.Viswanathan and Maria Victoria Sebastian	Fractal Interpolation Functions: A Short Survey	Applied Mathematics, 5, 1834-1841.doi:10.4236/am.2014. 512176
9.	A.K.B.Chand and P. Viswanathan	A Fractal Procedure for Monotonicity Preserving Interpolation	Applied Mathematics and Computation (2014), pp. 190-204 DOI information: 10.1016/j.amc.2014.06.090
10.	K.C. Sivakumar and M. Rajesh Kannan	Intervals of Certain Classes of Z-Matrices	Discussiones Mathematicae, General Algebra and its Applications, Vol.34, (2014), 85-93
11.	A.V.Jayanthan and Ramakrishna Nanduri	On the Depth of Fiber Cones of Stretched M-primary Ideals	Indian Journal of Pure and Applied Mathematics, 45 (2014) no. 6, 925-942
12.	S. H. Kulkarni	The Null Space Theorem	Linear Algebra Appl. 472 (2015), 97-105. MR3314368
13.	S.Sundar and Sudhakar Matle	Computation of Transmission Coefficients in the plain and corrugated Electro-magnetic wave guides using Finite Pointset Method	Appl.Math. Modlg., 38, 1838-1845, 2014.

14.	Y.V.S.S. Sanyasiraju and Satyanarayana Ch.	Upwind Strategies for Local RBF Scheme to Solve Convection Dominated Problems	Engineering Analysis with Boundary Elements, {48}, 1 - 13, 2014
15.	Nachiketa Mishra and Y.V.S.S.Sanyasiraju	Exponential Compact Higher order Schemes and their Stability Analysis for Unsteady Convection-diffusion Equations	International Journal of Computational Methods, { 11} (1), 1350053 (1 - 18), 2014
16.	R. Usha, M.H. Allouche V. Botton, D. Henry S. Millet and H. Ben Hadid	Experimental Determination of the Viscosity at very low shear rate for Shear thinning Fluids by Electrocapillarity	Journal of Non-Newtonian Fluid Mechanics, 215, 60-69 (2015)
17.	S. Mishra A. Pananjady and N. Safina Devi	On the Complexity of making a Distinguished Vertex Minimum or Maximum Degree by Vertex Deletion	Accepted in {bf Journal of Discrete Algorithms}, (2015), DOI: 10.1016/j.jda.2015.03.002
18.	S.Mishra A.C. Mane and N. Safina Devi	Computational Complexity of minimum $P_4$ vertex cover problem for regular and $K_{1,4}$ -free Graphs	Submitted to {bf Discrete Applied Mathematics}, (2015), vol. (184), pages: 114-121
19.	P.Veeramani Rafael Espinola and G.Sankara Raju Kosuru	Pythagorean Property and Best-Proximity Point Theorems	J.Optim Theory Appl ( 2015 ) 164: 534-550
	<b>Research Scholars and Faculties:-</b>		
20.	Sukhendu Ghosh R.Usha and K.C.Sahu	Double-diffusive Two-fluid Flow in a Slippery Channel: A Linear Stability Analysis	Physics of Fluids, Vol.26, 127101, 2014
21.	G. Krishna Kumar and S.H. Kulkarni	Banach Algebra Techniques to Compute Spectra, Pseudospectra and Condition Spectra of Some Block Operators with Continuous Symbols	Ann. Funct. Anal. 6 (2015), no. 1, 148–169. 47B35 (46H35 47A10 47B48) MR3297794
22.	Monisha Roy Satyajit Roy and Tanmay Basak	Role of Various Moving walls on Energy Transfer rates via Heat Flow Visualization during Mixed Convection in Square Cavities	Energy, Volume 82, 15 March 2015, Pages 1-22
23.	D. Ramakrishna Tanmay Basak Satyajit Roy and E. Momoniat	Analysis of Thermal Efficiency via Analysis of Heat Flow and Entropy Generation during Natural Convection within Porous Trapezoidal Cavities, in Inclined Square Cavities	International Journal of Heat and Mass Transfer, Vol.77, pp.98 – 113, October 2014
24.	Abhishek Kumar Singh Tanmay Basak Satyajit Roy and E. Momoniat	Role of Entropy Generation on Thermal Management during Natural Convection in a Tilted Square Cavity with Isothermal and Non-isothermal Hot Walls	Numerical Heat Transfer; Part A: Applications, 66 (11), pp. 1243-1267, Nov 2014
25.	Abhishek Kumar Singh Tanmay Basak Avijit Nag and Satyajit Roy	Role of Entropy Generation on Thermal Management during Natural Convection in Tilted Porous Square Cavities	Journal of the Taiwan Institute of Chemical Engineers (In Press, Corrected Proof, Available online 26 February 2015)

