CURRICULUM VITAE

RIDDHI SINGH

Assistant Professor

16, Department of Civil Engineering
Indian Institute of Technology Bombay
Powai, Maharashtra, India 400076

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Personal Information

Nationality: Indian

Languages: Hindi (Mother Tongue), English (Fluent) Maternity leave: May 2019 to October 2019

Research Interests

My research lies at the intersection of hydrology, water management, and sustainability science. I develop modeling frameworks that diagnose dominant hydrologic processes and predict hydrologic response for river basins undergoing environmental change, often with limited ground-based observations. I also analyze how anthropogenic interventions may alter water availability for ecology and humans at regional scales. My research generates insights to enable water management in the presence of deep uncertainties while considering the preferences of multiple stakeholders.

Professional Experience

Assistant Professor October 2017 - Present

Department of Civil Engineering, Indian Institute of Technology Bombay, Maharashtra, India

Assistant Professor July 2014 – October 2017

Department of Civil Engineering, Indian Institute of

Technology Hyderabad, Telangana, India

Post-doctoral scholar August 2013 – July 2014

Earth and Environmental Systems Institute, The Pennsylvania State University, University Park, Pennsylvania, U.S.A Research Assistant June 2010 – July 2013

Department of Civil and Environmental Engineering, The Pennsylvania State University, University Park, Pennsylvania, U.S.A

Education

PhD in Civil The Pennsylvania State University, University January 2011 – July 2013

Engineering Park, USA

Dissertation Title: An uncertainty framework for hydrologic projections in gauged and ungauged basins under non-stationary climate conditions

Advisor: Prof. Thorsten Wagener

G.P.A. 3.95/4

Master of The Pennsylvania State University, University August 2009 - December 2010

Science in Park, USA

Civil Master's thesis: A non stationary uncertainty

Engineering framework for climate change impact

projections – trading space-for-time to understand streamflow elasticity Advisor: Prof. Thorsten Wagener

G.P.A. 4/4

Bachelor of Maulana Azad National Institute of Technology,

Technology in Bhopal, India Civil C.G.P.A 9.35/10

Engineering

Professional Recognition

Associate, the Indian Academy of Sciences, 2018-2022

Awarded the Water Advanced Research and Innovation (WARI) Fellowship Program supported by the Department of Science and Technology, Govt. of India, the University of Nebraska-Lincoln (UNL), the Daugherty Water for Food Institute (DWFI) and the Indo-US Science and Technology Forum (IUSSTF), November 2016.

Invited to present a talk at INDOGFOE 2016, 8th Indo-German Frontiers of Engineering Symposium, held at Potsdam, Germany, 19-22 May 2016

Invited to present in ICON 2015, 1st Indo-Chinese Young Engineering Leaders' Conclave, held at the Indian Institute of Technology Gandhinagar, 7-9 October 2015

Silver Medal, 2nd Position in UG Civil Engineering Batch of 2009, Maulana Azad National Institute of Technology, Bhopal, India

Dr. Sadhana Chatterjee Gold Medal for Outstanding performance in class XII, 2005, Banaras Hindu University, Varanasi, India

