Internal Review 2014

Department of Mathematics

Indian Institute of Technology Delhi

Website: http://maths.iitd.ac.in

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Submitted to

Indian Institute of Technology Delhi

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Contents

Section 1
Curriculum

Executive Summary: Curriculum

The Department is running an academically rigorous and globally competitive curriculum to train the UG (Integrated M. Tech) and PG (MSC and M. Tech.) students for the employment market as well as for higher education, and our research scholars for a career in academic and industrial research. While we continue in this task with full earnest, we are also facing the twin challenges of increased enrolment as well as heterogeneity in the background and training of incoming students. The benchmarking of our programme with different institutions in India and abroad suggests that our core courses content is comparable, and indeed we offer a more diverse basket of electives. Current curriculum is seen relevant by the "core" employers which is clear from the list of companies from private sector, public sector and multinational companies who come to recruit our graduates. However, we are also cognizant of the fact that the curriculum requires periodic revision to maintain its relevance to all stakeholders (students, faculty and employers), and in that respect the Department has undertaken an elaborate review of the Curriculum in recent months. The challenge lies in its effective implementation and maintaining continued relevance.

1.1 List of degree Programmes offered - UG + PG - and enrolment

Sanctioned Strength of each Programme:

	Programme Name	**Current Sanctioned Strength (2013)**
UG	Int. M. Tech. in Mathematics and computing (MT5)	48
PG	M. Tech. in Computer Applications (JCA)	32
	M. Sc. in Mathematics	54
	Ph. D. in Mathematics	125

Number of Graduating Students in degree Programmes (last 5 years):

Year	Int. M. Tech.	M. Sc.	M. Tech.	Ph. D.
2013	47	53	14	4
2012	48	45	13	2
2011	45	29	15	6
2010	55	48	23	6
2009	39	43	17	5
Total	234	218	82	23

Number of students currently on-roll (October, 2013):

Programme Name	Number of Students
Int. M. Tech.	234
M. Sc.	98
M. Tech.	27
Ph. D.	66

1.2 Consistency of curricula with academic vision of the Department

The vision statement of the Department, that has been put together recently, reads as follows:

"**The Mathematics Department is committed to conducting significant and relevant research in Mathematics and allied areas and providing a comprehensive curriculum, relevant to research and career opportunities, at all UG and PG levels. Mathematics is a fundamental tool to understand and solve problems in science, engineering and social sciences. The Department of Mathematics strives to be recognized for excellence in teaching and research in Mathematics among academic institutions/universities in India and abroad. We wish to focus on providing a comprehensive curriculum at undergraduate and postgraduate levels, relevant to research and career opportunities in India and abroad. The department offers a wide variety of courses at all levels, covering all major areas in Mathematics, Statistics & OR and Computer Applications. We expect that this will train our students to become academically well rounded, to acquire the ability to familiarize themselves with basic literature, to be able to communicate their work effectively and to develop critical thinking essential for research and development. The Department is committed to strengthen its research activities by recruiting young and bright researchers as faculty and post-doctoral fellows and to strengthen its Ph.D. program."**

The present curricula (entrants at all levels in 2013 or earlier) is in keeping with this vision, which we have cherished and sustained, and which brings a curricular mix of fundamentals and application. At both UG and PG levels, the focus is on broad-based core courses which cover the main concepts in all sub-areas of Mathematics. This is followed by a list of elective courses which imparts all the necessary skills and knowledge to specialize in a chosen sub-area of Mathematics.

The courses currently offered by our Department at UG and PG levels are listed under Section 1.3(c).

1.3 Quality of Programmes

(a) Periodicity of curriculum review: UG and PG

Department of Mathematics has been participating in the Curriculum Review process whenever it has been mandated by the Senate. The last UG and PG review was in 2003. It is noteworthy that the department has proposed a new B. Tech. programme and dual degree M. Tech. in lieu of the existing Int. M. Tech. programme. The proposal is currently under consideration of the senate. Curriculum Review for M. Sc. and M. Tech. has just started.

(b) Mechanism for review at UG and PG level

The current UG Curriculum Review process has been undertaken at the Institute level in two stages. First, an Undergraduate Curriculum Review Committee was formed in late 2011 at the Institute level, in which one faculty colleague from the Department was nominated. This Committee deliberated on and evolved a Concept Paper which envisaged the broad outline of the revised curriculum. This was discussed and eventually passed by the Senate. Subsequently, an Undergraduate Curriculum Implementation Committee was formed in which two faculty from Department are members. This Committee is responsible for smooth implementation of the revised curriculum in the Department and the Institute.

As soon as the Undergraduate Curriculum Review Committee (UCRC) was constituted by the institute, Department also set up a small committee to review the curriculum of the Department and calibrate it against the evolving outline of courses at the Institute level. As the UCRC finalized its recommendations through 2013, the Department Curriculum Review Committee also undertook a thorough review of its courses, including taking a re- look at existing courses, taking feedback from current and recently graduated students, etc. This activity has been recorded in DFB meeting minutes that have been attached.

As the Institute moved towards Curriculum Implementation in 2013, the Department also undertook similar activity. For details, see DFB minutes (attached). The proposed Department Curriculum is now finalized and has been forwarded to Dean, Academics for discussion in the Senate.

PG Curriculum Review has just started and discussions are underway on how to implement this in the Department.

(c) Course work for UG & PG Programmes

Int. M. Tech in Mathematics and computing

Core Courses

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	CYL100	Physical Chemistry: Concepts and Applications	3-1-0	4
2	CYP100	Chemistry Laboratory	0-0-4	2
3	MAL115	Multivariable Calculus and Matrix Theory	3-1-0	4
4	MAL122	Real and Complex analysis	3-1-0	4
5	PHL120	Physics of Materials	3-1-0	4

6	PHL100	Physics Laboratory	0-0-4	2
7	AML110	Engineering Mechanics	3-0-2	4
8	CSL101/CSL102	Introduction to Computers and Programming/Introduction to Computer Science	3-0-2/3-0-2	4
9	CSL201	Data Structures	3-0-4	5
10	EEL101	Fundamentals of Electrical Engineering	3-0-2	4
11	MEL110	Graph Science	2-0-4	4
12	HUN100	Introduction to Humanities and Social Sciences	0-0-4	2
13	EEL201	Digital Electronics Circuits	3-1-0	4
14	EEL308	Computer Architecture	3-1-0	4
15	EEL201	Electronics Laboratory – I	0-0-3	1.5
16	EEL308	Computer Technology Laboratory	0-0-3	1.5
17	MAC450	Colloquium (MT)	0-3-0	3
18	MAD851	Major Project Part 1 (MT)	0-0-12	6
19	MAD852	Major Project Part 2 (MT)	0-0-28	14
20	MAD853	Major Project Part 1 (MT)	0-0-8	4*
21	MAD854	Major Project Part 2 (MT)	0-0-32	16*
22	MAL180	Discrete Mathematical Structures	3-1-0	4
23	MAL230	Numerical Methods and Computation	3-1-0	4
24	MAL245	Topology and Functional Analysis	3-1-0	4
25	MAL250	Introduction to Probability Theory and Stochastic Processes	3-1-0	4
26	MAL255	Linear Algebra	3-1-0	4
27	MAL335	Differential Equations: Theory and Stochastic Processes	3-1-0	4

28	MAL342	Analysis and Design of Algorithms	3-1-0	4
29	MAL358	Operating Systems	3-0-2	4
30	MAL390	Statistical Methods and Algorithms	3-1-0	4
31	MAL710	Database Management Systems	3-0-2	4
32	MAL715	Digital Image Processing	3-0-2	4
33	MAL745	Software Engineering	3-0-2	4
34	MAL754	Principles of Computer Graphics	3-0-2	4
35	MAN150	Introduction to Mathematics and Computing	0-0-4	2
36	MAP290	System Design Laboratory	0-0-4	2
37	MAT450	Practical Training (MT)	-	NC
		TOTAL IC	45-13-64	90

Elective Courses

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	AML710	Computer Aided Design and Design Methods	3-0-2	4
2	ASL410	Numerical Simulation of Atmospheric and Oceanic Phenomenon	3-0-2	4
3	BEL413	Modeling and Simulation of Bioprocesses	3-0-2	4
4	CSL374	Computer Networks	3-0-3	4.5
5	CYL410	Computational Methods and Analysis	3-0-0	3
6	EEL375	Embedded Systems	3-0-4	5
7	EEL422	Computers in Biomedicine	3-0-0	3
8	EEL703	Computer Networks	3-0-0	3

9	EEL704	Robotics and Automation	3-0-0	3
10	EEL706	Soft Computing	3-0-0	3
11	EEL707	Multimedia Systems	3-0-2	4
12	EEL708	Information Retrieval	3-0-0	3
13	EEL709	Pattern Recognition	3-0-0	3
14	EEL758	Intelligent and Knowledge Based Systems	3-0-0	3
15	EEL804	Scientific Visualization	3-0-0	3
16	EEL806	Computer Vision	3-0-0	3
17	MAD350	Mini Project (MT)	0-0-6	3
18	MAL145	Number Theory	3-1-0	4
19	MAL146	Combinatorics	3-1-0	4
20	MAL210	Optimization Methods and Applications	3-1-0	4
21	MAL256	Modern Algebra	3-1-0	4
22	MAL260	Boundary Value Problems	3-1-0	4
23	MAL311	Parallel Algorithms	3-0-2	4
24	MAL341	File Structures and Information Systems Design	3-0-2	4
25	MAL353	Algebraic Methods in Computer Sciences	3-1-0	4
26	MAL355	Partial Differential Equations: Theory and Computation	3-1-0	4
27	MAL365	Mathematical Programming Techniques	3-1-0	4
28	MAL373	Wavelets and Applications	3-1-0	4
29	MAL375	Programming Languages	3-0-2	4
30	MAL376	Graph Algorithms	3-1-0	4
31	MAL380	Numerical Linear Algebra	3-1-0	4
32	MAL381	Finite Element Theory and Applications	3-0-2	4

33	MAL382	Theory of Automata	3-1-0	4
34	MAL465	Parallel Computing	3-1-0	4
35	MAL466	Multivariate Statistical Methods	3-1-0	4
36	MAL468	Graph Theory	3-1-0	4
37	MAL717	Fuzzy Sets and Applications	3-1-0	4
38	MAL720	Neurocomputing and Applications	3-0-0	3
39	MAL731	Introduction to Chaotic Dynamical Systems	3-1-0	4
40	MAL732	Financial Mathematics	3-1-0	4
41	MAL733	Stochastic of Finance	3-1-0	4
42	MAL736	Information Integrity	3-1-0	4
43	MAL741	Fractal Geometry	3-1-0	4
44	MAL755	Algebraic Geometry	3-1-0	4
45	MAL760	Advanced Algorithms	3-0-2	4
46	MAL780	Special Topics in Computer Applications	3-0-2	4
47	MAL782	Data Mining and Knowledge Discovery	3-0-2	4
48	MAL785	Natural Language Processing	3-0-2	4
49	MAL786	Cryptology	3-1-0	4
50	MAL790	Special Topics in Computer Science	3-0-2	4
51	MAV791	Special Module in Dynamical System	1-0-0	1
52	MEL420	Total Quality management	3-0-2	4
53	SML410	Computational Techniques for Management Applications	3-0-2	4

Master of Science in Mathematics
Core Courses

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	MAD703	Project Part 1	0-0-8	4
2	MAD704	Project Part 2	0-0-8	4
3	MAL503	Linear Algebra	3-1-0	4
4	MAL509	Probability Theory	3-1-0	4
5	MAL513	Real Analysis	3-1-0	4
6	MAL517	Differential Equations	3-1-0	4
7	MAL519	Introduction to Computers & Programming	3-0-2	4
8	MAL514	Complex Analysis	3-1-0	4
9	MAL516	Algebra	3-1-0	4
10	MAL518	Methods of Applied Mathematics	3-1-0	4
11	MAL522	Statistical Inference	3-1-0	4
12	MAL524	Numerical Analysis	3-1-0	4
13	MAL526	Computer Oriented Operations Research	3-0-2	4
14	MAL601	Topology	3-1-0	4
15	MAL602	Functional Analysis	3-1-0	4
16	MAL609	Basic Computer Science	3-0-2	4
17	MAL630	Partial Differential Equations	3-1-0	4
18	MAP701	Computing Lab I	0-0-4	2
19	MAP702	Computing Lab II	0-0-4	2
		Total PC	45-12-3	72

Elective Courses

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	CYL665	Solid State Chemistry	3-0-0	3
2	MAL607	Mathematical Logic	3-1-0	4
3	MAL611	Principles of Fluid Mechanics	3-1-0	4
4	MAL614	Advanced Matrix Theory	3-1-0	4
5	MAL617	Combinational Methods	3-1-0	4
6	MAL621	Computational Methods for Ordinary	3-1-0	4
7		Differential Equations		
8	MAL638	Applied Nonlinear Programming	3-1-0	4
9	MAL656	Graph Theory	3-1-0	4
10	MAL658	Programming Languages	3-1-0	4
11	MAL725	Stochastic Processes and Applications	3-1-0	4
12	MAL726	Principles of Optimization Theory	3-1-0	4
13	MAL727	Applied Multivariate Data Analysis	3-1-0	4
14	MAL728	Category Theory	3-1-0	4
15	MAL729	Computational Algebra and its Applications	3-0-2	4
16	MAL730	Cryptography	3-1-0	4
17	MAL731	Introduction to Chaotic Dynamical Systems	3-1-0	4
18	MAL732	Financial Mathematics	3-1-0	4

19	MAL733	Stochastic of Finance	3-1-0	4
20	MAL734	Algebraic Geometry	3-1-0	4
21	MAL735	Number Theory	3-1-0	4
22	MAL737	Differential Geometry	3-1-0	4

M. Tech in Computer Applications

Core Courses

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	JCD 801	Major Project Part-1	0-0-12	6
2	JCD 802	Major Project Part-2	0-0-24	12
3	CSL 630 or MAL701	Data structures/Introduction to Programming and Data structures	3-0-2	4
4	MAL 704/MAL708	Numerical Optimization/Computer organization and operating systems	3-0-2	4
5	CSL 605	Introduction to logic and functional programming	3-0-2	4
6	EEL 702	System software	3-0-2	4
7	MAL705	Discrete Mathematical structures	3-0-0	3
8	MAL 710	Database Management	3-0-0	3
9	MAP706	Scientific software Lab	0-0-6	3
10	MAP707	Programming Language Lab	0-0-4	2
		Total	18-0-56	46

Electives Courses

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	ASL850	Numerical modeling of Atmospheric processes	3-0-0	3
2	CSL665	Introduction to Logic and Functional programming	3-0-2	4
3	CSL671	Artificial Intelligence	3-0-2	4
4	CSL672	Computer Networks	3-0-2	4
5	CSL740	Software Engineering	3-0-2	4
6	CSL758	Advanced Algorithms	3-0-0	3
7	CSL781	Computer Graphics	3-0-3	4.5
8	CSL783	Digital Image Analysis	3-0-3	4.5
9	CSL840	Computer Vision	3-0-2	4
10	CSL862	Special topics in software systems	3-0-0	3
11	CSL864	Special topics in artificial intelligence	3-0-0	3
12	CSL865	Special topics in computer applications	3-0-0	3
13	CSL868	Special topics in Data Base systems	3-0-0	3
14	EEL703	Computer Networks	3-0-0	3
15	EEL 706	Computer vision	3-0-2	4
16	EEL707	Multimedia systems	3-0-2	4
17	EEL708	Information Retrieval	3-0-0	3
18	EEL709	Pattern Recognition	3-0-0	3
19	EEL751	Computer system software	3-0-2	4
20	EEL715	Image Processing	3-0-2	4
21	EEL804	Scientific Visualization	3-0-0	3

22	EEL853	Agent Technology	3-0-0	3
23	JCD 799	Minor Project	0-0-6	3
24	JCS800	Independent study	3-0-0	3
25	MAL702	File systems and Data Management	3-0-0	3
26	MAL703	Numerical Algorithms for parallel computing	3-0-0	3
27	MAL711	Algorithmic Combinatorics	3-0-0	3
28	MAL 714	Finite Element Techniques and Computer implementation	3-0-0	3
29	MAL715	Statistical Computing	3-0-0	3
30	MAL720	Neuro-Computing and applications	3-0-0	3
31	MAL724	Cryptology	3-0-0	3
32	MAL732	Financial Mathematics	3-1-0	4
33	MAL733	Stochastic of Finance	3-1-0	4
34	MAL754	Principles of computer Graphics	3-0-2	4
35	MAL803	Pattern Recognition	3-0-0	3
36	MAL823	Special topics in computer Applications	3-0-0	3
37	SML815	Decision Support and Expert Systems	2-0-2	3

(d) Pre-PhD level Courses Offered by the Department in last 5 years

All Ph.D. students have to credit the course MAL 860 (Linear Algebra) as a core course. In addition they have to complete 9 credits from 700 or 800 level courses apart from HUL (Communication skills) course.

Elective Course

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	MAL704	Numerical Optimization	3-0-2	4
2	MAL708	Computer Organization & Operating Systems	3-0-2	4
3	MAL710	Database Management Systems	3-0-2	4
4	MAL715	Digital Image Processing	3-0-2	4
5	MAL728	Category Theory	3-1-0	4
6	MAL731	Intro To Chaotic Dynamical Systems	3-1-0	4
7	MAL732	Financial Mathematics	3-1-0	4
8	MAL734/755	Algebraic Geometry	3-1-0	4
10	MAL863	Algebraic Number Theory	3-0-0	3
11	MAL701	Introduction To Programming And Data Structures	3-0-2	4
12	MAL705	Discrete Mathematical Structures	3-0-0	3
13	MAL717	Fuzzy Sets & Applications	3-0-0	3
14	MAL724/786	Cryptology	3-0-0	3
15	MAL730	Cryptography	3-1-0	4
16	MAL733	Stochastic Of Finance	3-1-0	4
17	MAL754	Principles Of Computer Graphics	3-0-2	4
18	MAL760	Advanced Algorithms	3-0-2	4
19	MAL856	Lie Algebra	3-0-0	3
20	MAL860	Linear Algebra	3-0-0	3
21	MAL714	Finite Element Techniques & Comp. Implementation	3-0-0	3
22	MAL735	Number Theory	3-1-0	4

23	MAL745	Software Engineering	3-0-2	4
24	MAL720	Neuro-Computing Applications	3-0-0	3
25	MAL703	Numerical Algorithms For Parallel Computing	3-0-0	3
26	MAL728	Category Theory	3-1-0	4
27	MAL725	Stochastic Processes & Applications	3-1-0	4
28	MAL782	Data Mining And Knowledge Discovery	3-0-2	4
29	MAL716	Theory Of Automata And Formal Languages	3-0-0	3
30	MAL720	Neuro-Computing & Applications	3-0-0	3
31	MAL874	Analysis	3-0-0	3
32	MAL890	Wavelet Analysis And Applications	3-0-0	3
33	MAL737	Differential Geometry	3-1-0	4
34	MAL745	Software Engineering	3-0-2	4

(e) New/Advanced courses offered in last 5 years

- MAL733 Stochastic of finance
- MAV791 Special module in Dynamical Systems

Department has proposed the following new courses and waiting for the approval of the same from senate.

Serial No.	Course No.	Course Title	L-T-P	Total Credits
1	MAL742	Operator Theory	3	3
2	MAL 743	Fourier Analysis	3	3
3		Measure Theory	3	3
4		Advanced Applied Analysis	3	3

(f) Overlap Between courses (c) and (d) and (e), including opening latter to UG

All electives and core courses that are part of the PG programme (JCA and Int. M.Tech. programme) are also the elective courses for PhD programme.

Most PG level (700 and 800 level) elective courses are open to UG students as well as electives, the typical pre-requisite being their completion of the background core course of the UG programme. - Some of the courses also have a pre-requisite of "EC90" or "EC120", i.e. these courses are allowed only for the students who has earned 90 or 120 (respectively) Credits in the UG programme.

(g) Seminar series: Weekly/regular held each semester: (Provide List)

List of seminars (2011-Feb 2014):

S. No.	Date	Speaker	Affiliation	Title
1.	03.03.2011	Prof. S. P. Singh	DST-CIMS, BHU & University of Western Ontario, Canada	Nonlinear Analysis and Applications
2.	06.07.2011	Prof. N. K. Govil	Auburn University, USA	Some generalizations of Erdos-Lax Theorem and of a theorem of Turan
3.	27.09.2011	Dr. Harish Kumar	ETH, Zurich, Switzerland	Entropy stable schemes for two-fluid plasma flows
4.	11.11.2011	Prof. S. A. Choudum	IIT Madras	First-Fit-Coloring of Graphs
5.	05.03.2012	Prof. Jacques Giacomoni	Université de Pau, France	Quasilinear parabolic equations with singularities
6.	11.12.2012	Vishwanathan Arunachalam	National University of Colombia, Bogotá, Colombia	Levy-type Stochastic Volatility Models

7.	29.07.2013	Dr. Mousomi Bhakta	Technion, Haifa, Israel	Semilinear Elliptic Equations admitting Similarity Transformations
8.	05.09.2013	Dr. Sunil Chandran	IISc Bangalore	Cubicity, Degeneracy and Crossing Number
9.	15.01.2014	Prof. Cyril Tintarev	Uppasala University, Sweden	Variational problems without compactness: Functional Analytic approach
10.	17.01.2014	Prof. Cyril Tintarev	Uppasala University, Sweden	Concentration in semilinear elliptic problems
11.	23.01.2014	Dr. Pavel Valtr	Charles University, Prague, Czech Republic	On three measures of non-convexity
12.	20.02.2014	Prof. P. C. Das	(Retired Prof.) IIT Kanpur	Inverse Problem

(h) Placement details: As per format at Annexure-1.

Annexure – 1

(Data for last 5 years) 2008-09 to 2013-14

Prog. Type	Prog. Name	No. Of graduating students	No. Of Core companies that asked for prog. by name (+)	No. Of students selected (+)	No. of non – core companies that recruited students (++)	No. of students placed in non – core companies (++)	No. of students not placed at graduation time
Int. M. Tech. (MT)	Math. & Computing	149	Not available	75	-	61	13
M. Tech. (JCA)	Computer Applications	72	Not available	23	-	46	3
M.Sc.	Mathematics	240	Not available	28	-	18	194

Placement details for on campus recruitment:

Int. M. Tech.
(2008-2009)

Serial No.	Company	Sector	Number of Students
1	Aon	Non core	1
2	Oxyent Medical (India) Pvt. Ltd.	Core	2
3	MarketRx India Private Ltd	Core	4
4	Genpact	Core	2
5	The Icfai Institute of Science and Technology (IcfaiTech)	Non core	2
6	Deloitte Consulting	Non core	1
7	Pontiflex India Private Limited	Non Core	1
8	WorldQuant Bangalore	core	1
9	MarketRx India Private Ltd	core	1
10	Emriq Systems	Non core	1
11	MapmyIndia(CE Info Systems Pvt. Ltd.)	Non core	1
12	Jaypee India	Non core	1
13	Capital One Services (India)	Non core	1
14	IPCOS APTITUDE BV Limited	Non core	1
15	Morgan Stanley Technology Mumbai	core	1
16	Dolcera	Non core	1
17	Nivio Technologies(I) Pvt. Ltd.,	Non core	1
18	ARX Analytics & Advisory	Non core	1

(2009-10)

Serial No.	Company	Sector	Number of Students
1	Clickable	Non core	1
2	King Abdulaziz City of Science and Technology (KACST)	Noncore	1
3	Genpact	core	1
4	Adobe Systems India Pvt. Ltd.	core	1
5	J P Morgan Services India Private limited	core	1
6	Nomura Services India Pvt Ltd	core	2
7	Tower Research Capital LLC	core	2
8	Winshuttle Software (India) Pvt Ltd	Non core	2
9	Bain and Company	Core	1
10	Cisco Systems	core	1
11	ARI world (Position V - Software Engineer	Non core	1
12	Credit Suisse	core	2
13	Oracle India Pvt. Ltd.	core	4
14	Winzest Edutech Pvt. Ltd.	Non core	1
15	Tower Research Capital LLC	core	1
16	Nomura Services India Pvt Ltd	core	1
17	Citrix R&D India Pvt. Ltd.	Non core	2
18	TransWeb Educational Services Pvt. Ltd.	Non core	1
19	Jaypee Capital Services Ltd.	Non core	1
20	Yahoo! Software development India Pvt Ltd.	Core	1

(2010-11)

Serial No.	Company	Sector	Number of students
1	KyaZoonga	Non core	1
2	McKinsey Knowledge Center India Pvt	Core	1
3	MphasiS	Non core	1
4	BA Continuum India Pvt. Ltd	Non core	1
5	Rampgreen Technologies Pvt. Ltd	Non core	1
6	RBS India Development Centre (P) Ltd	Core	1
7	Towers Watson	Non core	1
8	Deutsche Bank AG - London (Analyst)	Core	1
9	Oracle India Pvt. Ltd.	Core	4
10	GPSK Investment Group & Navam Capital	Non core	1
11	Strand Life Science (Associate, Software)	Non core	1
12	capital IQ	Non core	1
13	Opera Solutions	Non core	1
14	Citibank	Core	1
15	Goldman Sachs	Core	1
16	Citicorp Services India Ltd.	Core	1
17	NetApp Systems India Pvt. Ltd	Non core	1
18	Open Solutions Software Services Pvt Ltd.	Non core	1
19	Synopsys	Non core	1
20	PIMCO (Pacific Investment Management Company)	Core	2
21	Infineon Technologies India Pvt. Ltd.	Non Core	1
22	Goldman Sachs	Core	2

(2011-12)

Serial No.	Company	Sector	Number of students
1	PayPal/ eBay India Pvt Ltd	Core	2
2	Tribal Fusion R&D Pvt Ltd	Non core	1
3	Snapdeal.com	Non core	1
4	American Express India Pvt. Limited	Core	1
5	PIMCO (Pacific Investment Management Company)	Core	2
6	Capital IQ	Core	1
7	Deutsche CIB Centre Pvt. Ltd.	Core	1
8	Ubiquiti Consultants Pvt. Ltd.	Non core	1
9	Yahoo! Software Development Pvt. Ltd	Core	1
10	McKinsey & Company, Inc.	Core	1
11	ORACLE INDIA PVT. LTD	Core	1
12	Finmechanics India Pvt. Ltd.	Non core	1
13	Jabong.com	Core	1
14	Scope International India (Pvt) Ltd	Core	1
15	The Parthenon Group	Core	1
16	Capital One Financial Services	Non core	1
17	Epic	Non Core	1
18	Works Applications,co.,ltd	Non core	1
19	WorldQuant India	Core	2
20	Citicorp Services India Ltd	Core	1
21	Snapdeal.com	Non core	1
22	McKinsey Knowledge Centre	Core	1
23	Opera Solutions	Core	1
24	KiE Square Consulting Pvt Ltd	Non core	1
25	King Abdulaziz City for Science and Technology	Non core	1
26	WorldQuant India	Non core	1

(2012-13)

Serial No.	Company	Sector	Number of students
1	Genpact	Core	1
2	Open Solutions Software Services Pvt Ltd.	Non core	1
3	Flipkart India Pvt Ltd	Non core	2
4	Epic	Core	6
5	American Express India Pvt. Limited	Core	1
6	Bain and Company India Pvt. Ltd.	Core	1
7	Global Analytics India	Non core	2
8	PayPal/ eBay India Pvt Ltd	Core	1
9	WorldQuant	Core	1
10	EMC Software and Services India Pvt. Ltd	Non core	2
11	GulfTalent.com	Non core	1
12	Yahoo!	Core	1
13	Microsoft India	Core	1
14	RBS Business Services	Core	1
15	Opera Solutions	Non core	2
16	Facebook Inc	Core	1
17	Firefly e-Ventures Ltd	Non core	1
18	Symantec Software India Pvt. Ltd	Core	1
19	Citicorp Services India Limited (Mumbai)	Core	1
20	Angara Ecommerce Pvt. Ltd.	Non core	1
21	WM Global Technology Services India Private Limited	Non core	1
22	Deutsche CIB Centre Pvt Ltd	Core	1

M. Tech. Computer Applications (JCA)

(2008-09)

Serial No.	Company	Sector	Number of students
1	Verizon Data Services India Private Limited	core	1
2	The Icfai Institute of Science and Technology (IcfaiTech)	Non core	2
3	Patni Computer Systems Ltd.	Non core	2
4	Bharat Electronics Limited - (CRL)	Core	2
5	Silicon Hive Electronics	Non core	1
6	One97 Communications Pvt. Ltd.	Non core	2
7	AXIOM EDUCATION PVT LTD.	Non core	1
8	Hi-Tech Robotic System Ltd.	Non core	1
9	Lovely Professional Univ.	Non core	1

(2009-10)

Serial No.	Company	Sector	Number of students
1	Informatica Corporation	Non core	1
2	Sharda Group of Institutions	Non core	2
3	Microsoft India R&D Pvt. Ltd.	Non core	1
4	Itaas India Pvt. Ltd.,	Non core	2
5	Nagaro	Core	2
6	Atrenta India Pvt Ltd	Non core	1
7	Amazon Development Centre Pvt. Ltd.	Core	1
8	Clickable	Non core	1
9	Oracle India Pvt. Ltd.	Core	3
10	Citrix R&D India Pvt. Ltd.	Non core	1
11	Tesco HSC Pvt. Ltd.	Non core	1
12	Strand Life Science	Non core	1
13	Shinghania University	Non core	1
14	ARX Analytics & Advisory Private Limited	Non core	1
15	Rakuten Inc.	Non core	1

(2010-11)

Serial No.	Company	Sector	Number of students
1	Infinera India, Bangalore	Non core	1
2	TCS	Core	1
3	Stryker Global Tech.Gurgaon	Non core	1
4	Polaris Software Lab Limited	Non core	2
5	Oracle India Pvt. Ltd.	Core	1
6	Itaas India Pvt. Ltd.,	Non core	1
7	Rediff.com	Core	1
8	Cognizant	Core	1
9	Institute of Technology and Management, Bhilwara	Non core	1
11	NetElixir,Inc	Non Core	1
12	One97 Communications Limited	Non core	1

(2011-12)

Serial No.	Company	Sector	Number of students
1	Google India	Core	1
2	Tata Consultancy Services	Core	1
3	IMS Engineering College	Non core	1
4	Samsung India Software Operations Pvt. Ltd	Core	2
5	AMD India Pvt.Ltd	Non Core	1
6	Audio Technology & Codecs (I) Pvt Ltd (ATC Labs)	Non core	2
7	ORACLE INDIA PVT. LTD	Core	1
8	Sharda University	Non core	1
9	Samsung India Software Operations Pvt. Ltd	Core	
10	Jabong.com	Non core	1

(2012-13)

Serial No.	Company	Sector	Number of students
1	The Glocal University	Non core	1
2	Firefly e-Ventures Ltd	Non core	1
3	Atimi Software Inc.	Non core	1
4	Open Solutions Software Services Pvt Ltd.	Non core	2
5	Tata Consultancy Services	Core	1
6	Dell (R&D Division)	Core	1
7	Epic	Non core	1
8	CISCO Systems (India) Pvt Ltd	Core	2
9	Microsoft India	Core	1
10	Yahoo!	Core	1

M. Sc. (Mathematics)

(2008-09)

Serial No.	Company	Sector	Number of students
1	Lovely Professional University	Core	8
2	Tata Consulting Service - CTO	Non core	1

(2009-10)

Serial No.	Company	Sector	Number of students
1	SAROJ EDUCATIONAL GROUP	Core	6
2	Rajiv Gandhi University of Knowledge Technologies	Core	4
3	Tata Consultancy Services	Non core	1
4	Lovely Professional University	Core	1
5	Globrin	Non core	1

(2011-12)

Serial No.	Company	Sector	Number of students
1	MarketRx, a Cognizant Company	Non core	1
2	Videocon Industries Ltd.	Non core	2
3	Rajiv Gandhi University of Knowledge Technologies	Core	1
4	Videocon Industries Ltd.	Non core	
5	Classteacher Learning Systems	Core	1
6	JRE Group of Institutions	Core	1

(2012-13)

Serial No.	Company	Sector	Number of students
1	Barclays shared Services Pvt. Ltd (BSS)	Non core	1
2	Tata Consultancy Services	Non core	1
3	The Glocal University	Core	2
4	Genpact	Non core	2
5	Accenture Services Pvt.Ltd.	Non core	1
6	The Glocal University	Core	1
7	Professional Assistance for Development Action (PRADAN)	Non core	1
9	JRE Group of Institutions	Non core	1
10	The Glocal University	Core	1

(i) Relevance of UG and PG programmes to the recruiters, potential and on-campus recruiters.

