

**Evaluative Report of the Department of Mathematics
Panjab University, Chandigarh**

For the period July 1, 2009 to June 30, 2013

1. Name of the Department : **Mathematics**
2. Year of establishment : **1958**
3. Is the Department part of a School/Faculty of the university? **Yes**
4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) :

Under-Graduate

- B.Sc. (Hons. School) Mathematics
- B.Sc. (Hons. School) Mathematics & Computing

Post-Graduate

- M.Sc. (Hons.School)Section-A
- M.Sc. (Hons.School)Section-B through OCET

Ph.D.

5. Interdisciplinary programmes and departments involved: **N.A.**
6. Courses in collaboration with other universities, industries, foreign institutions, etc.:
N.A.
7. Details of programmes discontinued, if any, with reasons: **N.A.**
8. Examination System: Annual/Semester/Trimester/Choice Based Credit System:
Semester System.

Semester system

9. Participation of the department in the courses offered by other departments:

The faculty members of the Department teach subsidiary courses in Mathematics to the students of B.Sc.(H.S.) of other Science Departments of the University viz. Physics, Physics & Electronics, Chemistry, Geology, Biophysics, Biochemistry, Microbiology.

10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

2009-2010

Name of the post	Sanctioned	Filled	Actual(including CAS & MPS)
Professor	09+03(RPS)=12	04(Open)	04(Open)+03(CAS)=07
Associate Professor	10+02(RPS)=12	03(Open)	03(Open)+02(CAS)=05
Assistant Professor	09	06	06
Others	Nil	Nil	Nil

2010-2011

Name of the post	Sanctioned	Filled	Actual(including CAS & MPS)
Professor	09+03(RPS)=12	03(Open)	03(Open)+03(CAS)=06 Plus 01 re-employed
Associate Professor	10+02(RPS)=12	03(Open)	03(Open)+02(CAS)=05
Assistant Professor	09	06	06
Others	Nil	Nil	Nil

2011-2012

Name of the post	Sanctioned	Filled	Actual(including CAS & MPS)
Professor	09+03(RPS)=12	03(Open)	03(Open)+03(CAS)=06 Plus 01 re-employed
Associate Professor	10+02(RPS)=12	03(Open)	03(Open)+02(CAS)=05
Assistant Professor	09	06	06
Others	Nil	Nil	Nil

2012-2013

Name of the post	Sanctioned	Filled	Actual(including CAS & MPS)
Professor	09+03(RPS)=12	02(Open)	02(Open)+03(CAS)=05 Plus 01 re-employed
Associate Professor	10+01(RPS)=11	03(Open)	03(Open)+01(CAS)=04
Assistant Professor	10	07	07
Others	Nil	Nil	Nil

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance:

See Annexure-I

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors :

See Annexure-II

13. Percentage of classes taken by temporary faculty – programme-wise information:

B.Sc.(HS)	75%
M.Sc.(HS)	75%

14. Programme-wise Student Teacher Ratio

Session	Programme	Student Teacher Ratio
2009-2010	UG	13:1
	PG	7:1
2010-2011	UG	14:1
	PG	9:1
2011-2012	UG	16:1
	PG	8:1
2012-2013	UG	15:1
	PG	7:1

15. Number of academic support staff (technical) and administrative staff: sanctioned,

filled and actual:

	Sanctioned		Filled		Vacant
Technical Staff		02		01	01
Administrative Staff	19		17		02

16. Research thrust areas as recognized by major funding agencies:

- **Number Theory**
- **Algebra**
- **Continuum Mechanics**
- **Numerical Analysis**
- **Operational Research**

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

1.	A Study of the Ramanujan's mock theta functions and partition identities	Prof. A. K. Agarwal	CSIR	1.4.2007 to 31.3.2010	Rs.2,25,000/-
2.	Research Studies in Algebra and Topology Indo-Russian Joint Research Project	Prof. A.K.Bhandari Principal Investigator with team members –Dr. Gurmeet K. Bakshi and Prof. Passi	DST	18.11.2008 to 17.11.2010	Rs.6,86,400/-
3.	A Study of valued Fields and Study of Irreducible Polynomials	Prof. Sudesh Kaur Khanduja	NBHM	01.04.2009 TO 31.03.2012	Rs.6,55,500/-
4.	A study of the Rogers-Ramanujan type identities from the combinatorial point of view	Prof. A.K.Agarwal Emeritus Scientist of CSIR	CSIR	02.01.2012 to 31.08.2014	Rs.6,24,000/- per year

5.	INDO RUSSIA JOINT RESEARCH PROJECT DST/INT/RFBR/P-137: Problems in the theory of groups and their actions	Dr.Gurmeet K. Bakshi	DST and RFBR	March 2014 To March 2017 (3 yrs duration)	Rs.7,00,000/- per annum
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18. Inter-institutional collaborative projects and associated grants received

a) National collaboration

b) International collaboration:

There are no Inter-Institutional collaborative projects and associated grants received. There is person to person research collaboration, nationally and internationally, depending upon their area of research.

