

BRIEF CURRICULUM-VITAE

Dr. Ram Naresh
Professor and Ex- Head

Department of Mathematics

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Harcourt Butler Technical University
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EDUCATIONAL QUALIFICATIONS :

- Ph.D., I.I.T. Kanpur, 1993, Mathematical Modelling – Air Pollution
- M. Sc.(Mathematics), Kanpur University, 1984, First
- B. Sc., Kanpur University, 1982, First
- Intermediate, U.P. Board, Allahabad, 1980, First
- High School, U.P. Board, Allahabad, 1978, First

TEACHING EXPERIENCE:

- Lecturer, Aug.23, 1993- Aug.22, 1997
- Senior Lecturer, Aug.23, 1997-Aug.22, 2002
- Assistant Professor Aug.23, 2002 – Dec.31, 2005
- Associate Professor Jan.01, 2006 – Aug.22, 2010
- Professor, Since Aug. 23, 2010 - continue
Department of Mathematics, HBTI Kanpur

COURSES TAUGHT:

- B. Tech, - Mathematics I, II, III, Computer Oriented Numerical Methods, Computer Oriented Numerical and Statistical Techniques, CONM Lab, Numerical Techniques Lab., Operations Research
- MCA – Mathematical Foundations of Computer Science, Linear Algebra, Computer Based Optimization Techniques
- M. Tech. – Numerical Methods and Operations Research

ACADEMIC DISTINCTIONS/AWARDS AND HONOURS

- Actively involved in research in the area of Mathematical modeling of the spread of infectious diseases and control, HIV/AIDS transmission, Environmental pollution and its abatement, Global warming and its control
- Published *Eighty* research papers in international and national journals

- Awarded *five* Ph.D. and *four* students registered
- Delivered many *invited talks* and attended many international and national conferences
- Attended various Refresher courses, summer/winter schools and online webinars
- Member of various learned Societies/Academies viz National academy of Sciences India, Indian Mathematical Society, Indian Science Congress Association, Bharat Ganit Parishad etc.
- **Chief Guest**, National Mathematics Day celebration, BND (PG) College, Kanpur, Dec. 22, 2020
- Awarded **Certificate of Appreciation** for successfully organizing and managing the Annual Cultural Fest “**Odyssey – 2018**”, April 27-29, 2018 as Dean Students’ Welfare/Chairman University Students Activity Council, HBTU Kanpur
- Awarded **Certificate of Appreciation** for delivering lecture on Mathematical Modeling as Resource Person in *Short Term Training Programme on Research Methodology*, Sept. 05-09, 2016, UPTTI Kanpur
- **Chief Guest**, National Mathematics Day Seminar, Shri Shakti Degree College, Kanpur, Dec. 22, 2015
- **Guest of Honour**, Ramanujan Lecture Series, BND(PG) College, Kanpur, Dec. 19, 2015
- **Judge**, National Level Science Exhibition (Mathematical Models), 2015-16, Jawahar Navodaya Vidyalaya, Sarsaul, Kanpur
- **Judge**, Uttar Pradesh and Uttranchal Science Level Exhibition, Puran Chandra Vidya Niketan, Kanpur, Aug. 22, 2008
- Won “**Best Paper Prize**”, Conference of Bharat Ganit Parishad, Nov.23-24, 2002, Lucknow University, Lucknow
- Won “**Best Paper Award**”, 7th Annual Conference of VPI, Oct. 24-26, 1997, HBTU, Kanpur
- **Awarded** CSIR JRF and SRF during Ph.D. program, 1987-1992, IIT Kanpur
- Qualified CSIR JRF examination 1986-87.
- Qualified Common Examination for Research Admission, 1985

ADMINISTRATIVE ASSIGNMENTS

- **Coordinator, STEP-HBTU** (An institute offering management courses affiliated to APJ Abdul Kalam Technical University, Lucknow), Aug. 04, 2020 - **continue**
- **Dean of Students’ Welfare**, June 03, 2017- June 02, 2019, Sept. 14, 2019 – **continue**, HBTU Kanpur
- **Chief Proctor**, July 5, 2017 – June 02, 2019, Sept.28, 2019 – **continue**, HBTU Kanpur
- **Chairman**, University Students Activity Council, August 26, 2017- June 02, 2019, Sept. 14, 2019 – **continue**, HBTU Kanpur
- **Chairman**, Council of Hostel Activities, June 03, 2017 – June 02, 2019, HBTU Kanpur

- **Mentor**, Induction Programme for Ist year B. Tech students, 2017-18, 2018-19, HBTU Kanpur
- **Coordinator**, Committee for hostel fees restructuring and policy framing for its utilization, HBTU Kanpur, 2019
- **Coordinator**, Committee for head wise fees collection/distribution and remuneration for examination related work, HBTU Kanpur, 2019
- **Coordinator**, RUSA/DDU scheme, July 11, 2019 - Feb. 05, 2020, HBTU Kanpur
- **Member**, Committee for proposing changes in ordinance to convert 3-year MCA programme into 2-year MCA programme, March 2020, HBTU Kanpur
- **Officer-in-charge**, University Canteen, July 25, 2017- June 02, 2019, HBTU Kanpur
- **Member**, Committee for DPR preparation for income-expenditure statement of students' fee structure, HBTU Kanpur, 2019
- **Member, Committee** for framing rules/regulations for expenditure of fees under the head 'Economically Weaker Section Fund', 16/08/2019
- **Member**, Committee for branch-wise allocation of number of guest faculty, June 2019, HBTU Kanpur
- **Co-Coordinator**, Guest Faculty selection. 2019, HBTU Kanpur
- **Convener**, Committee for catering services in University through rate contract E – tender, 01/07/2019, HBTU Kanpur
- **Member**, Committee for furniture requirement and specifications in University hostels, HBTU Kanpur, 2019
- **Chairman**, Cell for J & K students for higher studies, June 05, 2018 – June 02, 2019, HBTU Kanpur
- **Convener**, Student Grievance Redressal Cell, 2018-19, HBTU Kanpur
- **Convener**, Search Committee for appointment of Ombudsman in University, May 17, 2018, HBTU Kanpur
- **Member**, Academic Council, HBTU Kanpur, 2017-18, 2018-19, 2019-20, 2020-21
- **Chairman**, Committee for preparation of *Information Brochure* 2017-18, HBTU Kanpur
- **Member**, Central Purchase Committee, 2017-18, 2018-19, 2019-20, 2020-21, HBTU Kanpur
- **Member**, Board of Studies (Mathematics), 2018, 2019, 2020 HBTU Kanpur
- **Convener**, Inquiry committee on class IV *suspended* employees, July 2017, HBTU Kanpur
- **Flying Squad Member**, End Semester (Even) Examination 2017-18, End Semester (Odd & Even) Examination 2018-19, HBTU Kanpur
- **Professor-in-Charge**, Central Evaluation, Even semester, 2015-2016, HBTU Kanpur
- **Professor-in-Charge**, Central Evaluation, Odd and Even semester, 2016-17, HBTU Kanpur