The 5 year Int. M. Tech. in Mathematics and Computing programme is very popular among the recruiters. Department students get placed at reputed companies in finance, IT and Softwares.

Almost all JCA students get places in highly reputed software companies, PSUs and educational institutional.

Many M.Sc. students of the Department pursue Ph.D. at several reputed institutes in India and Abroad. Some of the M.Sc. students also get placement in IT and Software companies and educational students.

(j) Benchmarking of Curriculum: Benchmarking details as per required format is provided in Appendix-II

Appendix-II

Benchmarking of Curriculum: Undergraduate

Benchmarking Parameters	**IIT Delhi (5 year Int. M. Tech.)**	**National**					
		Two Old IITs		**One new IIT**	**Two NITs**		**One Private**
		IIT Kanpur (5 yrs. Int. M. Sc.)	**IIT Kharagpur (5 yrs. Int. M. Sc.)**	**IIT Guwahati (4 yrs. B. Tech.)**	**NIT Rourkela (5 yrs. Int. M. Sc.)**	**NITK (Suratkal) (No UG Programme)**	**BITS Pilani (5 yrs. Int. M. Sc. (Hons.))**
Total credit requirements	216	200	214* *Each elective assumed to be 4 credits	306* * 2 credits equivalent to 1 credit of IIT Delhi	262	**-**	**207/221**
Core Credits	133	128	166	264*	222	**-**	**153/185**
Elective credits	83	72	48* *Each elective assumed to be 4 credits	42*	40	**-**	**54/36**
Comparison of core courses across Institutions	-	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	28	26	33	38	34	**-**	**32**
Nos. and nature of laboratories	10	6	10	14	35	**-**	**7**

Benchmarking of Curriculum: Post-Graduate Programme

Benchmarking Parameters	IIT Delhi (2 yrs. M. Sc.)	National					
		Two Old IITs		One new IIT	Two NITs		One Private
		IIT Kanpur (2 yrs. M. Sc.)	IIT Kharagpur (2 yrs. M. Sc.)	IIT Guwahati (2 yrs. M. Sc.)	NIT Rourkela (2 yrs. M. Sc.)	NITK (Suratkal) (No math PG)	BITS Pilani (No PG programme)
Total credit requirements	90	80	93* *Each elective assumed to be 4 credits	159* * 2 credits are equivalent to 1 credit of IIT Delhi	101	-	207/221
Core Credits	72	64/60	73	135*	65	-	153/185
Elective credits	18	16/20	20* *Each elective assumed to be 4 credits	24*	36	-	54/36
Comparison of core courses across Institutions	-	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	15	19/20	16	19	8	-	32
Nos. and nature of laboratories	4	1/0	4	2	13	-	07

Benchmarking of Curriculum: Undergraduate Programme

Benchmarking Parameters	IIT Delhi	International				
		One in Top 10	Two ranked 10-50		One Top from China	One Top from Brazil
		MIT (B.Sc. in Math and Computing)	National University of Singapore (B. Sc. (Hons.)) (4 yrs)	Hong Kong University of Science and Technology (Comp. Sci. 4 yrs.)	Peking University, Beijing.	Universidade de Sao Paulo
Total credit requirements	216	-	160	120	-	148
Core Credits	133	-	120-137	120	-	124
Elective credits	83	-	23-40	-	-	24
Comparison of core courses across Institutions	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	28	-	-	40	-	26
Nos. and nature of laboratories	10	-	-	-	-	3

Benchmarking of Curriculum: Post-graduate Programme

Benchmarking Parameters	IIT Delhi	International				
		One in Top 10	Two ranked 10-50		One Top from China	One Top from Brazil
		MIT (No PG in Math)	National University of Singapore	Hong Kong University of Science & Technology (2 yrs. Fin. Math)	Peking University, Beijing.	Universidade de Sao Paulo
Total credit requirements	90	-	40	30	-	-
Core Credits	72	-	-	24	-	-
Elective credits	18	-	-	6	-	-
Comparison of core courses across Institutions	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	15	-	10	10	-	-
Nos. and nature of laboratories	4	-	-	-	-	-

Section 2
Teaching Environment

Executive Summary: Teaching Environment

The student strength has increased by 54% over the last five years. As a result the average class size has increased by 54%. The average class size for UG courses is 90 and for PG courses is 65. The average contact hour of the faculty is 5 hours per week of UG and 3 hours per week of PG teaching. This is excluding the class preparation and other discussion with the students. The laboratories have been modernized with 50% of experiments in UG and 25% of experiments in PG being revamped in the last decade in the form of including more laboratory courses.

2.1 Student-Teacher ratio separately and total for UG, PG, PhD (based on gross numbers and on class size basis)

Table 2.1.1: Student- Teacher ratio in Lecture courses

Programme	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
MT5	50	70	70	90	90
MSc	50	55	60	65	70
M. Tech. (2 year)	20	20	30	30	30

Table 2.1.2: Student- Teacher ratio per faculty in Project Courses

Programme	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
MT5	2	2	2.5	2.5	2.5
MSc	2	2	2	2	2
M. Tech. (2 year)	0.5	0.5	0.5	0.5	0.5

2.2 No. of students graduated each year:

Table 2.2.1: Undergraduate students (Integrated M.Tech) graduated per year in the last 5 years.

Year	No. of students graduated
2013	33
2012	32
2011	29
2010	26
2009	29

(Source: UG Section)

Table 2.2.2: Postgraduate students graduated per year in the last 5 years.

Year	No. of M.Sc. students graduated	No. of JCA students graduated	No. of PhD students graduated
2013	54	19	4
2012	32	21	3
2011	29	15	6
2010	29	22	6
2009	24	15	5

(Source: PG Section)

2.3 Student-T.A. ratio

Typically 40 students per TA in lecture courses and 20 students per TA in Laboratory courses.

2.4 No. of skilled technical staff

One.

2.5 Gross laboratory spaces: break-up of lab space for core UG/PG teaching

Room No.	Nature of the lab	Area in square feet
MZ 186	Ph.D. Lab	345
MZ 187	M. Tech. Lab	345
MZ 188	M.Sc. Lab	345
MZ 146	UG Lab	627
MZ 146	Instructional Lab	1421

2.6 Laboratory modernization performed in the last 5 years

New servers and PCs have been procured to make the laboratory up to date.

2.7 Course files for each course for last 5 years

Course files are available with the instructor of the course.

2.8 Study materials (monographs, notes, books, videos, web-based materials, etc.) prepared course-wise

Study material is available with the instructor of the course.

2.9 Research and innovations in teaching-learning processes

Most of the higher levels elective courses have term project component. Students are encouraged to study some current research papers on an assigned topic. At the end, some of the term project leads to research articles.

2.10 No. of students (UG and PG separately) who have spent at least a semester at another university/institute (overseas or Indian)

In the Integrated M.Tech. in Mathematics and Computing program, students may go for exchange program for a year or a semester to institutes/universities who have signed MOU with IIT Delhi.

2.11 No. of students from overseas universities who have taken classes, done project work or internship, UG & PG separately, in the Department

1. **UG: 30**
2. **PG: 25**

2.12 Course feedback

Academic system has the feature of taking feedback online. See Section 9.

2.13 Industry experts who have delivered lecture(s), seminars, discussions as part of a core / elective course – UG & PG separately

NIL

2.14 Industry exposure to students – course related visits to factories, sites, industry exhibitions, field trip, etc. – UG & PG separately

Each student of Integrated M. Tech in Mathematics and Computing has to undergo mandatory 50 day training in some industry or research lab.

Section 3
Research

Executive Summary: Research

The Department of Mathematics is very active in research. The average faculty strength of the Department over the last five years is around 16 and currently the strength is 21 including one Emeritus professor. The major research areas of the Department are (i) Algebra, (ii) Analysis, (iii) Number Theory, (iv) Applied Mathematics: Numerical Analysis and Numerical Solutions to Differential Equations, (v) Operations Research and Statistics: Optimizations and Queuing Theory, (vi) Discrete Mathematics and Theoretical Computer Science, and (v) Computer Applications. Averaged over the last five years, 10% of the Masters students and 75% of the research scholars have been supported by external funding. The average number of publications in journal over the last five year is 1.94 per year per faculty and that in conference proceedings is 0.46. The average number of Ph.D.'s graduated over the last 5 years per faculty has been 1 and the average SCOPUS cited publication per faculty is 50. The amount of research projects on average per faculty is 40 lakhs and industrial consultancy is 0.3 lakhs per faculty. In 40% of the projects, investigators from other units are collaborators.

3.1 No. of Masters and Ph.D. students supported (Last 5 years) - (i) by Institute Assistantship, (ii) on sponsored projects/consultancies, (iii) others sources and (iv) sponsored by external organizations.

	PhD students	M. Tech
Institute Assistantship	20	75+50* (*Int. M. Tech.)
Sponsored Project/Consultancies	02	10
CSIR/UGC/NBHM/DST Inspire	40	10 NBHM (M.Sc.) 10 (DST Inspire)

3.2 No. of Ph.D.s enrolled, graduated per faculty for last 5 years

Year	No of students enrolled	No of students graduated
2009	8	5
2010	8	6
2011	20	6
2012	10	3
2013	7	4
Total	46	24
Average (out of average 16)	2.8	1.4

3.3 Areas of research (e.g. areas listed in Prospectus, and others) by (i) Volume (quantifiable parameters), (ii) Breadth, and (iii) Years these have been research areas (*as per format at Annexure-4*) (Last five years)

S.No.	Research Area	Faculty Involved	PhDs		Journal Papers	Conf. papers	Sponsored Projects	Industry Consultancies	Listed in Prospectus since
			Produced	On going			Value in Lakhs	Value in Lakhs	
1	Algebra	RKS, RS	7	21	30	1	19.9(1)		yes
2	Number Theory	RB, AT	2	3	27	1			yes
3	Analysis and Topology	SK,AN,SS, AP,NSK,KS	3	11	43	4	20.8** + 44500 Euros	1.72	yes
4	Applied Math: 1. Numerical Analysis 2. Numerical solutions to Differential Eqns.	SCSR, MM, VVKS, HK	3	11	25	7	13.26(1)		yes
5	OR and Statistics 1. Optimizations 2. Queuing Theory	SC, SD, AM, NC	4	6	36	5	637.2**(3)		yes
6	Discrete Maths and Theoretical Computer Science	BSP, AT,AS	3+1*	6	26	6	11.2 (2) +100**		yes
7	Computer Applications	BC, NC, SCSR	2	8	17	25	42.88(3)	7	Yes
Total			24+1*	56	204	49	845.2+44500 Euros	8.72	

* Jointly with Electrical Engineering Department

** Joint Projects

3.4 Publications per Faculty (Average per year for last five years)

S. No.	Name of Faculty	Total(last Five years)		Total (all Years)	
		Refereed Journal	Refereed Conference	Refereed Journal	Refereed Conference
1	Prof Suresh Chandra	15	01	114	12
2	Prof. B. Chandra	11	11	45	50
3	Prof. R. K. Sharma	29	01	62	5
4	Prof. B. S Panda	15	6	31	22
5	Prof. A. Tripathi	16	1	41	2
6	Prof. S. Kundu	10	0	31	0
7	Prof. S.C.S. Rao	12	3	25	03
8	Prof. N. Chatterjee	6	14	19	51
9	Prof. S. Dharmaraja	10	1	26	20
10	Dr. A. Mehra	11	3	36	5
11	Dr. K. Sreenadh	17	0	34	02
12	Dr. A. Nagar	3	0	11	0
13	Dr. Mani Mehra	5	1	26	5
14	Dr. VVK Srinivas Kumar	3	0	6	1
15	Dr. Ritumoni Sarma	1	0	3	0
16	Dr. Anuradha Sharma	7	0	14	0
17	Dr. S. Sampath	7	4	8	5
18	Dr. Harish Kumar	5	3	5	3
19	Dr. N. Shravan Kumar	5	0	5	0
20	Dr. Amit Priyadarshi	1	0	1	0
21	Dr. Rupam Barman	15	0	16	0
	Total	204	49	559	187
	Average per faculty per year	1.94	0.46		

3.5 Publications (journal and conference) total and per (a) Ph.D. student, (b) Masters student, (c) UG student.

S. No.	Faculty	Total (Journal + Conference)	Total PhD students	Per Phd	Total M. Tech Students	Per M. Tech
1	Prof Suresh Chandra	126	12	8.1	25	0.2
2	Prof. B. Chandra	95	9	9.3	100	0.03
3	Prof.R.K.Sharma	67	12	4.5	55	0.02
4	Prof. B. S Panda	53	5	3.8	20	0.15
5	Prof. A. Tripathi	43	4	1.5	19	0.5
6	Prof. S. Kundu	31	3	4.6		
7	Prof. S.C.S. Rao	28	3	6.3	2	0
8	Prof. N. Chatterjee	70	3	6	40	0.25
9	Prof. S. Dharmaraja	46	3	6	8	0.5
10	Dr. A. Mehra	41	2			
11	Dr. K. Sreenadh	36	1	6	3	0
12	Dr. A. Nagar	11	1			
13	Dr. Mani Mehra	31	1			
14	Dr. VVK Srinivas Kumar	7	0	0	5	0
15	Dr. Ritumoni Sarma	3	1	1		
16	Dr. Anuradha Sharma	14	0			
17	Dr. S. Sampath	13	0	0	1	0
18	Dr. Harish Kumar	8	0	0	0	0
19	Dr. N. Shravan Kumar	5	0	0	0	0
20	Dr. Amit Priyadarshi	1	0	0	0	0
21	Dr. Rupam Barman	16	1	5	0	0

3.6 Best papers in last 5 years: (i) Individual best 3

Serial No.	Faculty	Best 3 papers
1	Prof Suresh Chandra	1. Jayadeva, Sameena Saha, Ravi Kothari, Surech Chandra, Ants Find the shortest path: a Mathematical proof, Swarm Intelligence, 7(1) 43-62 2013 2. Reshma Khemchandani, Jayadeva, and Suresh Chandra, Learning the optimal Kernel for Fisher disciminant analysis with second order cone programming, European Journal of Operations Research, 195, (2009) 914-923 3. Dubey, Dipti, Chandra, Suresh; Mehra, Aparna Fuzzy linear programming under interval uncertainty based on IFS representation, Fuzzy Sets and Systems 188 (2012), 68–87.
2	Prof. B. Chandra	1. B. Chandra and Manish Gupta, An efficient statistical feature selection approach for classification of gene expression data", Journal of Biomedical Informatics, current issue, 2011 2. B. Chandra, Ravi Kothari, Pallath Paul: A new node splitting measure for decision tree construction. Pattern Recognition, Elsevier,43(8): 2725-2731 (2010) 3. B. Chandra and P. Paul ,Moving Towards Developing Efficient splitting measures , Journal of Information Sciences, 179, 1059-1069, Elsevier,2009.
3	Prof. R. K. Sharma	1. R. K. Sharma, Pooja Yadav, Pramod Kumar, Lie Regular Units and Linear Groups, Commun. Algebra,40: 1304–1315, 2012 2. Sugata Gangopadhyay, Anand Joshi, Gregor Leander and Rajendra Kumar Sharma, A new construction of bent functions based on Z-bent functions, Des. Codes Cryptogr. (2013) 66:243–256 3. Sachin Kumar, R.K. Sharma, Recursive information of secrets by random grids, Cryptologia, 37(2) 154-161 (2013)
4	Prof. B. S Panda	1. B. S. Panda, D. Pradhan: Minimum paired-dominating set in chordal bipartite graphs and perfect elimination bipartite graphs. Journal of Combinatorial Optimization 26(4): 770-785 (2013) 2. G. J. Chang, B. S. Panda, D. Pradhan, Complexity of distance paired-domination problem in graphs, Theoretical Computer Science, 459 (2012), 89–99. 3. B.S. Panda, Anita Das, Tree 3-spanners in 2-sep chordal graphs: characterization and algorithms, Discrete Applied Mathematics, 158(17): 1913-1935, 2010.
5	Prof. A. Tripathi	1. Amitabha Tripathi, On the largest size of a partition that is both s-core and t-core, Journal of Number Theory, 129(7) (2009), 1805--1811. 2. Amitabha Tripathi, Sushmita Venugopalan, and Douglas B. West, A short constructive proof of the Erdos--Gallai characterization of graphic lists, Discrete Mathematics 310(4)

		(2010), 343--344. 3. Ram Krishna Pandey, and Amitabha Tripathi, On the density of integral sets with missing differences from sets related to arithmetic progressions, Journal of Number Theory, 131 (4) (2011), 634--647.
6	Prof. S. Kundu	1. McCoy, R. A., Jindal, Varun, Kundu, S. (2013) Homeomorphism spaces with uniform and fine topologies. Houston Journal of Mathematics, Vol.39 No. 3, 1051-1066. 2. KUNDU, S. and Pandey, Vipra (2012). The Metrizability and Completeness of the sigma-compact-Open Topology on C*(X). Topology and its Applications, 159, 593-602. , 3. KUNDU, S. and Garg, Pratibha (2009). The Dual of C_ps(X). Positivity, 13, 367-384.
7	Prof. S.C.S. Rao	1. Rao, S.C.S. and Sunil Kumar An Almost Fourth Order Parameter-Uniformly Convergent Domain Decomposition Method for a Coupled System of Singularly Perturbed Reaction-Diffusion Problems, J. Comput. Appl. Math. 235(2011) pp.3342-3354. 2. Rao, S.C.S., Sunil Kumar and Mukesh Kumar Uniform Global Convergence of a Hybrid Scheme for Singularly Perturbed Reaction-Diffusion Systems, J. Optim. Theory Appl. 151(2011) pp. 338-352. 3. Rao, S.C.S. and Sunil Kumar Second Order Global Uniformly Convergent Numerical Method for a Coupled System of Singularly Perturbed Initial Value Problems, Appl. Math. Comput. 219(2012) pp. 3740-3753. ,
8	Prof. N. Chatterjee	1. Mariya Khatoon, Geetam Tiwari, Niladri Chatterjee. Impact of Grade Separator on Pedestrian Risk Taking Behavior. Accident Analysis and Prevention, Elsevier, pp 861 – 870, 2012. 2. Niladri Chatterjee and Pramod K. Sahoo. Effect of Near-Orthogonality on Random Indexing Based Extractive Text Summarization. International Journal of Innovation and Applied Studies. Vol 3, No. 3, Pp 701 – 713, 2013. 3. Niladri Chatterjee and Renu Balyan, Towards Development of a Suitable Evaluation Metric for English to Hindi Machine Translation, International Journal of Translation Vol 23, No. 1, pp 7 - 26, 2011.
9	Prof. S. Dharmaraja	1. V Gupta, M Gong, S Dharmaraja, C Williamson, Analytical modeling of bidirectional multi-channel IEEE 802.11 MAC protocols, International Journal of Communication Systems 24 (5), 647-665, 2011 2. V Gupta, S Dharmaraja, Semi-Markov modeling of dependability of VoIP network in the presence of resource degradation and security attacks, Reliability Engineering & System Safety, 2011 3. V Gupta, S Dharmaraja, M Gong, Analytical modeling of TCP

		flow in wireless LANs Mathematical and Computer Modelling 53 (5), 684-693, 2011
10	Dr. A. Mehra	1. Amita Sharma, Aparna Mehra, Portfolio Selection with a Minimax Measure in Safety Constraint, Optimization, 62 (11), 1473-1500, 2013 2. Gupta, Rachana; Aussel, D., Mehra, Aparna Gap functions and error bounds for inverse quasi-variational inequality problems. J. Math. Anal. Appl. 407 (2013), no. 2, 270–280. 3. Dubey, Dipti, Chandra, Suresh; Mehra, Aparna Fuzzy linear programming under interval uncertainty based on IFS representation, Fuzzy Sets and Systems 188 (2012), 68–87.
11	Dr. K. Sreenadh	1. K. Sreenadh and Sweta Tiwari, On global multiplicity results for p(x)-Laplacian with non-linear boundary condition, Differential and Integral Equations, Vol.20, no.6, 2013, 1831-1850. 2. Bhatia Sumit Kaur, R.Dhanya and K. Sreenadh, On multiplicity of positive solutions for quasilinear equation with co-normal boundary condition, Advanced Nonlinear Studies, Vol. 10, (2010), 511-536 3. J. Giacomoni, S. Prashanth and K. Sreenadh, Uniqueness and multiplicity results for a N-Laplace equation with critical and singular nonlinearity, Asymptotic Analysis, Vol.61, (2009),195-227
12	Dr. A. Nagar	1. Puneet Sharma, Anima Nagar: Topological dynamics on hyperspaces. Applied General Topology, 11(1): 1-19, 2010. 2. Puneet Sharma, Anima Nagar: Inducing sensitivity on hyperspaces. Topology Applications, 157(13), 2010, 2052-2058. 3. Anima Nagar, Puneet Sharma, Combined dynamics on hyperspaces. Topology Proc. 38 (2011), 399-410.
13	Dr. Mani Mehra	1. M. Mehra, K. Goyal, A suit on wavelet differentiation algorithms, ACM Transaction on Mathematical software, Vol. 39 (4), pp. 1-28, 2013 2. Behera, Ratikanta; Mehra, Mani Integration of barotropic vorticity equation over spherical geodesic grid using multilevel adaptive wavelet collocation method. Appl. Math. Model. 37 (2013), no. 7, 5215–5226. 3. M. Mehra and Ranjan K Mallik, Solutions of Differential--Difference Equations arising from Mathematical Models of Granulocytopoiesis, Differential Equations and Dynamical Systems, Vol. 22 (1) (2014) pp. 33--49.
14	Dr. VVK Srinivas Kumar	1. A New Class of Stabilized WEB-Spline based Mesh-free Finite Elements for the Approximation of the Maxwell Equations. Numer. Funct. Anal. Optim. 33(3) : 264-283, 2012. 2. WEB-Spline based Mesh-free Finite Element Analysis for the Heat Equation and the Time Dependent Navier Stokes equation:

		A Survey. Numer. Methods Partial Diff.Equations. 29(4): 1322-1340, 2013.
15	Dr. Ritumoni Sarma	1. Ritumoni Sarma, Sunil Kumar Prajapati, On the Solution of x^k=g in a finite group, *B. Korean Math. Soc.,* 50(2) (2013) 697-704.
16	Dr. Anuradha Sharma	1. A. Sharma and A. K. Sharma, On MacWilliams type identities for r-fold joint m-spotty weight enumerators, Discrete Mathematics 312 (2012) pp. 3316–-3327. 2. A. Sharma and G. K. Bakshi, The weight distributions of some irreducible cyclic codes, Finite Fields Appl. 18, no. 1 (2012) pp. 144-159. 3. A. Sharma and A. K. Sharma, MacWilliams type identities for some new m-spotty weight enumerators, IEEE Transactions on Information Theory 58, no. 6 (2012) pp. 3912-3924.
17	Dr. S. Sampath	1. V. Naumova, S. V. Pereverzev and S. Sivananthan, A meta-learning approach to the regularized learning-case study: Blood glucose prediction, Neural Networks, 33, 181-193, 2012. 2. V. Naumova, S. V. Pereverzev and S. Sivananthan, Extrapolation in variable RKHSs with application to the blood glucose reading, Inverse Problems, 27 (7), 075010 (13pp), 2011. 3. S. H. Kulkarni, R. Radha and S. Sivananthan, Non-uniform sampling problem, Jour. Appl. Funct. Anal., 4 (1), 58-74, 2009.
18	Dr. Harish Kumar	1. Remi Abgrall and Harish Kumar, Numerical approximation of a compressible multiphase system, Commun. Comput. Phys., 15 (2014), pp. 1237-1265. 2. Harish Kumar, Siddhartha Mishra, Entropy Stable Numerical Schemes for Two-Fluid Plasma Equations, Journal of Scientific Computing, Vol. 52-2, 401-425 (2012). 3. V. Wheatley, H. Kumar, P. Hugueniot "On the role of Riemann solvers in Discontinuous Galerkin methods for magneto-hydrodynamics, Journal of Computational Physics, Vol. 229 (2010), pages 660-680.
19	Dr. N. Shravan Kumar	1. K. Parthasarathy and N. Shravan Kumar, Ditkin sets in homogeneous spaces, Studia Math. , Vol. 203, 2011, pp. 291-307. 2. N. Shravan Kumar, Ideals with bounded approximate identities in the Fourier algebras on homogeneous spaces, Indag. Math. , Vol. 24, N0. 1, 2013, pp. 1-14. 3. R. Radha and N. Shravan Kumar, Shift invariant subspaces on compact groups, Bull. Sci. Math., Vol. 137, No. 4, June 2013, pp. 485-497.
20	Dr. Amit Priyadarshi	1. Amit Priyadarshi, Roger Nussbaum and Sjoerd Verduyn Lunel, Positive operators and Hausdorff dimension of invariant sets. Trans. Amer. Math. Soc. 364 (2012), no. 2, 1029–1066.
21	Dr. Rupam Barman	1. R. Barman and G. Kalita, Hypergeometric functions over F_q and traces of Frobenius for elliptic curves, Proc. Amer. Math. Soc., 141 (2013), pp. 3403-3410.

		2. R. Barman and G. Kalita, Elliptic Curves and Special Values of Gaussian hypergeometric series, J. Number Theory, 133 (2013), pp. 3099-3111. 3. R. Barman and A. Saikia, Iwasawa lambda-invariants of p-adic measures on (Z_p)^n and their Gamma-transforms, J. Number Theory, 132 (2012), pp. 2258-2266.