International Collaborators

Several faculty members of the Department have been collaborating nationally and internationally with the various distinguished mathematicians from time to time. Also most of the faculty members from the Department regularly visit and collaborate with the eminent mathematicians in India and abroad for example Professor I.B.S.Passi with Professors C.K.Gupta and N.D.Gupta(University of Manitoba, Winnipeg), Prof. Roman Mikhailov(Steklov Mathematical Institute, Moscow, Russia), Dr. Oleg German(Moscow State University,Russia); Prof. Vladimir Vershinin(Universite Montpellier III, France) and Prof. A.W.Hales(U.C.L.A., presently at San Diego,USA), Prof. R.J.Hans-Gill with Prof. A. C. Woods (O.S.U. Columbus, Ohio), P. M. Gruber, Technische Universitat Wien, Wiedner Vienna, Austria; Prof. Martin Henk, Technical University Otto von Guericke, Institute for Algebra and Geometry, Magdeburg, Germany and Prof. Jorg M. Wills of Universitat Siegen; Prof. Madhu Raka with Prof. J.W.S. Cassels (Cambridge Univ.,U.K.); Prof. A. K. Bhandari with Professors S. K. Sehgal and Prof. A. Weiss (Univ. of Alberta, Edmunton, Canada),Prof. J. Ritter(Ausburg, Germany), Prof. K.T.Arsu(Ohio University, USA) and Prof. Milies (Brazil); Prof. A. K. Agarwal has collaborated with Professors George AnDre.w.s, D. M. Bressoud and G. Mullen (Penn. State Univ., U. S. A.), Prof. W. Miller Jr. (Univ. of Minnesota, U. S. A.), Prof. M. V. Subbarao (Univ. of Alberta, Edmonton, Canada), Prof. H. M. Srivastava (Univ. of Victoria, Canada) and Prof. E. G. Kalnins (Univ. of Waikato, NewZealand); Prof. S.K.Tomar with Prof. Holger STeeb, Dept. of Continuum Mechanics, Ruhr University, Bochum, Germany, Prof. R.W.Ogden, Dept. of Mathematics, Glasgow University, Glasgow, Scotland and Prof. G. Beda, Dept. of Applied Mechanics, BUTE Budapest University of Technology & Economics, Budapest, Hungary; Prof. Savita Bhatnagar with Prof. J.S.Pym(Univ.

of Sheffield,UK); Prof. A.L.Brown(Univ. College, London) and Prof. W.Tutshke(Tech. Univ. of Graz, Austria; Dr. Dinesh K. Khurana with Prof. Victor Camillo (Univ.of Iowa, USA), Prof. T. Y. Lam (Univ. of California, Berkeley, U. S. A.), Prof. S.K.Jain(Ohio University, Athens, USA) and Prof. Tariq Rizvi(Ohio State Univ.,Lima,USA); Dr. Kapil K. Sharma with Dr. Jacques Henry(Institut de Mathematiques, University Bordeaux I, France) and Dr. K.C.Patidar(University of the Western Cape, South Africa)

National Collaborators

Some national collaborators are Prof. Sudesh Kaur Khanduja with Prof. T. N. Shorey from T.I.F.R., Mumbai and Dr. Shanta Laishram of ISI Delhi; Prof. Madhu Raka with Dr. Ranjeet Sehmi and Dr. Sucheta of PEC, Chandigarh; Dr. Urmila Rani of Govt College, Sector 42,Chandigarh; Prof. A. K. Agarwal with Prof H. L. Manocha (IIT, Delhi), Professors K. Srinivasa Rao and R. Balasubramanian (MATSCIENCE, Chennai) and Prof.(Mrs.) Padmavathamma (University of Mysore, Mysore); Prof. S. K. Tomar with Prof. V. P. Kaushik of K.U.K, Dr. Neela Rani from MCMDAV College, Chandigarh, Dr. Aarti Khurana from DAV College, Sector 10, Chandigarh, Dr. Vinay Kanwar from UIET, PU, Chandigarh and Prof. Ramesh Chander(Retd. IIT, Roorkee); Dr. Kapil K. Sharma with Dr. M.K.Kadalbazoo of I.I.T., Kanpur.

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.

UGC-CAS(Phase-V, 2010-2015)

2010-2011	Rs. 7,25,000/- Recurring grant
2011-2012	Rs. 7,25,000/- Recurring grant
2012-2013	Rs.5,72,500/- Recurring grant
	Rs.57.50 lacs Non-Recurring

NBHM (National Board for Higher Mathematics) Grant for Departmental Library

2009-2010	2010-2011	2011-2012	2012-2013
30,00,000	28,00,000	33,00,000	32,00,000

20. Research facility / centre with

- state recognition
- **national recognition : Yes**
- **international recognition: Yes**

21. Special research laboratories sponsored by / created by industry or corporate bodies:

NA

22. Publications:

See Annexure-III

- Number of papers published in peer reviewed journals (national / international)
 - **About 90**
- Monographs **10**
- Chapters in
- Edited Books
- Books with ISBN with details of publishers
- Number listed in International Database (For *e.g.* Web of Science, Scopus,
 - Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.)
- Citation Index – range / average
- SNIP
- SJR
- Impact Factor – range / average * **0.1**
– **3.00**
- h-index **14**

23. Details of patents and income generated : NA

24. Areas of consultancy and income generated: NA

25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad

International Visits

2009-2010

Professor Madhu Raka

Visited Scuola Normale Superiore Pisa, Italy from 8th March to 14th March, 2010.

Dr. Gurmeet K. Bakshi

Visited Steklov Institute, Moscow in connection with Indo Russia Project during June 01-15, 2009

Visited Aachen, Germany to attend a conference during March 22-26, 2010

2010-2011**Professor S.K.Tomar**

Visited Institute of Mechanics-Continuum Mechanics, Ruhr University, Bochum under DST-DAAD program during January 05, 2011 to February 03, 2011 to collaborate research work with Prof. Holger Steeb.

Attended International Congress on Industrial and Applied Mathematics(ICIAM), Vancouver, Canada July 18-22, 2011.

Dr. Kapil K. Sharma

Visited AIMS, Muizeberg Cape Town, South Africa during June 13-18, 2011 to deliver a talk in CIMPA-UNESCO-MICINN-Research School on Modeling and Simulation in Population Biology held during June 13-18, 2011

2011-2012**Prof. R.J.Hans-Gill**

Visited Department of Mathematics, University of Magdeburg, Germany from Oct.10-19, 2011 and the Technical Institute at Vienna from Oct.20-25, 2011 for delivering lectures and research collaboration.