- **Convenor**, Screening Committee for promotion of employees from class four to class three (Tech. grade), Jan. 2016, HBTI Kanpur
- **Assistant Dean of Students' Welfare**, Sept. 29, 2014 – Oct. 29, 2015, HBTI Kanpur
- **Head**, Department of Mathematics, HBTI Kanpur, March 23, 2012- March 23, 2015
- **Chairman**, Board of Studies (Mathematics), HBTI Kanpur, 2012-2015
- **Member**, Academic Committee, HBTI Kanpur, 2012
- **Member**, Academic Council, HBTI Kanpur, 2012
- **Assistant Superintendent**, UPTU Odd Semester Examination, 2009-10 at HBTI Kanpur
- **Warden**, West Campus Hostel II, Dec.2004 – July 2007, HBTI Kanpur.
- **Officer- in- Charge, Institute Guest House**, May 2007- April 2010, HBTI Kanpur.
- **Warden**, Lake View (New) Hostel, Nov. 2001- July 2004, HBTI Kanpur.
- **Senator**, Students' Senate, 1989-90, 1990-91, IIT Kanpur.
- **Student Representative**, Department Post Graduate Committee (DPGC), 1989-90, 1990-91, Department of Mathematics, IIT Kanpur.
- **Student Representative**, Senate Post Graduate Committee (SPGC), 1990-91, IIT Kanpur.

MAJOR CONTRIBUTIONS AS DEAN STUDENTS' WELFARE /CHIEF PROCTOR / CHAIRMAN USAC , HBTU KANPUR

- Member Secretary, Committee on Economically Weaker Section Fund Rules-2019 and Student Aid Fund Rules-2019
- Managed and supervised all hostel affairs including hostel allotment, mess facility with assured food quality, hostel maintenance, hygiene, compliance of hostel rules, ambulance facility round the clock etc.
- All hostel messes brought under the ambit of Food Safety and Standards Authority of India (FSSAI).
- Started Bus facility for students between East and West campus, 2019-20
- For overall development of students, various activities were organized under University Students Activity Council (USAC) through its Sub-Councils viz NSS, Yoga, Photography, Literary, Hobby, Sports, Technical, Cultural and Social & Print Media etc.
- Formation of Anti-ragging committee and Anti-ragging squads and its wide publicity to make University campus ragging-free with strict compliance of UGC/AICTE directives.
- Adoption of 10 TB infected children and constitution of a task force for their medicine, nutrition and motivation, 2019-20
- Organized Fit India Movement programme including 'Cyclothan' (Cycling), Dec. 07-31, 2020
- Organized Annual Sports Fest "Aagaz-20", Feb. 15-17, 2020
- Organized Annual Techno-cultural Fest "ADHYAAY – 2019", Nov. 28-30, 2019

- Established 'Print and Social Media Sub-Council' under University Students Activity Council (USAC), Sept. 2019
- Publication of fortnightly news letter "The Pulse of HBTU" since Sept. 2019
- Organized Intercollegiate Annual Athletic cum Sports Fest "Aagaz-19", March 08-10, 2019 with Fun Fair, EDM night and inter-hostel competitive events.
- Organized an Outreach Programme for Research Scholars and teachers on Fulbright-Nehru and other Fulbright Fellowships by United States India Educational Foundation (USIEF), Jan. 31, 2019 (Speaker: Dr. Inumulu Jaya Bharti, Indian Programme Coordinator).
- Organized One day Workshop on "Self Defense through various Techniques of Martial art" for girl students, Feb. 10, 2019.
- Organized Annual Techno-cultural Fest "ADHYAAY – 2018", Oct. 26-28, 2018
- Organized One day Workshop on "Enhancement of Professional Skills for Placement" and University Teachers' Day Function, Sept.05, 2018.
- Organized One day Ideation Workshop, Fresher Function and University day celebration, September 01, 2018.
- Organized Three weeks Induction Programme for First Year B. Tech. Students, July 31-August 18, 2018, HBTU Kanpur as **Coordinator**.
- Organized Annual Cultural Fest "ODYSSEY – 2018", April 27-29, 2018
- Organized Annual Sports Meet & Prize distribution March 24-25, 2018.
- Organized One week Induction Programme for First Year B. Tech Students, Jan. 15-21, 2018, as **Mentor**.
- Started and managed 'Online hostel & mess fees payment' for University hostels, 2018.
- Started and managed CCTV and Biometric systems in University hostels, East Campus, 2018.
- Managed to install RO plants in West Campus University hostels by Ms. Kamdhenu Ltd., Gurugram, Haryana, 2018.
- Newly constructed Gymnasium became functional for students, 2018.
- Completion of cricket *turf pitch* on West Campus sports ground, 2018.
- Tree plantation drive in University hostels.
- Organized frequent medical camps in the University premises for students.
- Arranged Cashless treatment in hospitals and mediclaim policy for all students.
- PNG supply installation in all University hostels through MOU between CUGL and HBTU Kanpur.
- Organized One day Workshop on Awareness Programme under Rastriya Swachhata Mission with Kanpur Nagar Nigam and HBTU Kanpur, Dec. 22, 2017,
- Organized Prime Minister's live telecast address, Student Leader's Convention on the occasion of Pt. Deendayal Upadhyay Centenary Celebrations & 125th year of Swami Vivekanand's Chicago Address,

Young India, New India A Resurgent Nation: From Sankalp to Siddhi, September 11, 2017, HBTU Kanpur,

- Organized several Jayantis, Run for freedom and functions on other important days viz Shahid diwas (March 23, 2018), Ambedkar Jayanti, (April 14, 2018), Ravidas Jayanti (Jan. 31, 2018), Matrabhasha diwas (Feb. 21, 2018), Hemvati Nandan Bahuguna Shatabdi Varsh Samaroh (April 25, 2018), Kisan diwas (Dec. 23, 2018), Atal Jayanti (Dec. 25, 2018), Teachers day celebration (Sept.05, 2019), Rastriya Ekta Diwas, Sardar Patel Jayanti (Oct. 31, 2019), Matdata Shapath Samaroh (Jan. 25, 2019, Jan.25, 2020), Vigyan Diwas (Feb. 28, 2020), Parakram Diwas, Netaji Subhas Jayanti (Jan.23, 2021) etc.