3.7 Total citation of each Faculty (Scopus)

Serial No.	Name of faculty	Citations in last Five years	Total Citations
1	Prof. Suresh Chandra	603	857
2	Prof. B Chandra	NA	NA
3	Prof. S. Dharmaraja	73	102
4	Prof. B S Panda	33	53
5	Dr. K. Sreenadh	26	34
6	Dr. Rupam Barman	13	13
7	Prof. S.C.S. Rao	45	53
8	Prof. S. Kundu	26	38
9	Prof. R. K. Sharma	25	51
10	Prof. A. Tripathi	36	47
11	Prof. N. Chatterjee	10	19
12	Dr. Aparna Mehra	91	136
13	Dr. Anima Nagar	5	5
14	Dr. Mani Mehra	75	86
15	Dr. VVK Srinivas Kumar	NA	NA
16	Dr. Ritumoni Sarma	NA	NA
17	Dr. Harish Kumar	NA	NA
18	Dr. Anuradha Sharma	NA	NA
19	Dr. S. Sampath	NA	NA
20	Dr. N. Shravan Kumar	NA	NA
21	Dr. Amit Priyadarshi	NA	NA
Total		1061	1494

3.8 Changes, modifications, etc. done to improve the quality of (i) M.Tech., and (ii) Ph.D. graduates.

- M.Tech: Several Elective courses are floated by the department.
- Ph.D. Students: Periodically new Pre-Phd Courses are floated

3.9 Sponsored projects - (i) individually, (ii) with another faculty of the group/section of the department, (iii) with another faculty of the department but from another group/section of the department (iv) with another faculty of another dept/center.

Serial No.	Faculty	Individually (in lakhs)	with another faculty of the department (in Lakhs)	with another faculty of another dept (in Lakhs)
1	Prof. Niladri Chatterjee			600
2	Prof. B. Chandra	47.30		
3	Dr. Mani Mehra	13.26		
4	Dr. Anuradha Sharma	6.6		
5	Dr. K. Sreenadh	1.87		16 Indo –French Project 43550 Euros
6	Prof. B. S. Panda			4.66
7	S. Dharmaraja			35
8	Prof. A. Tripathi			100
	Total	76.03		755.66 + 43550 Euros

3.10 Industry consultancies

Serial No.	Faculty	Number of Consultancy Projects	Individually	with another faculty of the department	with another faculty of another dept.
1	Prof. Niladri Chatterjee		7		
2	K Sreenadh		1		
Total			8		

3.11 New areas of research which are different from the faculty's PhD thesis area:

Serial No.	Faculty	Research Areas
1	Prof Suresh Chandra	Machine learning, Fuzzy optimization, Financial

		mathematics.
2	Prof. B. Chandra	Statistical Classification & Clustering for data mining, Neural Networks for Statistical Pattern Recognition, NLP, Databases, Adaptive Control Models.
3	Prof.R.K.Sharma	Algebra, Cryptography
4	Prof. B. S Panda	Graph Theory, Algorithmic Graph Theory, Algorithms, Parallel Computing
5	Prof. A. Tripathi	Number Theory, Combinatorics and Graph Theory.
6	Prof. S. Kundu	Set-theoretic Topology, Function Space, Measure Theory.
7	Prof. S.C.S. Rao	Parallel Computing, Numerical Linear Algebra, Computational Ordinary/Partial Differential Equations
8	Prof. N. Chatterjee	Machine Translation, Artificial Intelligence, Reasoning, Statistical Modeling and Semantic Web.
9	Prof. S. Dharmaraja	Applied probability, queuing theory, financial mathematics, stochastic modeling and performance analysis of computer and communication systems.
10	Dr. A. Mehra	Optimization Theory, Variational Inequalities, Matrix Games Optimization, Fuzzy Optimization, Portfolio Optimization & Management, Bipolar Fuzzy Set Theory.
11	Dr. K. Sreenadh	Applied Nonlinear Functional analysis, Partial Differential equations.
12	Dr. A. Nagar	Dynamical Systems.
13	Dr. Mani Mehra	Wavelets in Numerical Analysis, Wavelets in Partial Differential Equations.
14	Dr. VVK Srinivas Kumar	Computational Partial Differential Equations.
15	Dr. Ritumoni Sarma	Algebra
16	Dr. Anuradha Sharma	Number Theory, Algebra and Algebraic Coding Theory
17	Dr. S. Sampath	Applied Harmonic Analysis, Inverse Problems, Learning Theory.
18	Dr. Harish Kumar	Computational methods for Partial Differential Equations.
19	Dr. N. Shravan Kumar	Abstract Harmonic Analysis.
20	Dr. Amit Priyadarshi	Fractal Dimensions, Positive Operators.
21	Dr. Rupam Barman	Iwasawa Theory, p-Adic Measures, Elliptic Curves, Hypergeometric series, and Modular Forms.

3.12 Methodology for (i) identifying obsolescence in research areas, and (ii) identification of new areas for future research.

It's solely depends on the individual faculty to identify new research areas. However, through M.Sc. projects, M. Tech. Projects the faculty slowly starts working in new areas.

3.13 Number of large interdisciplinary projects (within department's areas, and across the institute)

NIL

Section 4
Innovation, Design and Development

Executive Summary: Innovation, Design and Development

A total of 2 patents have been filed of which none has been granted. Institute wide innovation grants have been availed by no students in the Dept. Teams mentored by the faculty compete in 4 national events.

4.1 No. of students who have been funded for innovating (TePP, PRISM, etc.).

Nil

4.2 Technology developed (*give list and brief information*).

Nil

4.3 Technology transferred (*give list and brief information*).

Nil

4.4 Number of patents filed and patent granted as a fraction of patents filed

Table 4.1: Number of Patents Filed and Granted

Serial No.	Faculty	Patents		Name of the patents
		Filed	Granted	
1	Prof. B. Chandra	1		Cryptosystem Identification using Neural Networks, Patent application number 3439/DEL/2005, filed on December 22, 2005 (with SAG DRDO)
2	Dr. Sivananthan Sampath	1		Glucose predictor based on regularization networks with adaptively chosen kernels and regularization parameters, International patent application number PCT/EP2012/057260, filed on April 20, 2012 (with Samuel Mckennoch, Sergei Pereverzyev, and Jette Randloev), (Sivananthan Sampath).

4.5 Innovations of products, processes, designs, etc. in the department

1. A. Gupta, D. Tyagi, S. Kumar, S. Ozair, SAMSUNG Innovation Award 2012 in the area of Web Technology, Project name “Zumble.com”, August 2012, (Advisor: Niladri Chatterjee)

4.6 Availability and access to students' workshops, "tinkering laboratories" so that they may pursue their own ideas

Nil

4.7 No. of students/teams who have competed in national / international competitions, and outcome.

Students/Teams in National Competition: 4

Outcome:

1. D. Pushparaj Shetty, Best paper award in ADCONS 2011, “Strong Minimum Interference Topology for Wireless Sensors Networks” the paper appeared in Lecture Notes in Computer Science, Vol **7135** (2012), 366-374, Springer, (Advisor: B. S. Panda)

2. Dipti Dubey, Second prize in Best poster presentation in National Science day held on February 28, 2013, IIT Delhi, India, “Manifesting Bipolarity in Flexible Linear Programming”, (Advisor: Aparna Mehra).

3. A. Mittal, N. Bindal, A. Kumar, M. Agarwal, Won first prize in Code.fun.do, National level coding competition conducted by Microsoft India Development Center, Hyderabad, held on Jan 2013 and April – July 2013.

4. M. Gupta, B. Chandra, M.P. Gupta, Ranking police administration units on the basis of crime prevention measures using data envelopment analysis and clustering, Proc. Of 6^{th} international conference on e-governance (ICEG) 2008, 42-53.

Section 5
R& D Environment

The research areas of the Department of Mathematics are:

1. Pure Mathematics: Analysis: Real Analysis, Topology, Harmonic Analysis, Wavelets, PDE Theory, Dynamical Systems, Algebra and Number Theory.
2. Applied Mathematics: Numerical Analysis, Numerical Solutions to Differential equations,
3. Operations Research and Optimizations,
4. Discrete Mathematics and Theoretical Computer Science, and
5. Computer Applications.

Over the last five years, the Department has produced 204 journal publications and around 50 publications in conference proceedings. The average faculty strength of faculty in the Department over the last five years is around 16.

There are around 70 Ph.D. scholars working in different areas of research under the able guidance of faculty members of the Department. Over the last five years, 24 students have got their Ph.D. degree from the Department. These Ph.D. students graduated over the last five years are serving in Academic Institutions such as IITs, NITs and some are working as post-doctoral researchers in various reputed academic institutions in India and abroad, and some the students are working in the R & D organizations and Industries.

The faculty members of the Department are also engaged in various research and consultancy projects.

5.1 No. of post-doctoral scholars hired in the Department / centre and their duration, from (i) abroad, (ii) on project, and (iii) others, and outcomes.

NIL

5.2 No. of foreign students enrolled in (i) masters, and PhD programmes.

NIL

5.3 No. of Indian and foreign faculty / researchers who have spent a sabbatical in the Department.

NIL

5.4 Sabbatical taken by faculty and where spent:

Serial No.	Name of the Faculty	Period	Where
1	Prof. B S Panda	January 1, 2009 to December 31, 2009	Department of Computer Science, LNMIT, Jaipur
2	Prof. S. Dharmaraja	Dec. 16th 2010 to Dec. 15th 2011.	Department of Statistics, National University of Colombia, Bogota, Colombia for 4 months from March 2011 to June 2011.
3	Dr. K. Sreenadh	1 August 2012 to 31 December 2012	Visiting Scientist, International centre for Theoretical Physics (ICTP), Trieste, Italy, 20 August to 20 December 2012.
4	Prof. Niladri Chatterjee	January 1, 2010 to December 31, 2010	Department of Computer Science, University of Pisa
5	Prof. B. Chandra	January 2011 to 31st Dec, 2011	IIT Kanpur

5.5: Number of seminars (education and research separately) given by the faculty (i) in the Department, (ii) in other Department, (iii) at other institute.

Serial No.	Name of the Faculty	In Department	In other Departments	In other Institution
1	Dr. K. Sreenadh			10(research)
2	Dr.Rupam Barman			4 (research)
3	Prof.B S Panda			10(research)
4	Dr. Mani Mehra			6 (research)
5	Dr. AparnaMehra			10(research)
6	Prof. S. Dharmaraja			23(research)
7	Prof. N. Chatterjee			50 (research)
8	Dr. Ritumoni Sarma			2 (education)+ 1(research)
9	Prof. A Tripathi			30 (Education+Research)
10	Prof. B. Chandra			17+
11	Dr. Harish Kumar			3(Research) 2(Education)

5.6 No. of faculty / researchers / scholars invited by the Department for giving (i) seminars, (ii) spending at least a week in the Department

(i) List of seminars (2011-Feb 2014):

S. No.	Date	Speaker	Affiliation	Title
1	03.03.2011	Prof. S. P. Singh	DST-CIMS, BHU & University of Western Ontario, Canada	Nonlinear Analysis and Applications
2	06.07.2011	Prof. N. K. Govil	Auburn University, USA	Some generalizations of Erdos-Lax Theorem and of a theorem of Turan
3	27.09.2011	Dr. Harish Kumar	ETH, Zurich, Switzerland	Entropy stable schemes for two-fluid plasma flows
4	11.11.2011	Prof. S. A.	IIT Madras	First-Fit-Coloring of Graphs

		Choudum		
5	05.03.2012	Prof. Jacques Giacomoni	Université de Pau, France	Quasilinear parabolic equations with singularities
6	11.12.2012	Vishwanathan Arunachalam	National University of Colombia, Bogotá, Colombia	Levy-type Stochastic Volatility Models
7	29.07.2013	Dr. Mousomi Bhakta	Technion, Haifa, Israel	Semilinear Elliptic Equations admitting Similarity Transformations
8	05.09.2013	Dr. Sunil Chandran	IISc Bangalore	Cubicity, Degeneracy and Crossing Number
9	15.01.2014	Prof. Cyril Tintarev	Uppasala University, Sweden	Variational problems without compactness: Functional Analytic approach
10	17.01.2014	Prof. Cyril Tintarev	Uppasala University, Sweden	Concentration in semilinear elliptic problems
11	23.01.2014	Dr. Pavel Valtr	Charles University, Prague, Czech Republic	On three measures of non-convexity
12	20.02.2014	Prof. P. C. Das	(Retired Prof.) IIT Kanpur	Inverse Problem

(ii) Spending at least a week (approx.) in the Department

Serial No.	Name of the Visitor	Affiliation	Duration
1	Prof. J. Giacomoni	Lab.de Math. Appl., University of Pau, Pau, France.	20-30 August, 2009
2	Dr. Alvaro Calvache	University of Los Andes, Bogota, Colombia	Jan. 2011 – June 2011
3	Dr.Ian Schindler	Centre de Recherche Mathematique, Universite De Toulouse-1, Toulouse, France	27 December – 2 January 2011
4	Dr. Gernot Gresching	Vienna University of Technology	1 Feb 2012 - 31 March 2012
5	Dr.S. Prashanth	TIFR, Centre for Applicable Mathematics, Bangalore, India	22-30 March 2012
6	Prof.J.Giacomoni	Lab.de Math. Appl., University of Pau, Pau, France	26 February – 6 March 2012

7	Prof. J. Giacomoni	Lab.de Math. Appl., University of Pau, Pau, France	23 - 30 October 2013
8	Dr. Guy Vallet	Lab.de Math. Appl., University of Pau, Pau, France	23 - 30 October 2013
9	Dr. Juan Carlos	National University of Colombia, Bogota, Colombia	Nov. 2013 – Dec. 2013
10	Prof. Kyril Tintarev,	Department of Mathematics, Uppsala University, Sweden	12 - 18th January 2014.

5.7 No. of faculty / researchers who visited the Department on their initiative for giving (i) seminars, (ii) spending at least a week in the Department

NIL

5.8 Adequacy of research infrastructure in the Department of Mathematics

Space of the Department

The space occupied by the Department of Mathematics under various heads is as follows:

Serial No.	Heading	Space occupied
1	Faculty Room	5081 Square Ft
2	Laboratories	3736 square Ft.
3	Committee Room	650 Square Ft
4	Department Library	368 Square Ft

The detail description of space is given in the following table:

Serial No.	Room No.	Block	Length ft	Breadth ft	Area (Sq. Ft.)
Faculty Rooms					
1	147	MZ	11	7	77
2	148	MZ	11	7	77
3	149	MZ	16	16	256
4	149A	MZ	16	10	160

5	150	MZ	16	16	256
6	150A	MZ	16	10	160
7	151	MZ	12	7	84
8	152	MZ	10	7	70
9	154	MZ	10	7	70
10	157	MZ	15	11	165
11	159	MZ	11	7	77
12	160	MZ	11	7	77
13	161	MZ	15	11	165
14	164	MZ	15	11	165
15	165	MZ	11	7	77
16	166	MZ	11	7	77
17	167	MZ	16	10	160
18	169	MZ	16	10	160
19	170	MZ	17	10	170
20	171	MZ	15	7	105
21	172	MZ	12	8	96
22	173	MZ	12	8	96
23	174	MZ	16	11	176
24	175	MZ	11	7	77
25	176	MZ	11	7	77
26	177	MZ	11	7	77
27	178	MZ	15	10	150
28	179	MZ	12	7	84
29	180	MZ	12	8	96
30	181	MZ	12	8	96
31	182	MZ	12	8	96
32	183	MZ	23	13	299
33	183a	MZ	9	7	63
34	185	MZ	16	11	176
35	189	MZ	16	11	176
36	194	MZ	16	11	176
37	195	MZ	11	7	77
38	196	MZ	11	7	77
39	197	MZ	11	7	77
40	198	MZ	11	7	77
41	199	MZ	11	7	77
42	200	MZ	11	7	77
Committee Room					
43	168	MZ	26	25	650
Library					

44	184	MZ	23	16	368
LABORATORIES					
45	186	MZ	23	15	345
46	187	MZ	23	15	345
47	188	MZ	23	15	345
48	146	MZ	33	19	627
49	146	MZ	49	29	1421
50	146A	MZ	11	7	77
51	Nil	MZ	31	16	496
52	Nil	MZ	10	8	80
		Total			**3736**
		GrandTotal			**9835**

As it can be seen from above that there is no space for Ph.D. students. Some of the Ph.D. students are sitting in Laboratories and some are sitting in faculty offices as few of the faculty offices are temporarily vacant.

5.9 Adequacy of technical staff: Existing numbers and competency areas; competency area in which there is a shortage.

Serial No.	Labs	Existing	required
1	PA to Head	1	0
2	Library	1	0
3	UG Computing Laboratory	0	1
4	Instructional Laboratory	1	0
5	PG Computing Laboratory	1	0
6	Stores and Purchase	1	0
7	Office Staff	2	0
	Total	7	2

5.10 Work space available for (a) Master students, (b) PhD students, (c) Project Staff, (d) post-doctoral scholars.

Research Lab	Lab for Ph.D.	PG Teaching Lab

1317 Square Ft.	345 square ft.	1421 Square Ft.

5.11 No. of national conference/workshop/seminars attended by PhD students (totally and per students for 5 years).

Total: 140

Per Students: 2

5.12 No. Of international overseas conference/workshop/seminars attended by Ph.D students (Total and per students for 5 years)

Total: 15

Per Ph.d. Students: 0.2

5.13 No. Of students who have continued to Ph.D. (I) in same dept. (ii) other Departments of IITD (iii) in India and (iv) abroad (separately for M. Tech and B. Tech students)

M. Tech. Students:

1. In same Department: 5
2. Other Departments: 0
3. In India: 5
4. Abroad: 5

M SC Students:

1. In same Department: 20 (9 are continuing)
2. Other Department: 2
3. In India: 20
4. Abroad: 4

B. Tech. Students: Not Applicable.

5.14 No. of projects with co-guide from industry:

Nil

5.15 No. of students who have spent time in industry as part of thesis/project work (give number and duration).

NIL

5.16 Self-assessment reports of the Department if any.

NIL

5.17 Placement of M. Tech and PhD graduates in technical careers (as per format at Annexure -5)

Prog. Type	Prog. Name	No. of graduating students	Nature of job for first 2-3 years after graduation	Nature of job 5 years after graduation	% of graduates in technical line of work	% of graduates stared in technical line and are managers/administrators
M. Tech. (2 yrs)	Computer Applications	14 (2008-2009) 20 (2009-2010) 12 (2010-2011) 11 (2011-2012) 12 (2012-2013)	Information Technology Core(Technical) Teaching and Research	Data Not Available	Data Not Available	Data Not Available
Integrated M. Tech. (5 years)	Mathematics and Computing	23 (2008-2009) 26 (2009-2010) 27 (2010-2011) 29 (2011-2012) 31 (2012-2013)	Core (technical) Finance Analytics Consulting Information Technology Teaching and Research	Data Not Available	Data Not Available	Data Not Available
Ph.D.	Mathematics	4 (2013) 2 (2012) 6(2011) 6(2010) 5(2009)	Teaching and Research R&D IT Sector	Data Not Available	Data Not Available	Data Not Available

5.18 Inter-disciplinary work -: (i) joint thesis guidance by faculty across groups within a department or across departments/centers; (ii) Proposals submitted and funded : PI, Co-PI and their group/department affiliations.

Serial No.	Name of faculty	joint thesis guidance by faculty across groups within a Department or across Departments/centers;	(ii) Proposals submitted and funded – PI- CoPI and their group/Department affiliations.
1	B S Panda	• Thesis Title: Energy Aware Cross-Layer Optimization Strategies in Wireless Networks • Name of the Student: Bighnaraj Panigrahi • Entry No: 2007EEZ8087 Defended Thesis in February 2012 • Jointly with Dr.Swades De, EE Department	Optimal Mobility and Resource Management in Next Generation 4G Wireless Networks Between B S Panda, Swades De (EE Department) and NavratiSaxena (Korea)
2	S Dharmaraja	• Two PhD thesis with Prof. Subrat Kar, EE Dept (on going)	Queuing Network Virtual Laboratory (PI)
3	N Chatterjee	• Mariya Khatoon (jointly with TRIPP)	
4	B Chandra	• Ph.D. guidance Jointly with Prof. M. P. Gupta, Manish Gupta	

Section 6
Outreach / External Stakeholder engagement

Executive Summary: Outreach / External Stakeholder engagement

Educational outreach has been in the form of 5 short term courses, 4 NPTEL courses, mentoring 1 program in other IIT's. The number of books with sale more than 1000 units authored by faculty is 1. The faculty of the Department has served as selection committee members at various reputed institutions in the country. The faculty members are also involved in Ph.D. thesis evaluation of the Ph.D thesis submitted in some reputed institutions in the country.

6.1 Educational

(a) Workshops/Short term courses-topical research for disseminating research of IITD:

1. Organized PG training programme at IIT Delhi on Differential equations, May 2011 (Dr. K Sreenadh, Dr. VV K Srinivas Kumar, Dr. Mani Mehra)
2. Conducted half day work shop at South Asian university on Statistical Machine Translation in December 2013. (Prof. Niladri Chatterjee)
3. Conducted half day Workshop at Punjab University, Patiala in November 2013. (Prof. Niladri Chatterjee)
4. Conducted one-day Workshop on Semantic Web at MNIT Jaipur, in 2012 (Prof. Niladri Chatterjee)
5. Organized QIP workshops twice, each for 2 weeks, on Introductory Finance Mathematics for AICTE affiliated institutes teachers in summer 2010 and 2012 (Prof. S Dharmaraja and Dr. Aparna Mehra)
6. Organized Indo-US Advanced Summer Department on Systems and Networks, University of California, San Diego, USA, June - July, 2009. (Prof. S. Dharmaraja)

(b) Workshops/Short term courses education methods (teaching, learning resources, pedagogy).

1. Prof. Niladri Chatterjee, Organizing Chair of CICLING 2012
2. Prof. A. Tripathi , Mathematics Olympiad Training Lectures (2009-2013)

(c) Learning, research material in the website.

1. Course lecture notes and material for MAL 100 Calculus (Dr. K Sreenadh)
2. 25 hour lecture slides on Statistical Machine Translation are available on web. 2012 (Prof. Niladri Chatterjee)
3. Queueing Networks Virtual Laboratory (Prof. S Dharmaraja)

(d) Science and technology for public information on website.

NIL

(e) Courses taught to students of other IITs/NITs/Others institutions.

1. Taught Mathematics course to IIT Ropar students in their first year (Prof SCS Rao, Dr. Aparna Mehra)
2. Introductory Financial Mathematics, UPTC, Tunja, Colombia, June 18 - 21, 2013. (Prof. S Dharmaraja)
3. Stochastic Models of Telecommunication Systems, Department of Industrial and Systems Engineering, Universidad Nacional de Colombia, June 11 – 14, 2013. (Prof. S Dharmaraja)
4. Operations Research Course, Oct 22 - 26, 2012, Department of Mathematics, Central University of Rajasthan, Kishangarh, India. (Prof. S Dharmaraja)
5. Queuing Networks for Computer and Communication Systems, Department of Mathematics, University of Los Andes, Bogota, Colombia, summer course, May - June, 2012. (Prof. S Dharmaraja)
6. Queueing Networks and its Applications, Department of Statistics, National University of Colombia, Bogota, Colombia, Summer course, March - April, 2011. (Prof. S Dharmaraja)
7. Probabilistic Modeling for Communication Systems, Department of Mathematics, University of Los Andes, Bogota, Colombia, summer course, May - June, 2009. (Prof. S Dharmaraja)

(f) Courses taught via NKN.

NIL

(g) Courses developed for NPTEL.

1. 1 lecture course (under progress) (Dr. Aparna Mehra)
2. 2 courses, one video, one lecture (under progress) (Prof. S Dharmaraja)

(h) Books, monographs, study material made available outside IITD.

1. Suresh Chandra, S. Dharmaraja, Aparna Mehra, Reshma Khemchandani, Financial Mathematics: An Introduction, Narosa Publication House, 2013.
2. Liliana Blanco Castaneda, Viswanathan Arunachalam and Selvamuthu Dharmaraja, Introduction to Probability and Stochastic Processes with Applications, Wiley, 2012.
3. R K Sharma, S K Sah, A G Shankar, Complex Numbers and the Theory of Equations, Anthem Press, 2011.
4. R. K. Sharma, S. K. Shah and A. G. Shankar, Algebra I, Pearson Education, 2011.
5. Suresh Chandra, Jayadeva and Aparna Mehra, Numerical Optimization with Applications, Narosa Publications, 2009.
6. B.S. Panda and Abhaya Nayak (editors), Proceedings of the 11th International Conference on Information Technology (ICIT 2008), IEEE Computer Society, USA (ISBN 978-0-7695-3531-5).
7. C. R. Bector, Suresh Chandra and J. Dutta, Principles of Optimization Theory, Narosa Publications, 2005.
8. C. R. Bector and Suresh Chandra, Fuzzy Mathematical Programming and Fuzzy Matrix Games, Springer Verlag, 2005.
9. B. Chandra, Object Oriented Programming Using C++, Narosa Publications, 2002.
10. A. Tripathi et.al., Discrete Mathematics, IGNOU Publication, 1998.
11. B. Chandra, Advanced Turbo Pascal With Graphics And Object Oriented Programming, Narosa Publications,1996.
12. B. Chandra, DBASE IV and Structured Query Language, Narosa Publications, 1995.

(I) Experiments developed and made available to other institutions.

NIL

(j) Seminars live/via NKN, web to other institutions in India/abroad.

NIL

(k) Reach out to Departments, NCERT, KVs, etc (e.g. K-12 Programmes).

1. Mentor in INSPIRE Science Camp by DST for 11 and 12 class science students at Banasthali Vidyapeeth, Garhwal University, Deshbandhu College, and co-organized one Inspire Science camp, at IIT Delhi in December 2011. (Prof R K Sharma, Dr. Aparna Mehra)
2. Involved in work of confidential nature with CBSE (Dr. Aparna Mehra).
3. Involved in confidential operations in UPSC (Dr.K.Sreenadh)
4. Regional Coordinator for Delhi, Mathematics Olympiad Cell, HBCSE, Appointed by NBHM, (2000-present) (A. Tripathi).
5. Involved in work of confidential nature with CBSE and NCERT (A. Tripathi).
6. Teacher Training and Olympiad training lectures for KVS. (2009-2013) (A. Tripathi).
7. Teacher Training and Olympiad training lectures for various Departments in Delhi. (2009-2013) (A. Tripathi).

(l) Mentoring of other institutions e.g. New IITs, Nits, Universities etc. Including faculty mentoring, curriculum development, laboratory development, etc.

1. Curriculum development programme in Maths & computing at Dept. of Mathematics, Thapar University Patiala (Prof. Niladri Chatterjee)
2. Mentor of research faculties under summer research fellowship program of IITD (Prof. R. K. Sharma, Prof.B.S.Panad, Prof.S C S Rao, Prof. S. Dharmaraja, Prof. Niladri Chatterjee, Dr. Apana Mehra, Dr. K.Sreenadh, Dr.Mani Mehra)
3. Guided a BTech student internship from CIC of Delhi University for 3 months in summer 2013 (Dr. Aparna Mehra)
4. Curriculum design external expert in NIT Jaipur 2010 and IGDTU, Delhi, early 2013 (Dr. Aparna Mehra)
5. Involved in confidential work with IGNOU and UPSE (Dr. Aparna Mehra)

(m) MOU signed with other Institutes:

1. MoU with Wan Kwang University, South Korea, Research Collaboration in Semantic web. (Prof. Niladri Chatterjee)

2. MoU with National University of Colombia, Bogota, research collaboration in statistics. (Prof. S. Dharmaraja)

6.2 Industry collaboration

(a) No. Of students (PhD/Masters) directly linked to industry funded projects.

1. Two of the PhD students of Prof. Niladri Chatterjee are part time students working in industry, viz. in Cadence and CDAC Noida.

(b) No. Of industry staff/engineers who have taken a regular course(s) for entire semester.

NIL

(c) Technology transfer to companies, entrepreneurs, local and other governments/government agencies, NGO (separately).

NIL

(d) Continuing education/courses for industry.

NIL

(e) Faculty secondment to industry.

NIL

(f) Research project undertaken with industry as partner.

1. PI for Estimation of Used Car Prices : with Maruti -Suzuki India. (Prof. Niladri Chatterjee)
2. Co-PI for project on "Sustainable Urban Transport in Less Motorized Countries" sponsored by Volvo Research & Educational Foundation. 2006 – 2012 (Prof. Niladri Chatterjee)
3. PI for project on "Advanced Statistical Techniques for Statistical Inference", sponsored By "Smart Analyst" in 2011 (Prof. Niladri Chatterjee)

(g) Laboratories, equipment, etc. Provided by industry for use in UG /PG teaching laboratories and students projects.

NIL

(h) Seminars/workshops held with industry by the Department.

NIL

6.3 Professional

(a) Service as Board, senate, selection committee member at other IITs, NITs and Universities.

