

PROGRESS REPORT OF BHARAT SINGH CHAIR

July 1, 2021 to March 31, 2022

Name : DR. SURENDRA KUMAR MISHRA

Designation: PROFESSOR

Deptt./Centre/Programme: WATER RESOURCES DEVELOPMENT & MANAGEMENT

1(a). **Teaching Engagement**

- Taught a PG course WRN-504 APPLIED HYDROLOGY
- Taught a PG course WRN-571 DESIGN OF IRRIGATION STRUCTURES & DRAINAGE WORKS
- Taught a PG course WRN-515 IRRIGATION STRUCTURES

1(b). **MTech Thesis Dissertation Supervision**

Sl. No.	Title of Project/Thesis	Names of Students	Name of other supervisor (if any)	Remarks
1	Design flood estimation	Vachan Singh Meena	S.K. Mishra	
2	Effect of land use/land cover and climate change on water balance	Pallavi Chowdhary	S.K. Mishra AK Lohani	
3	Rainfall-runoff sediment yield modelling	Himanshu Tripathi	S.K. Mishra	
4	Dam break analysis	Avinash Kumar	S.K. Mishra	

1(c) **Continuing Education/ QIP Short Term Lectures/ Special Lectures:**

S No.	Title of Lecture/ Lecture Series	Date, Place and Programme where lectures delivered	Other relevant information
1.	Hydrologic issues of a hydropower project” in the course on “Technical Issues of Hydropower Projects	24.03.2022, WRDM, IIT Roorkee	

2. ACADEMIC RESEARCH AND PUBLICATION ELEMENT:

(a) Ph.D. Research Supervision

S.No.	Name of Student	Reg. Year and status (FT/PT)	Thesis Title	Other supervisor (s) (if any), name & department	Completed/ Ongoing
1.	N.K. Sharma	2014 (PT)	Investigation of Some Hydrologic and Hydraulic Issues in Water Resources	Dr. Ashish Pandey,	In Progress
2.	Hailu Birara	2015 (FT)	Impact of climate change on water resources	Dr. R.P. Pandey	2021
3.	Priyanka Gunjan	2015 (FT)	Integrated water resources development using decision support system	Dr. AK Lohani	Submitted
4.	Ishan Sharma	2018 (FT)	Rainfall-Runoff-Sediment Yield Modelling	Dr. Ashish Pandey	In Progress
5.	Sabyasachi Swain	2018 (FT)	Rainfall-Runoff-Sediment Yield Modelling	Dr. Ashish Pandey	In Progress
6.	Henok Mekonnen Aragaw	2019 (FT)	Water allocation under changing climate and land use/land cover in a river basin	Dr. M.K. Goel	2022
7.	Akash Jaiswal	2019 (FT)	Hydraulic Structures	Dr. Z. Ahmad	In Progress
8.	Esmatullah Sangin	2019 (FT)	Hydrologic modeling for optimal water allocation	Dr. Sumit Sen Dr. PR Patil	In Progress
9.	Melese Baye Hailu	2019 (FT)	Impact of climate change on water resources- A case of Tekeze river basin, Ethiopia	Dr. Sanjay Jain, NIH	In Progress
10.	Prashant	2021 (FT)	Rainfall-runoff-sediment yield modelling	--	In Progress
11.	Damodar Sharma	2021 (FT)	SCS-CN based modelling	--	In Progress
12.	Akash Bajpai	2022 (FT)	Leakage detection through pipes	--	In Progress

(b) Papers Published/Accepted in Journals

1. Shukla Chitra*, K.N. Tiwari, S.K. Mishra (2021), 'Multi-point sampling for improved throughfall measurement from tree plantations,' Trees, Ms. No. TSAF-D-20-00323R2 (Accepted).
2. Chaudhary, R.K., Mohammad Aamir, Z. Ahmad, S.K. Mishra (2021), 'Scour Downstream of a Corrugated Apron under Free Jets,' J. VW Applied Sciences, Volume: 1, Issue: 1, 15-25.
3. Chaudhary, R.K., Z. Ahmad, S.K. Mishra (2021), 'Scour downstream of a corrugated apron under wall jets,' IWA Pub., Water Practice & Technology Vol 00 No 0, 1 doi: 10.2166/wpt.2021.096.
4. Swain, Sabyasachi, S.K. Mishra, A. Pandey, P. Kalura (2022), 'Inclusion of groundwater and socio-economic factors for assessing comprehensive drought vulnerability over Narmada River Basin, India: A geospatial approach,' Applied Water Science. Volume: 12. Issue: 2. Open Access, Jan. 23.
5. Aragaw, Henok Mekonnen. S. K. Mishra (2022), 'Multi-site multi-objective calibration of SWAT model using a large dataset for improved performance in Ethiopia,' Arabian Journal of Geosciences, 15:320, <https://doi.org/10.1007/s12517-022-09602-5>.
6. Aragaw, Henok Mekonnen. S. K. Mishra (2022), 'Clarification of issues and long-duration hydrologic simulation SCS-CN-based proxy modelling, Acta Geophysica, <https://doi.org/10.1007/s11600-022-00730-w>.