EXTRA-CURRICULAR / CO-CURRICULAR ASSIGNMENTS

- **General Secretary**, Indian Academy of Mathematical Modeling and Simulation (IAMMS), 2019-20 (HQ: IIT Kanpur)
- **Convener**, Committee for Welcome and Stage conduction, Second Convocation-2020 held on Jan.29, 2021, HBTU Kanpur
- **Convener**, Committee for Discipline and Students management, Second Convocation-2020 held on Jan.29, 2021, HBTU Kanpur
- **Member**, Committee for Program Details, Annual Report, Messages and Convocation Address, Second Convocation-2020 held on Jan.29, 2021, HBTU Kanpur
- **Member**, Internal Quality Assurance Cell (IQAC), Christ Church College, Kanpur, 2020
- **Member**, Committee for organizing Guest Faculty selection, HBTU Kanpur, Jan. 2020, Oct. 2020
- **Member**, Research scholars selection committee, Sept. 06, 2020, HBTU Kanpur
- **Subject Expert**, Guest Faculty selection committee (Mathematics), AITH Kanpur, Oct. 17, 2020
- **Member Secretary**, Programme Conduction Committee, First Convocation, Dec.07, 2019 HBTU Kanpur
- **Convener**, Committee for discipline and students management, First Convocation, Dec.07, 2019 HBTU Kanpur
- **Member**, Committee for preparation of Annual report, Convocation address, agenda and messages, First Convocation, Dec.07, 2019 HBTU Kanpur
- **Convener**, Cultural Committee and Discipline Committee, 15th International Alumni Meet 2019, Nov. 23-24, 2019
- **Member**, Reception Committee, 15th International Alumni Meet 2019, Nov. 23-24, 2019
- **Member**, Research and Development Council (RDC), 2019, 2020, HBTU Kanpur

- **Convener**, Committee for preparation of documents for Criteria 09 (Student Support System) regarding NBA Accreditation team visit, Nov.15-17, 2019
- **Member**, Committee for reception, University presentation preparation, central facilities, labs and first year teaching faculty regarding NBA Accreditation team visit, Nov.15-17, 2019
- **Member**, National Advisory Committee, National Conference on Modeling, Analysis & Simulation (MAS-2019), Dec.16-18, 2019, IIT (ISM) Dhanbad, Jharkhand
- **Member**, National Advisory Board, 3rd International Conference on Soft Computing & Mathematical Modeling (ICSCMM-19), Dec.22-23, 2019, KIET Ghaziabad
- **Member**, Reception Committee, International Alumni Meet, Nov. 24-25, 2018, HBTU Kanpur
- **Convener**, Cultural Committee and Discipline Committee, International Alumni Meet, Nov. 24-25, 2018, HBTU Kanpur
- **Member**, Selection Committee for Ph.D. students, July 17, 2018, July 12, 2020, HBTU Kanpur
- **Subject Expert**, Board of Studies (Basic Sciences), Uttar Pradesh Textile Technology Institute, July 20, 2018
- **Convener**, Cultural Committee and Discipline Committee, 13th International Alumni Meet, Nov. 25-26, 2017, HBTU Kanpur
- **Subject Expert**, Board of Studies (Mathematics), Uttar Pradesh Textile Technology Institute, July 14, 2017
- **Subject Expert**, Guest Faculty selection committee in Mathematics, July 13, 2017, Rajkiya Engineering College, Mainpuri
- **Subject Expert**, Guest Faculty selection committee in Mathematics, July 11, 2017, Rajkiya Engineering College, Kannauj
- **Subject Expert and Vice Chancellor nominee**, recruitment and promotion under CAS of Assistant Professors, Dr.Bhim Rao Ambedkar University, Agra, 2017
- **Member**, Board of Studies (Mathematics), 2017, CSJM University, Kanpur
- **Subject Expert**, Board of Studies (Mathematics), Uttar Pradesh Textile Technology Institute, Nov. 09, 2016
- **Member**, Institute Information Brochure Printing Committee, 2015-16
- **Member**, Committee on Faculty matters for draft proposal submitted to U.P.Govt. for converting HBTI into a University, 2015
- **Judge** in National Level Science Exhibition (Mathematics) at Jawahar Navodaya Vidyalaya, Sarsaul, Sept. 15, 2015
- **Member**, Reception Committee, Workshop on State level Faculty Interaction Seminar under the aegis of Department of Technical Education, Govt. of U.P., June 8-9, 2015, H.B.T.I.Kanpur
- **Subject expert**, Syllabus modification committee for Applied Mathematics I & II courses in polytechnics, IRDT Kanpur, Sept. 23, 2014