1. Faculty selection committee member at NIT Uttarakhand, 2012 (Dr. K Sreenadh)
2. Faculty selection committee member at NIIT University, 2011, 2012 (Dr. K Sreenadh)
3. Faculty selection committee member at Shiv Nadar University, 2011 (Dr. K Sreenadh)
4. NIT Patna board member - 2010-2012 (Prof. B Chandra)
5. NIT Bhopal Senate member- 2008-2010 (Prof. B Chandra)
6. Faculty selection committee member at NITK, surathkal, 2013 (Prof. B S Panda)
7. Faculty selection committee member at IIT Hyderabad, 2012 (Prof. B S Panda)
8. Faculty selection committee member at NIT, Hamirpur 2012 (Prof. B S Panda)
9. Faculty selection committee member at MNIT Jaipur, 2014 (Prof. B S Panda)
10. Faculty selection committee member at IITDM, Jabalpur, 2013 (Prof. B S Panda)
11. Faculty selection committee member at ISM Dhanbad, 2013 (Prof. B S Panda)
12. Faculty selection committee member at Vardhaman Mahaveer Open University, Kota, 2013 (Prof. B S Panda)
13. Faculty selection committee member at ITM University, Gourgoan (Prof. B S Panda)
14. Faculty Selection committee Member at JNU for language Processing (Prof. Niladri Chatterjee)
15. External subject expert in scholarship extension committees of some Delhi University students (Dr. Aparna Mehra)
16. External subject mentor for 2 semester in a CIC Delhi University project on 24x7 water supply design 2012-13 (Dr. Aparna Mehra)
17. Selection committee member at NIT Goa (Prof. S Dharmaraja)
18. Faculty selection committee member at IIT kharagpur (Prof. R K Sharma)
19. Faculty selection committee member at IIT (BHU), Varanasi (Prof. R K Sharma)

20. Faculty selection committee member at IIT Hyderabad (Prof. R K Sharma)
21. Faculty selection committee member at NIT Surathkal (Prof. R K Sharma)
22. Faculty selection committee member at NIT Calicut (Prof. R K Sharma)
23. Faculty selection committee member at Mahrishi Dayanand University, Rohtak. (Prof. R K Sharma)
24. Faculty selection committee member at Deenbandhu Chhotu Ram University of Science & Technology, Murthal (Prof. R K Sharma)
25. Faculty selection committee member at Guru Jambheshwar University of Science & Technology, Hisar (Prof. R K Sharma)
26. Faculty selection committee member at Banasthali University, Rajasthan (Prof. R K Sharma)
27. Faculty selection committee member at MNIT Jaipur (Prof. R K Sharma)
28. Faculty selection committee member at University of Allahabad, Allahabad. (Prof. R K Sharma)
29. Faculty selection committee member at ISM Dhanbad (Prof. R K Sharma)
30. Faculty selection committee member at Shri mata vaishno devi university, Jammu (Prof. R K Sharma)
31. Faculty selection committee member at Central University of Kashmir, Ganderbal, JK. (Prof. R K Sharma)
32. Faculty selection committee member at The Islamic University of Science & Technology, Awantipora, Pulwama, Jammu and Kashmir (Prof. R K Sharma)
33. Board member at Mahrishi Dayanand University, Rohtak. (Prof. R K Sharma)
34. Board member at Himachal Pardesh University, Shimla. (Prof. R K Sharma)
35. Board member at Banasthali University, Rajasthan (Prof. R K Sharma)
36. Board member at Kurukshetra University, Kurukshetra. (Prof. R K Sharma)

(b) Service as PhD thesis examiner at other institutions.

1. IIT Kanpur, IIIT Gwalior, NIT Bhopal, Rajiv Gandhi Institute Bhopal (Prof. B Chandra)

2. IIT Madras, IIT KGP, NITK Surathkal, NIT Rourkela, KIIT, Bhubaneswar, Banasthali University, VTU, Belgaum, North Bengal University, JNTU, Hyderabad, Sambalpur University, Utkal University, Berhampur University (Prof. B S Panda)

3. IIT Kharagpur, TIFR (Bangalore) (Dr. K Sreenadh)

4. JNU 1, Jadavpur University, jamia Milia Islamia , University of Pune (Prof. Niladri Chatterjee)

5. Banasthali Vidyapeeth, Gandhigram University, Delhi University, JN University, Jaganath University (Dr. Aparna Mehra)

6. Anna University, Madurai Kamaraj University, Madras University, JN University (Prof. S Dharmaraja)

7. University of Allahabad, Allahabad, Mahrishi Dayanand University, Rohtak, Himachal Pardesh University, Shimla, Pt. Ravishankar Shukla University, Raipur, Banasthali University, Rajasthan, University of Lucknow, Lucknow, Delhi University, Delhi. (Prof. R K Sharma)

(c) Service as technical expert on committees- MHRD, DST, DSIR, DRDO, Pan IIT initiatives, other ministries, state and local governments.

1. Member of the Project Steering Committee (PSC) of the project "Web Internationalization, Standardization and W3C India Initiative" by Ministry of IT (Prof. Niladri Chatterjee)

2. Technical expert and chairman of the Project committee SASE DRDO, Chandigarh (Prof. B Chandra)

3. Technical expert of the Project committee DRDO, DST, CSIR (Prof. R K Sharma)

(d) Technical expert on policy, regulatory, laws, standards committees.

NIL

(e) Member of Board/Advisory Board of public and private sector corporations.

NIL

(f) Positions (e.g. Director, Vice Chancellor, etc.) help by faculty on lien.

NIL

6.4 Contribution to national development goals

(a) Projects undertaken and their outcome.

1. Principal Investigator of Sponsored projects from DST, DRDO, DBT. Resulted in a Patent with DRDO which is in the final stages (Prof. B Chandra)

(b) Policy inputs implications, visible impact on society.

NIL

(c) Entrepreneurship development.

NIL

6.5 Alumni engagement

(a) Regular interactions/ engagement with alumni and outcomes.

NIL

(b) Contributions from alumni.

NIL

6.6 Recognitions and Awards

(a) Awards to faculty:

1. Received "Best Paper" award in CICLING-2008, Haifa, Israel. (Prof. Niladri Chatterjee)
2. Honorary Guest Editor for SEMANTIC WEB AND INTELLIGENT TEXT PROCESSING, Polibits 45, 2012. (Prof. Niladri Chatterjee)
3. IEEE Delhi Chapter Young Engineer Award (Prof. S Dharmaraja)
4. Associate Editor, International Journal of Communication Systems, 2007 onwards (Prof. S Dharmaraja)
5. Associate Editor, International Journal of Performability Engineering, 2012 onwards. (Prof. S Dharmaraja)

(b) Fellows of academics, INAE, etc.

NIL

Section 7
Governance

Executive Summary: Governance

Transparency of the governance of the Department is achieved by collective decision taking by the DFB. Most of the policy decisions are taken in the DFB, and various committees in the Department implements these policies. The research related issues are discussed in the DRC and the recruitment related issues are discussed in DFB and PC.

We have had 36 DFB meetings over the past 2 years and these have been attended by about 70% of the faculty. Faculty time utilization has been 50% in class, 5% in meetings, 10% in project management, 25% thesis guidance and research and 10% in administrative work. Staff time utilization has been 30% in practical sessions and 70% in supporting research.

7.1 Governance

(a) Organization structure – their autonomy / terms of reference

The Department is currently having 21 faculty members including one Emeritus Professor. The Department office is equipped with one PA to Head of the Department and two office staffs. The Head of the Department, HOD, is appointed by the Director in a rotation basis among the professors of the Department. The term of the HOD is for a period of two years. The HOD is responsible for the administrative departmental matters. It is the duty of the HOD of the Department to see that the decisions of the authorities of the institutes and of the Director are faithfully carried out. He performs such other duties as may be assigned to him by the Director. The Department has various committees that assist the HOD in smooth functioning of the Department. The various committees are:

(i) Departmental Faculty Board (DFB):

- The DFB consists of all faculty members of the Department. HOD is the chairman of the DFB. One faculty member is selected as DFB secretary. The term of the DFB secretary is one year and in the next year, the same person is continued or another faculty member is appointed as DFB secretary. The DFB secretary generally issues notice containing agenda for DFB meeting in consultation with the chairman. The DFB secretary prepares the minutes of the DFB meetings in consultation with the HOD and circulates to all faculty members.
- The DFB meets as and when necessary but at least twice in a semester with 50% of its members in station forming the quorum. In the last two years, DFB has met more than once in a month on an average.
- DFB is the highest decision making body of the Department. It is responsible for all policy making of the Department. It takes up issues referred to it by HOD/Dean/DDO/Director.
- Minutes of the DFB meeting are recorded and circulated to all faculty members and get confirmed in subsequent DFB meetings. Once the minutes are confirmed, it is binding to the Department.

(ii) Professorial Committee (PC):

All professors of the Department are the members of the Professorial Committee (PC). If a Department has less number of professors, the Director may appoint professors from other allied Departments as PC members. The PC meets as and when necessary but normally at least twice in a semester with 50% of its members in station forming the quorum.

(i) Apart from the matters referred to it by the Director/Deputy Directors/Deans/HOD, it helps the HOD in executing the policies formulated by the institute and by DFB such as faculty short-listing,

secondment of faculty to any other Institutions, recommendation of long leave/ sabbatical leave/emeritus professor position/ guest faculty.

(ii) Minutes of the meeting are signed by all members or minutes is circulated and confirmed in subsequent meetings.

(iii) The current Professorial Committee of the Department consists of

1. Prof. B.S. Panda (HOD and Chairman)
2. Prof. B. Chandra
3. Prof. R. K. Sharma
4. Prof. A. Tripathi
5. Prof. S. Kundu
6. Prof. S.C.S. Rao
7. Prof. N. Chatterjee
8. Prof. S. Dharmaraja

(iii) Departmental Research Committee (DRC) :

(i) DRC is responsible for monitoring of post graduate research in the Department.

(ii) DRC consists of at least seven members of the Department, out of which at least four members are Professors. The number of members of the DRC does not normally exceed one third of the faculty strength of the Department.

(iii) The Chairman of the DRC is nominated by the DFB. Normally, the Chairman is a Professor of the Department. The members of the DRC are nominated by DFB. DFB also nominates one of the proposed members as DRC Secretary. The members as well as the DRC Chairman and Secretary of the DRC is approved and notified by Dean, academics.

(iv) HOD is always a member of the DRC, whether as Chairman or not.

(v) Departments nominee to the Board of Academic Programmes (BAP) as well as Ph.D. coordinator are members of the DRC.

(vi) The tenure of the members as well as Chairman of the DRC is one year.

(vii) In the event of resignation from the service by a member or in case a member goes on long leave (three months or more), a new member is appointed in consultation with Dean, Academics.

(viii) DRC is responsible for selection of Ph.D. students.

(ix) DRC meets regularly and the minutes of the meeting are circulated by the DRC Secretary. The minutes are confirmed in subsequent DRC meetings.

(x) DRC allocates and approves the M. Tech projects.

(xi) The members of the current DRC are;

1. Prof A. Tripathi (Chairman)
2. Prof. B.S. Panda (HOD)
3. Prof. S.C.S. Rao
4. Prof. Niladri Chatterjee
5. Prof. S. Dharmaraja
6. Dr. K. Sreenadh
7. Dr. Ritumoni Sarma
8. Dr. V.V.K. Srinivas Kumar
9. Dr. Sivananthan Sampath, (Secretary)

(iv) Other Committees:

To monitor the other activities of the Department, the following committees are formed in DFB. The term of each of these committees is one year. The committees and the current members are as follows.

- **Time table in-charge:** DFB nominates a faculty member as time table in-charge (TTI). The TTI uploads the teaching assignments, prepares the time table of the Department and prepares the invigilation duty chart for conducting various Minor and Major examinations.
  Current Time Table in-charge: Dr. Ritumoni Sarma
- **Computer User Committee:** DFB nominates a faculty member as Department representative to the computer user committee of the Institute.
  Current Member: Dr. Mani Mehra
- **AIC Member**: Prof. B. Chandra
- **Two members to BAP (Board of Academic Programmes)**
  (i) Prof. A. Tripathi
  (ii) Dr. K. Sreenadh
- **Placement in-charge:** Dr. V.V.K. Srinivas Kumar
- **Training in-charge:** Dr. Sivananthan Sampath
- **ACL & Library in-charge:**
  (i) Dr. Rupam Barman, ACL representative
  (ii) Dr. Amit Priyadarshi, library in-charge
- **Ph.D. Coordinator:** Dr. V.V.K. Srinivas Kumar
- **Seminar In-charge:** Dr. Amit Priyadarshi
- **Faculty Resources In-chage**:
  (i) Dr. Rupam Barman
  (ii) Dr. N. Shravan Kumar

- **Committee Room In-charge**
  (i) Prof. S. Dharmaraja
  (ii) Dr. Harish Kumar
- **Member, Alumni Affair Committee:** Prof. S.C.S. Rao
- **Department Website in-charge**
  (i) Prof. S. Dharmaraja
  (ii) Dr. Harish Kumar
- **Store in-charge:** Prof. Niladri Chatterjee
- **Computer Laboratory Committee**
  (i) Prof. B.S. Panda (Chairman)
  (ii) Prof. B. Chandra
  (iii) Prof. S.C.S. Rao
  (iv) Dr. Harish Kumar
  (v) Dr. Mani Mehra
- **Faculty Advisors of Math Society:**
  (i) Dr. Sivananthan Sampath
  (ii) Dr. N. Shravan Kumar
- **Curriculum Committee:**
  (i) Prof. A. Tripathi (Chairman)
  (ii) Prof. Niladri Chatterjee
  (iii) Prof. S. Dharmaraja
  (iv) Dr. K. Sreenadh
- **Review Committee:** Same as DRC
- **Member, Faculty Affairs Committee**: Prof. S.C.S. Rao
- **Faculty Search Committee**
  (i) Prof. A. Tripathi (Chairman)
  (ii) Dr. K. Sreenadh
  (iii) Dr. Harish Kumar
  (iv) Dr. Amit Priyadarshi

(b) Planning documents development by the Department – space, faculty staff related.

(i) A vision document of the Department was prepared and was submitted to the Institute.

(ii) A report on space details of the Department was prepared and sent to the Administration.

(c) Records of discussions within the Department – internal document (meeting minutes, position papers, discussion papers, concepts papers, etc)

The records of the following meeting are available.

(i) Minutes of all DFB meetings

(ii) Minutes of all DRC meetings

(iii) Minutes of all PC meetings

(d) Physical resources – percentage utilization for UG PG core and electives teaching separately, UG and PG student project, Ph.D. students' research, projections for future.

- Faculty spends on an average 30% time on core course, 20% time on elective courses, 10% time on administrative Department activities, 10% time on M.Sc./ M. Tech. projects, 25% time on Ph.D. guidance and research, and 5% in meetings.
- In future, Department plans to recruit more faculty members and plans to reduce the teaching time and plans to spend more time on research activities.

(e) Financial resources - (i) funds provided to the Department, (ii) processes of distribution, (iii) funding for focus areas, (iv) funding for UG and PG core teaching laboratories, Outcomes of funds utilization, Changes in funding pattern and funds utilization and effects on Departmental strategy

Funds are provided by the Institute to Department in various budget heads.

(i) NPN05

(ii) PLN03

(iii) PLN03F

(iv) PLN03C

(v) PLN06

The fund requirement under NPN05 and PLN03 are discussed in the DFB. Once the proposal is approved in the DFB, the proposals are sent to Planning unit. Once the fund is sanctioned, purchases are made as per the proposals. Institute allocates funds for 20% of the sanctioned faculty strength under PLN03F for purchasing equipment such as computers and printers. At present it is Rs 75,000/- per faculty (maximum for five faculty members) per year.

The details of the funds received and spent for the last five years is as follows.

Budget Head	2008-2009		2009-2010		2010-2011		2011-2012		2012-2013			
	Allocation	Expenditure	Allocation	Expenditure	Allocation	Expenditure	Allocation	Expenditure	Allocation	Expenditure	Total Allocation	Total Expenditure
NPN05	15.28	15.10	17.03	16.62	25.00	23.87	28.00	12.50	15.00	13.95	100.31	82.04
PLN03	35.70	23.81	29.76	23.73	28.00	27.98	75.00	74.73	93.00	72.01	261.46	222.26
PLN05					4.75	3.55	2.13	2.12			6.88	5.67
PLN03C					40.00	24.32					40.00	24.32
PLN06											0.00	0.00
PLN3F	2.40	0.00	2.40	0.00	2.40	2.40	2.40	2.40	2.40	1.80	12.00	6.60

(f) Delegation of decision making within Department. List the process and structures for financial and academic management, and the methodology for their review

- The decision making in the Department are delegated to various committees as described above. The committee takes decision and implements. However, depending on the nature of the job, the committee in consultation with HOD takes the decision.

7.2 Department Management and Operations

(a) Organization structure – mandates, flexibility, etc.

The following Departmental duties have been assigned with effect from October 1, 2013 for a period of one year.

(i)	**Time Table In-Charge:**	Dr. Ritumoni Sarma, with assistance from Dr. N. Shravan Kumar
(ii)	**Computer User Comm. member:**	Dr. Mani Mehra
(iii)	**AIC Member**	Prof. B. Chandra
(iv)	**Member, BAP**	Prof. A. Tripathi **,** Dr. K. Sreenadh
(v)	**Placement in-charge:**	Dr. VVK Srinivas Kumar
(vi)	**Training in-charge**	Dr. S. Sampath
(vii)	**ACL & Library in-charge**	Dr. Rupam Barman (ACL representative) and Dr. Amit Priyadarshi (Library in-charge internal)
(viii)	**Ph.D. Coordinator:**	Dr. V.V.K. Srinivas Kumar
(ix)	**DFB Secretary:**	Dr. Rupam Barman
(x)	**Faculty Advisors Math Society:**	Dr. Shravan Kumar and Dr. S. Sampath
(xi)	**Seminar In charges:**	Dr. Amit Priyadarshi
(xii)	**In Charge, Faculty Resources:**	Dr. Rupam Barman and Dr. Shravan Kumar
(xiii)	**In-Charge, Committee Room:**	Dr. Harish Kumar
(xiv)	**Member, Alumni Affair Comm.**:	Prof. S.C.S. Rao
(xv)	**Department Webpage in charge:**	Prof. S. Dharmaraja and Dr. Harish Kumar
(xvi)	**Store in charge:**	Prof. N. Chatterjee
(xvii)	**Computer Lab Committee:**	Prof. B.S. Panda (Chairman), Prof. B. Chandra, Dr. S.C.S. Rao, Dr. Harish Kumar, Dr. Mani Mehra
(xviii)	**M.Sc. I Coordinator**:	Dr. S. Sampath
(xix)	**MT6 Coordinator**:	Dr. Shravan Kumar, Dr. Amit Priyadarshi, and Dr. Harish Kumar
(xx)	**DRC:**	Prof. A. Tripathi (Chairman), Prof. B.S. Panda (HoD), Prof. N. Chatterjee, Prof. S. Dharmaraja, , Prof. S. C. S. Rao, Dr. K. Sreenadh, Dr. Ritumoni Sarma, Dr. V.V.K.

		Srinivas Kumar and Dr. S. Sampath (Secretary)
(xxi)	**Internal Review Committee:**	Same as DRC, DRC Chairman will be the convener
(xxii)	**Curriculum Committee:**	Prof. A. Tripathi (Chairman), Prof. N. Chatterjee, Prof. S. Dharamraja, and Dr. K. Sreenadh
(xxiii)	**Faculty affairs Committee:**	Prof. S.C. S. Rao
(xxiv)	**Search Committee:**	Prof. A. Tripathi (Chairman), Dr. Harish Kumar, Dr. Amit Priyadarshi and Dr. K. Sreenadh

(b) Processes for curriculum planning:

- The Department has a course curriculum committee. The current committee consists of (i) Prof. A. Tripathi, (ii) Prof. N. Chatterjee, (iii) Prof. S. Dharmaraja, and (iv) Dr. K. Sreenadh.

- Departmental elective courses are proposed by individual faculty members. The Curriculum Committee discusses it in DFB. After DFB's approval, HOD sends it to the Dean, Academics, who circulates it to all Departments/Centers for their views. The BAP (Board of Academic Programmes) deliberates, and if approved, sends to Senate for final approval. The Department of Mathematics periodically submits Departmental electives to keep track of the changes that take place in academics pertaining to the Department of Mathematics.

- Every 10 years, the Institute initiates the course curriculum review. Department actively participates in the course curriculum. The latest course curriculum review is getting implemented from 2013. The Curriculum Review Committee (CRC) of the institute has recommended to replace the existing 5 year Integrated M. Tech in Mathematics and Computing programme of the Department with a Dual degree programme. The Senate has also approved this. In response to this, the Department of Mathematics has proposed (i) B. Tech. in Mathematics and Computing, and (ii) Dual Degree B. Tech. + M. Tech. in Mathematics and Computing Programme in place of the 5 year Integrated Mathematics and Computing Programme.

- The process of review of the M.Sc. in Mathematics and M. Tech. in Computer Application are underway.

(c) Processes and Methods for Teaching Resources Managements

The Institute time table in-charge assigns rooms to the courses. Based on the need of each teacher, the Department time table in-charge gives the feedback on the requirements for various courses. The Institute has an online Academic system to manage the running of the courses. Each

faculty can manage his/her assigned courses through this system. The teacher provides the data of evaluation components to the system and grades the students. The grades of the various courses are moderated and approved by DRC before the faculty submits the final grades. Department provides Tablet PC to the teachers of large classes. Department also provides Teaching Assistants (TAs) to support the faculty for managing large courses.

(d) Guest faculty, affiliation for teaching core, elective UG & PG courses

Department at times uses guest faculty of high standard to teach some of the courses in the Department. The CV of the guest faculty is sent to the HOD. HOD puts it in the Professorial Committee. With the recommendation of the PC, the HOD sends it to Dean, Faculty for approval.

The following guest faculty taught courses in the Department in last three years.

- Prof. N. Parimala Prakash, Professor and former Dean, Department of Computer and Information Sciences, JNU taught Software Engineering course to the Integrated M. Tech. in Mathematics and Computing students.
- Prof. C.P. Katti, Professor and Dean, Department of Computer and Information Sciences, JNU has taught MAL 230 Numerical Methods to the Integrated M. Tech. in Mathematics and Computing students.

(e) Faculty short – listing criteria.

Minimum qualification and experience prescribed in the Advertisement	**Criteria used for Shortlisting**
Professor/Associate Professor/Assistant Professor: A first class or equivalent grade in preceding degree in appropriate branch/discipline with a very good academic record throughout. **Professor:** A minimum of 10 years' teaching / research / industrial experience of which at least 4 years should be at the level of Associate Professor in IITs, IISc Bangalore, IIMs, NITIE Mumbai and IISERs or at an equivalent level in any such other Indian or foreign Institution(s) of comparable standards. **Associate Professor:** A minimum of 6 years teaching / research / industrial experience, of which at least 3 years should be at the level of Assistant Professor or equivalent positions in IITs, IISc Bangalore, IIMs, NITIE Mumbai and IISERs or in any such other Indian or foreign Institution(s) of comparable standards. **Assistant Professor:** At least 3 years teaching / research / industrial experience, excluding however, the experience gained while pursuing Ph.D.	

NOTE: Fresh Ph.D. or candidates having less experience can also apply. However, they will normally be considered for Assistant professor on contract in the Pay Band-3. (Such selected candidates will be eligible to be considered for a regular/tenured position once they obtain three years of experience.)	

It is certified that:

(i) The above has the concurrence of the short-listing committee of the Department/Centre/Department

(ii) None of the applicants who fulfils the short-listing criteria has been rejected.

(iii) Further, the short-listing criteria used to arrive at the above short-listing is the institute-level short-listing criteria, suitably enhanced with additional criteria for this particular Department/Centre/Department (given below):

Institute-level short-listing criteria for faculty positions:

MINIMUM SHORT-LISTING CRITERIA FOR AN ASSISTANT PROFESSOR:

- Ph.D. with 3 years experience (excluding the experience gained while pursuing Ph.D.),
- First class or equivalent grade in preceding degree in respective discipline, with a consistently good academic record,
- Potential for very good teaching,
- Maximum age is 35 years for male and 38 years for female candidates (to be relaxed by 5 years in case of persons with physical disability, SC and ST), and
- At least 4 refereed conference/journal papers (of which at least 2 should be in reputed journals).

MINIMUM SHORT-LISTING CRITERIA FOR AN ASSOCIATE PROFESSOR:

- Ph.D. with 6 years experience (excluding the experience gained while pursuing Ph.D.) of which at least 3 years should be as Assistant Professor or equivalent,
- First class or equivalent grade in preceding degree in respective discipline, with a consistently good academic record,
- Should have demonstrated capability for good teaching,
- At least 10 refereed conference/journal papers (of which at least 4 should be in reputed journals, out of which at least 2 in last 3 years), and
- Completed at least one sponsored R&D or consulting project as a PI, or completed two sponsored R&D or consulting projects as a co-PI.

MINIMUM SHORT-LISTING CRITERIA FOR A PROFESSOR:

- Ph.D. with 10 years experience (excluding the experience gained while pursuing Ph.D.) of which either.
  a. At least 4 years should be as Associate Professor or equivalent, or
  b. At least 8 years should be as Assistant Professor or equivalent (in case of Institutions where the post of Associate Professor or equivalent does not exist),
- First class or equivalent grade in preceding degree in respective discipline, with a consistently good academic record,
- Should have demonstrated excellence in teaching.
- At least 20 refereed conference/journal papers (of which at least 8 should be in reputed journals, out of which at least 3 in last 4 years),
- Should have guided independently at least one Ph.D. student, or have guided at least two Ph.D. students jointly with other faculty/researchers, and
- Completed:
  a. One sponsored R&D or consulting project as a PI, and
  b. One more sponsored R&D or consulting project as a PI, or two sponsored R&D or consulting projects as a co-PI.

Note: 1. The Department/Centre/Department can suitably enhance with additional criteria above the Institute level short-listing criteria for faculty positions.

2. In case of exceptionally outstanding candidates on some fronts, criteria on some other front(s) may be relaxed and justified by the Short-listing Committee.

Additional criteria for the department (if any): The Professorial Committee of the Department adds suitably some criteria to enhance the Institute Minimum level Criteria.

(f) How collectiveness of the faculty has enhanced academic output and enhanced quality, etc.

The research groups and the faculty members in each groups is as follows.

Serial No.	Name of Research Groups	Members of the Group
1	Pure Mathematics	(i) Prof. R.K. Sharma (ii) Prof. A. Tripathi (iii) Prof. S. Kundu (iv) Dr. K. Sreenadh (v) Dr. Anima Nagar

		(vi) Dr. Ritumoni Sarma (vii) Dr. Anuradha Sharma (viii) Dr. Rupam Barman (ix) Dr. N. Shravan Kumar (x) Dr. Amit Priyadarshi
2	Applied Mathematics	(i) Prof. S.C.S Rao (ii) Dr.K.Sreenadh (iii) Dr. Mani Mehra (iv) Dr. V.V.K. Srinivas Kumar (v) Dr. Sivananthan Sampath (vi) Dr. Harish Kumar
3	Operations Research and Statistics	(i) Prof. S. Dharmaraja (ii) Dr. Aparna Mehra (iii) Prof. Suresh Chandra (iv) Prof. N. Chatterjee
4	Discrete Mathematics and Theoretical Computer Science	(i) Prof. B. Chandra (ii) Prof. B. S. Panda (iii) Prof. N. Chatterjee (iv) Prof. A. Tripathi

The division of faculty into groups greatly enhances the group activity such as project evaluation, research discussion, and gives a good understanding of the strength of the Department. It also indicates the areas of future growth of faculty in the Department.

(g) Nature, quantum and quality of support from secretarial staff, stores and inventory management, purchases, ambience, etc.

Staff in the Department help in smooth functioning of the Department. The Secretary to the Head looks after the various paper work and helps the Head in day-to-day

routine work. The librarian maintains the Departmental library. Two Laboratory Assistants takes care of the needs of the students in the Laboratory. Store Superintendent takes care of purchase related things. Two other staff members take care of other routine matters.

7.3 Faculty

(a) Faculty profile and a critique of the same.

There are 21 faculty members: Professors: 8, Associate Professor: 3, Assistant Professor: 9, and Emeritus Professor: 1. Areas of research are as follows.

Pure Mathematics: Algebra, Number Theory, Coding Theory, Cryptography, Dynamical Systems, Harmonic Analysis, Functional Analysis and Topology.

Applied Mathematics: Numerical and Scientific Computing, Partial Differential Equations and Wavelets.

Statistics and Operation Research: Queuing Theory and Optimization.

Computer Applications: Graph Theory, Algorithmic Graph Theory, Data Mining, Neural Networks, Natural Language Processing.

(b) Diversity in faculty profile by: (i) gender, (ii) category, (iii) region, (iv) Ph.D. institution, (v) post-doctoral institutions worked in, (vi) organization / industry worked in, (vii) employment prior to joining the Department.

(i) Gender:	Male: 16, Female: 5
(ii) Category:	General: 20, OBC: 1*
(iii) Region:	North: 8, South: 7, East: 5, West: 1
(iv) Ph.D. Institution:	IIT/TIFR: 11, Indian Universities: 5, US: 3, UK/Europe: 2
(v) Post-doc experience:	India: 6, US/Canada: 3, Europe: 6
(vi) Industrial experience:	None
(vii) Prior employment:	IIT: 3, Indian University: 4, BITS: 1, US University: 1.