Dr. Dinesh Khurana

Visited Center for Ring Theory, Ohio University Athens from May 27-June 2, 2012 in connection with research collaboration.

Dr. Kapil K. Sharma

Organized a Mini symposium in International Congress on Industrial and Applied Mathematics (ICIAM-2011) held at Vancouver, Canada during July 18-22, 2011.

Dr. Anuj Sharma

Visited as a researcher to RWTH Aachen University, Germany and Oxford Brookes University, Oxford, UK (Jan, 2011 to Sep, 2011).

2012-2013**Prof. I.B.S.Passi**

Visited Vercors (France) Aug. 26-31, 2012 to give an invited talk in Workshop on Groups in Action.

Visited Georg-August-Universit at Göttingen (Germany) as Guest Professor and gave a course on Group Rings during the Summer Semester.

Prof. R.J.Hans-Gill

Visited Tianjin, China during Sept. 18-22, 2012 to attend TWAS Annual Meeting & Conference

Visited Peking University, Beijing, in September 11-17, 2012 and gave one talk in the School of Mathematical Sciences. She participated in the TWAS annual meeting & Conference held at Tianjin, China in September 18-22, 2012.

Prof. S.K.Tomar

Visited Institute of Applied Mechanics, Budapest University of Technology and Economics, Budapest, HUNGARY under Indo-Hungarian educational exchange programme during December 03-17, 2012 to collaborate research work with Prof. Gyula Beda.

Visited School of Mathematics and Statistics, University of Glasgow, Glasgow, UK under INSA-Royal Society Edinburgh exchange of scientists program during May 23, 2013 to June 20, 2013 to collaborate research work with Prof. R. W. Ogden.

National Visits**2009-2010****Prof. I.B.S.Passi**

Visited University of Delhi, Delhi in January 2010 to deliver a lecture.

Invited to deliver a talk in Visited Homi Bhabha Centre for Science Education, Mumbai to deliver a talk on May 27, 2010

Visited University of Poona on July 31 and June 1, 2010 to give an invited talk.

Prof Sudesh Kaur Khanduja

Visited H.P.University, Shimla on Sept. 10, 2009 to deliver an invited lecture.

Visited GNDU, Amritsar on Dec. 23, 2009 to deliver an invited lecture.

Visited University of Kerala during Jan.3-7, 2010 to deliver invited lecture.

Visited N.I.T., Jalandhar during May 3-5, 2010 to deliver invited lecture.

Visited Punjabi University, Patiala on May 11, 2010 to deliver invited lecture.

Visited Mata Vaishno Devi University, Katra during June 25-27, 2010 to deliver invited lecture

Prof. A.K.Agarwal

Visited University of Delhi on Jan. 09, 2010 to give invited talk.

Visited Jiwaji University, Gwalior to give invited talk.

Dr. Gurmeet K. Bakshi

Visited DAV College, Amritsar during Sept.24-27, 2009 to give invited two lectures.

Visited HRI, Allahabad during Nov.2-14, 2009 to deliver invited lectures.

Visited Dr. B.R.Ambedkar NIT, Jalandhar from May 3-5, 2010 to deliver two invited lectures.

2010-2011

Prof.I.B.S.Passi

Visited University of Goa on Aug. 10, 2010 Invited talk in Workshop on Geometric Group Theory.

Visited Hyderabad on Aug. 20, 2010 to give Invited talk in the International Congress of Mathematicians.

Visited H.R.I., Allahabad on Sept. 11, 2010 to give Invited talk in International Conference on Groups, Actions and Computation.

Visited D.A.V.College, Jalandhar on Feb. 04, 2011 to give Invited talks in Conference on Recent Trends in Algebra and Analysis.

Visited Kurukshetra University on Feb. 10, 2011 to give an invited talk in the Science Conference.

Visited Paramahansa Yogananda Public School, Chandigarh on Feb. 15, 2011 as Chief Guest at Annual Function.

Prof. Sudesh Kaur Khanduja

Visited Hyderabad during Aug. 19-27, 2010 to give invited talk in 'ICM-2010.

Visited IISER, Mohali on Nov. 09, 2010 to deliver invited talk.

Visited Govt.College of Girls, Panchkula on Oct. 30, 2010 to deliver invited lecture.

Visited SRTM University, Nanded on Oct. 06, 2010 Invited to deliver lectures.

Visited HP University, Shimla on March 26, 2011 to give an invited talk in the National Seminar on Algebra and its Applications.

Prof. Madhu Raka

Visited DAV College, Amritsar July 2011 to deliver a lecture

Prof. A.K.Agarwal

Visited Jiwaji University, Gwalior during June 21-23, 2010 to deliver Presidential Addresses (both general as well as technical) in the "Conference on Special Functions and their Applications & Symposium on Computational and Biological Mathematics".

Visited Govt. M.A.M. College, Jammu during Feb. 12-13, 2011 to deliver Valedictory speech in a National Conference on "New Discoveries in Mathematics and their Applications".

Visited Rajasthan Central University during March 12-13, 2011 as Chief Guest, Valedictory Function, National Seminar on "Advances in Complex Analysis and Special Functions".

Visited JNV University, Jodhpur during July 28-30, 2011 to deliver Presidential Addresses (both general as well as technical), International Conference on Special Functions and their Applications.

Visited SRM University, Chennai during Jan. 3-7, 2011 to organize a special symposium on "Number theory, Combinatorics and Special Functions" during Indian Science Congress-2011.

Prof. SK.Tomar

Visited Govt. College, Panchkula on March 05, 2011 to give an invited talk in the National Seminar on "Role of Mathematics in Scientific Research".