(c) **Papers Published in Conferences**

1. Chaudhary, Vikrant, S.K. Mishra, Jagadish Patra (2021), "Irrigation Water Management of Mallour Distributary in Ambala,'Easy Chair Preprint № 6923, October 26.

(d) **Book Chapter**

1. Patil, P. R., Mishra, S. K., Jain, S. K., & Singh, P. K. (2021). An Analytical S-Curve Approach for SUH Derivation. In Water Management and Water Governance (pp. 349-360). Springer, Cham.

(e) **Technical Reports (External & Internal)**

S. No.	Title of Report	Particulars (Sponsored R&D/ Consultancy/ Status Reports etc.	Authors (same order as in publication)	Remarks (External/Internal report)
1.	Phase III hydrologic and hydraulic studies for Jigaon dam project (WRD-6002/21-22)	Consultancy	Dr. S.K. Mishra	Final Report
2.	Review of Sediment Management arrangement for Bajoli Holi Project, HP (WRD-6001/21-22)	Consultancy	Dr. S.K. Mishra Sh. A.C. Pandey	Final Report
3.	Detailed study for the protection work of Gola river bridge & flow channelization (WRD-6011/21-22)	Consultancy	Dr. S.K. Mishra Dr. RD. Garg Er. DK Agarwal	Final Report
4.	Site visit for technical evaluation of micro-irrigation projects under NVDA, Bhopal, MP (WRD-6014/2021-22)	Consultancy	Dr. S.K. Mishra Dr. ML Kansal Dr. Ashish Pandey Dr. S. Mittal	Draft Report
5.	Assessment of optimum distance of sand mining from guide bunds of a bridge (WRD-6009/21-22)	Consultancy	Dr. S.K. Mishra Dr. Ashish Pandey	Final Report
6.	Hydrogeological study of new ash dyke area at Koriaghat and Ghamota for NTPC Korba	Consultancy	Dr. S.K. Mishra Dr. UC Chaube	Draft Report
7.	Consultancy work for drainage study (surface and sub-surface) around ash dykes of NTPC Sipat	Consultancy	Dr. S.K. Mishra Dr. UC Chaube	Draft Report
8.	Assessment of sediment yield from the Tehri catchment	R&D	Ashish Pandey (PI) S.K. Mishra	Final Report
9.	Green technology for detection of leakage and heavy metals and prevention of choking in pipe networks and its demonstrations in Himalayan setups	R&D	Dr. SK Mishra (PI) Dr. NP Pathak	Interim Report

3. SPONSORED R&D, CONSULTANCY & EXTENSION ELEMENT:

(a) **Sponsored Research Projects**

S.No.	Title of Project	Funding Agency	Financial Outlay	Year start of total period	Name of P.I. and other investigators	Status Started or completed or in progress
1.	Assessment of sediment yield from the Tehri catchment	THDCIL, Rishikesh	Rs. 23.74 lacs	5 Years July 2017-Mar 2023)	Dr. S.K. Mishra (PI) Ashish Pandey	Final report Submitted
2.	Green technology for detection of Leakage and Heavy Metals and prevention of choking in pipe networks and its demonstrations in Himalayan setups	NMHS, Almorah	Rs. 1.00 crore	3 years (May 2020-April 2023)	S.K. Mishra NP Pathak	In Progress

(b) Consultancy Projects:

S No.	Title of Project	Funding Agency	Financial Outlay	Year of start & total period	Name of P.I. and other investigators	Status Started or completed or in progress
1.	Phase III hydrologic and hydraulic studies for Jigaon dam project (WRD-6002/21-22)	Jigaon Dam Project, Shegaon, Buldhana Maharashtra	24.5 lacs	01.05.2021-	Dr. S.K. Mishra	Completed
2.	Review of Sediment Management arrangement for Bajoli Holi Project, HP (WRD-6001/21-22)	Head, Civil-Design, Consulting Services Pvt. Ltd., IGI Airport, New Delhi	4.00 lacs	01.04.2021-09.06.2021	Dr. S.K. Mishra Sh. A.C. Pandey	Completed
3.	Hydrological study of new ash dyke area at Koriaghat and Ghamota for NTPC Korba (WRD-6011/2019-20)	AGM, C&M, SSC C&M (WR-2), NTPC LTD. Sipat	25.327 lacs	09.03.2020-08.07.2020	Dr. S.K. Mishra Dr. UC Chaube	Final Report Submitted
4.	Consultancy work for drainage study (surface and sub-surface) around ash dykes of NTPC Sipat	Sr. Manager (C&M) NTPC Ltd., SSC-WRII (Sipat) Project, Bilaspur	29.95 lacs	01.10.2021-	Dr. S.K. Mishra Dr. UC Chaube	Final Report Submitted
5.	Phase III hydrologic and hydraulic studies for Jigaon dam project (WRD-6002/21-22)	Jigaon Dam Project, Shegaon, Buldhana Maharashtra	24.5 lacs	01.05.2021-	Dr. S.K. Mishra	Completed
6.	Detailed study for the protection work of Gola river bridge & flow channelization (WRD-6011/21-22)	Project Manager, NHAI, Rudrapur	14.00 lacs	10.01.2022 -	Dr. S.K. Mishra Dr. RD. Garg Er. DK Agarwal	Completed
7.	Site visit for technical evaluation of micro-irrigation projects under NVDA, Bhopal, MP (WRD-6014/2021-22)	S.E. NVDA, Bhopal, MP	5.0 lacs	08.03.2022-15.04.2022	Dr. S.K. Mishra Dr. ML Kansal Dr. Ashish Pandey Dr. S. Mittal	Draft Report submitted
8.	Assessment of optimum distance of sand mining from guide bunds of a bridge (WRD-6009/21-22)	Ex. Er., UPID, Okhla	2.5 lacs	10.12.202-31.03.2022	Dr. S.K. Mishra Dr. Ashish Pandey	Completed

(c) Continuing Education/ QIP Short Term Lectures/ Special Lectures:

Sl. No.	Name of the conf./Seminar/Course	Sponsored by	Dates
1.	Delivered a lecture on "Hydrologic issues of a hydropower project" in the course on "Technical Issues of Hydropower Projects"	SJVNL, Shimla.	24.03.2022

(d) Other Extension Tasks

- Reviewed a technical paper HYP-21-0504 on 01.08.2021. Title: Revised runoff curve number for runoff prediction in the loess Plateau of China' by Shi et al. for J. Hydrological Processes
- Evaluated a PhD thesis of Mr Mukesh Kumar Chauhan, RGPV Bhopal on 19.08.2021. Topic: Water Resources Planning of Malwa Region- A Case Study. Supervisor- Dr. RK Srivastava
- Attended Board of Studies, HNB University Srinagar meeting on 24.08.2021 as an External Member.
- Attended Engineers day celebration on 15.09.2021 as Chief Guest organized by "Imperial College of Engineering and Research, Wagholi, Pune of Jayawant Sikshan Prasarak Mandal, a Cheritable Trust, Nanded.
- Attended Governing Body meeting of GBPIHE, Almora on 26.11.2021.
- Reviewed a PhD thesis of Dept. of Geosciences Engg., IIT (BHU) of Mr Nikhilesh Singh (Roll No. 16061010) on 26.01.2022. Topic: Hydrogeomorphological study of forms, patterns and processes of development of badlands
- Reviewed a PhD thesis of Prachi Vashishtha (Roll No. 186605) of Dept. of Civil Engg., JayPee University of Information Technology, Solan, on 18.01.2022. Thesis Topic: Water quality determination and modelling of natural lakes.
- Reviewed 20.01.2022 a PDS driven NIH project "Investigating water stress using hydrometeorological and remote sensing data, National Institute of Hydrology, Roorkee carried out by DS Rathore and his associates. Request made by Dr Manohar Arora.
- Reviewed 5 full length papers submitted to RWC-2022 for their publication in the Special Issue by Elsevier on 14.02.2022.
- Reviewed several papers submitted to RWC-2022 organized by IIT Roorkee.

- Reviewed a technical report prepared under PDS of NIH “Hydrological process and characterization of Lesser Himalayan catchments” prepared by JV Tyagi, Sanjay Kumar Jain, Manish Nema, Sharad K. Jain, RJ Thayyan, PK Mishra, HP Thakur on 20.02.2022 at the request of Dr. Vikas Goyal, SC. G of NIH.
- Reviewed a Draft BIS on “Guidelines for minimizing evaporation losses from reservoirs (first revision of IS14654) on 23.03.2022.