(c) Procedure for faculty searches

There are three routes by which the Department tries to search and attract new faculty.

- Department seeks young and fresh Ph.D.s around the world through its faculty members and their contacts.

- Interested candidates contact the HOD or any other faculty member directly. Such enquires are cultivated swiftly by the HOD.
- Through regular and rolling Advertisements.

Faculty members try to highlight the Department and its activities at all available forums. The Department also maintains a highly visible and informative website to attract the prospective faculty aspirants. The procedure to select a faculty member through all the routes remains the same

Procedure

As per the Statutes of the institute, all faculty posts at the Institute are normally filled through advertisement. However, the BOG has the power to decide, on the recommendations of the Director, that a particular post be filled by invitation or by promotion from amongst the members of the staff of the Institute. In all these cases, appointments are made by the BOG on the recommendations of the Selection Committee constituted for the purpose. In the case of appointments to reserved posts, the relevant reservation rules apply. The advertisement is drafted to include the following:

- Designation of the post sought to be filled.
- Area in which recruitment is contemplated.
- Pay scale attached to the post and allowances.
- Minimum qualifications expected of the candidates.
- Additional/desirable qualifications, if any.
- Previous experience required, with the type of experience, duration etc.
- Prescribed age.
- Relaxation of age, qualifications and experience if any.
- Mode of collecting forms of application from the Institute by the intending candidates.
- Last date for receiving requests for application forms from intending candidates.
- Last date for the receipt at the Institute, of filled and completed applications from candidates.

When any post is reserved for candidates belonging to the Scheduled Castes/Scheduled Tribes/OBC, this fact is specifically mentioned in the advertisement. Candidates in the service of

Government or Quasi-Government or Govt. aided Institutions including Universities, are expected to send their applications through proper channel or furnish a certificate from the employer that they have no objection to their applications being considered. The advertisement is released in such a way that all the regions of the country are covered. The Director approves a panel of such newspapers from time to time. In special cases, the Director may decide that additional coverage be provided by advertising the posts abroad and/or in scientific journals. The Institute also has rolling advertisement for the post of Assistant Professor in its various academic Departments/Centers. Prospective candidates can apply any time throughout the year. Based on the need of the department/Centre concerned, efforts are made to take a decision at the earliest.

The processing of applications is done in accordance with Statutes of the institute. Applications received in the Establishment (E-1) Section by the due date prescribed, are registered in a register kept for the purpose and entered in the ACSS System. All the applications received are then forwarded to the Head of the Department for his preliminary scrutiny and advice to the Chairman Selection Committee regarding the candidates who are shortlisted and could be invited for interview by the Selection Committee for the post. The applications undergo the shortlisting criteria check. Shortlisted candidates are then invited for interaction with the Department. This is preferably in the form of a one-day visit to the Department and a seminar by the candidate. The seminar is attended by the faculty members. Each member is asked to provide a feed-back about the candidate's suitability for selection to the HOD. Based on these inputs and experience of the one-to-one meetings, Professorial Committee thoroughly deliberates on each application and arrives at a recommendation which is conveyed to the Head of Department. The HOD gets the applications discussed by the COP before sending his advice to the Chairman Selection Committee. In case of Professor, the selection committee consists of

- Director (Chairman).
- One Visitor's nominee (member).
- Two nominees of the Board, one being an expert but other than a member of the Board (members).
- One expert nominated by the Senate other than being a member of the Senate (member).

In case of Assistant and Associate Professors, the selection committee consists of

- Director (Chairman).
- Two nominees of the Board, one being an expert but other than a member of the Board (members).
- One expert nominated by the Senate other than being a member of the Senate (member).
- Head of the Department (member).

- The Institute may have one member of the Board and one expert from the approved list against two nominees of the Board on the Selection Committees or both the experts as nominees of the Board from the approved list in case local member of the Board is not available. The nominees of the Board are approved by BOG from time to time, normally for a period of two years. SC/ST/OBC representative will also be included as a member of the Selection Committee if the post is reserved for SC/ST/OBC etc.

The meeting of the Selection Committee is fixed by the Chairman of the Committee. A copy of the advertisement and particulars of all the candidates called for interview are forwarded to each member of the Selection Committee. The Selection Committee interviews the candidates called for interview. It considers the credentials of all the persons who have applied and also considers names if any suggested by members or otherwise brought to its notice. The Selection Committee thereafter makes its recommendations, the names of selected candidates being arranged in the order of merit. The Selection Committee also suggests the starting salary in the grade in each case. The Chairman, BOG looks at the recommendations of the selection committee and takes the final decision. Offers of appointment are issued on approval of the Chairman, BOG. The offer of appointment indicates the salary offered, the rates of allowances, the duration of the appointment and other terms and conditions of service as applicable from time to time, and prescribes the date by which acceptance of offer is to be communicated by the candidate. A candidate who is offered an appointment in the Institute should join within three months, if in India; and within six months, if abroad, from the date of the offer. However, Director may extend the joining time on request, up to six months from candidates in India; and one year for candidates abroad. The candidate is directed to get himself examined for physical fitness by the prescribed Medical authority. On production of a satisfactory certificate of physical fitness, the offer of appointment becomes operative.

(d) Result of faculty searches – area-wise (as in Annexure iv), number of applicants, short listed and offered a position, their educational qualifications & experience.

In the last five years, (2009 -1013), five times faculty selections have taken place out of which three times faculty selections have been in last two years.

Selection took place in

i. November 2010

ii. March 2011

iii. June 2012

iv. November 2012

v. April 2013

In 2010, only one offer to external candidate was made at Assistant professor Position and the candidate subsequently joined the Department. In 2011, no external offer was made. The detail of the recruitment results in 2012 and 2013 is as follows.

ADVT	**Post**	**Applied**	**Short listed in stage-I**	**Shortlisted in stage-II**	**Offered**
ADVT01/2013(E1)*	Assistant Professor	41	17	1	0
ADVTNo 1/2012(E-I)	Assistant Professor	90	40	9	03
-do-	Associate Professor	15	2	2	01#
-do-	Professors	07	05	05	05#
ADVT141210 (2012)	Assistant Professor	108	32	05	03
ADVT 03/2010 (E-I) 2011	Professor	6	3	03	01#
ADVT 03/2010 (E-I) 2011	Associate Professor	8	1	01	0
Advt 01/2010(E-I) 2010	Professor	6	0	0	0
Advt 01/2010(E-I) 2010	Associate Professor	12	5	3	2#
Advt 01/2010(E-I) 2010	Assistant Professor	80	6	2	1

*: Special Drive Recruitment

#: Existing Faculty of the Department

(e) Success in recruitment (data for last 5 years), and offers that the persons had from other IITs/IISc/TIFR

In the last five years, the Department made seven offers at Assistant Professor level out of which six accepted the offers and joined the Department. Most of them had offers from other IITs as well. Out of the seven offers, six offers have been made in the last two years only.

(f) Faculty lost to other institutions post selection

- One, namely, Dr. Venku Naidu Dogga, joined IIT Hyderabad after getting selected in IIT Delhi in 2012.

(g) Faculty time utilization – in class, in meetings, project management, PhD guidance, masters project guidance, UG project guidance

- Faculty spends on an average 30% time on core course, 20% time on elective courses, 10% time on administrative Department activities, 10% time on MSc/ M. Tech projects, 25% time on Ph.D. guidance and research, and 5% in meetings.
- In future, Department plans to recruit more faculty members and plans to reduce the teaching time and plans to spend more time on research activities.

(h) Level of harmony amongst Department faculty

There is cooperation at professional level.

7.4. Students

(a) Criteria for short-listing and selecting students for admission to Master's and PhD. Programmes of past 5 years

- **M. Sc.** For last five years, admission to M. Sc. is through JAM Examination.
- **Ph. D.** The short-listing criteria used in last few years are as follows.

<table>
<tr><td>Year</td><td colspan="4">Full Time</td><td></td><td>Part Time</td></tr>
<tr><td></td><td></td><td></td><td>GEN</td><td>OBC</td><td>PH/SC/ST</td><td rowspan="5">Minimum of Two years of experience: employment in Govt./Research Organizations/Public sector/ Private industries. NOC required from the current employer. There is no fellowship criterion</td></tr>
<tr><td rowspan="2">2010</td><td rowspan="2">MSc/MA
&</td><td>Marks %</td><td>60</td><td rowspan="2">As per institute norms</td><td rowspan="2">As per institute norms</td></tr>
<tr><td>CGPA (10)</td><td>6.75</td></tr>
<tr><td rowspan="2">BSc/BA
&</td><td>Marks</td><td>60</td><td rowspan="2">As per institute norms</td><td rowspan="2">As per institute norms</td></tr>
<tr><td>CGPA</td><td>6.75</td></tr>
<tr><td>GATE
Or</td><td></td><td>400</td><td>As per institute</td><td>As per institute</td></tr>
</table>

	CSIR/UGC/NBHM		JRF	norms	norms	*and rest of the criteria are same as full time.*
2011	MSc/MA &	Marks %	60	As per institute norms	As per institute norms	
		CGPA (10)	6.75			
	BSc/BA &	Marks	60	As per institute norms	As per institute norms	
		CGPA	6.75			
	GATE Or CSIR/UGC/NBHM		400 JRF	As per institute norms	As per institute norms	
2012	MSc/MA &	Marks %	60	As per institute norms	As per institute norms	
		CGPA (10)	6.75			
	BSc/BA &	Marks	60	As per institute norms	As per institute norms	
		CGPA	6.75			
	GATE Or CSIR/UGC/NBHM		400 JRF	As per institute norms	As per institute norms	
2013 (sem-I)	MSc/MA &	Marks %	60	60	55	
		CGPA (10)	6.75	6.75	6.25	
		Marks	60	60	55	

	BSc/BA & GATE or CSIR/UGC/NBHM Or MTech	CGPA	6.75	6.75	6.25	
			400 JRF	360	200	
		Marks	60	60	55	
		CPPA	6.75	6.75	6.25	
	BTech (CS/IT) & GATE & CSIR/UGCNBHM	Marks %	70	70	65	
		CGPA (10)	7.5	7.5	7	
			400	360	200	
			JRF	JRF	JRF	
2013 (sem-II)	MSc/MA & BSc/BA/B.Tech (CS/IT/Math & Comp) & GATE	Marks %	60	60	55	
		CGPA (10)	6.75	6.75	6.25	
		Marks	60	60	55	
		CGPA	6.75	6.75	6.25	
			400	360	200	

	CSIR/UGC/NBHM		JRF			
	Or	Marks	60	60	55	
	MTech	CPPA	6.75	6.75	6.25	
	BTech(CS/IT/Math & Comp)	Marks %	70	70	65	
	&	CGPA (10)	7.5	7.5	7	
			400	360	200	
	GATE					
	&		JRF	JRF	JRF	
	CSIR/UGCNBHM					

(b) Facilities provided to students and their maintenance / management system.

Due to severe space constraints in the Department only about half of the Ph.D. students have been given space in the Department. All Ph.D. students have access to laboratory space meant exclusively for them. Department would like to have space earmarked for Ph.D. students. All Ph.D. students have access to Internet facility, Xerox machines and printers in the designated laboratory. Hostels are provided to Ph.D. students.

(c) Mentoring seminars / sessions held for PhD students for prospective faculty careers

Ph.D. students are encouraged to regularly give and attend seminars, both inside and outside the Department. They are also encouraged to attend workshops and conferences, on regular basis.

Section 8
Benchmarking

Executive Summary: Benchmarking

For benchmarking purposes we have chosen few good mathematics departments from India (i.e. IIT Kanpur, IIT Kharagpur, IIT Guwahati, NIT Rourkela, NITK Suratkal, BITS Pilani) and few from abroad (i.e. MIT, NUS, Hong Kong University of Science and Technology, Peking University, Universidade de Sao Paulo). The benchmarking is broadly done under two categories: curriculum of undergraduate and Post-Graduate programme based on several benchmarking parameters identified under these categories. The information from these institutes is collected from the data available in their websites and other sources from internet.

Our aim for next five years is to work towards making the Department of Mathematics among the very best ranked Department of the Institute and among top two-three Mathematics Departments of the country. It will also be our endeavour to consistently and substantially improve our position in Asia as well as in the global rankings of Mathematics Departments.

In the following four subsections we compare the performance of Department of Mathematics, IIT Delhi against the other departments from national and international universities. The benchmarking is broadly categorized into three parts based on comparison of (i) curriculum, (ii) teaching, and (ii) research. The comparison is done based on different parameters as listed out in the tables given under these three broad categories.

8.1 Benchmarking of Curriculum – Undergraduate Programme (National)

Benchmarking Parameters	IIT Delhi (5 year Int. M. Tech.)	National					
		Two Old IITs		One new IIT	Two NITs		One Private
		IIT Kanpur (5 yrs. Int. M. Sc.)	IIT Kharagpur (5 yrs. Int. M. Sc.)	IIT Guwahati (4 yrs. B. Tech.)	NIT Rourkela (5 yrs. Int. M. Sc.)	NITK (Suratkal) (No UG Programme)	BITS Pilani (5 yrs. Int. M. Sc. (Hons.))
Total credit requirements	216	200	214* *Each elective assumed to be 4 credits	306* * 2 credits equivalent to 1 credit of IIT Delhi	262	-	**207/221**
Core Credits	133	128	166	264*	222	-	**153/185**
Elective credits	83	72	48* *Each elective assumed to be 4 credits	42*	40	-	**54/36**
Comparison of core courses across Institutions	-	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	28	26	33	38	34	-	**32**
Nos. and nature of laboratories	10	6	10	14	35	-	**07**

8.2 Benchmarking of Curriculum – Post-Graduate Programme

Benchmarking Parameters	IIT Delhi (2 yrs. M. Sc.)	National					
		Two Old IITs		One new IIT	Two NITs		One Private
		IIT Kanpur (2 yrs. M. Sc.)	IIT Kharagpur (2 yrs. M. Sc.)	IIT Guwahati (2 yrs. M. Sc.)	NIT Rourkela (2 yrs. M. Sc.)	NITK (Suratkal) (No math PG)	BITS Pilani (No PG prog.)
Total credit requirements	90	80	93* *Each elective assumed to be 4 credits	159* * 2 credits are equivalent to 1 credit of IIT Delhi	101	-	-
Core Credits	72	64/60	73	135*	65	-	-
Elective credits	18	16/20	20* *Each elective assumed to be 4 credits	24*	36	-	-
Comparison of core courses across Institutions	-	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	15	19/20	16	19	8	-	-
Nos. and nature of laboratories	4	1/0	4	2	13	-	-

8.3 Benchmarking of Curriculum – Undergraduate Programme (International)

Benchmarking Parameters	IIT Delhi	International				
		One in Top 10	Two ranked 10-50		One Top from China	One Top from Brazil
		MIT (B.Sc. in Math and Computing)	National University of Singapore (B. Sc. (Hons.)) (4 yrs)	Hong Kong University of Science and Technology(Comp. Sci. 4 yrs.)	Peking University, Beijing.	Universidade de Sao Paulo
Total credit requirements	216	-	160	120	-	148
Core Credits	133	-	120-137	120	-	124
Elective credits	83	-	23-40	-	-	24
Comparison of core courses across Institutions	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	28	-	-	40	-	26
Nos. and nature of laboratories	10	-	-	-	-	3

8.4 Benchmarking of Curriculum – Post-Graduate Programme (International)

Benchmarking Parameters	IIT Delhi	International				
		One in Top 10	Two ranked 10-50		One Top from China	One Top from Brazil
		MIT (No PG in Math)	National University of Singapore	Hong Kong University of Science & Technology (2 yrs. Fin. Math)	Peking University, Beijing.	Universidade de Sao Paulo
Total credit requirements	90	-	40	30	-	-
Core Credits	72	-	-	24	-	-
Elective credits	18	-	-	6	-	-
Comparison of core courses across Institutions	-	-	-	-	-	-
Nos. of Theory Courses in Core Curriculum	15	-	10	10	-	-
Nos. and nature of laboratories	4	-	-	-	-	-

Section 9
Feedback Systems & Results

Executive Summary: Feedback Systems & Results

The course feedback system is very important aspect of teaching at IIT Delhi. The feedback system allows the student to convey their feedback about a course freely. Complete anonymity is maintained. The teaching quality, course coverage, clarity in teaching, and punctuality of the teachers among others are the parameters on which the students give feedback. This gives opportunity to the teacher to correct himself/herself.

9.1 & 9.2 System for feedback from UG & PG students and results

Teaching and Course evaluation for faculties:

The system for feedback of UG and PG students is the same. Students can turn in their feedback online. The faculty has to login at the following link:

https://campus1.iitd.ac.in/hcmprod1/signon.html

with their Kerberos ID and Password.

For navigation of teaching and course evaluation summary, please navigate to **"Teaching and course evaluation -> feedback summary"**

The faculties can click on the search button to see all the courses and the course components taught by them. In addition to that they can filter these results based upon course type.

For each course component (lecture/tutorial/practical) there are three types of feedback summaries:
1. Feedback Summary (Based upon student enrolment).
2. Attendance Correlation Summary (Based upon student enrolment and consolidated student attendance entered in the system).
3. Grade Correlation Summary (Based upon student enrolment and the grades received by students in the system).

In addition to the faculty's own feedbacks, they can access the feedbacks that are declared as public. To access public feedbacks please navigate to "Teaching and course evaluation **-> Public feedbacks".**

Note: Each summary opens in a new window, Please turn off you***r browser's pop up blocker*** in order to see the summary. Please close the window after viewing the summary.

1. **Feedback Summary**
Navigation: Teaching and course evaluation -> feedback summary

- The faculty will see the following page with his faculty ID and name.
- The faculty may select the course type to further filter.

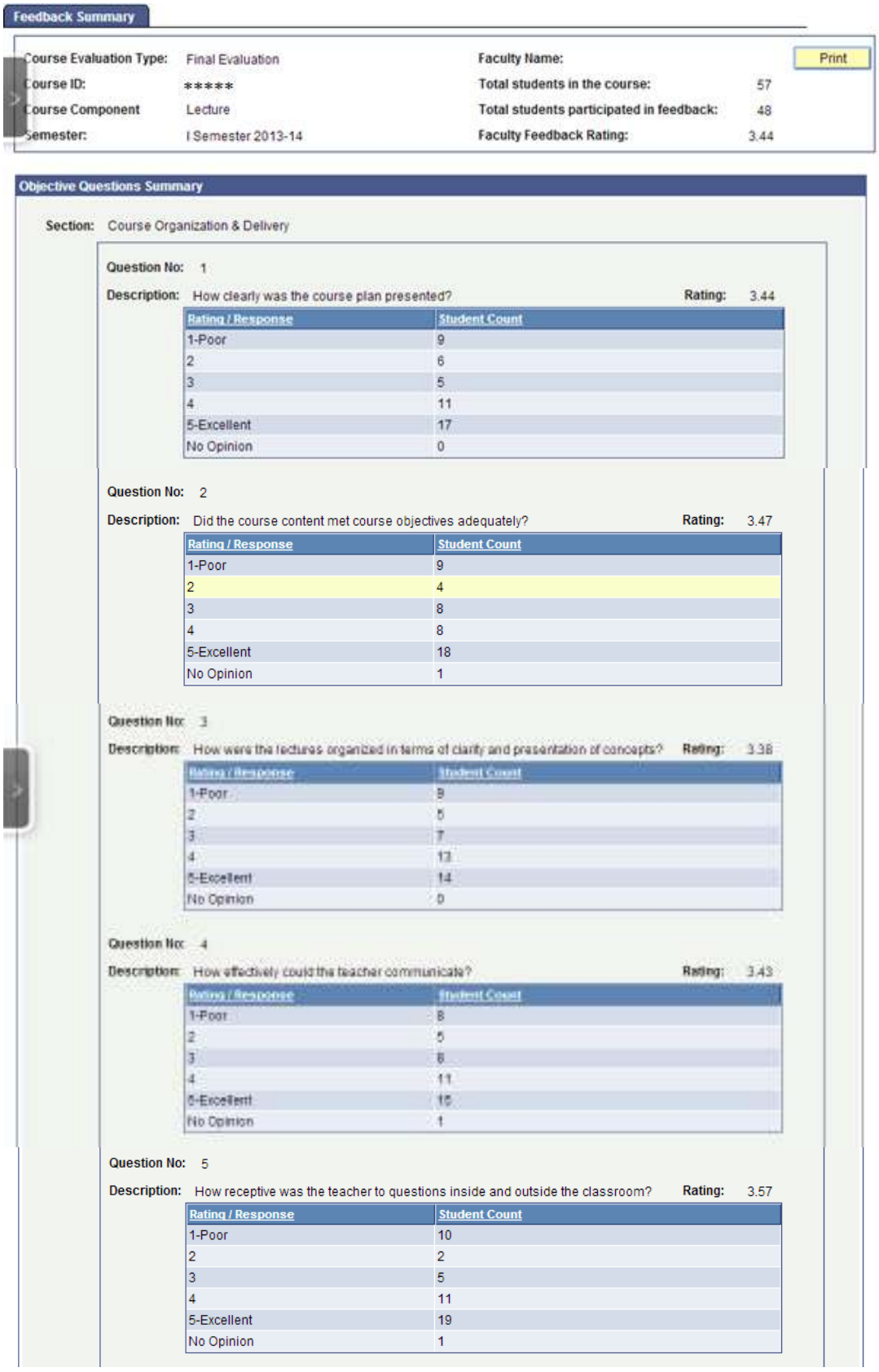
- The faculty will click on the search button.
- The course type field will have the values as shown by the lookup.

Please note that if course type field is left blank then all the feedbacks of this faculty will be shown.

The faculty can click the "view feedback summary" link if he wishes to view the feedback summary for a particular course and course component.

Feedback summary
Information shown to the faculty in feedback summary

1. The number of students participated in the feedback for this course component.
2. Faculty feedback rating.
3. Individual question rating.
4. Student count for a particular rating.
5. The subjective questions and their corresponding feedbacks given by the students (No rating).



Feedback Summary

Course Evaluation Type:	Final Evaluation	Faculty Name:	
Course ID:	*****	Total students in the course:	57
Course Component	Lecture	Total students participated in feedback:	48
Semester:	I Semester 2013-14	Faculty Feedback Rating:	3.44

Print

Objective Questions Summary

Section: Course Organization & Delivery

Question No: 1

Description: How clearly was the course plan presented? Rating: 3.44

Rating / Response	Student Count
1-Poor	9
2	6
3	5
4	11
5-Excellent	17
No Opinion	0

Question No: 2

Description: Did the course content met course objectives adequately? Rating: 3.47

Rating / Response	Student Count
1-Poor	9
2	4
3	8
4	8
5-Excellent	18
No Opinion	1

Question No: 3

Description: How were the lectures organized in terms of clarity and presentation of concepts? Rating: 3.38

Rating / Response	Student Count
1-Poor	9
2	5
3	7
4	13
5-Excellent	14
No Opinion	0

Question No: 4

Description: How effectively could the teacher communicate? Rating: 3.43

Rating / Response	Student Count
1-Poor	8
2	5
3	6
4	11
5-Excellent	16
No Opinion	1

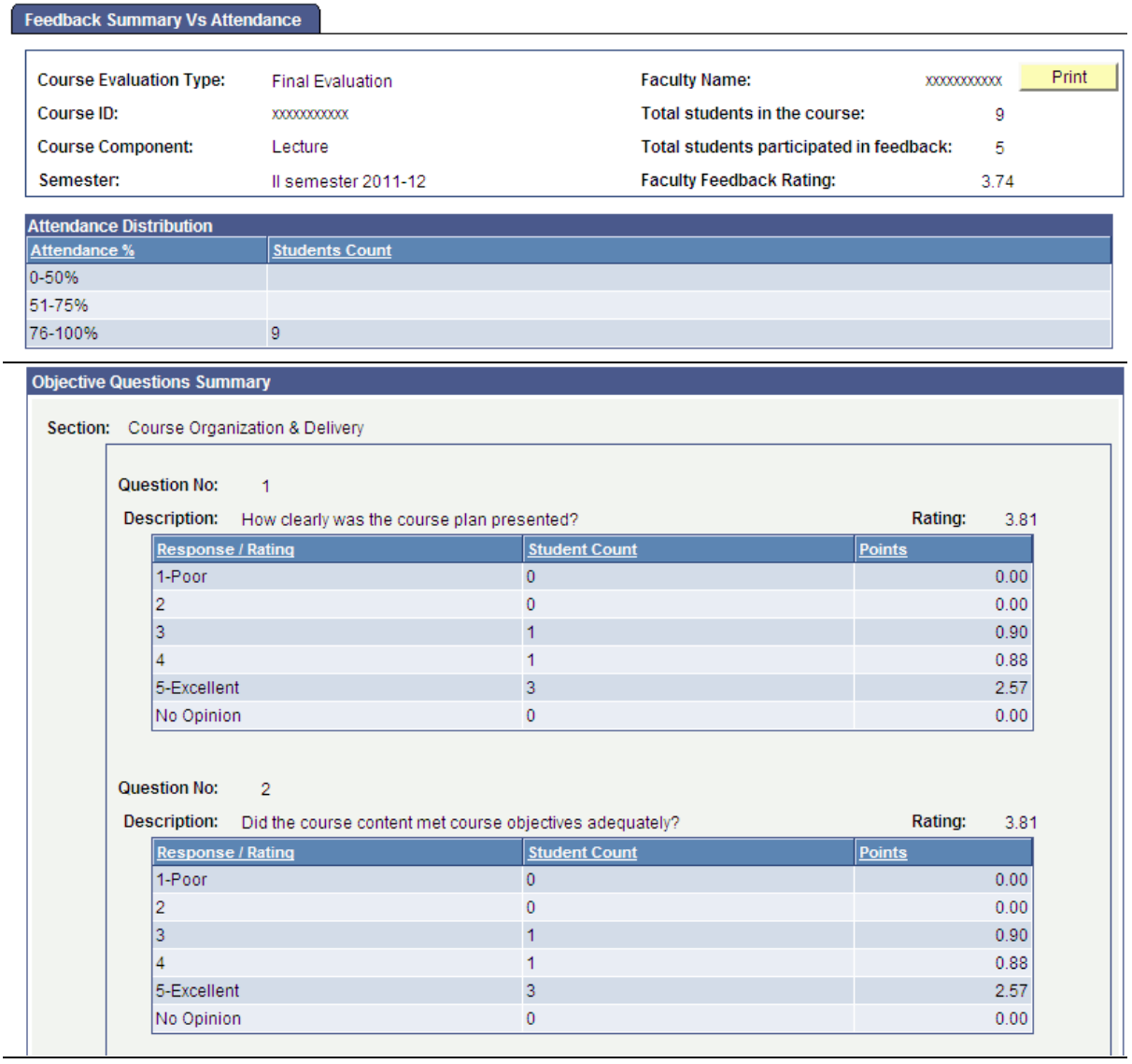
Question No: 5

Description: How receptive was the teacher to questions inside and outside the classroom? Rating: 3.57

Rating / Response	Student Count
1-Poor	10
2	2
3	5
4	11
5-Excellent	19
No Opinion	1

Attendance correlation

- The faculty can click the attendance correlation to view the relation between the attendance and feedback of the students.
- This relation will show the number of students in the categories: 0 to 50 %, 51- 75%, 76-100% under Attendance distribution.
- This page will show the number of students participated in the feedback for the course component, Faculty feedback rating, Individual question rating and Student count for a particular rating.
- The rating will be calculated based upon a pre-decided formula. The attendance rating will be different from the feedback summary rating as the formula for this attendance rating will include the attendance percentage.