Prof. Savita Bhatnagar

Visited Hyderabad during Aug.19-27, 2010 to present a paper entitled “Multipliers of $A_p(0, \infty)$ with order Convolution” in ICM-2010.

Dr. Renu Bajaj

Visited Hyderabad during Aug.19-27, 2010 to present a paper in International Congress of Mathematicians (ICM) 2010.

Visited CSIO, Sec 33, Chandigarh on March 4, 2011 to present research work in “Brain mapping Session on Ferrofluids”.

Dr. Gurmeet K. Bakshi

Visited HRI, Allahabad during Sept. 10-12, 2010 to give invited talk in the International Conference on Groups, Actions and Computations 2010.

Visited NIT, Jalandhar during May 03- 05, 2010 to deliver lectures in the 25th Annual Conference of the Ramanujan Mathematical Society.

Dr. Dinesh K. Khurana

Visited DAV College, Jalandhar during Feb.04-06, 2011 to give invited talk and chair a Session in the Conference “Recent Trends in Algebra and Analysis”

2011-2012**Prof. I.B.S. Passi**

Visited H.R.I., Allahabad during Oct. 02-05,2011 to deliver a talk in the Annual Conference of Ramanujan Mathematical Society.

Visited Maharishi Dayanad University, Rohtak on Dec. 03, 2011 to deliver a lecture.

Prof. Madhu Raka

Visited DAV College, Amritsar in July 2011 to deliver a lecture.

Visited HRI, Allahabad to gave an Invited talk in the International Meeting on Number Theory during Dec. 15-20, 2011.

Visited IMSc, Chennai on Feb. 24, 2012 to deliver a lecture.

Prof. A.K.Agarwal

Visited JNV University, Jodhpur during July 28-30, 2011 to deliver Presidential Addresses (both general as well as technical) in the International Conference on Special Functions and their Applications.

Visited HRI, Allahabad to give an invited talk in the International Meet on Number Theory on 15.12.2011.

Visited SRTM University Nanded during Dec. 27-30., 2011 to give a talk at 77th Annual Conference of Indian Mathematical Society.

Visited Lucknow University during 02-04.02.2012 to give a talk on 'Bijective proofs of some partition identities' in the National Conference on recent advances in Mathematics.

Visited Jammu University during 24-25.02.2012 to give talk in the 22nd Annual Conference Jammu Mathematical Society and a National Seminar on Recent Developments in Complex Analysis and Related Areas.

Visited IIT, Bangalore during June 25, 2012 to deliver keynote address in a Conference on Life and Works of Srinivasa Ramanujan.

Visited SVNIT, Surat during June 27-29, 2012 to delivered Presidential Addresses (both general as well as technical) in the International Conference on Special Functions and their Applications and a symposium on Ramanujan Mathematics.

Prof. V. K. Grover

Visited HBCSE(Homi Bhabha Centre for Science Education, TIFR, Mumbai during April 24-May 10, 2012 to deliver lectures in IMO Training Camp

Prof. S.K.Tomar

Visited Dept. of Mathematics, Pachhunga University College, Mizoram University AIZAWL during Nov.24-5, 2011 to attend National Conference on Mathematical Sciences

Visited NIT, Hamirpur(HP) during Dec. 18-21, 2011 to attend the National Conference on 'Advances in Mathematics and its Applications'

Visited Khalsa College for Women, Ludhiana on March 22, 2012 to deliver a lecture.

Dr. Vanita Verma

Visited Dept. of Mathematics, IITR, Roorkee during Dec. 05-07, 2011 to attend the International Conference on Advances in Modelling, O

Dr. Gurmeet K. Bakshi

Visited University of Allahabad during Oct. 2-5, 2011 to deliver an invited lecture in 26th Annual Conference of the Ramanujan Mathematical Society.

Visited IISER Pune from Dec.05-31, 2011 to deliver a series of invited lectures in AFS-I sponsored by NBHM.

Dr. Dinesh K. Khurana

Visited University of Allahabad on 04.10.2011 to deliver a lecture in the 26th Annual Conference of the Ramanujan Mathematical Society.

Visited H P. University, Shimla during July 18-Aug. 06, 2011 to deliver lectures in the Refresher Course in Mathematics.

Visited HNB Univejrity, Srinagar(Garhwal) on Dec. 24, 2011 to deliver lelcture in DST Sponsored INSPIRE SCIENCE CAMP.

Visited IISER Mohali during July 03-11, 2011 to deliver lectures in Advanced instructional school.

Dr. Anjana Khurana

Visited H P. University, Shimla during July 18-Aug. 06, 2011 to deliver lectures in the Refresher Course in Mathematics.

Visited HNB Univejrity, Srinagar(Garhwal) on Dec. 24, 2011 to deliver lelcture in DST Sponsored INSPIRE SCIENCE CAMP.

2012-2013**Prof. I.B.S.Passi**

Visited DAV College Jalandhar(Punjab) during Feb.02-03, 2013 to deliver an invited talk in the National Conference on Recent Trends in Discrete and Fuzzy Mathematics.

Visited MD University, Rohtak during Oct. 21 – 24, 2012 as a Guest of Honour at International Conference on History and Development of Mathematical Sciences.

Visited Panorma Science Centre, Kurukshetra on Nov. 30, 2012 to deliver a lecture.

Visited Thapar University, Patiala on 30.03.2013 to deliver a lecture in INSPIRE Camp.

Prof. R.J.Hans-Gill

Visited SMVDU, Katra during July 19-23, 2012 to deliver two lectures in 5th DST sponsored INSPIRE Camp.

Visited IISER, Mohali during July 16-17, 2012 to deliver lectures in Advanced Instructional School.

Visited Delhi University during Dec. 17-22, 2012 to participate in the International Conference on the 'Legacy of Ramanujan'.