May 2005 - April 2009

Professional Service

- Associate Editor, Hydrological Sciences Journal (International Association of Hydrological Sciences, IAHS), 2019-Present.
- Associate Editor, Journal of Earth System Sciencel (Indian Academy of Sciences), 2020-Present. Editorial Advisory Board, Climate Risk Management (Elsevier).
- Guest Editor, Special Issue on "Climate and Land-Use Change and Their Effects on the Hydrological Behaviour of Landscapes", MDPI Atmosphere.
- Scientific Committee, 2nd International Symposium on Water Systems Operations, 1-3 September 2021 (event postponed), Bristol, United Kingdom
- Reviewed for Geophysical Research Letters, Water Resources Research, Journal of Hydrology,
 Journal of Water Resources Planning and Management, Hydrological Sciences Journal,
 Hydrological Processes, Advances in Water Resources, Hydrology and Earth System
 Sciences (HESS), Journal of the American Water Resources Association, Land
 Degradataion and Development, Ecohydrology, Computers and Geosciences, Current
 Science, Sadhana- Academy Proceedings in Engineering Science, Journal of Earth System
 Science, ISH Journal of Hydraulic Engineering
- Co-organizer for national level conference titled 'Next Frontiers in Civil Engineering: Sustainable and Resilient Infrastructure (NFiCE2018)' held at IIT Bombay in December 2018.
- Co-organizer for national level conference titled 'Modelling tools for sustainable water resources management' held at IIT Hyderabad in December 2015. (Co-organized with Dr. T. Shashidhar, Dr. K.B.V.N Phanindra, and Dr. Basudev Biswal)
- Co-convener, Session titled "Regional hydro-climatic observations, patterns, changes and implications for modeling." Fall meeting of the American Geophysical Union (AGU), San Francisco, U.S.A., 2013.(Convener: Benjamin Livneh; Co-conveners: Rohini Kumar and Stacey Archfield).

Member, American Geophysical Union, December 2010 – present

Peer Reviewed Journal Publications

Scholar profile: https://scholar.google.co.in/citations?user=VpsQcKoAAAAJ&hl=en&oi=ao

Self, Student Author

- [14] <u>Singh</u>, R., Mishra, V., Narasimhan, B., Ghosh, S., Sharma, A., Dutta, S., and Mujumdar, P. P., 2020. Hydrological Modeling in India Status Report 2016-2019. *Proceedings of the Indian National Science Academy*, 86(1), 479-494, doi: 10.16943/ptinsa/2020/49802.
- [13] <u>Deshmukh</u>, A., and <u>Singh</u>, R., 2019. A Whittaker-Biome based framework to account for the impact of climate change on catchment behavior. *Water Resources Research*, 55, 11,208-11,224, doi: 10.1029/2018WR023113.
- [12] <u>Singh</u>, R., and Kumar, R., 2019. Climate versus demographic controls on water availability across India at 1.5° C, 2.0° C and 3.0° C global warming levels. *Global and Planetary Change*,

- 177, doi: 10.1016/j.gloplacha.2019.03.006.
- [11] <u>Singh</u>, R., Quinn, J.D., Reed, P.M., and Keller, K., 2018. Skill (or lack thereof) of data-model fusion techniques to provide an early warning signal for an approaching tipping point. *PloS one*, *13*(2), p.e0191768, doi: 10.1371/journal.pone.0191768.
- [10] Biswal, B., and <u>Singh</u>, R., 2017. Incorporating channel network information in hydrologic response modeling: development of a model and inter-model comparison. *Advances in Water Resources*, 100, 168-182, doi: 10.1016/j.advwatres.2016.12.015.
- [9] <u>Deshmukh</u>, A., and <u>Singh</u>, R., 2016. Physio-climatic controls on vulnerability of watersheds to climate and land use change across the United States. *Water Resources Research*, In Press, doi: 10.1002/2016WR019189.
- [8] <u>Singh</u>, R. and Kumar, R., 2015. Vulnerability of water availability in India due to climate change: A bottom-up probabilistic Budyko analysis. *Geophysical Research Letters*, *42*(22), pp.9799-9807.
- [7] Ward, V.L., <u>Singh</u>, R., Reed, P.M. and Keller, K., 2015. Confronting tipping points: Can multi-objective evolutionary algorithms discover pollution control tradeoffs given environmental thresholds? *Environmental Modelling & Software*, *73*, pp.27-43.
- [6] <u>Singh</u>, R., Reed, P.M. and Keller, K., 2015. Many-objective robust decision making for managing an ecosystem with a deeply uncertain threshold response. *Ecology and Society*, *20*(3), p.12.
- [5] <u>Singh</u>, R., Wagener, T., Crane, R., Mann, M.E. and Ning, L., 2014. A vulnerability driven approach to identify adverse climate and land use change combinations for critical hydrologic indicator thresholds: Application to a watershed in Pennsylvania, USA. *Water Resources Research*, *50*(4), pp.3409-3427.
- [4] <u>Singh</u>, R., Archfield, S.A. and Wagener, T., 2014. Identifying dominant controls on hydrologic parameter transfer from gauged to ungauged catchments—A comparative hydrology approach. *Journal of Hydrology*, *517*, pp.985-996.
- [3] <u>Singh</u>, R., van Werkhoven, K. and Wagener, T., 2014. Hydrological impacts of climate change in gauged and ungauged watersheds of the Olifants basin: a trading-space-for-time approach. *Hydrological Sciences Journal*, *59*(1), pp.29-55.
- [2] Ning, L., Mann, M.E., Crane, R., Wagener, T., Najjar Jr, R.G. and <u>Singh</u>, R., 2012. Probabilistic projections of anthropogenic climate change impacts on precipitation for the mid-atlantic region of the United States. *Journal of Climate*, *25*(15), pp.5273-5291.
- [1] <u>Singh</u>, R., Wagener, T., Werkhoven, K.V., Mann, M.E. and Crane, R., 2011. A trading-space-for-time approach to probabilistic continuous streamflow predictions in a changing climate—accounting for changing watershed behavior. *Hydrology and Earth System Sciences*, *15*(11), pp.3591-3603.