Feedback Summary Vs Attendance

Course Evaluation Type:	Final Evaluation	Faculty Name:	xxxxxxxxxx
Course ID:	xxxxxxxxxx	Total students in the course:	9
Course Component:	Lecture	Total students participated in feedback:	5
Semester:	II semester 2011-12	Faculty Feedback Rating:	3.74

Print

Attendance Distribution

Attendance %	Students Count
0-50%	
51-75%	
76-100%	9

Objective Questions Summary

Section: Course Organization & Delivery

Question No: 1

Description: How clearly was the course plan presented? Rating: 3.81

Response / Rating	Student Count	Points
1-Poor	0	0.00
2	0	0.00
3	1	0.90
4	1	0.88
5-Excellent	3	2.57
No Opinion	0	0.00

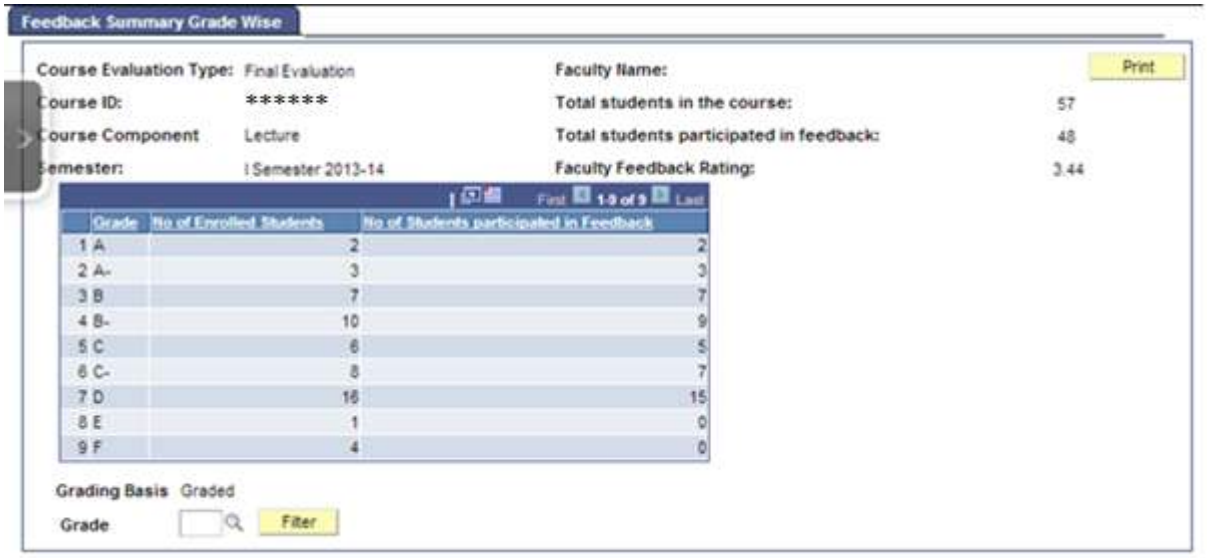
Question No: 2

Description: Did the course content met course objectives adequately? Rating: 3.81

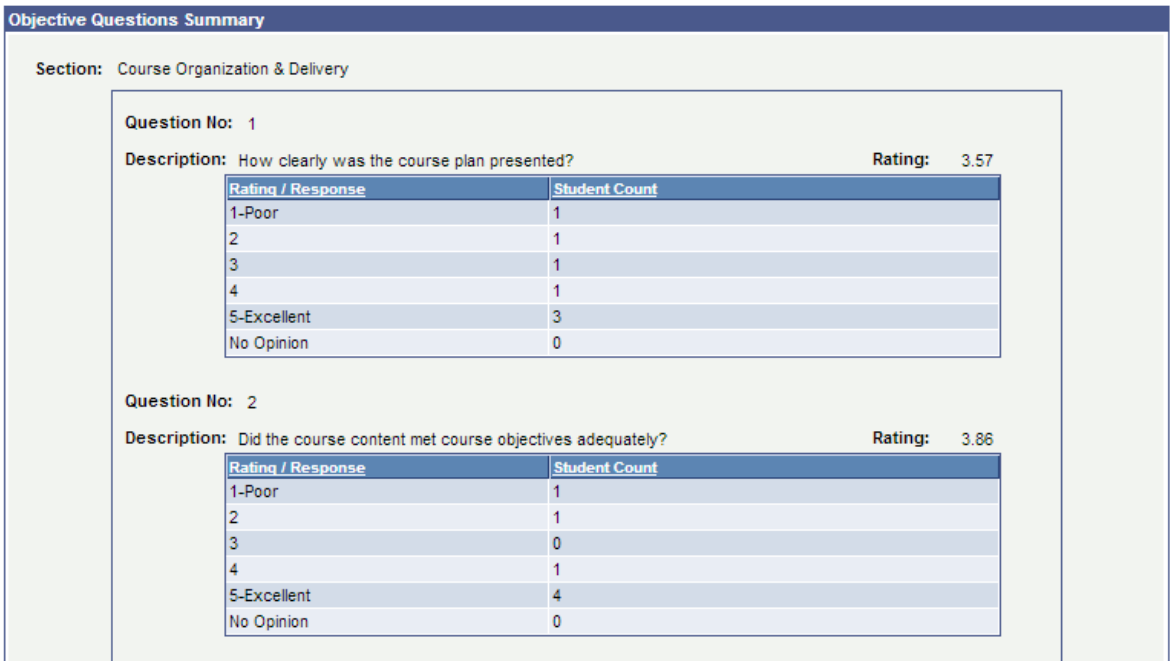
Response / Rating	Student Count	Points
1-Poor	0	0.00
2	0	0.00
3	1	0.90
4	1	0.88
5-Excellent	3	2.57
No Opinion	0	0.00

Grade Correlation summary

- The faculty will click the “View Grade Correlation” link.
- The faculty can filter the feedback summary report according to the grades by clicking the filter button after entering the grade.

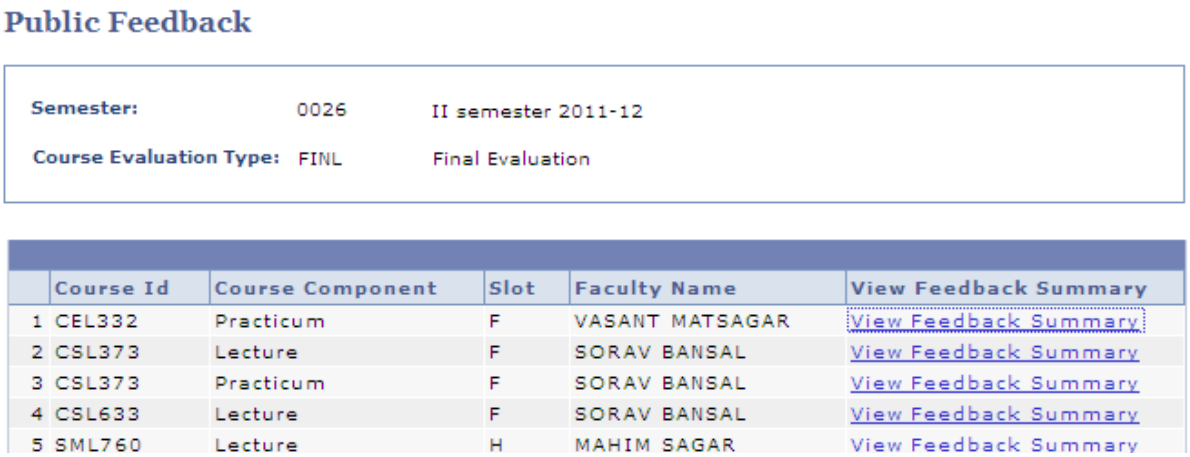


- This will show the feedback summary for the grade entered by the faculty for example its C- in the screenshot.

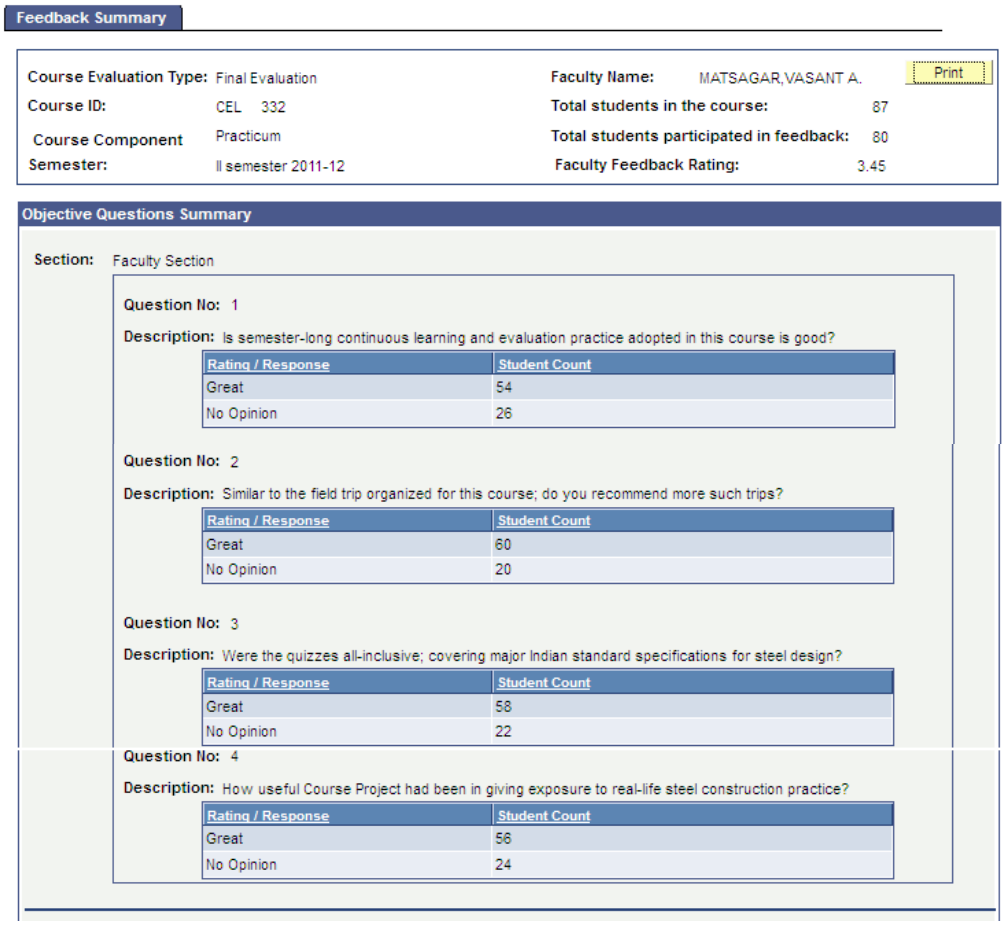


2. Public feedbacks

Navigation: "**Teaching and course evaluation -> Public feedbacks"**



- Everyone will have the access to this page.
- Feedbacks made public by the faculties will only be shown in this page.
- The user will click the link" View feedback summary" to view the feedback summary.



9.3 System for feedback from Recruiters (UG/PG)

On campus: T&P cell

Off campus: None

9.4 Mechanism of obtaining industry feedback & findings

Informal feedback

9.5 Alumni feedback mechanism and its outcome

Indirect feedback

9.6 Placement records (in last 5 years)

PhD - 100%
Integrated M. Tech. - 98-100%
M. Sc. - 20-25%
M. Tech. in computer Applications (2 year) - 90-100%

Section 10

Future Vision

For 5-10 years

Executive Summary: Future Vision for 5-10 years

Mathematics is a fundamental tool to understand and solve problems in science, engineering and social sciences. The Department of Mathematics strives to be recognized for excellence in teaching and research in Mathematics among academic institutions/universities in India & abroad.

We wish to focus on providing a comprehensive curriculum at undergraduate and post graduate levels, relevant to research and career opportunities in India and abroad. The department currently offers four programmes – five-year integrated M.Tech. in Mathematics & Computing (admission through IIT JEE), two-year M.Sc. in Mathematics (admission through JAM), two-year M.Tech. in Computer Applications (admission through GATE, followed by an interview), and Ph.D. in Mathematics (admission through GATE/CSIR-JRF/NBHM, followed by interview). The present five-year integrated M.Tech. in Mathematics & Computing programme is replaced by a Dual degree B. Tech. + M. Tech. programme in Mathematics & Computing (admission through IIT-JEE). We may also initiate an integrated Ph.D. programme in Mathematics at some future stage.

10.1 Goals and benchmarking for future in relation to (i) curricula, (ii) research, (iii) outreach, and (iv) processes for regular internal assessment.	(i) **Curricula:** The Institute is in the process of finalizing the UG Curriculum, to be made effective from the 2013 entry batch. The process for the PG Curriculum (JCA & M.Sc.) will begin after the completion of this exercise shortly. As part of the UG Curriculum, it has been decided to have a four-year B. Tech. degree in Mathematics & Computing, which would include basic traditional elements of core Mathematics & Computing programme. Our new programme has a larger intake per batch, and the courses have been suitably altered to take into account the changing times. There will be 50-60 students in each batch, and they will need to do 168 credits. These are categorized as Institute Core (55 credits), Programme linked electives (12.5 credits), Department Core (63.5 credits), Department Electives (12 credits), Open Category (10 credits), and Non-graded Core (15 credits). The department is currently reviewing the two-year M.Sc. Curriculum, and is inclined towards a set of core courses in first year and a set of courses from the specialization in their second year. All students will be required to do a project towards their degree. **(ii) Research:** The department currently has 21 members in the faculty, with research interests in the areas of Algebra, Analysis, Algebraic Coding Theory, Combinatorics, Cryptology, Differential Equations, Data Mining, Dynamical Systems, Graph Theory, Financial Mathematics, Measure Theory, Natural Language Processing, Number Theory, Numerical Analysis, Optimization, Stochastic Processes, Topology. While we expect to strengthen research in these areas, we also seek to expand our research areas by hiring faculty in other areas of contemporary interest that also leads to collaborative and interdisciplinary work.

	(iii) Outreach: The department of Mathematics has conducted several workshops and seminars for high Department, undergraduate and postgraduate students, and teachers over the past several years. We propose to regularly conduct such workshops for students and teachers to encourage them to pursue a career in mathematical sciences and their applications. We also propose to establish a strong interaction between our Alumni and the Department of Mathematics. The department regularly invites eminent mathematicians from India and abroad for lectures and collaborations. Several research projects are funded externally through grants from Government organizations and industries. **(iv) Processes for regular internal assessment:** The department regularly assesses its performance and progress through Department Faculty Board and Department Research Committee meetings. Teaching evaluations are done through student feedback during mid-semester and again through a mandatory online end-semester feedback.
10.2 Vision of curricula and teaching- learning processes – UG, PG and Ph.D.; innovations proposed.	As per the institute policy the department agreed to replace the 5-year integrated M.Tech programme with a Dual degree B.Tech + M.Tech programme. Curriculum for the B.Tech part has already been approved in the Senate. Finalization of the M.Tech part is under way. Department is in favour of demarcating some specialization within the curriculum of the B.Tech programme. Outside department B.Tech students may consider them as their Minor areas as well. Details are being deliberated. The department is planning to review the M.Sc Mathematics programme, and in favour of making the second year of it focused on some specialization, e.g. Pure Maths, Statistics& OR etc. In future we are planning to introduce three year M.S. (Research) programme in mathematics for students clearing JAM examination.

10.3 Area identified for improvement in (i) curriculum (ii) teaching – learning processes.	Keeping in mind new developments and recent trends in Mathematics & Computing, the department proposes to improve our teaching and research expertise in emerging areas of Mathematics by attracting young and new Ph.D.'s as faculty. We also intend to attract established Researchers to visit the Department to strengthen our Research programme.
10.4 New areas for research and Masters programme, and industry participation in these.	The department proposes to build and develop research in the areas that highlight the existing strengths of the department.
10.5 Projections for (i) funded projects, (ii) Journal publications.	**(i) Funded projects:** Several members of the faculty have funded projects in areas like Cryptography, Machine Learning, Data Mining, Queueing Network Modeling, and Partial Differential Equations. The department encourages others to widen their research interests to emerging and applicable areas so that funding of their research is easier. **(ii) Journal publications:** All faculty members are currently active in research, and publish their work in journals and in conference proceedings. With more proposed faculty hirings in the foreseeable future and with greater interaction between faculties, both within and outside department, we expect to have a larger output in research publications, both qualitatively and quantitatively.
10.6 Projected graduation numbers – Ph.D, M.Tech and B.Tech.	In last 5 years or so, we have graduated roughly 5 Ph.D. students and 30 M.Tech. students per year. We do not have a B.Tech. programme. With an increased number of Ph.D. students, it is expected that the number of graduating Ph.D. students will increase a little. The intake for the new 4-year B.Tech. programme is between 50 & 60.
10.7 Projected faculty profile, and areas for recruitment of faculty.	In addition to enhancing the strengths of the major research areas within our department, we look to fill teaching and research needs in areas that highlight the existing strengths of the department.
10.8 Projections for future benchmarking (for comparison after 5 years) – institutions in India and abroad, and parameters for future comparison	IIT Delhi is one of the five original IITs. Among the IITs, the three that run similar programmes are those at Kanpur, Kharagpur & Guwahati. NITs at Rourkela & Surathkal also have a similar programme. We would also like to compare our programmes with such established institutes as MIT & ETH, Zurich.

10.9 Infrastructure and governance – limiting factors that affect achievement of benchmarks and methods to overcome these.	The department has a sanctioned strength of 25 as of 2011 and faculty apportionment for the department is 38. However, presently we have just 20 faculty members plus one Emeritus Professor. As a basic science department we need to cater the first year B.Tech programme (with two Mathematics courses) for all the 851 students of first year B. Tech. This is a huge load, and hinders the research activities of the faculty members involved. Apart from that many Mathematics courses are Core to other B.Tech programmes. As a consequence the research activities of the faculty members suffers badly. Also, there is a problem with space. There is no space for the research scholars which is currently more than 60 in number. They are accommodated primarily in the labs, or faculty rooms lying vacant currently. This is one major limiting factor for the department. For a long time we did not have any store keeper, and some other supporting staffs. As a consequence, faculty members have to share the burden of many administrative works sacrificing their research and other academic activities. We need to compare the faculty members' duties with some globally renowned universities and institutes in this regard.
10.10 Working with other Department / centre will undertake.	Several members of the faculty work jointly with members from Computer Science & Engineering, Electrical Engineering, TRIPP, Bharti Department of Telecommunication. We expect to widen this collaboration to include more members from these faculties, and some new members of centres like Atmospheric Science.
10.11 New initiative that the Department / centre will undertake.	Major initiative that the department has taken over the last two years is to recruit young faculty members with excellent academic standards. In last two years the department could recruit 5 members through this initiative. The process is still going on. The department is also showcasing the Mathematics and Computing programme to industries and other research institutes. The results of the effort can be seen from the undergraduate students coming through JEE. Over the last few years more and more students with high JEE ranks are preferring this course.

10.12 Outreach goals and anticipated limitations in the attainment of these	The department expects to run many more conferences and training programmes for teachers and students in new and emerging areas of Mathematics & Computing. Limitations in attaining our goals could be due both to infrastructure and funding.
10.13 Mechanisms for effective changes based on feedback received and development and implementation of corrective measures	The faculty members meet the students regularly to pinpoint their grievances and difficulties with respect to each course; and initiate corrective actions. The online feedbacks, both midterm and end -term, given by the students also help us in this regard.
10.14 Questions to which the department seeks answers from the Review committee.	What are the key drawbacks in our system and suggestions to improve on these?

Section 11
Information in the Public Domain

Executive Summary: Information in the Public Domain

The Department maintains a reasonably good website of the Department. The website contains information about all academic programmes run by the Department, the details of the faculty and staff of the Department. The list of journal and conference publications is made available. The list of students enrolled in various programmes and the list of recruiters of the students of the Department are placed in the website. Department also maintains record of the meetings of various committees such as (i) DFB, (ii) DRC, and (iii) PC.

11.1 Minutes of all meetings

Department maintains the record of the minutes of the meetings of various committees. The DFB secretary maintains the hardcopy and softcopy of the minutes of the DFB meetings. The DRC secretary maintains the hardcopy and softcopy of the minutes of the DRC meetings, the HOD maintains the minutes of the PC meetings.

11.2 All reports archived in the central / Department / centre libraries

The Department library maintains the copies of Ph.D. thesis, M. Tech and MSc project reports.

11.3 Past vision documents, review documents, standing review committee documents

The Department had prepared a vision document and a space related document. These were sent to the administration.

11.4 Any other documents developed by the department, a group / section of the department.

The Department is currently proposing the programmes (i) B. Tech in Mathematics and Computing, and (ii) Dual Degree B. Tech + M. Tech in Mathematics and Computing. The Department has spent enormous amount of time and efforts in preparing the complete program proposals and submitted to Institute for considerations and approval.

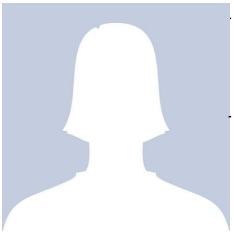
11.5 Feedback documentation and action taken on the same, and its outcome.

Currently no such document is available. However, the Department plans to maintain the internal review report once the review is over.

Appendix

Short CV of Faculty Members

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
B. CHANDRA	1979	Mathematics , Professor

Degree	Specialization	Institute/University	Year

Research Areas and Highlights
Neural Networks for Pattern Classification, Statistical Clustering of Gene Expression Data, Data Mining, Databases, Adaptive Forecasting.

Experience

Significant Publications

- A Single Neuron Model for Pattern Classification, ICONIP 2012,Qatar, Part IV, LNCS 7666, 2012 pp. 619–625 , Conference , International
- B. Chandra, Shalini Bhaskar: A Novel Approach for Finding Frequent Itemsets in Data Stream. Int. J. Intell. Syst. 28(3): 2013, 217-241

  , Journal , International
- B. Chandra, Shalini Bhaskar: A Novel Approach for Finding Frequent Itemsets in Data Stream. Int. J. Intell. Syst. 28(3): 2013, 217-241

  , Journal , International
- B. Chandra, Manish Gupta: A novel approach for distance-based semi-supervised clustering using functional link neural network. Soft Computing,Springer, 17(3): 2013,369-379 , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years

Patent & IPR

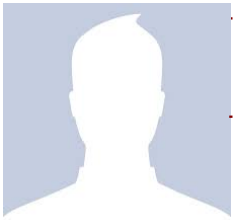
Course Name	L-T-P	Course Belongs To
DATABASE MANAGEMENT SYSTEMS	3-0-2	PG
NEURO-COMPUTING & APPLICATIONS	3-0-0	PG
DATA MINING AND KNOWLEDGE DISCOVERY	3-0-2	PG
SYSTEM DESIGN LABORATORY	0-0-4	UG

BASIC COMPUTER SCIENCE	3-0-2	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
A. TRIPATHI	1991	Mathematics , Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Honours in Mathematics	University of Delhi	1980
M.Sc.	Mathematics	Indian Institute of Technology Kanpur	1982
MA	Mathematics	State University of New York at Buffalo, Buffalo, NY USA	1985
Ph.D.	Number Theory	State University of New York at Buffalo, Buffalo, NY USA	1989

Research Areas and Highlights
Additive & Combinatorial Number Theory, Diophatine Equations, Combinatorial problems in Graph Theory, Ramsey Theory

Experience
Professor, Indian Institute of Technology Delhi, December 2012 -
Associate Professor, Indian Institute Of Technology Delhi, January 2005 - December 2012
Assistant Professor, Institute of Technology Delhi, December 1993 - January 2005
Lecturer, Indian Institute of Technology Delhi, July 1991 - December 1993
Assistant Professor, Division of Science & Mathematics, Fairmont State University, Fairmont, WV, USA, August 1989 - July 1991

Significant Publications

- (with Ram Krishna Pandey) On the density of integral sets with missing differences from sets related to arithmetic progressions, Journal of Number Theory 131 (2011), 634-647.
  , Journal , International
- (with Sushmita Venugopalan & Douglas B. West) A short constructive proof of the Erdos-Gallai characterization of graphic lists, Discrete Mathematics 310 (2010), 343-344. , Journal , International
- On the largest size of a partition that is both s-core and t-core, Journal of Number Theory 129 (2009), 1805-1811. , Journal , International
- (with Sachin Gautam & Ashish Kumar Srivastava) On multicolour noncomplete Ramsey graphs of Star graphs, Discrete Applied Mathematics 156 (2008), 2423-2428. , Journal , International
- A Comparison of Dispersion and Markoff Constants, Acta Arithmetica 63.3 (1993), 193-203. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	4	3

M.Tech.	Completed	17	7
M.S.(Research)	Completed	12	4

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	40	15
Journal	National	3	1
Books	National	1	0

Patent & IPR

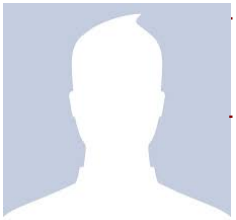
Course Name	L-T-P	Course Belongs To
GRAPH THEORY	3-1-0	PG
DISCRETE MATHEMATICAL STRUCTURES	3-0-0	PG
NUMBER THEORY	3-1-0	UG
GRAPH THEORY	3-1-0	UG
NUMBER THEORY	3-1-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

- Member, American Mathematical Society, 1982 -

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
SUBIMAN KUNDU	1992	Mathematics , Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics Honours	University of Calcutta	1978
M.Sc.	Pure Mathematics	University of Calcutta	1981
Ph.D.	Topology, Measure Theory, Function Spaces and Atsuji Spaces	Virginia Polytechnic Institute & State University	1989

Research Areas and Highlights

Topology, Measure Theory, Function Spaces and Atsuji Spaces.

Experience

After his Ph.D., Subiman Kundu worked for two years (approx) as a Visiting Scientist (supported by the CSIR) at the ISI, Kolkata. Thereafter in January 1992, he joined the IIT Delhi as a Lecturer. At IIT Delhi, he became an Assistant Professor in December 1993, an Associate Professor in October 2006 and a Professor in December 2012. In between, he visited the second university of Naples in Italy as a CNR visiting Professor during June 1994, the ISI, Kolkata as a NBHM Visiting Professor during July 1998-December 1998 and the Institute of Mathematics, Slovak Academy of Sciences, Slovakia as an INSA visiting Scientist during July 2009.

Significant Publications

- KUNDU, S., McCoy, R.A. and Okuyama, A. (1989). Spaces of Continuous Linear Functionals on C_k(X). Mathematica Japonica, 34, 5, 775-787. , Journal , International
- KUNDU, S. (1989). Spaces of Continuous Linear Functionals: Something Old and Something New. Topology Proceedings, 14, 113-129. , Journal , International
- KUNDU, S. (1991). On a Topology of the Set of Bounded Tight Contents. Kobe Journal of Mathematics, 8, 47-54. , Journal , International
- KUNDU, S. and McCoy, R.A. (1993). Topologies Between Compact and Uniform Convergence on Function Spaces. Internat. J. Math. & Math. Sci., 16, 1, 101-109. , Journal , International
- KUNDU, S., Raha, A.B. and McCoy, R.A. (1992/93). Topologies Between Compact and Uniform Convergence on Function Spaces: II. Real Analysis Exchange, 18, 1, 176-189. , Journal , International
- KUNDU, S. and Okuyama, A. (1993) Complete Duals of C*(X). Mathematica Scandinavica, 72, 1, 33-46. , Journal , International
- KUNDU, S. and Raha, A.B. (1993). Pseudocompactness Versus First Countability. Questions and Answers in General Topology, 11, 183-191. , Journal , International

- KUNDU, S. and McCoy, R.A. (Spring 1995). Weak and Support-Open Topologies on C(X). Rocky Mountain Journal of Mathematics, 25, 2, 715-732. , Journal , International
- KUNDU, S. and Raha, A.B. (1995). The Bounded-Open Topology and its Relatives. Rendiconti dell Istituto di Matematicadell Universita di Trieste, 27, 61-77. , Journal , International
- KUNDU, S. and Raha, A.B. (1997). Addendum to the paper The Bounded-Open Topology and its Relatives. Rendiconti dell Istituto di Matematica dell Universita di Trieste, 29, 163-166. , Journal , International
- KUNDU, S. and Raha, A.B. (2000). The Dual of C_b(X). Mathematica Japonica, 51, 2, 187-197. , Journal , International
- KUNDU, S., Raha, A.B. and Swardson, M.A. (2001). Bounded Subsets and Weak Realcompactness Conditions. Quaestiones Mathematicae, 24, 225-235. , Journal , International
- KUNDU, S. and Raha, A.B. (2001). The Stone-Weierstrass Theorem and Dini Theorem: An Insight. Houston Journal of Mathematics, 27, 4, 887-895. , Journal , International
- KUNDU, S. (2004). C_b(X) Revisited : Induced Map and Submetrizability. Quaestiones Mathematicae, 27, 47-56. , Journal , International
- KUNDU, S. and Garg, Pratibha (2006). The Pseudocompact-Open Topology on C(X). Topology Proceedings, 30, 1, 279-299. , Journal , International
- KUNDU, S. and Jain, Tanvi (2006). Atsuji Spaces : Equivalent Conditions. Topology Proceedings, 30, 1, 301-325. , Journal , International
- Jain, Tanvi and KUNDU, S. (2007). Atsuji Completions : Equivalent Characterisations. Topology and its Applications, 154, 28-38. , Journal , International
- Jain, Tanvi and KUNDU, S. (2007). Boundedly UC Spaces : Characterisations and Preservation. Quaestiones Mathematicae, 30, 247-262. , Journal , International
- McCoy, R. A., Jain, Tanvi and KUNDU, S. (2007). Factorization and Extension of Isomorphisms on C(X) to Homeomorphisms on Hyperspaces. Topology and its Applications, 154, 2678-2696. , Journal , International
- KUNDU, S. and Garg, Pratibha (2007).} Countability Properties of the Pseudocompact-Open Topology on C(X): A Comparative Study. Rendiconti dell Istituto di Matematica dell Universita di Trieste, 39, 421-444. , Journal , International
- KUNDU, S. and Garg, Pratibha (2008). Completeness Properties of the Pseudocompact-Open Topology on C(X). Mathematica Slovaca, 58, 3, 325-338. , Journal , International
- Jain, Tanvi and KUNDU, S. (2008). Atsuji Completions vis-a-vis Hyperspaces. Mathematica Slovaca,

58, 4, 497-508. , Journal , International

- KUNDU, S. and Garg, Pratibha (2009). The Dual of C_ps(X). Positivity, 13, 367-384. , Journal , International
- KUNDU, S. and Garg, Pratibha (2009). The Compact-Open Topology : A New Perspective. Topology and its Applications, 156, 686-696. , Journal , International
- KUNDU, S. (2010). The Metrizability and Completeness of the Support-Open Topology on C(X). Topology and its Applications, 157, 1119-1126. , Journal , International
- KUNDU, S. and Pandey, Vipra (2012). The Metrizability and Completeness of the sigma-compact-Open Topology on C*(X). Topology and its Applications, 159, 593-602. , Journal , International
- Garg, Pratibha and KUNDU, S. (2012). The Compact-G-delta-Open Topology on C(X). Topology and its Applications, 159, 2082-2089. , Journal , International
- McCoy, R. A., Jindal, Varun, Kundu, S. (2013) Homeomorphism spaces with uniform and fine topologies. Houston Journal of Mathematics, Vol.39 No. 3, 1051-1066. , Journal , International
- Jindal, Varun, McCoy, R. A., Kundu, S. Path components in the uniform spaces of continuous functions into a normed linear space. Vol.43(2014), 19-27. The paper has been E-published on April 20, 2013. , Journal , International
- Arora, Nitin and Kundu, S. Semiclean rings and rings of continuous functions. To appear in Journal of Commutative Algebra. The paper was accepted for publication in May, 2013. , Journal , International
- KUNDU, S. and Pandey, Vipra. (2013) Countability Properties of the $sigma$-Compact-Open Topology on C*(X). Topology Proceedings, Volume 41. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
M.Tech.	Completed	6	5
B.Tech.	Completed	1	1
M.Tech.	In Progress	1	1
Ph.D.	Completed	3	1
Ph.D.	In Progress	5	5

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	1	240000

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	31	9

Patent & IPR

Course Name	L-T-P	Course Belongs To
LINEAR ALGEBRA	3-0-0	PG
ANALYSIS	3-0-0	PG
TOPOLOGY AND FUNCTIONAL ANALYSIS	3-1-0	UG
MEASURE, INTEGRAL AND PROBABILITY	3-1-0	UG

COMPLEX ANALYSIS	3-1-0	PG
TOPOLOGY	3-1-0	PG
FUNCTIONAL ANALYSIS	3-1-0	PG
ALGEBRA	3-1-0	UG
TOPOLOGY AND FUNCTIONAL ANALYSIS	3-1-0	UG
LINEAR ALGEBRA	3-1-0	UG
INTRO. TO ALGEBRA & MATRIX ANALYSIS	3-1-0	UG
INTRO. TO ANALYSIS & DIFFERENTIAL EQUATIONS	3-1-0	UG
MULTIVARIABLE CALCULUS AND MATRIX THEORY	3-1-0	UG
MATHEMATICS II	3-1-0	UG
REAL & COMPLEX ANALYSIS	3-1-0	UG
MODERN ALGEBRA	3-1-0	UG

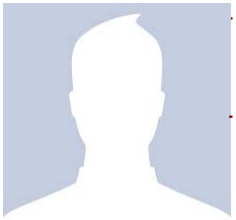
Awards & Distinctions

- GURU DAKSHINA (HONORING MENTOR) Award by the Golden Jubilee Committee, IIT Delhi on the occasion of the Golden Jubilee of the IIT Delhi.
- INSA Visiting Scientist to Institute of Mathematics, Slovak Academy of Sciences, Slovakia from June 30, to July 22, 2009.
- NBHM Visiting Professor to ISI Kolkata from July 1, 1998 to December 31, 1998.
- CNR Visiting Professor to Institute of Mathematics, Second University of Naples, Italy during June 1994.