26.	Tanmay Sarkar and S. Sundar	Nonlinear Conservation Law Model for Production Network Considering Yield Loss	J. Nonlinear Sci. Appl. 7 (2014), no. 3, 205–217.
27.	Tanmay Sarkar and S. Sundar	On existence and Stability Analysis of a Nonlinear Conservation Law Model appearing in Production System	Nonlinear Stud. 21 (2014), no. 2, 339–347.
28.	Tanmay Sarkar	An Entropy Admissible time Splitting Scheme for a Conservation Law Model of Manufacturing System	Int. J. Numer. Methods Appl.12(2015), no. 1, 1–20.
29.	Tanmay Sarkar	Comment on: Traveling Wave Solutions for Fifth-order KdV type Equations with time-dependent Coefficients	[Commun Nonlinear Sci Numer Simulat 19 (2014) 404–408]. <i>Commun. Nonlinear Sci. Numer. Simul.</i> 23 (2015), no. 1-3, 17–20
30.	J. Mahipal	A scheme with Discrete Maximum Principle and Optimized Rotation Invariance for Coherence Enhancing Diffusion	Comp.Math.Appl. 68, 859-871, 2014
31.	Sukhendu Ghosh R.Usha and Kirti Chandra Sahu	Linear Stability Analysis of Miscible Two-Fluid Flow in a Channel with Velocity Slip at the Wallz	Physics of. Fluids, 26,014107, 2014
32.	A. Antony Selvan and R.Radha	Sampling and Reconstruction in Shift Invariant Spaces on $R^d$	Annali di Matematica pura ed applicata, 2014 August online 10.1007/s10231-014-0439-x
33.	S.Rajesh and P.Veeramani	Chebyshev Centers and Fixed Point Theorems	J.Math.Anal.Appl.422 ( 2015) , no.2, 880-885
34.	P. Viswanathan and A. K. B. Chand	Alpha Fractal Constrained Fractal Interpolation	Electronic Transaction on Numerical Analysis, 41, 420-442, 2014

c) **In Proceedings of National Conferences:**

d) **In Proceedings of International Conferences:**

Sl.No.	Name of the faculty	Title of the paper	Institution	Period
1.	R.Usha	Stability Analysis of a Gravity Driven Miscible Two-fluid flow: Role of wall slip.	Proceedings of IUTAM on Multiphase flows with Phase change and Challenges and Opportunities, IIT Hyderabad	08.12.2014 to 11.12.2014
2	A. K. B. Chand Coauthors: P. Viswanathan and M. A. Navascues	Uniform Restricted Range Approximation with Self-referential Functions	10th AIMS International Conference on Dynamical System, Differential Equations and Applications, Universidad Autonoma de Madrid, Spain	07.07.2014 To 14.07.2014