Papers under review

- [1] <u>Veena</u>, S., <u>Singh</u>, R., Gold, D., Reed, P.M., and Bhave, A. Improving information-based coordinated operations in inter-basin water transfer megaprojects: a case study in Southern India. In review with *Journal of Water Resources Planning and Management*.
- [2] <u>Lakshmi</u>, E., <u>Singh</u>, R., and Kambhammettu, B.V.N.P. REGSim: An open-source framework to estimate recharge and simulate groundwater heads. In review with *Computers and Geosciences*.

Book Chapters

[3] <u>Singh</u>, R. and Biswal, B., 2019. Assessing the Impact of Climate Change on Water Resources: The Challenge Posed by a Multitude of Options. In: Singh S., Dhanya C. (eds) *Hydrology in a Changing World* (pp. 185-204). Springer Water, Cham., ISBN: 10.1007/978-3-030-02197-9_9. [2] <u>Singh</u>, R., Biswal, B., and Kumar, R., 2019. Water Availability Across India Under Observed and Projected Climate. In: Mishra V., Bhatt, J.R. (eds) *Climate change and water resources in India*, New Delhi: Ministry of Environment, Forest and Climate Change, Dec. 2018, ISBN: 9788193313169.

[1] <u>Singh</u>, R., <u>Veena</u>, S., and <u>Deshmukh</u>, A., 2017. Assessing the vulnerability of water availability across India to climate change and interlinking of rivers. In, <u>Sustainable Holistic Water Resources Management</u>, Raju, S., and Vasan, A. (eds)., 2017, M/S Jain Brothers, New Delhi.

Technical Report

[1] Widmann, M., Blake, R., Sooraj, K.P., Orr, A., Sanjay, J., Karumuri, A., Mitra, A.K., Rajagopal, E.N., Van Loon, A.F., Hannah, D.M., Barrand, N., Singh, R., Mishra, V., Sugden, F., and Arya, D. S., 2019. Current Opportunities and Challenges in Developing Hydro-Climatic Services in the Himalayas: Report of Pump Priming Project 2017. Centre for Ecology & Hydrology, Wallingford and Indian Institute of Tropical Meteorology, Pune.