4. OTHER ACTIVITIES:

(a) Awards/ distinctions/ honours/ membership of National Committees

- Received academic excellence Award 2021 on 15.09.2021 for 40+ engineers from Institution of Engineers (India), Local Chapter, Roorkee.
- Nominated as a Member of Board of Studies of the Dept. of Rural Technology, Chauras, HNB University, Srinagar, on 27.01.2022.
- Participated as an Expert Member of the Interview Board of Bihar Public Service Commission, Patna, for selection of Assistant professors (Civil) for the Bihar state.
- Participated as an Expert Member of the Interview Board of Bihar Public Service Commission, Patna, for selection of Assistant professors (Civil) for the Bihar state during 24-27.02.2022.

(b) Membership of Professional Societies

- Fellow (F-116611-1), Civil Eng. Div., Institution of Engineers (India), UK State Centre, Roorkee Local Centre, India.
- Life Fellow Member (F-2004-1164), Indian Water Resources Society, Roorkee, India.
- Member (No. 1313), International Association of Hydrological Sciences, Wallingford, U.K.
- Life Member (LM-916), Indian Association of Hydrologists, Roorkee, India.
- Member, Board of Advisors, Psy-fronts, Annual J. of Multiple Sciences, Govt. Model Science College, Jabalpur, M.P.
- Member, Science and Technology Entrepreneurship Park (STEP), I.I.T., Roorkee (Membership No. 120/2009)
- Associate Editor, Int. J. Water Resources and Environmental Management, Serial Publications, New Delhi.
- Member, Editorial Board, International Scholarly Research Network (ISRN) Meteorology, Hindawi Pub. Corp., New York, USA.
- Editor, J. Indian Water Resources Society, Dept. of Water Resources Development and Management, IIT Roorkee.

(c) Organisation of Courses/ Conferences

Name of the Conf./Seminar/Course	Sponsored by	Dates
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- Organized a course on “Technical Issues of Hydropower Projects” during 21-25.03.2022. Organizers Ashish Pandey, ML kansal and SK Mishra. Sponsor: SJVNL, Shimla

(d) Visit to outside Institute/ Organisation

Instt./Organisation visited	Purpose of visit	Dates of visit
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- Visited Indore on 15.02.2022 for discussions with NVDA officials regarding Third Party Evaluation of Water Resources projects (pressurized systems).
- Visited Dept. of Rural technology, HNB Srinagar, Pauri Garhwal to attend BoS meeting on 26.03.2022

(e) Participation in Seminar/ Symposium/ Workshop etc.

Name of the Conf./Seminar/Sym./Workshop	Place & Sponsored by	Dates
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- Attended as a moderator of a session of the Webinar “Hydrological extremes modelling and mitigation measures” sponsored by SPACE & UIERI and organized by Dept. of WRDM.
- Attended as panelist in the webinar ‘Managing hydrometeorological extremes under the climate change organized by Prof. Kasiviswanathan & Prof Ashish Pandey on 16.02.2022
- Co-Chaired a Plenary Session on 03.03.2022. The session was chaired by Prof. Yukata Matsuno. Total 05 papers were presented.
- Attended 2nd Roorkee water Conclave-2022 organized by IIT Roorkee and NIH Roorkee during 02-04.03.2022.

- Delivered a key note address on “Role of SCS-CN methodology in water resources under climate change” in the workshop “Integrated approach and planning for sustainable watershed development in the Himalayan Region, UK” organized by: GBPNIHE Garhwal regional Centre, Srinagar & HNB University, Srinagar, on 08.03.2022.
5. OTHER WORK (not included above)
- Attended Scrutineers’ Committee meeting on 06.07.2021 for finalization of schedule of election for EC of IE(I) Roorkee Chapter.
 - Attended WRD-24 (BIS) online meeting on 25.10.2021.
 - Presented the Final report of the MoWR project, ‘Experimental Verification of SCS-CN runoff curve numbers for selected soils and land uses,’ on 04.03.2022
6. MANAGEMENT & INSTITUTIONAL DEVELOPMENT ELEMENTS:
- a) Dept./ Centre's Level:**
- Attended a number of SRCs of various research scholars in the Dept. of WRDM & several other departments of IIT Roorkee.
 - Worked as Chairman, DRC in the Dept. of WRDM including PhD screening, interviews, seminars, and many other paper works.
 - Carried out any other duty assigned by Prof. & Head of the Department.
- b) Institute Level:**
- Participated on 27.09.2020 as IR in JEE (Adv) at Kurukshetra- Self and Anad Bulusu
 - Completed any other work assigned by the institute from time to time.
7. PLAN FOR FUTURE WORK
- A 1-d workshop on “Water Resources of Indus Basin” is being organized on April 26, 2022.
 - A Report/Book on “Water Resources of Indus River Basin” is under preparation.
 - Organization of special lectures by eminent personalities in the field.
 - Any other work assigned.

(PROF. S.K. MISHRA)