- **Subject expert**, Ph.D. admission interview committee, UPTU Lucknow, Dec. 23, 2013
- **Convener**, Guest Lecturers selection committee in Mathematics, HBTI Kanpur and Dr BRAECIT, Bijnore, July 18, 2013
- **Member**, Syllabus Moderation Committee for Mathematics Courses in I. B. Tech., GBTU Lucknow 2012-13 (April 18, 2013)
- **Convener**, Guest Lecturer selection committee in Mathematics, HBTI Kanpur and Dr BRAECIT, Bijnore, Jan.02, 2013
- **Convener**, Guest Lecturers selection committee in Mathematics, Dr. BRAECIT, Bijnore, July 19, 2012
- **Convener**, Guest Lecturers selection committee in Mathematics, HBTI Kanpur, July 18, 2012
- **Expert member**, Selection Committee (Mathematics), Axis Institute of Technology Kanpur, Jan. 2012.
- **Expert Member**, Guest Lecturers Selection Committee in Mathematics, HBTI Kanpur, Jan. , 2008, August 2008, August 2010, Jan.2011.
- **Member**, Draft Committee for Convocation 2010 held on Dec.18, 2010 HBTI Kanpur
- **Member**, Accommodation and Transport Committee for Convocation 2010 held on Dec.18, 2010 HBTI Kanpur
- **Expert member**, syllabus modification committee of Mathematics I and II for Diploma courses, IRDT Kanpur, April 22, 2010
- **Member**, Accommodation and Transport Committee for Convocation 2009 held on March 16, 2010. HBTI Kanpur
- **Member**, Board of Studies (Mathematics), HBTI Kanpur, 2009
- **Expert member**, Selection Committee (Mathematics), P S Institute of Technology Kanpur, June 07, 2009.
- **Expert member**, Selection Committee (Mathematics), Eshan Institute of Engineering Technology and Management, Agra, May 08, 2009.
- **Expert member**, Selection Committee (Mathematics), Sunrise Institute of Engineering Technology and Management, Unnao, , May 03, 2009,
- **Judge**, Uttar Pradesh and Uttaranchal Science level Exhibition, held at Puran Chandra Vidya Niketan Kanpur, Aug. 22, 2008.
- **Member**, Accommodation and Transportation Committee, IIIrd International Alumni Meet, Nov.24-25, 2007, HBTI Kanpur
- **Expert Member**, Guest Lecturers Selection Committee in Mathematics, HBTI Kanpur, Feb.14, 2005
- **Expert Member**, Guest Lecturers Selection Committee in Mathematics, Dr Ambedkar Institute of Technology for Handicapped, Feb.12, 2005.
- **Subject Expert** in Mathematics, U.P. Intermediate Education Services Selection Board, Allahabad, July 2-3, 2004.
- **Expert Member**, Lecturers Selection Committee in Mathematics, Kanpur Institute of Technology, Feb.29, 2004
- **Member**, Audio Video Committee, Conference on “Recent Development of Polymers”, August 16-17, 2002, Department of Plastic Technology, HBTI Kanpur

- **Member**, Program Conduction Committee, Symposium on “Environmental Challenges for the New Millennium”, Nov.24-25, 2000, Department of Chemical Engineering, HBTI Kanpur
- **Member**, Selection Committee for Research Scholars, 2003-04, HBTI Kanpur.
- **Member**, Antiragging Committee, 1997, 1999, 2000- 2007, 2008-09, 2009- 20, 2010-11, 2011-12, 2012-13 HBTI Kanpur.
- **Member**, Convocation Sub Committee, 1996-97, HBTI Kanpur

RESEARCH ACTIVITIES

RESEARCH EMPLOYMENT

- (i) JRF in a project on “Air Pollution” Dec. 1984 - July 1987
- (ii) Senior Project Fellow on “Dispersion of Air Pollutants and its Control by Greenbelt”, Sep. 1992- April 1993
- (iii) Research Associate in a project on “Water Pollution and its effects on Ecosystems”, May 1993 – August 1993.

Department of Mathematics, IIT Kanpur

PH.D THESIS TITLE

Modeling the Fate of Air Pollutants emitted from a Time Dependent Point Source: Effects of Removal Mechanisms, Department of Mathematics, IIT Kanpur

RESEARCH INTEREST

- Mathematical Modelling of Environmental & Ecological systems.
- Mathematical Epidemiology, Transmission dynamics of HIV/AIDS.
- Nonlinear Dynamics

Ph.D. THESIS SUPERVISION (Awarded- 05, In Progress - 04)

- **The transmission dynamics of AIDS epidemic: Some nonlinear mathematical models**, Sandip Omar, CSJM University Kanpur, 2004.
- **Removal of air pollutants from the atmosphere by precipitation: Mathematical models and their analyses**, Shyam Sundar, U. P. Technical University, Lucknow, 2008.
- **Mathematical modeling of the transmission of AIDS epidemic: Nonlinear models and their analyses**, Agraj Tripathi, U. P. Technical University, Lucknow, 2009.

- **Mathematical modeling of the spread of infectious diseases: demographic and environmental effects**, Surabhi Pandey, G.B. Technical University, Lucknow, August 2012.
- **Mathematical modeling of the spread of AIDS epidemic in a variable size population**, Dileep Sharma, G. B. Technical University, Lucknow, March 2013.
- **Mathematical modeling of acid rain and its effects on ecological and biological systems**, Shivangi, U.P. Technical University, Lucknow, Work in progress.
- **Modeling the spread and control of infectious diseases in a variable size population**, Sandhya Rani Verma, Dr APJ Abdul Kalam Technical University, Lucknow, Work in progress.
- **Stability and control mechanism for the growth of biological species in a stressed environment**, Niranjana Swaroop, Dr APJ Abdul Kalam Technical University, Lucknow, Work in progress.
- **Modeling and analysis of the spread of infectious diseases: Effect of factors related to human health and environment**, Kratika Misra, Harcourt Butler Technical University Kanpur, Synopsis approved.

M.Sc. DISSERTATION SUPERVISION: (Awarded- 01)

- **Modelling the Dynamics of the Zika Virus with Public Health Education and Transgenic Mosquitoes as Control Measures**, Dotto Azizi, University of Dar Es Salaam, Sept. 2017

INVITED EXPERT LECTURES DELIVERED

- Delivered an invited talk on “**Outcome Based Education: An integrated approach to Learning**”, in The Summer/Winter School [Multidisciplinary] through virtual mode (Jan. 16 - 29, 2021), organized by the UGC-Human Resource Development Centre, BHU Varanasi for College and University teachers, Jan.18, 2021
- Delivered an invited talk in the valedictory function of National Mathematics Week (22-30th December 2020), Dec.30, 2020, VIT Bhopal,
- Delivered a talk on “ **Contributions of Great Mathematician Srinivasa Ramanujan**” in Webinar on “**Modeling and Simulation**” organized on the eve of National Mathematics Day, Dec.22, 2020, HBTU Kanpur
- Delivered an invited talk on "**Mathematical modeling of air pollutants removal**" in one week **online FDP on Mathematical Modeling and its Applications in Engineering**, July 6-10, 2020, IET Lucknow