Visited Science Institute, Sector 32, Chandigarh, as a Judge in the project competition of School students held under INSPIRE program.

Prof. Madhu Raka

Visited SMVDU, Katra during July 19-23, 2012 to deliver two lectures in 5th DST sponsored INSPIRE Camp.

Visited SVIET(Swami Vivekanand Institute of Engg. & Tech.), Banur, Patiala on March 8, 2013 to deliver lecture in a programm called ISTE-SRMC.

Visited TIFR Mumbai during Dec. 17-20, 2012 to chair a session in the Conference on Discrete Mathematics (in honour of Prof. Navin Singhi's 64th Birthday).

Prof. A.K.Agarwal

Visited DCR University of Science & Technology, Murthal on October 18, 2012 to deliver Keynote address in the "National Mathematics Year-2012" celebration.

Visited DST Centre for Interdisciplinary Sciences, BHU, Varanasi during Oct. 19-20, 2012 to deliver Keynote address in the "National Mathematics Year -2012" celebration.

Visited Ramjas College, Delhi on Oct. 30, 2012 to deliver Keynote address in the "National Mathematics Year -2012" celebration.

Visited DAV College, Chandigarh on Nov. 26, 2012 to deliver a Special lecture in the "National Mathematics Year-2012" celebration by the Society for Promotion of Science & Technology in India (SPSTI).

Visited University of Mysore during Dec. 12-14, 2012 to give an invited talk in the International conference on Works of Srinivasa Ramanujan and Related Topics.

Visited AMU, Aligarh on Dec.22, 2012 to deliver a special lecture in the "National Mathematics Year-2012" celebration.

Visited University of Delhi during Dec. 17-22, 2012 to give an invited talk in the International conference on "The Legacy of Srinivasa Ramanujan"

Visited University of Pune on Dec.23, 2012 to give an invited talk in the National conference on Discrete Mathematics.

Visited Trivandrum, Kerala on Jan. 31, 2013 to deliver a Special lecture in the "National Mathematics Year -2012" celebration during the 25th Kerala Science Congress.

Visited Institute of Basic Sciences, Dr. B.R. Ambedkar University, Agra on May 24, 2013 to deliver an invited talk in MCM-2013.

Prof. S.K.Tomar

Visited G J University of Science and Technology, Hisar, Haryana during Nov.10-11, 2012 to deliver lectures in the Refresher Course in Mathematics.

Visited Punjabi University, Patiala(Punjab) on Nov.30, 2012 to deliver lectures in the Refresher Course in Mathematics.

Visited Department of Mathematics, M D University, Rohtak, Haryana, during November 21-24, 2012 to chair a session in International Conference on History and Development of Mathematical Sciences & Symposium on Non-linear Analysis (ICHDMS-2012) .

Visited S D P College for Women, Ludhiana (Punjab) on March 16, 2013 to deliver keynote address in a State level Seminar.

Visited Guru Nanak Khalsa College Yamunanagar (Haryana) during March 18-19, 2013 to deliver Keynote speech in a two-day National Seminar on the theme "Role of Mathematics in Various Fields".

Visited SVIET(Swami Vivekanand Institute of Engg. & Tech.), Banur, Patiala on March 8, 2013 to deliver lecture in a programm called ISTE-SRMC.

Visited Dept. of Mathematics, H P University, Simla during March 29-30, 2013 to give an invited talk in a National Conference on Recent Advances in Continuum Mechanics.

Visited Dept. of Mathematics, South Asian University, New Delhi, India during April 05-06, 2013 to give two invited talks in a Symposium on Computational Techniques and Mathematical Modelling”.

Prof. V. K. Grover

Visited HBCSE, Mumbai during April 24-May 15, 2013 to deliver lectures in IMO Training Camp

Prof. Renu Bajaj

Visited CSIR-National Physical Laboratory, New Delhi during Jan. 07-11, 2013 to present a paper in 13th International Conference on Magnetic Fluids.

Dr. Vanita Verma

Visited Delhi University during Nov.29 to Dec.01, 2012 to chair a Technical Session in the International Conference OPTIMA-2012.

Dr. Gurmeet K. Bakshi

Visited TIFR Mumbai during Dec. 17-20, 2012 to chair a session in the Conference on Discrete Mathematics (in honour of Prof. Navin Singhi's 64th Birthday).

Visited D.A.V. College Jalandhar during Feb.2-3, 2013 as a member of the National advisory Committee of the `Conference on Recent Trends in Discrete and Fuzzy Mathematics`.

Visited IISER, Mohali during July 03-21, 2013 to deliver lectures in Advanced Instructional School sponsored in NBHM.

Dr. Dinesh Khurana

Visited IISER, Mohali during July 03-21, 2013 to deliver lectures in Advanced Instructional School sponsored in NBHM.

Visited Agricultural University, Palampur(HP) on July 27, 2012 to deliver a talk in INSPIRE Camp.

Visited SCERT(State Council of Educational Training and Rsearch), Solan(HP) on April 24, 2013 to deliver lectures.

Dr. Anjana Khurana

Visited SDP College for Women, Ludhiana on March 16, 2013 to deliver lecture in UGC-SPONSORED STATE Seminar in Algebra, Number Theory and their Applications.

Dr. Anuj Sharma

Visited NITTTR, Chandigarh during May 27- 31,2013 as a subject expert for faculty programme "Solving Mathematics problems using Matlab"

26. Faculty serving in

- a) National committees b) International committees c) Editorial Boards d) any other (please specify)

Most of the faculty members of the Department are the members of various Selection Committees, Inspection Committees, Science Faculty, Academic Council, Board of Studies both Post-Graduate and Under-graduate studies, Board of Controls, RDC, Research Boards and other Committees of Panjab University, Chandigarh. Some senior faculty members are appointed subject experts on the various Committees and Boards of the neighbouring institutes/universities/colleges.