3	A. K. B. Chand Coauthors: S. K. Katiyar	Hidden Variable Fractal Functions and Its Monotonicity Aspects	10th AIMS International Conference on Dynamical System, Differential Equations and Applications, Universidad Autonoma de Madrid, Spain	07.07.2014 To 14.07.2014
4	A. K. B. Chand Coauthors: P. Viswanathan	Constrained Approximation with Fractal Functions and SAIN Property of Fractal Polynomials	New Directions in Fractal Geometry, Canberra, Australia	23.11.2014 To 28.11.2014
5	A. K. B. Chand Coauthors: S. K. Katiyar	Approximation Using Hidden Variable Fractal Interpolation Functions	New Directions in Fractal Geometry, Canberra, Australia	23.11.2014 To 28.11.2014
6	A. K. B. Chand Coauthors: K. R. Tyada	Constrained Data Visualization using Rational Quadratic Trigonometric Fractal Interpolation	New Directions in Fractal Geometry, Canberra, Australia	23.11.2014 To 28.11.2014
7	A. K. B. Chand Coauthors: S. K. Katiyar	Quintic Hermite Fractal Interpolation in a strip: Preserving Copositivity	ICRTMAA-2014, IIT Roorkee	21.12.2014 To 23.12.2014
8	A. K. B. Chand Coauthors: K. M. Reddy and P. Viswanathan	A Novel Approach to Surface Interpolation: Marriage of Coons Technique and Univariate Fractal Functions	ICRTMAA-2014, IIT Roorkee	21.12.2014 To 23.12.2014
9	A. K. B. Chand Coauthors: K. R. Tyada	Constrained 2D Data Interpolation using Rational Cubic Fractal Functions	ICRTMAA-2014, IIT Roorkee	21.12.2014 To 23.12.2014
10	A. K. B. Chand Coauthors: S. K. Katiyar	Towards a Unified Methodology for Fractal Extension of various Shape Preserving Spline Interpolants	ICMC-2015, Haldia Institute of Technology	05.01.2015 to 10.01.2015
11	A. K. B. Chand Coauthors: N. Vijender	A Monotonic Rational Fractal Interpolation Surface and Its Analytical Properties	ICMC-2015, Haldia Institute of Technology	05.01.2015 to 10.01.2015
12	A. K. B. Chand Coauthors: K. R. Tyada	Positivity Preserving Rational Cubic Trigonometric Fractal Interpolation Functions	ICMC-2015, Haldia Institute of Technology	05.01.2015 to 10.01.2015
13	A. K. B. Chand Coauthors: M. A. Navascues P. Viswanathan and S. K. Katiyar	Restricted Range Approximation with Fractal Trigonometric Polynomials	ICAFW-2015, Amrita School of Engineering	10.01.2015 to 11.01.2015
14	A. K. B. Chand Coauthors: N. Vijender and M. A. Navascues	Convexity/Concavity and Stability Aspects of Rational Cubic Fractal Interpolation Surfaces	ICAFW-2015, Amrita School of Engineering	10.01.2015 to 11.01.2015

15	A. K. B. Chand Coauthors: S. K. Katiyar	A New Class of Rational Quartic Fractal Function For Curve Fitting: Preserving Positivity	ICAFW-2015, Amrita School of Engineering	10.01.2015 to 11.01.2015
16	A. K. B. Chand Coauthors: K. R. Tyada	Partially Blended Rational Cubic Trigonometric Fractal Interpolation Surfaces Over a Plane	ICAFW-2015, Amrita School of Engineering	10.01.2015 to 11.01.2015
17	A. K. B. Chand Coauthors: M. A. Navascues P. Viswnathan and S. K. Katiyar	Smooth Fractal Interpolation with Function Scaling Factors	IC-MACS 2015, DON BOSCO, Kannur	22.01.2015 To 25.01.2015
18	A. J. Shaiju Coauthors: Dharini Hingu and K. S. Mallikarjuna Rao	Evolutionary Stability of Dimorphic Population States	16 <sup>th</sup> International ISDG Symposium, Amsterdam	09.07.2014 to 12.07.2014
19	A. J. Shaiju Coauthor: Anita Sharma	Solution of Affine Quadratic Control Problema	19 <sup>th</sup> IFAC World Congress, Cape Town	24.08.2014 to 29.08.2014
20	Shruti Dubey and Sharad Dwivedi	On Stability of Steady-States for a Two-Dimensional Network Model of Ferromagnetic Nanowires	International Conference on Recent Trends in Mathematical Analysis and Its Applications (ICRTMAA), IIT Roorkee, India	21.12.2014 to 23.12.2014