- Delivered an invited talk at National Conference on Mathematical Structures and Models in Science, Nehru Gram Bharti University, Prayagraj, Nov. 23, 2019
- **Invited** to deliver a talk in the **7th China-India-Japan-Korea International Conference on Mathematical Biology (CIJKMB-2019)**, August 23- 27, 2019, University of Science and Technology, Beijing, P.R. China.
- Delivered an invited talk on “**Outcome based education: An integrated approach to teaching learning process**”, in the National Seminar on “Need for Research and Innovation in Teaching Methodology” sponsored by National Assessment and Accreditation Council (NAAC), Jan. 27-28, 2019, Shri Shakti Degree College, Ghatampur, Kanpur and *Chaired a Technical Session*.
- Delivered an invited talk on “**Modeling the spread of HIV/AIDS: Role of media awareness programs**”, International Conference of Mathematical Modeling and Computations under the aegis of IAMMS, Dec. 01-03, 2018, South Asian University, New Delhi
- Delivered an invited talk on “**Modeling the effect of sanitation on the spread of infectious diseases**” in 6th China India Japan Korea Mathematical Biology Colloquium (CIJKMB) under the aegis of IAMMS, Aug.23-26, 2017, IIT Kanpur.
- Delivered an invited lecture on “**Mathematical Modeling**” in a Short Term Training Programme on “Research Methodology”, Sept. 05-09, 2016, UPTTI Kanpur.
- Delivered an invited talk on “**Modeling the spread of HIV/AIDS with treatment and delay**”, in International Conference on Mathematical Modeling and Simulation, BHU Varanasi, Aug.29-31, 2016.
- Delivered invited lectures on Environmental Pollution and Mathematical Epidemiology in a workshop, BHU Varanasi, Aug. 24-28, 2016.
- Delivered an invited talk on “**Modeling the dynamics of dust scavenging from the near earth atmosphere**” in International Conference on Mathematical Modeling, Differential Equations, Scientific Computing & Applications (ICMMDESCA-2016), March 27-29, 2016, IIT Kanpur and **Chaired a Technical Session** (March 29, 2016).
- Delivered an invited talk on “**Role of ecological factors on the spread of tuberculosis and its control using disinfectants**” in Twentieth Annual Conference of Gwalior Academy of Mathematical Sciences and Symposium on Mathematics in Real Life Problems with Special Reference to Life Sciences, Feb.5-7, 2016, Jiwaji University, Gwalior.
- Delivered lecture as **Chief Guest** on the eve of **National Mathematics Day Seminar**, Dec. 22, 2015, Shri Shakti Degree College, Ghatampur, Kanpur
- Delivered an invited talk as a **Guest of Honour** in Ramanujan Memorial Lecture series, Dec. 19, 2015, B.N.D.College Kanpur
- Delivered an invited talk on “**Environmental Pollution**” in National Workshop on ‘Theory and Applications of Mathematical and Computational Biology’, Jan. 22-24, 2015, ABV-IIIT Gwalior.
- Delivered an invited talk on “**AIDS Modeling: Epidemiological and Mathematical Considerations**” in National Workshop on ‘Theory and

Applications of Mathematical and Computational Biology', Jan. 22-24, 2015, ABV-IIIT Gwalior.

- Delivered an invited talk on “**Modelling the control of tuberculosis using disinfectants**” in National Conference on Recent Advancements in Mathematics, Beant College of Engineering and Technology, Gurdaspur, Punjab, Feb. 01-02, 2014 and **chaired a technical session.**
- Delivered an invited talk on “**Modelling the removal of carbon dioxide from the atmosphere to reduce global warming**” in International Conference on Mathematical Modelling and Computer Simulation with Applications (ICMMCSA) at IIT Kanpur, Dec. 31, 2013- Jan. 02, 2014 and **chaired a technical session.**
- Delivered an invited talk on “**Modeling the removal of carbon dioxide to reduce global warming by introducing aqueous ammonia solution near the source and external liquid species in the atmosphere**” in National Conference of Mathematics, University of Lucknow, Lucknow, Nov.29-Dec.01, 2013
- Participated in Panel discussion on **Research Meet on Social Needs** related to Ecology, Environment, Epidemic, Resource Conservation, Awareness Program, Terrorism and IT at BGI Kanpur, June 8, 2013 and delivered lecture on **Environmental Conservation.**
- Invited to deliver talk on "**Modelling the effect of disinfectants in controlling the bacterial disease-tuberculosis**", Symposium on Biomathematics, Annual Conference of Indian Mathematical Society, Banaras Hindu University, Varanasi, Jan.22-25, 2013. (*Could not attend*)
- Delivered an invited talk on “**Survival of resource dependent species in a polluted environment**” in **International Conference on Mathematical Modelling and Computer Simulation**, Bhabha Group of Institutions, Kanpur(D), Feb.17-18, 2012
- Delivered an invited talk on “**Modelling the biological control of Malaria**” and chaired two sessions on Environmental and Social Systems in a National Conference on Mathematical Modelling and Computer Simulation, Bhabha Group of Institutions, Kanpur(D), July 7-9, 2011
- Delivered invited lecture on “**Role of environmental and ecological factors on the spread of infectious diseases**” in a *National Seminar on Recent Advances in Mathematics and its Applications*, BND College Kanpur, Feb. 12, 2011.
- Delivered lecture on “**Role of Mathematics in Real Life Applications**” at DAV College, Kanpur, Oct. 11, 2010.
- Delivered lecture on “**Mathematics and Environmental Pollution**” at Bhabha Institute of Technology, Kanpur, Oct. 10, 2010.
- Delivered lecture on “**Mathematical Modelling-A General Framework**” in a Lecture Series on “Mathematical Modelling and Systems Simulation”, Feb.19-March 31, 2010, HBTI Kanpur.
- Delivered lecture on “**Mathematical Modelling- Real Life Applications**” in a Lecture Series on “Mathematical Modelling and Systems Simulation”, Feb.19-March 31, 2010, HBTI Kanpur