Some of the senior faculty members served in the national Committees of CSIR and UGC and some editorial board of national and international journals. Year-wise information is as under:

2009-2010**Prof. R.J.Hans-Gill**

Fellow of TWAS i.e. The Academy of Science for the Developing World.

Member, Programme Advisory Committee in Mathematical Sciences, DST, New Delhi.

Prof. Sudesh K. Khanduja

Member, Sectional Committee of INSA.

Member(Subject Expert) on the PG Board of Studies in Mathematics, Kurukshetra University.

Prof. S.K.Tomar

Member, Board of Studies in Mathematics, M.D.University, Rohtak.

Life Member of Punjab Academy of Sciences, Punjabi University, Patiala.

Member, Editorial Board of International Egyptian Engineering Mathematical

Society.

Member, Under-graduate Board of Studies in Mathematics, GNDU, Amritsar.
UGC nominee on the Advisory Committee of DRS Phase-II in the Department
Mathematics, Rani Durgawati University Jabalpur for the period April 01, 2007
March 31, 2012.

Member, Board of Studies in Lovely Professional University, Jalandhar.

Dr. Kapil K. Sharma

Associate Editor, Applied Mathematics and Computation (referred
International Journal published by Elsevier).

Dr. Anuradha Sharma

Reviewer for Mathematical Reviews of American Mathematical Society.

2010-2011

Prof. I.B.S.Passi

Member, Inter-Academy Panel constituted by the Indian National Science
Academy for the DST INSPIRE Programme.

Member, State Resource Group in Science Education, Haryana Prathmik Shiksha
Pariyojna Parishad(Sarv Shiksha Abhiyaan-Haryana).

Member of Programme Advisory Committee-Mathematical Sciences, Department
of Science and Technology, Govt. of India.

Prof. Madhu Raka

Served in the national committees of CSIR and UGC and in some editorial
board of regional journals.

Prof. S.K.Tomar

Life Member of Punjab Academy of Sciences, Punjabi University, Patiala.

Member, Editorial Board of International Egyptian Engineering Mathematical
Society.

Member, Post-graduate Board of Studies in Mathematics, Panjab University,
Chandigarh.

Member, Post-graduate Board of Studies in Mathematics, G.N.D.University,
Amritsar.

Member, Under-graduate Board of Studies in Mathematics, Kurukshetra
University

UGC nominee in the meeting of the Advisory Committee of DRS Phase-II in the
Department of Mathematics, Rani Durgawati University Jabalpur for the
period April 01, 2007 to March 31, 2012

Dr. Gurmeet K. Bakshi

Zonal Coordinator (North Zone) for conducting NBHM M.A./M.Sc. and Ph.D.
scholarships since Jan 2011.

Member of the national committee for under graduate teachers enrichment programme of the Ramanujan Mathematical Society (RMS-UGTE) 2013.

Dr. Anuj Sharma

Editorial Board member of MG&V International Journal

2011-2012

Prof. I.B.S.Passi

Member, Inter-Academy Panel constituted by the Indian National Science Academy for the DST- INSPIRE Programme

Member, State Resource Group in Science Education, Haryana Prathmik Shiksha Pariyojna Parishad(Sarv Shiksha Abhiyaan-Haryana)

Member of Programme Advisory Committee-Mathematical Sciences, Department of Science and Technology, Govt. of India

Member, Academic Senate, IISER, Mohali; Member, Governing Council, Society for Science and Technology in India

Member of the Apex Committee and Chairman Selection Committee(Mathematics) of INSA for the INSPIRE Faculty Programme of DST.

Prof. S.K.Tomar

Life Member of Punjab Academy of Sciences, Punjabi University, Patiala.

Member, Editorial Board of International Egyptian Engineering Mathematical Society.

Member, Under-graduate Board of Studies in Mathematics, Kurukshetra University.

Outside Expert on the Board of Studies in Applied Mathematics of Punjab Technical University, Jalandhar for 3 years.

UGC nominee in the meeting of the Advisory Committee of DRS Phase-II in the Department of Mathematics, Rani Durgawati University Jabalpur for the period April 01,2007 to March 31, 2012.

Dr. Gurmeet K. Bakshi

Member, National Academy of Sciences(NASI)-2012.

Member Academic Committee: Northern Regional Conference under the National initiative on Mathematics Education held at Delhi, Nov 21-23, 2011.

Dr. Kapil K. Sharma

Associate Editor, Applied Mathematics and Computation (refereed International Journal published by Elsevier).

Dr. Anuj Sharma

Editorial and Advisory Board Member of International Journal of Machine Graphics and Vision.

Dr. Anjana Khurana

Member of the team to interview the students for the Kishore Vaigyanik Protsahan Yojana (KVPY) Fellowships of Indian Institute of Science in 2011.

2012-2013**Prof. I.B.S.Passi**

Member, Apex Committee for INSPIRE Faculty Scheme of the Department of Science and Technology, GOI.

Member, Joint Science Education Panel, Indian Academy of Sciences, Bangalore

Member Mathematics Advisory Board, Eternal University, Baru Sahib, Himachal Pradesh.

Prof. S. K. Tomar

Member of the Board of studies in Applied Mathematics at Punjab Technical University, Jalandhar.

Convener of Post Graduate Board of Studies in Mathematics, Panjab University, Chandigarh.

Convener of the Under Graduate Board of Studies in Mathematics, Panjab University, Chandigarh.

Member, Board of Studies Applied Mathematics, PTU, Jalandhar.

Member of Research Degree Committee in Computer Science and Applications, Panjab University, Chandigarh.

Convener, Research Degree Committee in Mathematics, Panjab University, Chandigarh.

