KUSHAGRI SINGH

ASSISTANT PROFESSOR (LIFE SCIENCE)

INTER UNIVERSITY CENTRE FOR TEACHER EDUCATION, BHU, VARANASI

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DATE OF BIRTH: 07/12/1987

AREA OF SPECIALIZATION: Microbial Technology, Biochemical Engineering, Phage Therapy, Kinetic Modelling of Nano Drugs, Nanomedicine, Life Sciences Pedagogy, and Innovative Teaching Approaches.

LANGUAGE: HINDI & ENGLISH

OBJECTIVE

To apply my knowledge and skills pertaining to working in a challenging environment that encourages learning and professional growth and utilizes my efficiency to the best for fulfilling organizational requirements. Quality education blended with great sense of responsibility enables me to deliver promising work in a professional environment.

QUALIFICATION

- **Post Doctoral:** Worked as a Project Research Associate in the research project entitled "Isolation and characterization of Diarrhoea-associated bacteriophages and their use in Phage Therapy" in Indian Council of Medical Research-NICED, Kolkata from July 2021 to September 2022.
- **Research (Ph.D.):** DST-INSPIRE FELLOW (2012-18) ("Polymeric Nano-Particles for the Delivery of Poorly Soluble Drugs") from the School of Biochemical Engineering, Indian Institute of Technology, Banaras Hindu University, Varanasi, India-CGPA 8.7.
- **Post Graduation (M.Sc.):** Applied Microbiology (2010-12) from Faculty of Science, Banaras Hindu University, Varanasi - 93.4%.
- **Graduation (B.Sc.):** Microbial Technology (2007-10) from Jaipur National University, Jaipur, Rajasthan - 86%.

AWARDS

- Ph. D. Department of Science & Technology-***INSPIRE*** (FELLOWSHIP)
- ***BHU GOLD MEDAL*** - M.Sc. Applied Microbiology, BHU, Varanasi
- ***GOLD MEDAL*** - B.Sc. Microbial Technology, JNU, Jaipur
- CSIR-UGC-NET (***AIR-42***)
- Best employee award for valuable academic contribution at IUCTE, BHU, for the session 2024-25.

CARRIER SUMMARY

To contribute meaningfully in a dynamic and intellectually stimulating environment that fosters continuous learning, innovation, and professional growth. I aim to leverage my academic foundation, research experience, and operational efficiency to fulfil organizational goals with integrity and excellence. My commitment to quality education, combined with a strong sense of responsibility, enables me to deliver impactful and reliable outcomes in collaborative and professional settings. Previously, I served as a Project Research Associate on the Indian Council of Medical Research (ICMR)–NICED project titled “Isolation and Characterization of Diarrhoea-Associated Bacteriophages and Their Use in Phage Therapy” (July 2021 – September 2022), where I contributed to the isolation, profiling, and therapeutic evaluation of bacteriophages for antimicrobial applications.

Currently, I am deeply engaged in transforming life science education across higher education institutions in India, focusing on innovative pedagogical strategies, curriculum enhancement, and learner-centered approaches to improve academic quality and engagement in the biological sciences.

Dissertation Work / Project Work

Isolation and Molecular characterization of *Salmonella Paratyphi A* Specific Bacteriophages (Bacteriophage Therapy) under the supervision of Dr. Gopal Nath, M.D. Ph.D., MNAMS, Department of Microbiology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, from June to November 2011 (6 months).

Scholastic Achievements

- Qualified Entrance Examination of NCBS, Bangalore for M.Sc. in 2010.
- Qualified Entrance Examination (PET, 2010) for M.Sc. Biochemistry, Applied Microbiology, and Plant Biotechnology courses in Banaras Hindu University.
- Qualified Entrance examination for M.Sc. Biotechnology, Thapar University, Patiala and stood 7th rank all over India.
- Qualified JNU, Delhi Combined Entrance Examination (CEE) for M.Sc. Biotechnology, 2010.
- Qualified CSIR UGC NET-LS (AIR-42) December, 2011.
- Gold Medalist in graduation (B.Sc. Microbial Technology) from Jaipur National University, Jaipur.
- Gold Medalist in post-graduation (M.Sc. Applied Microbiology) from Faculty of Science, Banaras Hindu University, Varanasi.
- DST-Inspire Fellowship holder from the period April 2013- March 2018.
- Best employee award for valuable academic contribution at IUCTE, BHU for 2024-25.