- Delivered invited lecture on “**Mathematical Modelling**” in a Conference on the eve of Birth day celebration of Prof. Harish Chandra, the great mathematician, at VSSD College, Kanpur, Oct. 11, 2007
- Delivered invited lecture on “**Removal of air pollutants from the atmosphere of an industrial city by monsoon rain: Nonlinear Modeling and Analysis**” in “Symposium on Recent Advances in Mathematical Sciences” at IIT Kanpur Feb.16-17, 2007.
- Delivered two invited lectures on “**Modelling of Environmental Systems and effects of removal mechanisms**” in a Short Term Training Programme on “Modelling and Simulation of Engineering and Environmental Systems” at Beant College of Engineering and Technology, Gurdaspur, Punjab, March 15-19, 2004.
- Delivered two invited expert lectures on “**Environmental Pollution**” at IIT Kanpur during UNESCO Regional Training Programme in “Mathematical Modelling of Fluid Flows, Diffusion and Environmental Pollution”, March 12-24, 2001

RESEARCH CONTRIBUTION

Environmental pollution, global warming and spread of infectious diseases including the transmission of HIV/AIDS are major issues today before the mankind. These issues have been addressed in the form of research papers. The scientific contributions are significant and well recognized both at national and international level as is evident from the research publications in international journals. Presently, we are also studying the role of media awareness/campaign in containing the spread of infectious diseases. Some specific issues that have been addressed are summarized below.

1. Global Warming

Global warming is a serious threat to our planet due to emission of greenhouse gases into the atmosphere. Due to continuous increase in the concentration of greenhouse gases, emitted into the atmosphere from natural as well as anthropogenic sources, the temperature of the earth’s atmosphere is increasing leading to various environmental consequences including climate change. The CO₂ gas is the largest contributor to global warming. We have suggested mechanisms to reduce the concentration of carbon dioxide gas in the atmosphere. One of my paper “**Removal of carbon dioxide from the atmosphere to reduce global warming: A modeling study**” published in *International Journal of Global Warming*, 7(2), 270-292, 2015, was selected (**Article Featured in Press**) as potentially being of broad interest to non-specialists audience and a news item was prepared by the publisher, based on the results described in the paper, to run it via an appropriate news wire service in international media. The findings suggest that the carbon dioxide would be removed from the atmosphere through the introduction of aerosols or particulates (calcium oxide) that would sequester carbon dioxide so that it would precipitate out of the atmosphere. The greenhouse gases could then be

eliminated from the atmosphere. Further, the absorption of carbon dioxide would be carried out by plant photosynthesizing species.

2. Removal of air pollutants and effects on biological species

Air pollution is one of the most challenging problems which our industrial cities face today as their atmospheres are getting highly polluted due to discharges of gaseous and particulate matters from various household, industrial and vehicular sources. One such example is the city of Kanpur in India which is highly polluted by various kinds of gases and particulate matters emitted from different types of industries and vehicular exhausts. Gases like SO₂ and NO₂ released from industries, power plants etc., when reach high into the atmosphere and combine with moisture, form acid rain which is very harmful to ecosystems. When rainy season comes, the rain washes the city lanes, streets, buildings and cleans the atmosphere at least for a few months. We have developed nonlinear mathematical models and suggested mechanisms for removal of air pollutants from the atmosphere in the form of precipitation scavenging, greenbelt plantation etc. through these models. The work and inferences drawn are of immense use to scientists and mathematicians working in the area to understand the dynamics of nonlinear phenomenon of interactions of pollutants with raindrops, which in turn, may suggest method for cloud seeding leading to artificial rain. The effect of pollutants/toxicants and acid rain on plant and biological species have also been studied. The analysis of above work also suggests a mechanism by which toxic gases leaked out in the atmosphere due to accidental discharge etc. can be removed by introducing suitable liquid or gaseous phase in the environment.

3. Transmission of HIV/AIDS and other infectious diseases

The human immunodeficiency virus (HIV) infection, which can cause acquired immunodeficiency syndrome (AIDS), has shown a high degree of prevalence in populations all over the world. The most susceptible individuals at risk of acquiring infection include people having sexual contacts with HIV infecteds, homosexual and bisexual men, intravenous drug abusers and persons transfused with contaminated blood. Mathematical models of transmission dynamics of HIV play an important role in better understanding of epidemiological patterns for disease control as they provide short and long term prediction of HIV and AIDS incidence. Several papers have been published to understand the spread of HIV/AIDS under various epidemiological conditions addressing issues like mother-to-child transmission, immigration of HIV infectives in susceptible population, screening of unaware infectives, HIV-TB co-infection, contact tracing, vaccination threshold, risky sexual behavior and subsequent control measures. The study of other infectious diseases like Japanese encephalitis, tuberculosis, malaria etc. under the influence of degraded environmental conditions and subsequent control measures have also been taken up and various suggestions given.

EXTERNAL EXAMINER: M.Phil/ Ph.D Thesis

- (i) National University of Science and Technology, Zimbabwe
- (ii) IKG Punjab Technical University, Kapurthala
- (iii) Manipur University, Imphal
- (iv) Jiwaji University, Gwalior
- (v) CSJM University Kanpur

SPONSORED RESEARCH PROJECT

A major research project on “**Mathematical modeling of air pollutants removal by precipitation**” sponsored by University Grants Commission, New Delhi is completed (Feb.2011-Jan 31, 2014) as Principal Investigator.

PEER REVIEWER OF JOURNALS

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- Applied Mathematics and Computation (Elsevier)
- Nonlinear Analysis: Modeling and Control (Vilnius Univ.Press)
- AIMS Mathematics (AIMS Press)
- International Journal of Modeling Simulation and Scientific Computing (World Scientific Publishing Co.)
- Journal of Mathematical Control Science and Applications
- Mathematics and Computers in Simulation (Elsevier)
- International Journal of Biomathematics (World Scientific Publishing Co.)
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- Journal of Applied Mathematics and Computing (Springer)
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- Applied Mathematics (Scientific & Academic Publishers, USA)
- Journal of Biomathematics (Scientific & Academic Publishers, USA)
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- Natural Resource Modeling (Wiley)
- International Journal of System Science

- Theory in Biosciences
- IEEE Transactions on Systems, Man and Cybernetics: Systems
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- International Journal of Applied and Computational Mathematics
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- Far East Journal of Mathematical Sciences
- Proceedings of the National Academy of Sciences, India

EDITORIAL BOARD MEMBERSHIP

- Member, Editorial Board, International Journal of Applied Mathematics and Computation
- Member, Editorial Board, Journal of HIV and STD Research
- Member, Editorial Board, HIV AIDS Research and Antiviral Therapy, AUCTORES PUBLISHING LLC, USA
- Member, International Editorial Board, IOSR Journal of Mathematics
- Guest Editor, International Journal of Mathematical Modeling of Complex Systems: Nature and Society, 2015