#### 5.8 Distinguished Visitors to the Department:

Sl. No.	Name of the visitor and Designation	Date of visit	Purpose of visit
1.	Dr. Sarbeswar Pal Post-doc	06.04.2014 to 12.04.2014	Academic collaboration with Dr. Arjit Dey
2.	Dr . Sarath Sasi Department of Mathematics, University of West Bohemia, Plzeň, Czech Republic	22.05.2014 to 24.05.2014	Given a Seminar talk on 'Weighted Quasilinear Eigenvalue Problems in Exterior Domains'
3.	Prof. Daher, Univ. of Hassan, Casablanca	30.08.2014 to 31-08-2014	Academic collaboration with Prof.R.Radha
4.	Prof Luz Roncal, University of La Rioja, Logrono, Spain	30.08.2014 to 31-08-2014	Academic collaboration with Prof.R.Radha
5.	Prof.Ratnasingham Shivaji H.Barton Excellence Professor and Head Department of Mathematics & Statistics The University of North Carolina at Greensboro, USA	16.09.2014 to 21-09-2014	Given a Seminar talk on PDE theory for MSc/MTech/PhD students
6.	Prof. V.Raghavendra Department of Mathematics IIT Kanpur	21.11.2014 to 27.11.2014	Delivered lectures on, Compact Course "Partial Differential Equations Theory - with a stress on Elliptic Equations of Second Order

7.	Prof. Jeffrey E. Froyd TEES Research Professor, Dwight Look College of Engineering, Texas A&M, University	08.01.2015	Presentation-cum-interaction with Faculties-Problem based learning as a useful method of teaching PhD courses
8.	Prof. Mario Paul Ahues Blanchait Institut Camille Jordan Unité CNRS 5208, Université Jean Monnet, Saint- Etienne, France	09.01.2015 to 14.01.2015	Research collaboration with Prof. M. Thamban Niar and delivered special seminar in our department
9.	Prof. Laurence Grammont Institut Camille Jordan Unité CNRS 5208, Université Jean Monnet, Saint- Etienne, France	09.01.2015 to 14.01.2015	Research collaboration with Prof. M. Thamban Niar and delivered special seminar in our department
10.	Dr . Nathann Cohen Universite Paris Sud, France	01.12.2014 to 19.01.2015	Research collaboration with Dr. A.V.Jayanthan and Dr. N. Narayanan
11.	Prof. M. A. Navascues University of Zaragoza, Spain	11.01.2015 to 12.01.2015	Research collaboration with Dr. A.K.B. Chand
12.	Prof. A. V. Tetenov Gorno-Altai state University, Russia	25.02.2015 to 08.03.2015	Research collaboration with Dr. A.K.B.Chand

## 5.9 Other Activities of the Department/Centre:

### a. Other activities of the Faculty

Sl. No.	Name of faculty	Title/Member/programme	Institution	Period
<b>PROFESSOR:</b>				
1.	Prof. S.H.Kulkarni	Attended the Professors Selection Committee meeting.	Lucknow	05.09.2014
2.	Prof. S.H.Kulkarni	Attended Ph.D Viva-Voce meeting	IIT, Bhubaneswar	03.11.2014
3.	Prof. S.H.Kulkarni	Attended Ph.D Viva- Voce meeting	IIT, Kanpur	27.10.2014
4.	Prof. R.Rama	Attended the DC Meeting for 3 students as memebr	VIT, Vellore	13.08.2014
5.	Prof. R. Rama	Attended DST-Project Presentation ( As Co-investigator)	IIT, Gandhinagar	10.11.2014
6.	Prof. R.Rama	Attended DC Meeting	VIT, Vellore	30.01.2015
7.	Prof. Y.V.S.S.Sanyasi Raju	Attended Ph.D. Thesis and Viva- Voce as Examiner	IIT, Delhi	27.08.2014
8.	Prof. Y.V.S.S.Sanyasi Raju	Attended Board of Studies meeting of the Mathematics Board	Madanapalle Institute of Technology and Science, Madanapalle	04.09.2014
9.	Prof. Y.V.S.S.Sanyasi Raju	Attended Board of Studies meeting of the Mathematics Board	PSG College of Technology, Coimbatore	27.09.2014