Summer Training/Industrial Visit/Workshops

- An Industrial visit to FOREST RESEARCH INSTITUTE, Dehradun in May 2008.
- Visited the PARLE-G industry at Neemrana in April 2009.
- One month summer training in "Clinical Microbiology" from the Department of Microbiology, Institute of Medical Sciences, BHU in June 2009.
- Participated in DBT-funded National Workshop on "To Predict & Model Biological Molecules and Systems" at the University of Kalyani, West Bengal, March 2011.
- Attended Workshop (one week) on "Applied Statistical Methods for Biological Sciences", CIMS, BHU, April 2014.
- Successfully completed the workshop on AKTA organized by IIT, BHU from 10-11 August 2017.

Conferences/Seminars

- Participated in poster presentation on "Detection of Chronic Carriers of *Salmonella Typhimurium* in Mice" in XXXV National conference of Indian Association of Medical Microbiologists, 23rd-26th Nov, 2011 (MICROCON 2011) at Institute of Medical Sciences, BHU.
- Participated in poster presentation on "Detection of Specificity of Bacteriophages against Different Pathogenic Bacteria" in National conference on frontiers in biological sciences sponsored by- UGC, 4-5th Dec, 2011 at Veer Bahadur Singh Purvanchal University, Jaunpur (U.P).
- Participated in "Brain Storming Meeting on Advances in Neuroendocrinology", 14-15th Feb, 2011 organized by Department of Zoology, BHU.
- Participated in National Seminar on "New Biology and Plant Engineering" held at JNU, Jaipur, Oct-2009.
- Participated in International Conference on "Mycology and Plant Pathology Biotechnological Approaches" (ICMPPBA) held at Centre of Advanced Study in Botany, BHU in Feb 27th to 29th 2012.

- ICMFA held at Department of Chemistry, IIT, BHU (International-2015)-Poster presentation.
- Nano materials and sustainable synthetic strategies held at Department of chemistry, BHU (National-2015)-Poster presentation.
- NSAAMB, Department of Chemistry, BHU (International-2016)-Poster presentation.
- Participation in National symposium on "Nano materials and sustainable synthetic strategies", Department of Chemistry, BHU (2015).
- Participation in International conference on "Multifunctional material for future application", Department of Chemistry, IIT, BHU (2015).
- Participation in International conference on "Frontiers of spectroscopy", Department of physics, BHU (2015).
- Participated in Workshop organized by CSIR-IITR, on "Wet chemical synthesis: gold and silver nanoparticle" on December 15, 2021.
- Presented a research paper titled “Awareness and Perception of University Faculties towards STEM Integration in Indian Higher Education” at the International Conference on Revamping Higher Education: Blending of Legacy & Advancement, jointly organized by IUCTE and Gujarat Vidyapith, held on 25th–26th December 2024.

ACADEMIC TRAININGS

Program Title	**Organizing Institution(s)**	**Dates**
Faculty Induction Program	Ramanujan College, University of Delhi	22 Jan – 20 Feb 2024
Faculty Induction Program on Statistical Analysis with Excel	Research Council of India	21–26 Aug 2024
Training on Statistical Analysis with Excel	Research Foundation of India & Council of Academic Research and Educational Organisation	21–26 Aug 2024
NEP 2020 Orientation & Sensitization Programme under	MMTTC, IIT, Kharagpur	20-30 May, 2024
Short Term Programme (STP) on Developing MOOCs and Engaging Digital Content	Inter-University Centre for Teacher Education (IUCTE), BHU, Varanasi	26–31 May 2025
Training of Trainers on Integration of AI in Teaching-Learning & Research	Inter-University Centre for Teacher Education (IUCTE), BHU, Varanasi	3–8 Mar 2025
Two-Day Workshop on Artificial Intelligence in Digital Pedagogy: Shaping the Future of Learning in HEIs	IUCTE, BHU, Varanasi & Consortium for Educational Communication (CEC), New Delhi	13–14 Feb 2025
Short Term Course on Science, Innovation and Technology in the 21st Century	UGC-MMTTC, Bhagat Phool Singh Mahila Vishwavidyalaya, Sonipat (Haryana)	3–8 Feb 2025
Refresher Course: Achieving Sustainable Development Goals Through Higher Education	National Institute of Educational Planning and Administration (NIEPA), New Delhi	6–18 Jan 2025
National Seminar: Peace and Sustainable Development in the Light of Gandhian Thought on Education (Co-Chair)	IUCTE & Gujarat Vidyapith	2 Oct 2024
International Conference: Revamping Higher Education – Blending of Legacy & Advancement (Paper Presentation)	IUCTE & Gujarat Vidyapith	25–26 Dec 2024
Brainstorming Sessions – Pioneering Pedagogy: Training Program for Life Sciences Educators (Chair)	Inter-University Centre for Teacher Education (IUCTE), BHU, Varanasi	26–27 Nov 2024