Member of Editorial Board of American Journal of Fluid Dynamics.

Member of Board of Advisors of Bulletin of the Gauhati University Mathematics Association.

Dr. Gurmeet K. Bakshi

Member, National Academy of Sciences, India 2012

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).

See Annexure IV

28. Student projects **Nil**

- percentage of students who have done in-house projects including inter-departmental projects
- percentage of students doing projects in collaboration with other universities / industry / institute

29. Awards / recognitions received at the national and international level by

(2009-2013)**Faculty****Prof. I.B.S.Passi**

Prasanta Chandra Mahalanobis Medal 2011
 Indian National Science Academy, New Delhi
 Khosla National Award 2011, Indian Institute of Technology, Roorkee

Prof. Sudesh Kaur Khanduja

Elected Fellow of the Indian Academy of Sciences, Bangalore 2010

Dr. Gurmeet K. Bakshi

Shiksha Rattan Puraskar 2011
 Member of the National Academy of Sciences, India. 2012

Prof.A.K.Agarwal

Emeritus Scientistship' of CSIR

Post doctoral fellows**Dr. Anuj Sharma**

Post Doctoral from RWTh Aachen, Germany

Doctoral Fellow(Ph.D. students)**2010-2011**

Mr. Paramjit Singh, a Ph.D. student of this Department, awarded French Government Sandwich Ph.D. fellowship through 'Services Culturels de l'Ambassade de France en Inde'. Duration of fellowship was 6 months (April 23 to October 20, 2010). Through this fellowship, he worked at Laboratoire Jacques-Louis Lions, Université Pierre et Marie Curie Paris, France under the supervision of Prof. Benoît Perthame and Prof. Edwige Godlewski. He was also awarded Visiting fellowship by Institute for Mathematical Sciences, National University of Singapore, Singapore to participate in Thematic Program on Hyperbolic Conservation Laws and Kinetic Equations: Theory, Computation, and Applications from November 21, 2010 to December 10, 2010.

2012-2013

Two research students of this Department viz Mr. Ramandeep Behl and Ms. Megha Goyal were awarded Professor R. S. Verma Best Paper Presentation Award in the International Conference of FIM on Inter-disciplinary Mathematics, Statistics and Computational Techniques held from Dec.15-17, 2012 in the Department of Statistics, Panjab University, Chandigarh. Mr. Ramandeep Behl won first prize (certificate and Rs.9,000/- cash) and Ms. Megha Goyal won 2nd prize (Certificate and Rs.6,000/- cash) for the best paper presentations.

One Research student- Ms. Leetika was awarded IMS prize for the year 2012 for presenting best research paper in the area of Number Theory at 78th Annual

Conference of the Indian Mathematical Society held at Banaras Hindu University, Varanasi(UP) during January 22-25, 2013.

Ms. Megha Goyal was also adjudged the best by the judges for oral presentation in Mathematical/Computational Section of the 7th Chandigarh Science Congress(CHASCON-2013) held in the Department of Mathematics on March 2, 2013 and she won Best Paper Presentation Award.

Students

Name of the award	No. of students awarded
Dr. V. C. Dumir Scholarship to PG students	08
Prof. Hans Raj Gupta Scholarship to PG students	03
NBHM(National Board for Higher Mathematics) Scholarship to PG students	03
Labhu Ran Sharma & Shanta Sharma Scholarship to PG students	01
Smt. Balwant Kaur & Dhanpat Rai Scholarship to PG students	02
Need-cum-Merit Sports and Handicapped Scholarship to PG students	02
Award of Sports to UG students	03

30. Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.

See Annexure-V

31. Code of ethics for research followed by the departments **Yes**

32. Student profile programme-wise: **See Annexure-VI**

33. Diversity of students **See Annexure-VII**

34. How many students have cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.:(2009-2013)

NET: 30(Approx.)

GATE: Not known

35. Student progression

Student progression		Percentage against enrolled
UG to PG	2009-2010	63.4%
	2010-2011	46.15%
	2011-2012	36.36%
	2012-2013	74.41%
PG to M.Phil.		N.A.
PG to Ph.D.		5%
Ph.D. to Post-Doctoral		2%
Employed		
<input type="checkbox"/>	Campus selection	Both 10-12%
<input type="checkbox"/>	Other than campus recruitment	
Entrepreneurs		NA

36. Diversity of staff :

Percentage of faculty who are graduates of	
the same university	65%
from other universities within the State	Nil
from universities from other States from	25%
universities outside the country	Nil

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period: **NIL**

38. Present details of departmental infrastructural facilities with regard to

a) **Library**

Library computerised. Reading Hall well-equipped. Computer available for accessing online journals and computerised catalogue.

The National Board for Higher Mathematics (NBHM) has recognized the Departmental Library as Regional Library(Northern Region), which has approximately 24,335 bound volumes of books and journals besides about 12,000 books on Mathematics are housed in University Central Library. The Library of the Department subscribes 53 research journals and has the facility of online access to Math SciNet. In addition to the normal functioning, the Departmental library is providing the following additional facilities to the users:

- (1) Opening of the library on Saturdays from 9.00a.m. to 1.00p.m.(Saturday is not a working day in Panjab University).
- (2) Mailing photocopies of 'Page of Contents' of journals received in the library to 20 Universities of Northern region for the use of mathematics community.
- (3) Photocopies of articles are sent promptly on request, free of charge to Mathematicians of the northern region.

Hence, the Department has excellent Library facilities for research and teaching.

b) **Internet facilities for staff and students**

For students and faculty- All the staff members and the students are allotted internet connectivity through wi-fi and internet through cable in Labs, Library and faculty rooms.