10.	Prof. Y.V.S.S.Sanyasi Raju	Attended Ph.D. Thesis and Viva-Voce as Examiner	GITAM University	10.10.2014
11.	Prof. Y.V.S.S.Sanyasi Raju	Attended Ph.D. Thesis and Viva-Voce as Examiner	JNTU, Hyderabad	28.11.2014
12.	Prof. Y.V.S.S.Sanyasi Raju	Attended Ph.D. Thesis and Viva-Voce as Examiner	IIT, Guwahati	30.12.2014
13.	Prof. Y.V.S.S.Sanyasi Raju	Attended Ph.D Viva-Voce meeting	VIT, Vellore	23.01.2015
14.	Prof. Y.V.S.S.Sanyasi Raju	Attended DC Meeting	VIT, Vellore	04.02.2015
15.	Prof. Y.V.S.S.Sanyasi Raju	Attended Board of Studies meeting	PSG college of Engineering, Coimbatore	28.02.2015
16.	Prof. Y.V.S.S.Sanyasi Raju	Attended Board of Studies meeting	GITAM, Visakhapatnam	28.03.2015
17.	Prof. Satyajit Roy	Attended the Viva-Voce examination as an external examiner	B.N.M. Institute of Technology, Bangalore	10.05.2014
18.	Prof. Satyajit Roy	Attended the comprehensive viva as an Doctoral committee member	Indian Institute of Space Science & Technology, Kerala	19.05.2014
19.	Prof. Satyajit Roy	Attended the DC Meeting as member	VIT, Vellore	10.09.2014
20.	Prof. Satyajit Roy	Attended the DC Meeting as member	VIT, Vellore	24.09.2014
21.	Prof. Satyajit Roy	Attended Ph.D Viva-Voce meeting	IIT, Guwahati	20.10.2014
22.	Prof. Satyajit Roy	Attended Ph.D Viva-Voce meeting	NIT, Warangal	5.11.2014
23.	Prof. K.C.Sivakumar	Attended the Board of Studies meeting and served as an expert in Mathematics in the academic audit	PSG College of Technology, Coimbatore	27.09.2014
24.	Prof. K.C.Sivakumar	Attended as Chief Guest for the Inauguration of the Ramanujan Mathematics Association	Soka Ikeda College for Arts and Science for Women, Ambattur	16.09.2014
25.	Prof. S.Sundar	Attended the Ph.D viva-voce examination as an external examiner	IIT, Kharagpur	14.07.2014
26.	Prof. S.Sundar	Attended the 58 <sup>th</sup> Meeting of PAC-MS	University of Pune	09.06.2014 to 10.06.2014
27.	Prof. S.Sundar	Attended Ph.D Viva-Voce as Examiner	IIT, Roorkee	17.08.2014
28.	Prof. S.Sundar	Attended the Faculty selection committee meeting	NIT, Trichy	03.08.2014