Publications

- Singh, K., Mishra, A., & Singh, A. (2017). Synthesis Characterization and In Vitro Release Study of Ciprofloxacin-Loaded Chitosan Nanoparticle. *BioNanoScience, 1-8*.
- Singh, K., Mishra, A., & Singh, A. (2017). Synthesis, characterization and in-vitro release profile of Gentamicin loaded chitosan nanoparticle. *International Journal of pharmacy and nanotechnology, 9*(1), 29189-29198.
- Singh, K., Mishra, A., & Singh, A. (2016). Preparation, characterization and in-vitro release study of Ketoconazole loaded chitosan nanoparticles. *International journal of Medicine and Pharmaceutical Science, 6*(5), 1-8.
- Singh, K., Mishra, A., & Singh, A. (2016). Effect of cross-linking agent on the size of polymeric nanoparticles. *World journal of pharmacy and pharmaceutical sciences, 3*(12), 1416-1420.
- Singh, K., Mishra, A., & Singh, A. (2015). Preparation and In Vitro Characterization of Chitosan Nanoparticles Containing Amphotericin B as a Drug Delivery System. *Advanced Science Letters, 21*(8), 2606-2608.
- Singh, K., & Mishra, A. (2015). Chitosan Nanoparticulate and Their Applications: A Review. *Intl J Pharm Bio Sci, 6*, 557-66.
- Singh, K., & Mishra, A. (2014). Gelatin Nanoparticle: preparation, characterization and application in drug delivery. *International Journal of Pharmaceutical Sciences and Research, 5*(6), 2149.
- Kushagri Singh, Amit Singh, Abha Mishra (2014). Polymeric Biodegradable Nanoparticle: a review int. J. Of adv. Res. 2 (11). (ISSN 2320-5407).
- Singh, K., & Mishra, A. (2013). Water soluble chitosan nanoparticle for the effective delivery of lipophilic drugs: a review. *Int J Appl Pharm, 5*, 1-6.
- Singh, K., Mishra, A., Sharma, D., & Singh, K. (2019). Nanotechnology in Enzyme Immobilization: An Overview on Enzyme Immobilization with Nanoparticle Matrix. *Current Nanoscience, 15*(3), 234-241.
- Sharma, D., Singh, K., Singh, K., & Mishra, A. (2019). Insights into the Microbial L-Asparaginases: from Production to Practical Applications. *Current Protein and Peptide Science, 20*(5), 452-464.
- Kushagri Singh, Biswas, A., Chakrabarti, A. K., & Dutta, S. (2023). Phage therapy as a protective tool against pathogenic bacteria: How far we are?. *Current Pharmaceutical Biotechnology*, *24*(10), 1277-1290.
- Kushagri Singh and Saurabh Singh Rathore, Effective Curriculum and Pedagogical approaches in Microbiology, *UNIVERSITY NEWS*, 61(17) April 24-30, 2023.
- Kushagri Singh and Deepty Gupta, STEM in Higher Education in India: How Far We Are?, *UNIVERSITY NEWS*, 61(48) Nov 27- Dec 3, 2023.
- Kushagri Singh, Higher Education Institutions in Bharat to Set Significant Emphasis on Innovative Life Science Education Pedagogy. *UNIVERSITY NEWS*, 62(03) Jan 15- 21, 2024.
- Kushagri Singh, In what ways is 21st century higher education pedagogy evolving*? UNIVERSITY NEWS*, 63 (38) September 16-22, 2024.
- Singh, K. (2024). Making Sense of STEM Education: An Integration into Higher Education. *Current Social Sciences*.
- Goyal, P., Mathur, N., Singh, A., Singh, K., & Mohammad, I. (2025). Isolation, characterization, and in vivo evaluation of therapeutic potential of bacteriophage Sal11TP against Salmonella enterica serovar Paratyphi *A. Journal of Pure and Applied Microbiology*, 19(1). https://doi.org/10.22207/JPAM.19.1.04.