Presentations

Self, Student Author, invited, **presented by

At International Conferences/Meetings

- [36] <u>Vora</u>**, A., and <u>Singh</u>, R., 2020. Using the Budyko framework to evaluate anthropogenic impacts on long-term surface water partitioning in India. AGU Fall Meeting, December 2020. Virtual poster presentation.
- [35] <u>Molakala</u>**, M., <u>Singh</u>, R., and Veena, S., 2020. Can groundwater development reduce reliance on large scale water transfers? AGU Fall Meeting, December 2020. Virtual oral presentation.
- [34] <u>Veena</u>**, S., <u>Singh</u>, R., and Bhave, A., 2020. A Stakeholder Elicitation-based Socio-hydrological Model of an Inter-basin Water Transfer Mega Project in Southern India. AGU Fall Meeting, December 2020. Virtual oral presentation.
- [33] <u>Lakshmi</u>**, E., <u>Singh</u>, R., and Phanindara, K.B.V.N., 2019. A data-driven model to simulate groundwater levels Application to an urban agglomeration in India. MODSIM2019, 23rd International Congress on Modelling and Simulation, December 2019.
- [32] <u>Deshmukh</u>**, A., <u>Singh</u>, R., and Samal, A., 2019. Discovering linkages between catchment characteristics and water quality using catchment classification. Water Future

- International Conference, Bengaluru, 24-27 September 2019.
- [31] <u>Veena</u>**, S., and <u>Singh</u>, R., 2019. Socio-hydrology model of inter-basin water transfers with stakeholder elicitation. Water Future International Conference, Bengaluru, 24-27 September 2019.
- [30] <u>Veena</u>**, S., <u>Singh</u>, R., Gold, D., Reed, P. and Bhave, A., 2019. Evaluating proposed Godavari to Krishna inter-basin water transfers in Southern India under changing climate and human demands. *Spring Meeting of the European Geosciences Union*, 7-12 April 2019, Vienna, Austria.
- [29] <u>Lakshmi</u>**, E., <u>Singh</u>, R., and Phanindra, K.B.V.N., 2018. A conceptual understanding of groundwater levels using data driven model: a case study in Hyderabad, India. HYDRO-2018 International Conference, National Institute of Technology Patna, 19-21 December 2018.
- [28] <u>Deshmukh</u>, D., <u>Singh</u>**, R., 2018. and Samal, A. Catchment classification: a tool to understand hydrology in data scarce regions. 15th Annual Meeting of the Asia Oceania Geosciences Society (AOGS), 03-08 June 2018, Honolulu, Hawaii.
- [27] <u>Veena</u>, S., and <u>Singh</u>**, R., 2018. Identifying strategies to share water under changing climates and demands: a case study in southern India. 15th Annual Meeting of the Asia Oceania Geosciences Society (AOGS), 03-08 June 2018, Honolulu, Hawaii.
- [26] <u>Singh</u>^{†**}, R., and <u>Veena</u>, S., 2018. Impact of river interlinking on vulnerability of catchments to climate change. Presented by: R. Singh at Workshop on "Integrating precipitation forecasts and climate predictions with basin scale hydrological modelling in the Himalayas" Organized by the India-UK Water Centre (IUKWC), 2-4 May 2018.
- [25] <u>Singh</u>^{+**}, R., and Kumar, R., 2018. Relative impacts of socio-economic and climate drivers on water availability over India. Presented by: R. Singh at Workshop on "Integrating precipitation forecasts and climate predictions with basin scale hydrological modelling in the Himalayas" Organized by the India-UK Water Centre (IUKWC), 2-4 May 2018.
- [24] <u>Deshmukh</u>**, A., and <u>Singh</u>, R., 2018. Identifying physio-climatic controls on watershed vulnerability to climate and land use change. International Soil and Water Assessment Tool Conference, 10-12 January 2018, Chennai, India.
- [23] <u>Singh</u>**, R., and Biswal, B., 2018. How well does a model reproduce hydrologic response? Lessons from an inter-model comparison. International Soil and Water Assessment Tool Conference, 10-12 January 2018, Chennai, India.
- [22] <u>Dagani</u>**, K. R., 2018. Quantifying the water footprint of an urban agglomeration in developing economy. *International Soil and Water Assessment Tool Conference*, 10-12 January 2018, Chennai, India.
- [21] <u>Singh</u>, R., <u>Deshmukh</u>**, A., and Kumar, R., 2017. Relative controls of natural and socioeconomic drivers on water availability over India: an exploratory modeling analysis. *Fall Meeting of the American Geophysical Union*, 11-15 December 2017, New Orleans, USA.
- [20] <u>Deshmukh</u>**, A., Samal, S., and <u>Singh</u>, R., 2017. Towards a robust framework for catchment classification. *Fall Meeting of the American Geophysical Union*, 11-15 December 2017, New Orleans, USA.
- [19] <u>Veena</u>**, S., and <u>Singh</u>, R., 2017. A decision support framework for managing inter-basin water transfers under changing climate and demands. *Fall Meeting of the American Geophysical*