Society Membership, Certification & Training & Any Other Details

- Member of the American Mathematical Society.

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
S.CHANDRA SEKHARA RAO	1998	Mathematics , Professor

Degree	Specialization	Institute/University	Year
Ph.D.	Parallel Numerical Algorithms	Indian Institute of Technology Kanpur	1995

Research Areas and Highlights
Parallel Computing, Numerical Linear Algebra, Computational Ordinary/Partial Differential Equations

Experience
Professor, IIT Delhi Department of Mathematics, Dec. 2012- to date. Associate Professor, IIT Delhi Department of Mathematics, Aug. 2008- Nov. 2012. Assistant Professor, IIT Delhi Department of Mathematics, Dec. 1999- July 2008. Lecturer, IIT Delhi Department of Mathematics, July 1998- Nov. 1999. Research Associate(CSIR) IIT Kanpur Department of Mathematics, Jan 1996- June 1998.

Significant Publications

- Rao, S.C.S. and Sunil Kumar An Almost Fourth Order Parameter-Uniformlty Convergent Domain Decomposition Method for a Coupled System of Singularly Perturbed Reaction-Diffusion Problems, J. Comput. Appl. Math. 235(2011) pp.3342-3354. , Journal , International
- Rao, S.C.S., Sunil Kumar and Mukesh Kumar Uniform Global Convergence of a Hybrid Scheme for Singularly Perturbed Reaction-Diffusion Systems, J. Optim. Theory Appl. 151(2011) pp. 338-352. , Journal , International
- Rao, S.C.S. and Sunil Kumar Second Order Global Uniformly Convergent Numerical Method for a Coupled System of Singularly Perturbed Initial Value Problems, Appl. Math. Comput. 219(2012) pp. 3740-3753. , Journal , International
- Rao, S.C.S. and Mukesh Kumar An almost Fourth Order Parameter-Robust

Numerical Method for a Linear System of (M ¸ 2) Coupled Singularly Perturbed Reaction-Diffusion Problems, Int. J. Num. Anal. Model. 10(2013) pp. 603-621. , Journal , International

- Rao, S.C.S. and Sunil Kumar Robust High Order Convergence of an Overlapping Schwarz Method for a Singularly Perturbed Semilinear Reaction-Diffusion Problems, J. Comp. Math. 31(2013) pp. 509-521. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	2	2
M.Tech.	Completed	2	2

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	16	16
Conference	International	4	4

Patent & IPR

Course Name	L-T-P	Course Belongs To
NUM. METHODS & COMPUTATION	3-1-0	UG
DIFFERENTIAL EQUATIONS	3-1-0	PG
NUMERICAL ANALYSIS	3-1-0	PG
ADVANCED MATRIX THEORY	3-1-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

Brief CV

Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
NILADRI CHATTERJEE	1998	Mathematics , Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Statistics	(B.Stat) Indian Statistical Institute	1982
M.Sc.	Statistics	Indian Statistical Institute	1984
M.Tech.	Computer Science	Indian Statistical Institute	1986
Ph.D.	Computer Science	University College London	1995

Research Areas and Highlights

Natural Language Processing, Statistical Modeling, Semantic Web.

My primary research area in Natural Language Processing. In particular I focus on Example Based Techniques in Language Processing. I have already supervised one Ph.D in Example Based Machine Translation from English to Hindi; and one in Example Based Parsing of Hindi texts. Currently, two more Ph.D students are working in Machine Translation under my supervision - one in Statistical Machine Translation and the other in Evaluation of Translation quality.

Recently one student has submitted his Ph.D thesis in Text Summarization using Random Indexing. For a fundamental work in this area I received the Best Paper award from CICLING 2008.

My other interests are: Ontology development and Statistical Modeling. I have One Ph.D student working in each of these two areas respectively. I also have an MOU with Won Kwang university South Korea to work in the area of Semantic Web.

My primary research area in Natural Language Processing. In particular I focus on Example Based Techniques in Language Processing. I have already supervised one Ph.D in Example Based Machine Translation from English to Hindi; and one in Example Based Parsing of Hindi texts. Currently, two more Ph.D students are working in Machine Translation under my supervision - one in Statistical Machine Translation and the other in Evaluation of Translation quality. Recently one student has submitted his Ph.D thesis in Text Summarization using Random Indexing. For a fundamental work in this area I received the Best Paper award from CICLING 2008. My other interests are: Ontology development and Statistical Modeling. I have One Ph.D student working in each of these two areas respectively. I also have an MOU with Won Kwang university South Korea to work in the area of Semantic Web.

Experience

Indian Institute of Technology Delhi Professor

January 2013 - till date

University of Pisa Italy Visiting Professor

January 2010 - July 2010 (On sabbatical)

Indian Institute of Technology Delhi Associate Professor October 2006 December 2012

Indian Institute of Technology Delhi Assistant Professor December 1998 September 2006

University College London Research Fellow July 1996 November 1998

ISI Calcutta Visiting Scientist January 1996 June 1996

Dept. Of Computer Science , University College London Research Associate November 1993 August 1995

Dept. Of Computer Science , University College London Research Scholar October 1990 October 1993

ISI, Calcutta Computer Engineer April 1987 September 1990

Significant Publications

- Niladri Chatterjee and Renu Balyan, Context Resolution of Verb Particle Constructions for English to Hindi Translation. PACLIC 2011, pp 140-149, Singapore, 2011.

  Hisham Kholidy and N. Chatterjee. Towards Developing an Arabic Word Alignment Annotation Tool with some Arabic Alignment Guidelines. Proc. ISDA 2010, Cairo, Egypt, 2010, IEEE Publishers, pp. 778 – 783. 2010.

  Niladri Chatterjee and Avikant Bhardwaj. Single Document Text Summarization Using Random Indexing and Neural Networks. Proc. KE , Conference , International
- Mariya Khatoona,, Geetam Tiwari, Niladri Chatterjee. Impact of Grade Separator on Pedestrian Risk Taking Behavior. Accident Analysis and Prevention, Elsevier, pp 861 – 870, 2012.

  Niladri Chatterjee and Renu Balyan, Towards Development of a Suitable Evaluation Metric for English to Hindi Machine Translation, International Journal of Translation Vol 23, No. 1, pp 7 - 26, 2011

  K. V. Krishna and N. Chatterjee. A Necessary Condition to Test the Minimality of Generalized Linear Sequential Mac , Journal , International
- M Khatoon,, G. Tiwari, Niladri Chatterjee. Impact of Grade Separator on Pedestrian Risk Taking Behavior. Accident Analysis and Prevention, Elsevier, pp 861 – 870, 2012.

  Niladri Chatterjee and R. Balyan, Towards Development of a Suitable Evaluation Metric for English to Hindi Machine Translation, International Journal of Translation Vol 23, No. 1, pp 7 - 26, 2011

  K. V. Krishna and N. Chatterjee. Holonomy Decomposition of Seminearrings. Southeast Asian Bulletin of Mathematics, Vol 31, pp 111 , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	In Progress	8	5
M.Tech.	Completed	55	25

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	15	4

Journal	National	4	1
Conference	International	28	8
Conference	National	22	5

Patent & IPR

Course Name	L-T-P	Course Belongs To
INTRODUCTION TO PROGRAMMING AND DATA STRUCTURES	3-0-2	PG
PROBABILITY & STOCHASTIC PROCESSES	3-1-0	UG
THEORY OF AUTOMATA	3-1-0	UG
STATISTICAL METHODS AND ALGORITHMS	3-1-0	UG
THEORY OF AUTOMATA AND FORMAL LANGUAGE	3-0-0	UG
BASIC COMPUTER SCIENCE	3-0-2	PG
SOFTWARE ENGINEERING	3-0-2	UG
NATURAL LANGUAGE PROCESSING	3-0-2	PG
SPECIAL TOPICS IN COMPUTER SCIENCE	3-0-2	UG
INTRODUCTION TO COMPUTERS AND PROGRAMMING	3-0-2	PG
INTRODUCTION TO COMPUTERS AND PROGRAMMING	3-0-2	UG
PROGRAMMING LANGUAGES	3-0-2	UG
INTRODUCTION TO COMPUTERS AND PROGRAMMING	3-0-2	PG
INTRODUCTION TO COMPUTERS AND PROGRAMMING	3-0-2	PG
ANALYSIS & DESIGN OF ALGORITHMS	3-1-0	UG
FUZZY SETS AND APPLICATIONS	3-1-0	PG
PROBABILITY THEORY	3-1-0	PG

Awards & Distinctions

- Best Paper - CICLING 2008 Conference Haifa, Israel, 2008
- Best Paper and the Raizada memorial shield by Computer Society of India, 2001.
- Organizing Chair “CICLING – 2012” – 13th international Conference Computational Linguistics and Intelligent text Processing, 11-17 March 2012, IIT Delhi
- Guest Editor for SEMANTIC WEB AND INTELLIGENT TEXT PROCESSING, Polibits 45, 2012.
- Invited talk at John Hopkins University, USA 2003.
- Invited talk at EACL Workshop Languages of South Asia Expanding Synergies with Europe, EACL-2003

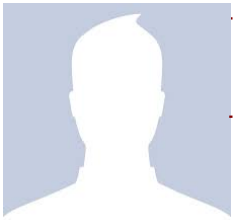
Society Membership, Certification & Training & Any Other Details

- Member of Technology Development for Indian Languages (TDIL) Govt. of India.

  Member of the Consortium on Open Linked Data DEPARTMENT OF ELECTRONICS & INFORMATION TECHNOLOGY

  Member of Project Steerin

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
BHAWANI SANKAR PANDA	2002	Mathematics , Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics (Honors)	Government College Bhawanipatna, Sambalpur University	1984
M.Sc.	Mathematics	Sambalpur University, Orissa	1986
Ph.D.	Graph Theory, Algorithmic Graph Theory	IIT Kanpur	1994

Research Areas and Highlights

Algorithmic Graph Theory, Graph Theory, Algorithms,Combinatorial Optimization, Parallel Computing.

Experience

B. S. Panda did his Ph.D. in the Department of Mathematics, IIT Kanpur in Algorithmic Graph Theory in 1994. He was then a visiting scientist at ISI Calcutta. He was a lecturer and subsequently became an Assistant Professor in computer Science Department at BITS Pilani. He then served as a Reader in the Department of Computer and Information Sciences, University of Hyderabad. He was also in the Department of Computer Science and Engineering, University of Texas at Arlington, USA as a visiting researcher. He joined the Department of Mathematics, IIT Delhi as an Assistant Professor in 2002 June, became an Associate Professor in October 2006 and is a Professor since 13th April, 2011. He is also the Head of the Department since January 1, 2012.

Significant Publications

- B. S. Panda, S. Paul: Liar's domination in graphs: Complexity and algorithm. Discrete Applied Mathematics 161(7-8): 1085-1092 (2013) , Journal , International
- B.S. Panda, D. Pradhan, Minimum paired-dominating set in chordal bipartite graphs and perfect elimination bipartite graphs. Journal of Combinatorial Optimization, 26(4): 770-785 (2013) , Journal , International
- G. Chang, B.S. Panda, and D. Pradhan, Complexity of distance paired domination in Graphs, Theoretical Computer Science, 459, 89-99(2012). , Journal , International
- Bighnaraj Panigrahi, Swades De, B. S. Panda, Jean-Daniel Lan Sun Luk: Network lifetime maximising distributed forwarding strategies in ad hoc wireless sensor networks. IET Communications 6(14): 2138-2148 (2012) , Journal , International
- B. S. Panda, Anita Das: Tree 3-spanners in 2-sep chordal graphs: Characterization and algorithms. Discrete Applied Mathematics 158(17): 1913-1935 (2010) , Journal , International
- B. S. Panda, Sajal K. Das: Parallel recognition algorithms for chordal_planar graphs and planar k-trees. J. Parallel and Distributed Computing, 65(8): 922-926 (2005) , Journal , International
- B. S. Panda, The Separator Theorem for Rooted Directed Vertex Graphs. J. Combinatorial Theory, Ser. B 81(1): 156-162 (2001) , Journal , International
- B. S. Panda: The forbidden subgraph characterization of directed vertex graphs. Discrete Mathematics 196(1-3): 239-256 (1999) , Journal , International
- B. S. Panda, Sajal K. Das: A linear time recognition algorithm for proper interval graphs. Inf. Process. Lett. 87(3): 153-161 (2003)

, Journal , International

- B. S. Panda, S. P. Mohanty: Intersection graphs of vertex disjoint paths in a tree. Discrete Mathematics 146(1-3): 179-209 (1995)

  , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	5	4
Ph.D.	In Progress	4	4

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	2	1200000

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	29	18
Journal	National	1	0
Conference	International	17	6
Conference	National	3	0
Books Edited	International	1	1

Patent & IPR

Course Name	L-T-P	Course Belongs To
ANALYSIS & DESIGN OF ALGORITHMS	3-1-0	UG
GRAPH ALGORITHMS	3-1-0	UG
ADVANCED ALGORITHMS	3-0-2	PG
INTRODUCTION TO PROGRAMMING AND DATA STRUCTURES	3-0-2	PG
GRAPH THEORY	3-1-0	PG
GRAPH THEORY	3-1-0	UG
PARALLEL COMPUTING	3-1-0	UG
MATHEMATICS-I	3-1-0	UG
OPERATING SYSTEMS	3-0-2	UG
DISCRETE MATHEMATICAL STRUCTURES	3-1-0	UG

Awards & Distinctions

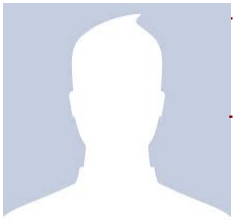
- Fifth Rank in the University in BSc
- Second Rank in the University in MSc
- National Scholarship from 1984-1986

Society Membership, Certification & Training & Any Other Details

- ADMA (Academy of Discrete Mathematics and Applications)
- OITS (Orissa Information Technology Society)
- OMS (Orissa Mathematical Society)

- Sun Certified Java Programmer
- IBM Certified Visual Age for JAVA

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
RAJENDRA KUMAR SHARMA	2002	Mathematics , Professor

Degree	Specialization	Institute/University	Year
Ph.D.	Algebra	IIT DELHI	1984

Research Areas and Highlights
Algebra, Cryptography.

Algebra, Cryptography

Algebra,Cryptography

Experience
More than 25 years

Significant Publications

- Algebra I (Pearson Education)

  Complex Numbers: Theory and Equations (Anthem Press)

  Authors: R K Sharma, S K Shah, A Gurishankar , Books , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	12	6

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	1	2000000

Type of Publication	Level of Publication	Total Publication	In last 5 years

Patent & IPR

Course Name	L-T-P	Course Belongs To
MULTIVARIABLE CALCULUS AND MATRIX THEORY	3-1-0	UG
CRYPTOLOGY	3-0-0	PG
CRYPTOLOGY	3-1-0	PG
CRYPTOGRAPHY	3-1-0	PG
ALGEBRA	3-1-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

- American Mathematical Society,
  Allahabad Mathematical Society,
  Indian Mathematical Society and several other

Brief CV

Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
S.DHARMARAJA	2003	Mathematics , Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics	Presidency College	1992
M.Sc.	Applied Mathematics	Anna University	1994
Ph.D.	Mathematics	IIT Madras	1999

Research Areas and Highlights

Applied Probability, Stochastic Modeling, Queueing Theory, Performance Modeling, Financial Mathematics.

Experience

From 1999 to 2002, he was a post-doctoral fellow at the Department of Electrical and Computer Engineering, Duke University, USA. From 2002 to 2003, he was a research associate at the TRLabs, Winnipeg, Canada. He has been with the Department of Mathematics, IIT Delhi, since 2003. He has held visiting positions at the Duke University, USA, University of Calgary, Canada, University of Los Andes, Bogota, Colombia and National University of Colombia, Bogota, Colombia.

Significant Publications

- Resham Vinayak, Dilip Krishnaswamy and S. Dharmaraja: Analytical Modeling of TCP NewReno using Generalized Stochastic Petri Nets, To appear in International Journal of Communication Systems, 2013. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	3	3
M.S.(Research)	Completed	1	1
M.Tech.	Completed	6	6

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	3	4700000

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	26	16
Conference	International	17	5
Books	International	2	2
Books Chapter	International	2	2

Patent & IPR

Course Name	L-T-P	Course Belongs To
MATHEMATICS-I	3-1-0	UG
PROBABILITY & STATISTICS	3-1-0	UG
PROBABILITY THEORY	3-1-0	PG
STATISTICAL INFERENCE	3-1-0	PG
STOCHASTIC PROCESSES & APPLICATIONS	3-1-0	PG

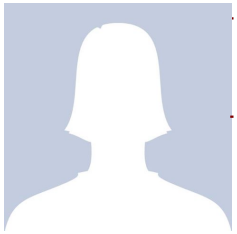
Awards & Distinctions

- Jaswinder & Tarvinder Chadha Chair Professor, 2010-2014.
- Best Performance in Teaching & Research Award, IIT Delhi, 2004.
- II Rank in MSc (Applied Mathematics), Anna University, 1994.
- II Rank in BSc (Mathematics), Presidency College, 1992.
- IEEE Delhi Section Young Engineer Award, IEEE Delhi Section, 2006.

Society Membership, Certification & Training & Any Other Details

- Senior Member of IEEE, 2006 onwards
- Life Member of ORSI, India, 2004 onwards
- Senior Member of IETE, 2010 onwards

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
APARNA MEHRA	2003	Mathematics , Associate Professor

Degree	Specialization	Institute/University	Year
Ph.D.	Mathematical Programming	University of Delhi, Delhi	2000

Research Areas and Highlights

Mathematical Programming specifically convex and non-convex optimization; Fuzzy Optimization; Portfolio Optimization.

Experience

Associate Professor at IITD: 03 years, Assistant Professor at IITD: 06 years 03 months,

Reader at Operations Research Department, University of Delhi: 01 year 05 months, Lecturer/Senior Lecturer at a College affiliated to University of Delhi: 08 years.

Significant Publications

- Dipti Dubey and Aparna Mehra, Fuzzy Multi-objective Linear Programming: A Bipolar View, Advances in Computational Intelligence Communications in Computer and Information Science, 300, 2012, 458-468. , Conference , International
- Anulekha Dhara and Aparna Mehra, Second Order Necessary Optimality Conditions for Minimax Optimization, Journal of Optimization Theory and Applications, 156, 567-590, 2013. , Journal , International
- Didier Aussel, Rachana Gupta and Aparna Mehra, Gap Functions and Error Bounds For Inverse Quasi-Variational Inequality Problems, Journal of Mathematical Analysis and Applications, 2013. , Journal , International
- Abha Agarwal, Dipti Dubey,

  and S. Chandra, Aparna Mehra, Application of Atanassov's I-fuzzy Set Theory to Matrix Games with Fuzzy Goals and Fuzzy Payoffs, Fuzzy Information and Engineering, 4, 2012, 401-414. , Journal , International
- Abha Agarwal, S. Chandra and Aparna Mehra, Application of Linear Programming with I-fuzzy Sets to Matrix Games with I-fuzzy Goals,

  Fuzzy Optimization Making and Decision Making, 11, 465-480, 2012 , Journal , International
- Deepali Gupta and Aparna Mehra, A New Notion of Quasi Efficiency in Vector Optimization, Paci cfic Journal of Optimization, 8(2), 217-230,

  2012. , Journal , International
- Dipti Dubey and Aparna Mehra, Fuzzy Linear Programming under Interval Uncertainty Based On IFS Representation, Fuzzy Sets and Systems,188, 68 - 87, 2012. , Journal , International
- Rachana Gupta and Aparna Mehra, Gap Functions and Error Bounds for Quasi Variational Inequalities, Journal of Global Optimization, DOI: 10.1007/s10898-011-9733-y, 2011 , Journal , International
- Anjana Gupta, Aparna Mehra and Davinder Bhatia, Characterizing Strict Efficiency for Convex Multiobjective Programming Problems, Journal of Global Optimization, 49(2), 265-280, 2011. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	2	2
Ph.D.	In Progress	3	3
M.Tech.	In Progress	1	1
M.Tech.	Completed	15	13

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	31	11
Books	International	2	2
Books Edited	International	1	0
Journal	National	4	0
Conference	International	5	3
Books Chapter	International	1	1

Patent & IPR

Course Name	L-T-P	Course Belongs To
NUMERICAL OPTIMIZATION	3-0-2	PG
DISCRETE MATHEMATICAL STRUCTURES	3-1-0	UG
COMPUTER ORIENTED OPERATIONS RESEARCH	3-0-2	PG
OPTIMIZATION METHODS & APPLICATIONS	3-1-0	UG
INTRO. TO ALGEBRA & MATRIX ANALYSIS	3-1-0	UG
MATHEMATICS-I	3-1-0	UG
MATHEMATICS II	3-1-0	UG
DISCRETE MATHEMATICAL STRUCTURES	3-0-0	PG
FUZZY SETS & APPLICATIONS	3-0-0	UG
FINANCIAL MATHEMATICS	3-1-0	UG

Awards & Distinctions

- Excellence in Teaching for the II Semester, 2011-2012 (MAL 526), IITD, awarded on 28/01/2013.

Society Membership, Certification & Training & Any Other Details

- ORSI Life member
- Working Group of Generalized Convexity
- Pacific Optimization Research Group (POP)

Brief CV

Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
ANIMA NAGAR	2003	Mathematics , Associate Professor

Degree	Specialization	Institute/University	Year

Research Areas and Highlights
Topological Dynamics.

Experience

Significant Publications

- REFLECTIONS OF EQUICONTINUITY - coauthored by J. Auslander and G. Greschonig. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years

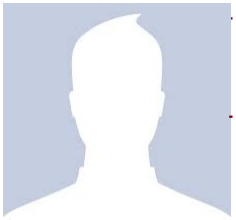
Patent & IPR

Course Name	L-T-P	Course Belongs To
MINI PROJECT (MT)	0-0-6	UG
TOPOLOGY	3-1-0	PG
INTRO TO CHAOTIC DYNAMICAL SYSTEMS	3-1-0	PG
COMPLEX ANALYSIS	3-1-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
KONIJETI SREENADH	2004	Mathematics , Associate Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics	Madras University	1995
M.Sc.	Mathematics	Madras University	1997
Ph.D.	Mathematics	Indian Institute of Technology Kanpur	2002

Research Areas and Highlights

Applied Nonlinear functional analysis and Partial Differential Equations

Experience

Post-doctoral fellow with NBHM fellowship at Tata Institute of Fundamental research Bangalore center from July 2002 to September 2003 and followed by another post-doctoral experience with Marie-Curie fellowship of Govt.of France at Center de Recherche Mathematique, Univeristy of Toulouse 1, Toulouse, France from October 2003 to September 2004.

I joined as faculty of IIT Delhi in November 2004.

Visiting Professor at University of Pau, France for two months in summer 2008

Visiting Professor at University of Toulouse , France for one month 2009.

Visiting scientist at ICTP, Trieste, Italy for 4 months from August - December 2012

Significant Publications

- K. Sreenadh and Sweta Tiwari, On global multiplicity results for $p(x)$-Laplacian with nonlinear boundary condition, Differential and Integral equations, Vol.26 no.7/8), 2013, 815-836. , Journal , International
- Kaur, Bhatia Sumit; Sreenadh, K.; Dhanya, R. On multiplicity of positive solutions for quasilinear equation with co-normal boundary condition. Adv. Nonlinear Stud. 10 (2010), no. 3, 511–536. , Journal , International
- Giacomoni, Jacques; Prashanth, S.; Sreenadh, K. W1,N versus C1 local minimizers for elliptic functionals with critical growth in RN. C. R. Math. Acad. Sci. Paris 347 (2009), no. 5-6, 255–260 , Journal , International
- Giacomoni, J.; Prashanth, S.; Sreenadh, K. Uniqueness and multiplicity results for N-Laplace equation with critical and singular nonlinearity in a ball. Asymptot. Anal. 61 (2009), no. 3-4, 195–227 , Journal , International
- S. Prashanth and K. Sreenadh, Multiplicity results in a ball for p-Laplace equation with positive nonlinearity,Advances in Differential equations, Vol.7, no.7, (2002),876-897. , Journal , International
- S. Prashanth and K. Sreenadh, Multiplicity of positive solutions for nonhomogeneous elliptic equation in R^{2}, Differential and Integral equations, Vol.18, no.6, (2005), 681-698. , Journal , International
- Roberta Musina and K. Sreenadh, Radially symmetric solutions to the H'enon-Lane-Emden system on the critical hyperbola, Communications in Contemporary Mathematics,DOI: 10.1142/S0219199713500302} , Journal , International
- J.Giacomoni, S.Prashanth and K.Sreenadh, Multiple positive solutions for N-laplacian with Neumann boundary condition,Differential and Integral equations, Vol.23, no.3-4, (2010),201-222 , Journal , International
- Sarika Goyal and K. Sreenadh, The Nehari Manifold approach for N-Laplace equation with singular and exponential nonlinearities in R^N,

accepted and to appear in Communications in Contemporary Mathematics. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	1	1
Ph.D.	In Progress	4	4
M.Tech.	Completed	4	2

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	4	3000000

Type of Publication	Level of Publication	Total Publication	In last 5 years
Conference	International	2	1
Journal	International	32	17

Patent & IPR

Course Name	L-T-P	Course Belongs To
FUNCTIONAL ANALYSIS	3-1-0	PG
BOUNDARY VALUE PROBLEMS	3-1-0	UG
MATHEMATICS-I	3-1-0	UG
MATHEMATICS II	3-1-0	UG
ANALYSIS	3-0-0	PG
DIFFERENTIAL EQUATIONS	3-1-0	UG
PARTIAL DIFFERENTIAL EQUATIONS	3-1-0	PG
REAL ANALYSIS	3-1-0	PG
DIFFERENTIAL EQUATIONS	3-1-0	PG
METHODS OF APPLIED MATHEMATICS	3-1-0	PG
FINITE ELEMENT TECHNIQUES & COMP.IMPLEMENTATION	3-0-0	PG

Awards & Distinctions

- I was selected for ICTP,Trieste fellowship for visiting ICTP for 4 months during 2012.