29.	Prof. S.Sundar	Attended DST-PAC (Mathematical Science Meeting)	IIT, Gandhinagar	10.11.2014
30.	Prof. S.Sundar	Attended Ph.D Viva-Voce meeting	TIFR –CAM, Bangalore	29.01.2015
31.	Prof. S.Sundar	Attended faculty selection committee meeting	NIT, Karnataka	11.02.2015
32.	Prof. S.Sundar	Attended Board of Studies meeting	NIT, Patna	13.02.2015
33.	Prof. S.Sundar	Attended DRDO- scientists selection committee meeting	Delhi	05.03.2015
34.	Prof. S.Sundar	Attended Ph.D viva-voce as expert member	IIT(BHU), Varanasi	20.03.2015 to 21.03.2015
35.	Prof. S.Sundar	Attended Ph.D viva-voce as expert member	IIIT, Allahabad	22.03.2015
36.	Prof. M.Thamban Nair	Attended pre-departure session for students to France for higher studies, at "Alliance Francais"	Chennai	09.06.2014
37.	Prof. R.Usha	Attended the 2 <sup>nd</sup> School Board Meeting	Hyderabad	08.09.2014
38.	Prof. R.Usha	To Collaborate with Prof. Kirti Sahu, Prof. Rama Govindarajan	IIT Hyderabad	01.12.2014 to 02.12.2014
39.	Prof. P. Veeramani	Attended Ph.D Viva-Voce meeting	Aligarh Muslim University, Aligarh	22.11.2014
40.	Prof. V.Vetrivel	Attended Admission committee meeting	KIIT, Bhubaneswar Orissa	22.02.2015
<b>ASSOCIATE PROFESSOR:</b>				
41.	Dr. A.K.B. Chand	Presentation for ongoing DST Project	IIT, Gandhinagar	10.11.2014
42.	Dr. Chidella Srinivasa Rao	Attended General Test Committee Meeting	VIT, Vellore	17.11.2014
43.	Dr. Chidella Srinivasa Rao	Attended Ph.D Viva- Voce meeting	VIT, Vellore	23.01.2015
<b>ASSISTANT PROFESSOR:</b>				
44.	Dr. Arijit Dey	Attended conference on vector swdle	Hyderabad	23.03.2015 to 27.03.2015
45.	Dr. A.V.Jayanthan	Attended as Resource person for "Refresher Course in Algebra for College Teachers"	Kerala School of Mathematics, Kozhikode, Kerala	08.12.2014 to 11.12.2014
46.	Dr. Kalpana Mahalingam	Attended the DC Meeting as member	VIT, Vellore	13.08.2014
47.	Dr. Kalpana Mahalingam	DST Project Presentation	IIT, Gandhinagar	10.11.2014
48.	Dr. Sounaka Mishra	Attended indogerman workshop on algorithms	ISI, Kolkata	10.03.2015 to 13.03.2015
49.	Dr. Sounaka Mishra	Attended DC meeting as member	IIITDM, Kanchipuram	04.03.2015

50.	Dr. T.E.Venkata Balaji	Attended as Chief Guest for the Valedictory Function of Ramanujan Day Celebrations	Hindu Senior Secondary School, Triplicane, Chennai	22.12.2014
51.	Dr. Srilakshmi, Inspire hosted Faculty	Research collaboration with Dr. Narasimha Kumar	IIT Hyderabad	12.05.2014 to 24.05.2014

**b. Member of DST**

Sl.No	Name	Particulars	Period
1.	Prof. S.Sundar	Member of DST-Program Advisory Committee (Mathematical Sciences)	Since October,2012