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- Meteorology and Atmospheric Physics (Springer)
- Modeling Earth Systems and Environment (Springer)
- International Journal of Global Warming (Inderscience)
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11. Analysis of a nonlinear model for removal of pollutants by precipitation, **Ram Naresh**, Shyam Sundar & J.B.Shukla, International Conference on Mathematical Biology, Feb. 19-21, 2004, IIT Kanpur
12. Nonlinear modeling of the removal of pollutants (Gases and Particulate matters) from the atmosphere, J.B.Shukla, **Ram Naresh** & Shyam Sundar, International Symposium on Nonlinear Analysis and Applications, Jan. 2-4, 2003, Science City, Kolkata.
13. Modelling the effect of chemical defense mechanism on two competing species, J.B.Shukla, Shalini Sharma, **Ram Naresh** & P. Sinha, Conference on Mathematical Modelling and Computer Simulation, Nov. 14-15, 2002, NAL, Bangalore.
14. Removal of a reactive pollutant from the atmosphere by green belt, J.B.Shukla and **Ram Naresh**, Conference on Mathematical Modelling and Computer Simulation, Nov. 14-15, 2002, NAL, Bangalore.
15. Models for removal of pollutants from the atmosphere of an industrial city by rain, J.B.Shukla, Shyam Sundar & **Ram Naresh**, Conference on Mathematical Modelling and Computer Simulation, Nov. 14-15, 2002, NAL, Bangalore.
16. Qualitative analysis of nonlinear AIDS epidemic model, **Ram Naresh**, Sandip Omar & J.B.Shukla, Conference on Mathematical Modelling and Computer Simulation, Nov. 14-15, 2002, NAL, Bangalore.
17. A mathematical model for removal of air pollutants by precipitation, **Ram Naresh**, Bharat Ganit Parishad Conference on Mathematics, Nov. 23-24, 2002, Lucknow University, Lucknow.
18. Some models for removal of pollutants from the atmosphere of industrial city by rain, **Ram Naresh** & J.B.Shukla, Conference on Mathematical Modelling and Computer Simulation, Oct. 23-24, 2000, NEERI, Nagpur.
19. Removal of air pollutants and control of its dispersal in the atmosphere by greenbelt, **Ram Naresh** & J.B.Shukla, Conference on Mathematical Modelling and Computer Simulation, Oct. 23-24, 2000, NEERI, Nagpur.
20. Dispersion of heavier air pollutants forming secondary species: effect of removal mechanism, **Ram Naresh**, VIIth Annual Conference of VPI, Oct. 24-26, 1997, HBTI Kanpur.

BOOK PUBLISHED

1. **Joint Editor** of the book “Mathematical Analysis & Applications” published by Narosa Publishing House, New Delhi, 2000.

MEMBERSHIP OF PROFESSIONAL SOCIETIES

- (i) Member, National Academy of Sciences, India
- (ii) Life Member, Indian Science Congress Association (ISCA: L33396)
- (iii) Life Member, Indian Mathematical Society (L/2019/2)
- (iv) Life member, Bharat Ganit Parishad (BGP)
- (v) Life Member, Indian Academy of Mathematical Modelling and Simulation (IAMMS)
- (vi) Member, Indian Society of Nonlinear Analysts, 2002-03
- (vii) Annual Member, Indian Society for Technical Education, 2009-10

CONFERENCE/REFRESHER COURSE ORGANISED/CO-ORGANISED

- (i) **Coordinator**, 26th International Conference of IAPS (online) on “**Advances in Differential Equations & Mathematical Modeling**” jointly organized by School of Computational and Integrative Sciences, JNU, New Delhi and International Academy of Physical Sciences (IAPS), Prayagraj, Dec. 18-20, 2020 and **chaired a session** on Dec. 20, 2020
- (ii) **Coordinator**, One week Short Term Training Programme on “Data Analysis and SPSS Software”, sponsored by TEQIP-III, Cot. 21-25, 2019. HBTU Kanpur
- (iii) **Coordinator**, Faculty Development Programme on Mathematical Modeling and Research Methodology, Oct. 08-12, 2018, HBTU Kanpur
- (iv) **Member**, National Advisory Committee, International Conference on Mathematical Modeling and Simulation, Aug. 29-31, 2016.
- (v) **Convener**, Symposium on Biomathematics, 74th Annual Conference of Indian Mathematical Society, Jan.22-25, 2013, Banaras Hindu University, Varanasi.
- (vi) **Member**, National Advisory Committee, National Seminar on Recent Advances in Mathematics and its Applications, Feb.12, 2011, BND College, Kanpur
- (vii) **Member**, Organizing Committee in the Workshop on “Role of Mathematics in Science and Technology”, Oct.24, 2007, HBTI Kanpur.
- (viii) **Member**, Organizing Committee in the Workshop on “Applications of Mathematics in Engineering and Technology”, Sept.8, 2007, HBTI Kanpur
- (ix) **Convener**, Refresher Course on “Applied Mathematical Techniques for Chemical Sciences”, April 11-15, 2007, HBTI Kanpur
- (x) **Assistant Organizing Secretary**, Seventh Annual Conference of Vijnana Parishad of India, Oct.24-26, 1997, HBTI, Kanpur.