For Staff -There are 4 computers and 4 Laserjet printers in the Office of the Department for smooth functioning of the Department.

c) **Total Number of Class Rooms**

6 Class Rooms and one Smart Class Room

d) **Class rooms with ICT facility**

The Department has a fully equipped Seminar Room with all the latest infrastructural facilities viz. LCD Projector, Notebook, Smart Board with touch screen, touch monitor and digital pen. There are two OHPs available to run the seminars, academic activities etc. smoothly.

e) **Students and Research Laboratories**

Installed new network of wi-fi connectivity

Mathematics Department is facilitated with two well-equipped computing labs with 48 machines with internet connections. Two servers with latest specifications are available, along with 3 printers. The Department has windows XP as operating system and MATHEMATICA software to strengthen the computational facilities needed for research.

There are no separate Computer Labs for students and research purpose. Both the computer labs are meant for the students as well as for research purposes.

39. List of doctoral, post-doctoral students and Research Associates

a) **From the Host Institution/University**

Ph.D. Completed

1. Ms. Aarti Khurana
2. Ms. Meenakshi
3. Ms. Shivani Anand
4. Ms. Ramneek Khassa
5. Mr. Vikas
6. Ms. Harpreet Kaur
7. Mr. Anuj Bishnoi
8. Mr. Paramjit Singh
9. Mr. Pooja Grover
10. Ms. Partima Rai

Ongoing Ph.D. students

11. Ms. Megha Goyal
12. Ms. Leetika
13. Ms. Nisha Sharma
14. Mr. Jai Bhagwan
15. Ms. Garima Sood
16. Mr. Sanjeev
17. Mr. Suraj Goyal
18. Ms. Sugandha Maheshwary
19. Ms. Manju Sharma
20. Ms. Amita Sahni
21. Ms. Komal Bansal
22. Ms. Rachna
23. Ms. Bablesh

b) From other Institutions/Universities

1. Mr. Ashish Arora
2. Mr. Jaswant Singh
3. Mr. Ramandeep Behl

40. Number of post graduate students getting financial assistance from the university.
Nil

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.: **NA**

42. Does the department obtain feedback from: **NO**

- a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?
- b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?
- c. alumni and employers on the programmes offered and how does the department utilize the feedback?

43. List the **distinguished alumni** of the department (maximum 10):

- i. Dr. J. D. Gupta, IAS(Retd.), #230/Sector - 6, Panchkula
- ii. Prof. Gautami Bhowmik, U.M.R. 8524, Université de Lille I, 59655 Villeneuve d'Ascq Cédex, France
- iii. Shri *K.K Jalan*, IAS. Address. Bhavishya Nidhi Bhawan,. 14, Bhikaiji Cama Place, New Delhi-110 066.
- iv. Sh. J. P. Sharma, Principal Secretary (Medical Education), Department of Health & Family Welfare, Government of Uttar Pradesh, 5th Floor, Room No. 306, Vikas Bhawan, Janpath Market, Vidhan Sabha Road, Hazrat Ganj, Lucknow – 226001, U.P.
- v. Mr. Gurdarshan Singh, IPS(REtd.), Member, Public Service Commission, UP
- vi. Shri Kuldeep Singh Dhatwalia, ADG (Media) MHA North Block, New Delhi
- vii. Punjab IPS Rajan Gupta is director general (DG) of the Bureau of Police Research and Development (BPR&D), ON CENTRAL DEPUTATION. DG/BPR & D, GOI, MHA, NEW DELHI.
- viii. Prof. T. N. Shorey, Senior Professor, School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road, Colaba
- ix. Prof. K.T.Arsu, Department of Mathematics, Wright State University, Dayton

- x. Prof. Radha Kessar School of Engineering and Mathematical Sciences ,
Mathematical Science, City University, London
- xi. Prof. R. P. Bambah, Emeritus Professor, Dept. of Mathematics, PU,
Chandigarh
- xii. Prof. R.J.Hans-Gill, Emeritus Professor, Dept. of Mathematics, PU,
Chandigarh
- xiii. Prof. I.B.S.Passi, Emeritus Professor Dept. of Mathematics, PU, Chandigarh
and Honorary Professor, IISER, Mohali

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

For the enrichment of the students, special lectures, workshops, Conferences, Seminars are being organized in the Department and distinguished mathematicians from the reputed institutions are also invited to the Department to deliver lectures. For details,

See Annexure VIII

45. List the teaching methods adopted by the faculty for different programmes:

Smart Board, E-board, black board teaching, LCD Projector, Power Point presentation , demonstrator through computer, through Model etc.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

The teachers complete their syllabus properly within the specified time schedule. The scheme of holding various academic activities in the Department are generally finalized in the Department faculty meetings from time to time and are monitored by the Board of Control and other Committees at the Department level.

47. Highlight the participation of students and faculty in extension activities.

See Annexure VIII

48. Give details of “beyond syllabus scholarly activities” of the department.

See Annexure VIII

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.: **NA**

50. Briefly highlight the contributions of the department in generating new knowledge,

basic or applied

The faculty members have been involved in research in both basic and applied mathematics and have published around 90 research papers during the period of the report in the reputed national and international journals.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths

1. Honour School Programs at UG and PG level
2. Faculty having reputed mathematicians
3. Strong Ph.D. programmes
4. NBHM sponsored Regional Library for northern region
5. UGC Centre for Advanced Study in Mathematics

Weaknesses

1. Shortage of faculty especially in major
2. Lack of basic infrastructure like projectors in classrooms
3. Shortage of classrooms/faculty rooms
4. Lack of skilled manpower to handle computer Labs
5. Lack of space for Departmental Library

52. Future plans of the department

The faculty member will continue to pursue research in the identified thrust areas and also strengthen the ongoing research programmes. The Department will try to overcome all the weaknesses mentioned in Col. 51.