**c. Weekly Seminar Talk**

Sl. No.	Name of the Faculty	Title	Date
1.	Prof. M. Thamban Nair IITM	Hilbert Scales for Optimal Order Estimates	03.04.2014
2.	Dr. Sarbeswar ISI Bangalore	Moduli of non-very stable bundles over a compact Riemann surface	10.04.2014
3.	Dr. Shreedevi IMSc, Chennai	Rees' Theorem	17.04.2014
4.	Dr.Santanu Sarkar CMI, Chennai	Cryptanalysis of RSA Variants and Implicit Factorization	25.04.2014
5.	Dr. Bhavin Moriya HRI Allahabad	Some Weighted Zero Sum Problems	08.05.2014
6.	Dr. Antony Vijesh Department of Mathematics, IIT Indore	Solution of a Fractional Differential Equation via Iteration	16.05.2014
7.	Dr . Sarath Sasi Department of Mathematics, University of West Bohemia Plzeň, Czech Republic	Weighted quasilinear eigenvalue problems in exterior domains	23.05.2014
8.	Dr. Somnath Jha Department of Mathematics, Osaka University, Japan	Functional equation for Selmer groups	22.05.2014
9.	Dr. Sarang Sane TIFR, Bombay	Euler Classes and Category Theory	29.05.2014
10.	Dr. Vishnu Narayan Mishra	Approximation of functions by positive linear operators	30.05.2014
11.	Dr. Senthilkumar Department of Mathematics, National Institute of Technology (NIT), Thiruchirappalli.	Stability of Time Delay Systems	06.06.2014

12.	Dr. Gibin Powathil Department of Mathematics, University of Dundee, Scotland	Mathematical and Computational Modelling in Cancer Research	06.06.2014
13.	Prof. M. Ram Murty Department of Mathematics, Queen's University at Kingston, Canada.	Transcendental Numbers and Modular Forms	07.08.2014
14.	Dr. Kunal Krishna Mukherjee Department of Mathematics, IIT Madras	Doubling	21.08.2014
15.	Dr. Luz Roncal Gomez Department of Mathematics and computations, University of La Rioja, Logrono, Spain	Semigroups And Harmonic Analysis	01.09.2014
16.	Dr. Mani Lakshminarayanan Adjunct Faculty at Rutgers University, Biotechnology Clinical Development Statistics Group at Pfizer	Grammar of Graphics: A Visual Data Excursion in R	04.09.2014
17.	Prof. Ratnasingham Shivaji H. Barton Excellence Professor and Head Department of Mathematics and Statistics University of North Carolina at Greensboro USA.	Uniqueness of positive solutions for a class of singular nonlinear eigenvalue problem	18.09.2014
18.	Dr. Krishna Jagannathan Dept. of Electrical Engineering IIT Madras	Zero-One Laws in Probability, and some Applications	25.09.2014
19.	Dr. Shanta Laishram Department of Mathematics, ISI, Delhi	Powers in products of terms of binary recurrences sequences	10.10.2014
20.	Dr. M. Rajesh Kannan Post Doctoral Student, Department of Mathematics, Technion-Israel Institute of Technology, Haifa, Israel	Spectral Theory of Nonnegative Tensors	16.10.2014
21.	Prof. P.V. Subrahmanyam Department of Mathematics, IIT Madras	Remarks on connectedness	30.10.2014
22.	Dr. Amritanshu Prasad IMSc, Chennai	The RSK correspondence and Symmetric Group Representations	05.11.2014
23.	Prof. P. R. Parthasarathy Retired Faculty, Department of Mathematics, IIT Madras	Transient Queues	13.11.2014