Society Membership, Certification & Training & Any Other Details

- Member of NASI, Allahabad

Brief CV

Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
MANI MEHRA	2008	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
Ph.D.	Wavelets based numerical methods	Indian Institute of Technology Kanpur	2005

Research Areas and Highlights

My main field of interest is developing wavelet based schemes to solve partial differential equations efficiently.

Experience

From 2005 to 2007, I was a post-doctoral fellow at the Department of Mathematics & Statistics, McMaster University, Hamilton, Canada.

Since Jan. 2008 I am Assistant Professor in Department of Mathematics, IIT Delhi.

I held Visiting position at ENS, Paris, France in 2008. I also held Visiting position at university of Bremen, Bremen, Germany during July 2012 and May-June 2013.

Significant Publications

- Ratikanta Behera and Mani Mehra, Integaripon of barotropic vorticity equation over spherical geodesic grid using multilevel adaptive wavelet collocation method, Applied Mathematical Modelling, Vol. 37, 2013, pp. 5215--5226.
  , Journal , International
- Mani Mehra and Kavita Goyal, A suit on wavelet differentiation algorithms, ACM Transaction on Mathematical software, Vol. 39, 4, 2013.

  , Journal , International
- Mani Mehra and Ranjan K. Mallik, Solutions of Differential--Difference Equations arising from Mathematical Models of Granulocytopoiesis, Differential Equations and Dynamical Systems, (2013). , Journal , International
- Mani Mehra and Ratikanta Behera, Approximate solution of modified Camassa-Holm and modified Degasperis-Procesi (mDP) equations using wavelet optimized finite difference method, International Journal of Wavelets, Multiresolution and Information Processing, Vol. 11, 2 (2013).

  , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	Completed	1	1
Ph.D.	In Progress	2	2
M.S.(Research)	Completed	8	8
M.Tech.	Completed	6	6

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	1	1300000

Type of Publication	Level of Publication	Total Publication	In last 5 years

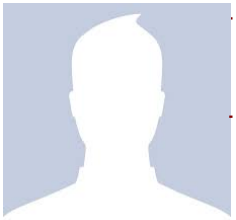
Patent & IPR

Course Name	L-T-P	Course Belongs To
MAJOR PROJECT PART 1 (MT)	0-0-12	PG
MAJOR PROJECT PART 1 (MT)	0-0-12	PG
MAJOR PROJECT PART 2 (MT)	0-0-28	PG
MAJOR PROJECT PART 2 (MT)	0-0-28	PG
MAJOR PROJECT PART 1 (MT)	0-0-8	PG
MAJOR PROJECT PART 1 (MT)	0-0-8	PG
MAJOR PROJECT PART 2 (MT)	0-0-32	PG
MAJOR PROJECT PART 2 (MT)	0-0-32	PG
PARTIAL DIFFERENTIAL EQUATIONS	3-1-0	PG
DIFFERENTIAL EQUATIONS	3-1-0	UG
METHODS OF APPLIED MATHEMATICS	3-1-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
V.V.K. SRINIVAS KUMAR	2008	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics, Physics, Chemistry.	Nagarjuna University	1993
M.Sc.	Mathematics	Pondicherry University	1997
Ph.D.	Mathematics	Indian Institute of Technology Kanpur	2005

Research Areas and Highlights

Computational Partial Differential Equations.

Experience

Post Doctoral fellow in Indian Institute of Science, Bangalore, from January 2005 to June 2008.

Assistant Professor in Indian Institute of Technology Delhi from July 2008 to present

Significant Publications

- Sudhakar Chaudhary, Srinivas Kumar V V K, WEB-Spline based Mesh-free Finite Element Analysis for the Heat Equation and the Time Dependent Navier Stokes equation: A Survey. Numer. Methods Partial Diff.Equations. 29 (2013) no.4, 1322-1340.

  , Journal , International
- Sudhakar Chaudhary, Srinivas Kumar V V K, A New Class of Stabilized WEB-Spline based Mesh-free Finite Elements for the Approximation of the Maxwell Equations. Numer. Funct. Anal. Optim. 33 (2012), no.3, 264-283. , Journal , International
- Srinivas Kumar, V. V. K., Rathish Kumar, B. V. and Das, P. C.; WEB-Spline based Mesh-free finite element analysis for the approximation of the stationary Navier-Stokes Problem, J. Nonlinear Analysis: Theory, Methods and Appl. 68 (2008), 3266-3282.

  , Journal , International
- Srinivas Kumar, V. V. K., Rathish Kumar, B. V. and Das, P. C.; Weighted extended B-spline method for the approximation of the stationary stokes problem, J. of Computational and Applied Maths. 186 (2006), 335-348. , Journal , International
- Srinivas Kumar, V. V. K., Rathish Kumar, B. V. and Das, P. C.; A new class of stabilized mesh-free finite elements for the approximation of the Stokes problem, Numerical Methods for Partial Differential Equations, 20 (2004), no. 5, 703-722. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	In Progress	2	2
M.Tech.	Completed	6	6
M.Tech.	In Progress	3	3
M.S.(Research)	Completed	10	10
M.S.(Research)	In Progress	4	4

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	6	3
Conference	International	1	0

Patent & IPR

Course Name	L-T-P	Course Belongs To
MATHEMATICS II	3-1-0	UG
PARTIAL DIFFERENTIAL EQUATIONS: THEORY AND COMPUTA	3-1-0	UG
MATHEMATICS-I	3-1-0	UG
INTRO. TO ANALYSIS & DIFFERENTIAL EQUATIONS	3-1-0	UG
NUM. METHODS & COMPUTATION	3-1-0	UG
BOUNDARY VALUE PROBLEMS	3-1-0	UG
DIFFERENTIAL EQUATIONS	3-1-0	UG
BOUNDARY VALUE PROBLEMS	3-1-0	PG
PARTIAL DIFFERENTIAL EQUATIONS: THEORY AND COMPUTA	3-1-0	UG
MINI PROJECT (MT)	0-0-6	UG
DIFFERENTIAL EQUATIONS	3-1-0	PG
SYSTEM DESIGN LABORATORY	0-0-4	UG
INTRODUCTION TO MATHEMATICS AND COMPUTING	0-0-4	UG
FINITE ELEMENT TECHNIQUES & COMP.IMPLEMENTATION	3-0-0	PG
PARTIAL DIFFERENTIAL EQUATIONS	3-1-0	PG
NUMERICAL ANALYSIS	3-1-0	PG
METHODS OF APPLIED MATHEMATICS	3-1-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

Brief CV

Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
RITUMONI SARMA	2008	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics(honors).	Darrang College, Tezpur, Assam. affiliated to Gauhati University, Guwahati, Assam.	1996
M.Sc.	Mathematics	IIT Delhi.	1999
M.Phil.	Mathematics (Algebra).	Mumbai University, Mumbai, India.	2002
Ph.D.	Mathematics (Group Theory)	Tata Institute of Fundamental Research Mumbai, India.	2004

Research Areas and Highlights
Arithmetic Groups, Finite groups.

Experience
Worked in Harish-Chandra Reresearch Institute, Allahabad during 2004-2007 as a post doctoral fellow. Served in IIT Guwahati during 2007-2008 as an Assistant Professor. Coordinated and Taught UG as well as PG courses. During the stay in IIT Guwhati, I was deputed in the IIT Patna to assist while initiating the new IIT. We taught an undergraduate course and helped to initiate various facilities. Joined in IIT Delhi in December 2008.

Significant Publications

- Author: Ritumoni Sarma, Sunil Kr. Prajapati (PhD Student)

  Title: On the Solutions of X^k=g in a finite group.

  Journal: Bull. Korean Math. Soc. 50 (2013), No.2

  Abstract:

  The function g↦ζ^k_G(g) which counts the number of solutions of x^k=g in a finite group G, is not necessarily a character of G. We study this function for the case of dihedral groups and generalized quaternion groups. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
M.Tech.	Completed	1	1
M.Tech.	In Progress	2	2
M.S.(Research)	Completed	10	10
M.S.(Research)	In Progress	4	4

Ph.D.	Completed	1	1
Ph.D.	In Progress	1	1

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	3	1

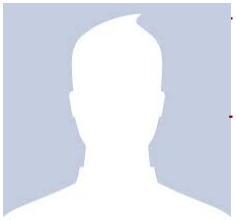
Patent & IPR

Course Name	L-T-P	Course Belongs To
INTRO. TO ANALYSIS & DIFFERENTIAL EQUATIONS	3-1-0	UG
INTRO. TO ALGEBRA & MATRIX ANALYSIS	3-1-0	UG
LINEAR ALGEBRA	3-1-0	PG
COLLOQUIUM (MT)	0-3-0	UG
ALGEBRAIC GEOMETRY	3-1-0	PG
ALGEBRAIC GEOMETRY	3-1-0	PG
TOPOLOGY	3-1-0	PG
ALGEBRA	3-1-0	PG
ALGEBRAIC NUMBER THEORY	3-0-0	PG
INTRODUCTON TO MATHEMATICSAND COMPUTING	0-0-4	UG
LINEAR ALGEBRA	3-1-0	UG
MODERN ALGEBRA	3-1-0	UG
MULTIVARIABLE CALCULUS AND MATRIX THEORY	3-1-0	UG
MATHEMATICS-I	3-1-0	UG
MATHEMATICS II	3-1-0	UG
LINEAR ALGEBRA	3-0-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
SURESH CHANDRA	2009	Mathematics , Emeritus Professor

Degree	Specialization	Institute/University	Year
Ph.D.	Optimization	I.I.T.Kanpur	1970

Research Areas and Highlights
Mathematical Programming, Fuzzy Optimization, Machine Learning, Financial Mathematics.

Mathematical Programming,Fuzzy Optimization,Machine Learning,Financial Mathematics

Experience
Teaching and Research Experience Since 1970 till date.

Significant Publications

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
M.Tech.	Completed	25	5
M.S.(Research)	Completed	15	5
Ph.D.	Completed	12	1

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	120	15
Conference	International	10	0
Books	International	4	2

Patent & IPR

Course Name	L-T-P	Course Belongs To
OPTIMIZATION METHODS & APPLICATIONS	3-1-0	UG
FINANCIAL MATHEMATICS	3-1-0	PG
MATHEMATICS-I	3-1-0	UG
MATHEMATICS II	3-1-0	UG
COMPUTER ORIENTED OPERATIONS RESEARCH	3-0-2	PG

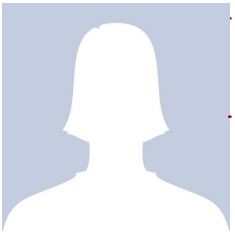
FUZZY SETS AND APPLICATIONS	3-1-0	PG
FUZZY SETS & APPLICATIONS	3-0-0	PG
NUMERICAL OPTIMIZATION	3-0-2	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

- Life Member- Operations Research Society Of India

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
ANURADHA SHARMA	2010	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics (Hons.)	Panjab University, Chandigarh	2000
M.Sc.	Mathematics	Panjab University, Chandigarh	2002
Ph.D.	Algebraic Coding Theory	Panjab University, Chandigarh	2006

Research Areas and Highlights
Algebraic Coding Theory.

Experience
I joined Department of Mathematics at IIT-Delhi on 30th December 2010. Prior to this, I was an assistant professor at Center for Advanced Study in Mathematics at Panjab University, Chandigarh during the period 29th August 2007 to 29th December 2010. Before that, I worked as an assistant professor at Department of Mathematics, Punjabi University, Patiala (Punjab) during the period of 20th October 2006 to 28th August 2007.

Significant Publications

- A. Sharma, G. K. Bakshi, V. C. Dumir & M. Raka, Cyclotomic numbers and primitive idempotents in the ring GF(q)[x]/<x^{p^n}-1>, Finite Fields Appl. 10, no. 4 (2004) pp. 653-673.

  , Journal , International
- A. Sharma, G. K. Bakshi & M. Raka, Polyadic codes of prime power length, Finite Fields Appl. 13, no. 4 (2007) pp. 1071-1085. , Journal , International
- A. Sharma & G. K. Bakshi, The weight distributions of some irreducible cyclic codes, Finite Fields Appl. 18, no. 1 (2012) pp. 144-159. , Journal , International
- A. Sharma & A. K. Sharma, MacWilliams type identities for some new m-spotty weight enumerators, IEEE Transactions on Information Theory 58, no. 6 (2012) pp. 3912-3924. , Journal , International
- A. Sharma & A. K. Sharma, On some new m-spotty Lee weight enumerators, Designs, Codes and Cryptography, DOI: 10.1007/s10623-012-9725-z (2012). , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	In Progress	2	2
M.Tech.	Completed	3	3

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	1	660000

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	14	9
Conference	International	2	0

Patent & IPR

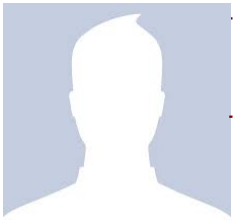
Course Name	L-T-P	Course Belongs To
REAL & COMPLEX ANALYSIS	3-1-0	UG
NUMBER THEORY	3-1-0	UG
LINEAR ALGEBRA	3-1-0	UG
NUMBER THEORY	3-1-0	PG
INTRO. TO ALGEBRA & MATRIX ANALYSIS	3-1-0	UG
LINEAR ALGEBRA	3-1-0	PG
ADVANCED MATRIX THEORY	3-1-0	PG

Awards & Distinctions

- Kusuma Outstanding Young Faculty Fellowship Award during June 2011 till May 2013

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
SIVANANTHAN SAMPATH	2012	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics	University of Madras	2002
M.Sc.	Mathematics	Anna University	2004
Ph.D.	Applied Harmonic Analysis	Indian Institute of Technology Madras	2008

Research Areas and Highlights

My research focuses on two areas: Sampling theory and Learning theory.

Sampling Theory: Given a class of functions, one seeks to find a discrete sample set X which allows to determine the class of functions by knowing the function values on X. It has wide application in signal and image processing. In particular, conversion of analog signal into digital signal, in-missing data problem, image acquisition, and so on.

Learning Theory: In learning paradigm, we are given with discrete samples of complex, high dimensional data. The aim is to develop a method to find a generalized function which approximates the given samples and predicts well for the unseen input data.

Experience

* Half time Teaching/Research Assistant(Jan–June 2005), Department of Mathematics, IIT Madras

* Research Fellow in NBHM project(July 2005–Aug 2008), Department of Mathematics, IIT Madras

* Postdoc fellow in the Inverse Problem group (September 2008-June 2012), RICAM, Austria

* Since July 2012: Assistant professor, IIT Delhi, India

Significant Publications

- S. Lu, S. Pereverzyev Jr. and S. Sivananthan, Multi-parameter regularization for construction of extrapolating estimators in statistical learning theory, accepted within the book “Multiscale Signal Analysis And Modeling”, Springer Lecture Notes in Electrical Engineering (Eds. Xiaoping Shen and Ahmed I Zayed), 2011, 19 pp. , Books Chapter , International
- V. Naumova, S. V. Pereverzev and S. Sivananthan, Reading blood glucose from subcutaneous electric current by means of a regularization in variable Reproducing Kernel Hilbert Spaces, IEEE Conf. Proc. on Decision and Control and European Control Conference (CDC 2011), Orlando, FL, USA, December 12-15, 2011. , Conference , International
- J. U. Poulsen, A. Avogaro, F. Chauchard, C. Cobelli, R. Johansson, L. Nita, M. Pogose, L. del Re, E. Renard, S. Sivananthan, F. Saudek, M. Skillen, J. SoendergaarD, A diabetes management system empowering patients to reach optimised glucose

control: from monitor to advisor., EMBC2010, Conf Proc IEEE Eng Mede Biol Soc., Buenos Aires, Argentina, 2010. , Conference , International

- S. V. Pereverzev and S.Sivananthan, Regularized Learning Algorithm for Prediction of Blood Glucose Concentration in “No Action Period”, CMBE’09, Editors: Nithiarasu, L¨ohner and van Loon (Hrsg.), 395-398, Swansea, UK, 2009. , Conference , International
- R. Radha and S. Sivananthan, Reconstruction of Image in Shift-Invariant Space, Proceedings of AIPR International Conference, 58 - 62, Florida, USA, 2007. , Conference , International
- V. Naumova, S. V. Pereverzev and S. Sivananthan, Adaptive parameter choice for one-sided nite dierence schemes and its application in diabetes technology, Journal of Complexity, 28, 2012, 524-538. , Journal , International
- V. Naumova, S. V. Pereverzev and S. Sivananthan, A meta-learning approach to the regularized learning-case study: Blood glucose prediction, Neural Networks, 33, 2012, 181-193. , Journal , International
- V. Naumova, S. V. Pereverzev and S. Sivananthan, Extrapolation in variable RKHSs with application to the blood glucose reading, Inverse Problems, 27 (7), 075010 (13 pp), 2011. , Journal , International
- S. Sivananthan, V. Naumova, C. Dalla Man, A. Facchinetti, E. Renard, C. Cobelli, S. V. Pereverzev, Assessment of Blood Glucose Predictors: The Prediction-Error Grid Analysis, Diabetes Technology & Therapeutics, 13 (8): 787-796, 2011. , Journal , International
- R. Radha and S. Sivananthan, A local reconstruction method and voice system, Comput. Math. Appl., 58 (1), 74-79, 2009. , Journal , International
- S. H. Kulkarni, R. Radha and S. Sivananthan, Non-uniform sampling problem, Jour. Appl. Funct. Anal., 4 (1), 58-74, 2009. , Journal , International
- R. Radha and S. Sivananthan, Local Reconstruction of a function from a Non-uniform Sampled Data, Appl. Numer. Math., 59 (2), 393 - 403, 2009. , Journal , International
- R. Radha and S. Sivananthan, Shannon Type Sampling Theorems on the Heisenberg Group, Fields Inst. Commun. (AMS), 52, 367 - 374, 2007. , Journal , International
- R. Radha and S. Sivananthan, Local reconstruction from a non-uniform sampled data and some illustration, Proceedings of emerging trends in wavelet applications in medical image conference, Chennai, 2010. , Conference , National

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
M.Tech.	Completed	1	1
Ph.D.	In Progress	2	2
M.Tech.	In Progress	1	1

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	8	8

Conference	International	4	3
Conference	National	1	1
Books Chapter	International	1	1

Patent & IPR

- Glucose predictor based on regularization networks with adaptively chosen kernels and regularization parameters

  Inventors: Samuel MCKENNOCH, Sergei PEREVERZYEV, Jette RANDLØV, Sivananthan SAMPATH

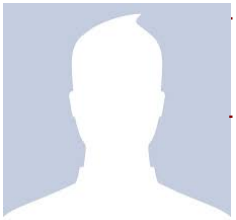
Course Name	L-T-P	Course Belongs To
WAVELETS AND APPLICATIONS	3-1-0	UG
REAL ANALYSIS	3-1-0	PG
WAVELET ANALYSIS AND APPLICATIONS	3-0-0	PG
MATHEMATICS II	3-1-0	UG

Awards & Distinctions

- Second rank in M.Sc. Mathematics, Anna University

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
HARISH KUMAR	2012	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
Ph.D.	Applied Mathematics	ETH Zurich, Switzerland.	2009

Research Areas and Highlights
Numerical methods for partial differential equations

Hyperbolic PDEs and Applications

Experience
• December 2012-Current: Assistant Professor at Department of Mathematics, IIT Delhi, India.
• October 2011 - November 2012: PostDoc Research Fellow at BACCHUS Team, INRIA, Bordeaux, France.
• July 2009 - July 2011: PostDoc Research Fellow at Seminar for Applied Math- ematics, D-MATH, ETH Zurich, Switzerland.

Significant Publications

- Kumar H., Jeltsch R., Three dimensional Plasma Arc simulation Using Resistive MHD, Book Chapter: The Courant-Friedrichs-Lewy (CFL) Condition: 80 Years After Its Discovery, de Moura, Carlos A.; Kubrusly, Carlos S. (Eds.), Birkhuser Basel (2013).
  , Books Chapter , International
- Hiptmair R., Hugueniot P., Jeltsch R., Kumar H., Schwab C., Torril- hon M., Wheatley V. Numerical Simulation of Compressible Magnetohydrody- namic Plasma Flow in a Curcuit Breaker, International Conference on Numerical Analysis and Applied Mathematics, SEP 16-20, (2008), Psalidi, Greece, AIP Con- ference Proceedings, Vol. 1048, pages 21-22. , Conference , International
- Huguenot P., Kumar H., Wheatley V., Jeltsch R., Schwab C., Numerical Simulations of High Current Arc in Circuit Breakers, 24th International Confer- ence on Electrical Contacts (ICEC) (2008), Saint-Malo, France.
  , Conference , International
- Kumar H., Finite Volume Methods for the Two-Fluid MHD Equations, Hyp 2010 Beijing. Series in Contemporary Applied Mathematics Vol 18. Hackensack, NJ: World Scientific; Beijing: Higher Education Press (2012), pages 510-518.
  , Conference , International
- V. Wheatley, H. Kumar, P. Hugueniot,On the role of Riemann solvers in Discontinuous Galerkin methods for magnetohydrodynamics, Journal of Computa- tional Physics, Vol. 229 (2010), pages 660-680. , Journal , International
- Wheatley V., Kumar H., Jeltsch R., Spectral Performance of RKDG methods for Ideal MHD, Mathematica Balkanica, Vol. 25-3, pages 257-276 (2011).
  , Journal , International
- Harish Kumar, Siddhartha Mishra, Entropy Stable Numerical Schemes for Two-Fluid Plasma Equations, Journal of Scientific Computing, Vol. 52-2,

401-425 (2012). , Journal , International

- Remi Abgrall, Harish Kumar, Numerical approximation of a compressible multiphase system, Accepted in Communications in Computational Physics (2013).

  , Journal , International
- Remi Abgrall, Harish Kumar, Robust finite volume schemes for two-fluid plasma equations. Accepted in Journal of Scientific Computing (2013).

  , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
M.Tech.	In Progress	2	2
M.S.(Research)	In Progress	2	2
Ph.D.	In Progress	2	2

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	5	5
Books Chapter	International	1	1
Conference	International	3	3

Patent & IPR

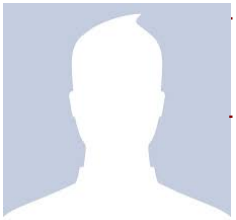
Course Name	L-T-P	Course Belongs To
NUM. METHODS & COMPUTATION	3-1-0	UG
COMPUTING LAB. I	0-0-4	PG

Awards & Distinctions

- May 2001: Gold Medal for First rank in B.Sc.(Hons.) Mathematics, MD University Rohtak, India.
- Gold Medal For highest CGPA (Credit Point) in Masters of Mathematical Science at IISc.-TIFR, Bangalore, India.

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
N.SHRAVAN KUMAR	2012	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
M.Sc.	Mathematics	Indian Institute of Technology Madras, Chennai	2004
Ph.D.	Mathematics	Ramanujan Institute for Advanced Study in Mathematics, University of Madras	2011

Research Areas and Highlights
Abstract harmonic analysis

Experience
NBHM Project Associate in IIT Madras from Jan 2011 to Jan 2012.

NBHM Postdoctoral fellow in IIT Madras from Feb 2012 to december 2012.

Significant Publications

- R. Radha and N. Shravan Kumar, Shift invariant subspaces on compact groups, Bull. Sci. Math. , Vol. 137, No. 4, June 2013, pp. 485-497. , Journal , International
- N. Shravan Kumar, Ideals with bounded approximate identities in the Fourier algebras on homogeneous spaces, Indag. Math. , Vol. 24, N0. 1, 2013, pp. 1-14. , Journal , International
- K. Parthasarathy and N. Shravan Kumar, Homological properties of the Fourier algebras on homogeneous spaces, Arch. Math. , Vol. 96, 2011, pp. 359-367. , Journal , International
- K. Parthasarathy and N. Shravan Kumar, Ditkin sets in homogeneous spaces, Studia Math. , Vol. 203, 2011, pp. 291-307. , Journal , International
- K. Parthasarathy and N. Shravan Kumar, Fourier algebras on homogeneous spaces, Bull. Sci. Math. , Vol. 135, No. 2, Mar. 2011, pp. 187-205. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	5	5

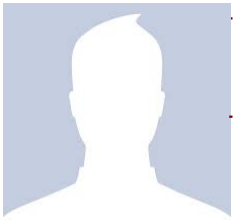
Patent & IPR

Course Name	L-T-P	Course Belongs To
PROBABILITY THEORY	3-1-0	PG
TOPOLOGY	3-1-0	PG

Awards & Distinctions

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
AMIT PRIYADARSHI	2012	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
M.Sc.	Mathematics and Scientific Computing	IIT Kanpur	2004
Ph.D.	Fractal Dimensions	Rutgers University	2011

Research Areas and Highlights

Hausdorff Measure and Dimension, Positive Operators, Functional Analysis.

Experience

Teaching Assistant at Rutgers University from Fall 2004 to Spring 2011.

Significant Publications

- Nussbaum, R.D., Priyadarshi, A. and Verduyn Lunel, S., Positive Operators and Hausdorff Dimension of Invariant Sets, Trans. Amer. Math. Soc. 364 (2012), no. 2, 1029-1066. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	1	1

Patent & IPR

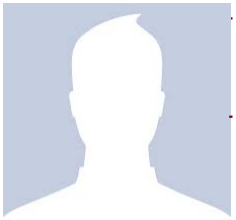
Course Name	L-T-P	Course Belongs To
TOPOLOGY AND FUNCTIONAL ANALYSIS	3-1-0	UG
LINEAR ALGEBRA	3-1-0	PG

Awards & Distinctions

- Kusuma Young Faculty Incentive Fellowship

Society Membership, Certification & Training & Any Other Details

Brief CV



Personal and Educational Details

Employee Name	@IITD Since	Department & Designation
RUPAM BARMAN	2013	Mathematics , Asstt. Professor

Degree	Specialization	Institute/University	Year
B.Sc.	Mathematics	Cotton College/ Gauhati University	1999
M.Sc.	Mathematics	Indian Institute of Technology Delhi	2001
Ph.D.	Algebra and Number Theory	Indian Institute of Technology Guwahati	2010

Research Areas and Highlights

The broad areas of my research are Number Theory and Algebra. In particular, I am interested in p-adic measures, elliptic curves, Iwasawa theory, hypergeometric series, modular forms, and the mathematics influence by Ramanujan.

Experience

I joined Tezpur University (Central) in 2002 as a lecturer. I visited the Mathematics Center, University of Heidelberg, Germany during 2011. Before joining IIT Delhi, I was an Associate Professor at Tezpur University since August 2010.

Significant Publications

- Hypergeometric functions over F_q and traces of Frobenius for elliptic curves, Proc. Amer. Math. Soc., 141 (2013), pp. 3403-3410. (with G. Kalita) , Journal , International
- Elliptic Curves and Special Values of Gaussian hypergeometric series, J. Number Theory, 133 (2013), pp. 3099--3111. (with G. Kalita) , Journal , International
- Iwasawa lambda-invariants of p-adic measures on (Z_p)^n and their Gamma-transforms, J. Number Theory, 132 (2012), pp. 2258--2266. (with A. Saikia) , Journal , International
- On the polynomial x^d+ax+b over F_q and Gaussian hypergeometric series, Int. J. Number Theory, 9 (2013, pp. 1753–1763. (with G. Kalita) , Journal , International
- A note on Iwasawa mu-invariants of Elliptic curves, Bulletin of Brazilian Math. Soc. (New Series), 41 (3) (2010), pp. 399--407. (with A. Saikia) , Journal , International
- Another look at Iwasawa lambda-invariants of p-adic measures on (Z_p)^n and Gamma- transforms, Int. J. Number Theory, 9 (2013), pp. 1289-1299. , Journal , International

Academic and Research Contributions

Research Guidance (Total Nos. & Last 5 Years Data)

Category	Guidance Status	Total Guidance	In last 5 years
Ph.D.	In Progress	2	2

Sponsored Research, Consultancy & Technology Development

Category	Total Projects	Total Value
Sponsored Research Projects	1	105000

Type of Publication	Level of Publication	Total Publication	In last 5 years
Journal	International	13	13
Journal	National	1	0

Patent & IPR

Course Name	L-T-P	Course Belongs To
INTRO. TO ANALYSIS & DIFFERENTIAL EQUATIONS	3-1-0	UG
DISCRETE MATHEMATICAL STRUCTURES	3-0-0	PG

Awards & Distinctions

- Indo-Australlian visiting fellowship by INSA to work at Newcastle University, Australlia during 2012-2013.
- Post doctoral fellowship by the Mathematics Center Heidelberg (MATCH), University of Heidelberg Germany during 2011.
- Post doctoral fellowship by ICTP Trieste Italy during 2011 (could not avail).
- Teacher Fellowship by National Board for Higher Mathematics for a period of three years: 2008-2011.

Society Membership, Certification & Training & Any Other Details

- Ramanujan Mathematical Society
- Assam Academy of Mathematics