- Union, Virtual Poster Presentation, 2017.
- [18] <u>Singh</u>**, R., <u>Veena</u>, Sai, and <u>Deshmukh</u>, A., 2016. Quantifying the vulnerability of watersheds to climate change using the bottom-up modelling framework: A case study in the Krishna river basin. *International Conference on Climate Change, Water, Agriculture, and Food Security* (ICCCWAFS), 2-3 November 2016, ICRISAT Campus, Hyderabad, India.
- [17] <u>Singh</u>**†, R. 2016. Water resources in a changing environment: quantifying the impact of climate and land use change on water availability. *8th Indo-German Frontiers of Engineering (INDOGFOE) Symposium*, 19-22 May 2016, Potsdam, Germany.
- [16] <u>Singh</u>, R., and Kumar**, R., 2016. Estimating water availability over India using a bottom-up probabilistic Budyko approach. *Spring Meeting of the European Geosciences Union*, 17-22 April 2016, Vienna, Austria.
- [15] <u>Singh</u>**, R., and Kumar, R., 2015. Estimating the spatio-temporal distribution of surface water availability across India. *Fall meeting of the American Geophysical Union*, 14-18 December 2015, San Francisco, USA.
- [14] Biswal**, B., and <u>Singh</u>, R., 2015. Incorporating channel network information in hydrologic response modelling: model development and validation using ecologically relevant indicators. *Fall meeting of the American Geophysical Union*, 14-18 December 2015, San Francisco, USA.
- [13] <u>Singh</u>**, R., and <u>Deshmukh</u>, A., 2015, December. What controls vulnerability of watersheds to climate and land use change across the United States? *Fall meeting of the American Geophysical Union*, 14-18 December 2015, San Francisco, USA.
- [12] Ward**, V.L., <u>Singh</u>, R., Reed, P.M. and Keller, K., 2014. Confronting Decision Cliffs: Diagnostic Assessment of Multi-Objective Evolutionary Algorithms' Performance for Addressing Uncertain Environmental Thresholds. *Fall meeting of the American Geophysical Union*, 15-19 December 2014, San Francisco, USA.
- [11] <u>Singh</u>**, R., Wagener, T., Crane, R.G., Mann, M.E. and Ning, L., 2013. Considering uncertainty in climate change projections through a new decision-centric approach to global change impact assessment on water resources tested in a Pennsylvania watershed. *Fall meeting of the American Geophysical Union*, 9-13 December 2013, San Francisco, USA.
- [10] <u>Singh</u>**, R., van Werkhoven, K., Wagener, T., Mann, M.E., Crane, R., and Ning, L., 2013. A robust decision making framework for identifying dominant controls on indicators of hydrologic alteration under environmental change. *Spring Meeting of the European Geosciences Union*, 7-12 April 2013, Vienna, Austria.
- [9] <u>Singh</u>**, R., van Werkhoven, K., Wagener, T., Mann, M.E., Crane, R., and Ning, L., 2012. When does model parameter non-stationarity matter? Insights from the applications of a novel trading space-for-time framework across the US and South Africa. *Fall meeting of the American Geophysical Union*, 3-7 December 2012, San Francisco, USA.
- [8] Wagener**, T., <u>Singh</u>, R. and Kelleher, C., 2012. An uncertainty framework for predicting hydrologic ecosystem services everywhere and under nonstationary conditions. *Fall meeting of the American Geophysical Union*, 3-7 December 2012, San Francisco, USA.
- [7] <u>Singh</u>, R., Archfield, S.A., Wagener**, T., and Vogel, R.M., 2012. Transferring rainfall runoff model parameters to ungauged catchments: Does the metric by which hydrologic similarity is defined actually matter? *Spring Meeting of the European Geosciences Union*, 22-27 April 2012,