24.	Dr. Arun Kumar IIT, Bombay	Time Changed Processes	24.11.2014
25.	Dr. Nathan Cohen LRI, Orsay, France	Introduction to Graph Theory and Linear Programming in Sage	25.11.2014
26.	Dr. H. Anathanarayan Department of Mathematics, IIT Bombay	Zero-set Topology on $C^d$ and Gorenstein Rings	08.12.2014
27.	Prof. Sharad S. Sane Department of Mathematics, IIT Bombay	Some Interesting Matrices and Related Combinatorial Configurations	11.12.2014
28.	Dr. Nathann Cohen Visiting Faculty from the Department of Mathematics, IIT Madras	Introduction to Combinatorial Designs	23.12.2014
29.	Prof. Mario Paul Ahues Blanchait and Prof. Laurence Grammont Institut Camille Jordan Unité CNRS 5208, Université Jean Monnet, Saint-Etienne, France	Linearization or Discretization: Which To Start With?	12.01.2015
30.	Dr. Jaban Meher Inspire Fellow Indian Institute of Science, Bangalore	Asymptotic Formulas for the Fourier Coefficients of Certain Modular Functions	21.01.2015
31.	Prof. Ar. Meenakshi Professor Emeritus, Department of Mathematics, Annamalai University	A Survey of Regular Inclines	29.01.2015
32.	Dr. Shilpa Gondhali University of Haifa, Israel	Modular class of a lie algebroid with a nambu structure	19.02.2015
33.	Dr. Sivaram Ambikasaran Courant Institute of Mathematical Sciences	Fast algorithms for data analysis and elliptic partial differential equations	17.02.2015
34.	Dr. J. Jaikrishnan	Proper holomorphic mappings of balanced domains	26.02.2015
35.	Dr. Andrei V. Tetenov Gorno-Altai State University, Russia	On geometry of self-similar curves	05.03.2015
36.	Dr. Sushmita Venugopalan Chennai Mathematical Institute	Moment map and the vortex equation	11.03.2015
37.	Dr. Soumya Bhattacharya Centro Internazionale per la Ricerca Matematica, Trento	Factorization of holomorphic eta quotients	19.03.2015

38.	Dr. Makoto Yamashita Department of Mathematics of Ochanomizu University, Japan	Categorical classification of quantum group actions	18.03.2015
39.	Dr. Anirban Bose Institute of Mathematical Sciences Chennai	Real elements in groups of type F4	26.03.2015

#### d. Ph.D. Viva – Voce Examination

Sl. No.	Name of the Scholar/Guide	Title of the thesis	Date of Viva
1.	Ms. N. Safina Devi MA09D001 <b>Guide:</b> Dr. Sounaka Mishra	On the approximability of certain node deletion problems on graphs	19.08.2014
2.	Mr. Tanmay Sarkar MA09D006 <b>Guide:</b> Prof. S.Sundar	A study on nonlinear conservation law model of production system incorporating yield loss	15.09.2014
3.	Mr. Vijender Nallapu (MA09D012) <b>Guide:</b> Dr. A.K.B.Chand	Shape preserving fractal interpolation curves and surfaces	23.10.2014
4.	Mr. Anjalaiah (MA09D010) <b>Guide:</b> Prof. R.Usha	Dynamics and stability of some gravity-driven free surface flows	20.11.2014
5.	Mr. S.Rajesh (MA10D009) <b>Guide:</b> Prof. P.Veeramani	Chebyshev centers, fixed point theorems and best proximity point theorems	17.04.2015

#### 6.1 Results obtained in research work (from M.S. & Ph.D thesis) of the scholar/faculty (last year sample enclosed from Director's Speech): will be given at the time of convocation.

##### a. Name: Anjalaiah

**Title of thesis: Dynamics and Stability of Some Gravity- Driven Free -Surface Flows**

**Ph.D Degree: 2014**

**Results obtained:** The thesis considers the dynamics and stability characteristics of a gravity-driven film (single/two-layer) down an inclined (flat/undulated) substrate (porous/slippy) in the presence/absence of an insoluble surfactant at the free surface. The study explores the possibility to propose strategies to control or suppress the free surface/interface instabilities that may occur in each of the flow systems considered and this acts as a common thread. The study reveals that the stabilizing role of Marangoni stresses can be favourably exploited as a means of controlling free surface instabilities; further, in relevant applications, the stabilizing role of slip can be used as control option in the absence/presence of surfactants, by designing the substrate to be a flat or undulated rough/textured/hydrophobic surface.

#### 6.2 Inter disciplinary group achievements of the Departments: Nil

#### 6.3 Socially relevant activities carried out by the Department

#### 6.4 International collaboration achievements by the Department

**1. Faculty visit: Nil**

**2. Student visit: Nil**

**3. Activities initiated**

**6.5 Major infrastructure development made in the Department: Nil.**