SYMPOSIA/CONFERENCE/ATTENDED/INVITED

- (i) Attended International Conference on Mathematical Modeling and Simulation, BHU Varanasi, Aug.29-31, 2016 and delivered an invited talk on “Modeling the spread of HIV/AIDS with time delay and treatment”.
- (ii) Attended International Conference of Mathematical Modelling and Computer Simulation with Applications (ICMMCSA), IIT Kanpur , Dec. 31, 2013-Jan. 2, 2014 and delivered an invited talk on “ Modeling the removal of carbon dioxide from the atmosphere to reduce global warming”
- (iii) Invited to attend the BIT’s second Annual World AIDS Day (HIV-2011) , Parallel summit of Ist Annual World Congress of microbes-2011, Dec.1-3, Beijing, China
- (iv) Invited to deliver an ‘Invited talk’ in the Third International Conference on Analytic Mathematics and its Applications, Xinyang Normal University, Xinyang-464000, Henan, P.R.China, Aug.08-12, 2011.
- (v) Symposium on Recent Advances in Mathematical Sciences, Feb.16-17, 2007, IIT Kanpur.
- (vi) International Conference on Mathematical Modelling and Computer Simulation, Dec.12-15, 2006, LNMIIT, Jaipur
- (vii) Recent Developments in Biomathematics, Feb.14, 2005, IIT Roorkee.
- (viii) International Conference on Mathematical Biology, Feb.19-21, 2004, IIT Kanpur
- (ix) International Symposium on “Nonlinear Analysis and Applications”, Jan.02-04, 2003, Organized by Indian Society of Nonlinear Analysts, Science City, Kolkata.
- (x) Conference on Mathematics, Bharat Ganit Parishad, Nov.23-24, 2002 Lucknow University, Lucknow.
- (xi) International Conference on “Current Trends in Differential Equations and Dynamical Systems”, Dec.15-17, 2001, IIT Kanpur.
- (xii) Seminar, World Mathematical Year, Dec.30, 2000, Department of Mathematics, HBTI, Kanpur.
- (xiii) ISMMACS Annual Conference on Mathematical Modelling and Computer Simulation, Oct.23-24, 2000, National Environmental Engineering Research Institute, Nagpur.
- (xiv) Seminar to Commemorate the 78th Birthday of Prof. Harish Chandra, Oct 11, 2000, Department of Mathematics, HBTI, Kanpur.
- (xv) Seventh Annual Conference of Vijnana Parishad of India, Oct.24-26, 1997, HBTI, Kanpur
- (xvi) Fifth International Conference on Atmospheric Science and Application to Air Quality, June 18-20, 1996, Seattle, Washington, USA (Invited to present a paper but could not attend).
- (xvii) Conference on “Recent Trends in Mathematics and Applications” & National Symposium on “Dedication of Prof. J.N. Kapur to Mathematics and Mathematics Education”, Sep. 7, 1993, HBTI, Kanpur.
- (xviii) Fifth International Conference on Precipitation Scavenging and Atmosphere-Surface Exchange Processes, July 15-19, 1991, Richland, Washington, USA (Invited to present a paper but could not attend)

- (xix) All India Symposium on System Science: Theory and Application to Biology, March 10-11, 1986. Jiwaji University, Gwalior.
- (xx) International Symposium on Mathematical Modelling of Ecological, Environmental & Biological Systems, August 27-30, 1985, IIT, Kanpur.

SUMMER/WINTER SCHOOLS/WORKSHOPS ATTENDED

- (i) Completed successfully Two weeks Faculty Development Programme on "Managing Online Classes and Co-Creating MOOCS 2.0", May18-June 03, 2020, Teaching Learning Center, Ramanujan College, University of Delhi, Sponsored by MHRD, Pandit Madan Mohan Malviya National Mission on Teachers and Teaching.
- (ii) Summer Training Program on "Active Learning for Senior Faculty", June 11-15, 2018, IIT Kanpur, Sponsored by TEQIP-III
- (iii) Workshop on "Outcome Based Accreditation for Undergraduate Training Programs", March 22-23, 2018, Organized by HBTU Kanpur and UPTTI Kanpur, Sponsored by TEQIP-III
- (iv) Workshop on Management Capacity Enhancement Programme – In Compliance with NBA and NAAC Accreditation, March 29-31, 2017, HBTU Kanpur (With ESCI Hyderabad, The Institution of Engineers (India) Sponsored by TEQIP-II)
- (v) Training Workshop for Faculty Mentors "Induction Programme for New Students", Organized by National Project Implementation Unit under TEQIP-III, Sept. 22-24, 2017, HBTU Kanpur.
- (vi) Workshop on Effective Pedagogy for Engineering Faculties, March 26-28, 2017, HBTU Kanpur (With ESCI Hyderabad, The Institution of Engineers (India) Sponsored by TEQIP-II)
- (vii) Workshop on "Energy Conservation and Energy Audit in Academic Institutions", March 07-09, 2017, HBTU Kanpur (With ESCI Hyderabad, The Institution of Engineers (India) Sponsored by TEQIP-II)
- (viii) Workshop on State level Faculty Interaction Seminar under the aegis of Department of Technical Education, Govt. of U.P., June 8-9, 2015, H.B.T.I. Kanpur
- (ix) Faculty Development Program on Modeling, Simulation and Analysis of Engineering Systems, Oct. 25-30, 2013, HBTI Kanpur
- (x) Workshop on Curriculum Development and Evaluation Methods in Technical Education, July 1-6, 2013, HBTI Kanpur.
- (xi) AICTE-ISTE sponsored Short Term Training Programme on "Optimization Techniques for Engineers", March 23-28, 2009 HBTI Kanpur.
- (xii) Workshop on Disaster Management and Mitigation, March 17-21, 2009, HBTI Kanpur.
- (xiii) Workshop on Modeling and Simulation of Chemical Processes, Feb.24-28, 2009, HBTI Kanpur
- (xiv) Workshop on 'Pedagogy' Feb. 24, 2008, HBTI Kanpur.
- (xv) Short Term Course on Mathematical Methods in Engineering and Science, July 3-15, 2006, IIT Kanpur.

- (xvi) Short Term Training Programme on “Intellectual Property Rights and Patent Information” conducted by Applied Science Department, National Institute of Technical Teachers Training and Research, Chandigarh, Sept.27-Oct.01, 2004 at HBTI Kanpur.
- (xvii) Short Term Training Programme on “Eco-Friendly Chemical Technologies”, March 11-24, 2002, HBTI Kanpur.
- (xviii) UNESCO Regional Training Programme on “Mathematical Modelling of Fluid Flows, Diffusion and Environmental Pollution” March 12 – 24, 2001, IIT Kanpur.
- (xix) Summer Course on “Probability, Random Processes and Elements of Information Theory”, June 14-26, 1999, IIT Kanpur.
- (xx) Refresher Course on “Sobolev Spaces and its Applications” Dec. 3-20, 1998, IIT, Kanpur.
- (xxi) Short Term Course on “Reliability and Safety in Process Industries,” Sep. 28-Oct. 10, 1998, HBTI, Kanpur.
- (xxii) Summer School on “Mathematical Modelling,” May 19-28, 1994, IIT, Kanpur.