Vienna, Austria.

- [6] Wagener**, T., Laaha, G., Koffler, D. and <u>Singh</u>, R., 2012. Hydrologic similarity, comparative hydrology and hydrologic extremes. *Spring Meeting of the European Geosciences Union*, 22-27 April 2012, Vienna, Austria.
- [5] <u>Singh</u>**, R., Kelleher, C., Edmundson, C., Wagener, T., van Werkhoven, K., Mann, M.E., Crane, R., and Shortle, J.S., 2011. Probabilistic predictions of hydrologic services in ungauged basins and under global change. *Fall meeting of the American Geophysical Union*, 5-9 December 2011, San Francisco, USA.
- [4] <u>Singh</u>**†, R., van Werkhoven, K., and Wagener, T., 2011. Hydrologic modeling in a changing climate: Expecting the unexpected. Invited webinar for AECOM Technology Corporation.
- [3] <u>Singh</u>**, R., Wagener, T., van Werkhoven, K., Mann, M.E., Crane, R., and Ning, L., 2010. Trading space for time: an approach to probabilistic flow predictions in a changing climate. *Fall meeting of the American Geophysical Union*, 13-17 December 2010, San Francisco, USA.
- [2] Archfield**, S., Vogel, R., Wagener, T. and <u>Singh</u>, R., 2010. Rainfall-runoff model calibration at an ungauged catchment using the map-correlation method. *Spring Meeting of the European Geosciences Union*, 2-7 May 2010, Vienna, Austria.
- [1] Wagener**, T., van Werkhoven, K., and <u>Singh</u>, R., 2010. Credibility of hydrologic models in the context of climate change impact studies a case study in the Olifants Basin, South Africa. *Spring Meeting of the European Geosciences Union*, 2-7 May 2010, Vienna, Austria

At National Conferences/Meetings

- [9] <u>Singh</u>**†, R, 2020. On the use of hydrological models to estimate future surface water availability. 86th Annual meeting of Indian Academy of Sciences, 2020, online link: https://www.youtube.com/watch?v=ipmxR3-kF04
- [8] <u>Singh</u>**, R, 2020. Decision making under uncertainties related to climate change. 7th e-School on Climate Science & Policy, Interdisciplinary Program in Climate Studies, IIT Bombay, 17-28 August 2020, online lecture:

https://www.youtube.com/watch?v= kMnq4ans3s&t=3576s.

- [7] <u>Singh</u>**†, R, 2018. Estimating the spatiotemporal variation of water availability: challenges and opportunities. Indian Academy of Sciences Workshop on Advances in Earth System Science, Banaras Hindu University, Varanasi, 31st October 1st November, 2018.
- [6] <u>Singh</u>**†, R., 2017. Rainfall Runoff Modelling and Uncertainty Analysis. Workshop on *Best Practices in Water Resources Sector*, Andhra Pradesh Human Resources Development Institute, Bapatala, Andhra Pradesh.
- [5] <u>Deshmukh</u>**, A., <u>Singh</u>, R., and <u>Veena</u>, S., 2016. How does a watershed's physio-climatic characteristics control its vulnerability to climate and land use change? National Workshop on Mainstreaming Climate Change and Adaptation in Agriculture and Allied Sectors, 16-17 November, 2016, Hyderabad, India
- [4]<u>Singh</u>**†, R, 2016. Hydrology in the Anthropocene: Towards modelling frameworks that incorporate the impact of humans on hydrologic processes. For *Meeting of Project Appraisal and Monitoring Committee for Hydrology and Cryosphere, Ministry of Earth Sciences* at IIT Kanpur *on*

11thApril 2016

- [3] <u>Singh</u>**†, R, 2016. Dealing with large uncertainties in future climate and land use change: towards bottom-up hydrologic modelling approaches. For *Institute Seminar Series on Interdisciplinary Program in Climate Studies* at IIT Bombay on 23rdMarch 2016
- [2] <u>Singh</u>**†, R, 2015. Sharing a scarce resource: Identifying strategies for water use across multiple stakeholders in a changing environment. In *1st Indo-Chinese Young Engineering Leaders Conclave*, 7th-9thOctober 2015 held at IIT Gandhinagar
- [1] <u>Singh</u>**†, R., 2015. Dealing with large uncertainties in hydrologic modelling through bottomup approaches. In *Workshop on Integrated Urban Flood Management* at the Centre for Excellence in Water Resources Management at BITS Hyderabad on 30th October 2015

Completed Projects

DST-SERB Early Career Research Award for 2016-2019 of amount approximately Rs. 25, 00,000 for the project titled 'Inter basin water transfer in India: when and how much?

Adaptive multi-objective robust decision making for managing water transfers.'

Student Advising

Ph.D. Thesis Completed as Advisor: Ankit Deshmukh, Graduated 2021

M. Tech Thesis Completed as Advisor: Ankit Deshmukh, Graduated 2016

Ph.D. Thesis On-going as Advisor: Lakshmi E. (2016-, Co-advised with Prof. K.B.V.N. Phanindra), Sai

Veena (2017-), Molakala Siva Manvitha (2018-), Akshay Sunil (2020-)

M. Tech Thesis On-going as Advisor: Anav Vora (2019-), Urooj Malik (2019-, Co-advised with Prof. Subimal Ghosh)

Teaching Experience

Undergraduate level

- CE228 (IIT Bombay) Applied Hydraulic Engineering: analysis of pipe networks and open channel flows.
- CE4502 (IIT Hyderabad) Engineering hydrology and water resources engineering: basics of hydrology, irrigation engineering and design of large hydraulic structures

Graduate level

- CE626 (IIT Bombay) Groundwater Systems Planning and Management: groundwater occurrence, general equations of movement of water in saturated porous media, groundwater surface water interactions, groundwater recharge, conjunctive use of surface water and groundwater
- CE766 (IIT Bombay) Watershed Management: catchment functioning, ecosystem services, human interventions in catchment ecosystems, XLRM framework for decision analysis for

- catchment ecosystems, state of the art decision analysis algorithms, implementation in real world case studies using R/Matlab.
- CE6011 (IIT Hyderabad) Computer methods in Civil Engineering: introduction to Matlab, matrices, numerical solutions to differential equations, statistics, solving linear/ nonlinear equations in a Matlab environment
- CE6511 (IIT Hyderabad) Soft computing for hydrologists: introduction to rainfall runoff modelling, parameter estimation methods including single and multi-objective optimization, GLUE (generalized likelihood uncertainty estimation), MCMC (Markov Chain Monte Carlo) methods, sensitivity analysis and uncertainty analysis of rainfall runoff models

Institute Activities

(At IIT Bombay)

Academic Advisor for the M.Tech Water Resources Engineering, Civil Engineering batch of year 2020 Academic Advisor for the Undergraduate Civil Engineering batch of year 2018 Member, Department Vision Committee; Department Visitor Committee Organized 3 departmental seminar by experts in hydrology, climate change, and watershed management in 2018

(At IIT Hyderabad)

Academic Advisor for the undergraduate Civil Engineering batch of year 2017 Member, Women Cell at IIT Hyderabad, 2015-16 Member, Hindi Committee at IIT Hyderabad, 2015-16 Clean India Committee at IIT Hyderabad, 2015-16