BOOK CHAPTERS

- Singh, K., Mishra, A., Sharma, D., & Singh, K. (2018). Antiviral and Antimicrobial Potentiality of Nano-Drugs. In Mohapatra, S., Ranjan, S., Dasgupta, N., Mishra, R. K., & Thomas, S. (Eds.). *Applications of Targeted Nano Drugs and Delivery Systems: Nanoscience and Nanotechnology in Drug Delivery*. Elsevier, 343-356.
- Singh, K, (2025). Transforming Higher Education: Embracing innovative pedagogies, addressing challenges, and paving the way forward with NEP 2020. *Nep 2020: Embracing Multidisciplinary Perspectives*. 1(1) 217-236.
- Singh, K. (2025). EMPOWERING EDUCATION: IMPLEMENTING INNOVATIVE TEACHING PRACTICES in peer reviewed edited book entitled *Transforming Education in India: Bridging Tradition and Innovation for a New Era*. DOI:10.25215/9141001427.02

LECTURES DELIVERED

Date	**Event / Program**	**Organizing Institution**	**Topic / Theme**
11 June 2024	NEP Orientation & Sensitisation Programme Series 2024–25	IUCTE, BHU	Learner-Centered Pedagogical Practices
23 July 2024	NEP Orientation & Sensitisation Programme Series 2024–25	IUCTE, BHU	Innovative Pedagogical Approaches in Higher Education
2 September 2024	NEP Orientation & Sensitisation Programme Series 2024–25	IUCTE, BHU	Learner-Centered Pedagogical Practices
1 October 2024	NEP Orientation & Sensitisation Programme Series 2024–25	IUCTE, BHU	Innovative Pedagogical Approaches in Higher Education
8 November 2024	NEP Orientation & Sensitisation Programme Series 2024–25	IUCTE, BHU	Learner-Centered Pedagogical Practices
11 December 2024	NEP Orientation & Sensitisation Programme Series 2024–25	IUCTE, BHU	Innovative Pedagogical Approaches in Higher Education
21 August 2025	Short Term Training Program (STTP) on Research Ethics & Academic Integrity	IUCTE, BHU	Introduction to Reference Management Tools (Mendeley, Zotero, EndNote, RefWorks)
23 September 2025	Faculty Induction Programme (FIP)	MMTTC, RIE, Mysore	Learner-Centered Pedagogy in Context of NEP 2020
24 September 2025	FDP: Academic Leadership 5.0	IUCTE, BHU	Blended and Digital Pedagogy: Leadership in Making Classrooms Future-Ready

24 September 2025	FDP: Academic Leadership 5.0	IUCTE, BHU	Group Discussion / Presentation
27 September 2025	FDP: Academic Leadership 5.0	IUCTE, BHU	Student-Centric Academic Leadership: Understanding Learners' Perspectives
09 October 2025	Faculty Induction Programme (FIP)	MMTTC, RIE, Mysore	Introduction to Reference Management Tools (Mendeley, Zotero, EndNote, RefWorks)

CONFERENCE/SEMINARS/WORKSHOPS/FACULTY DEVELOPMENT PROGRAMMES ORGANISED

Events	**Organizers/Collaborators**	**Date(s)**
International Conference on "Revamping Higher Education: Blending of Legacy & Advancement"	IUCTE, BHU & Gujarat Vidyapith	25–26 Dec 2024
One-Day Online Workshop on "Life Sciences Pedagogy: Transforming NEP 2020 Approaches"	IUCTE, BHU	27 June 2025
Six "NEP Orientation and Sensitization Programmes"	IUCTE, BHU	From June–Dec 2024
"Pioneering Pedagogy: A Training Program for Life Sciences Educators of Higher Education"	IUCTE, BHU	25–30 Nov 2024
"Empowering Educators from the Global South"	IUCTE, BHU & UNESCO-MGIEP (MEA ITEC Programme)	17–24 Mar 2025
National Conclave on "Global Perspective of Indian Education"	IUCTE, BHU	25–26 Mar 2025
National Seminar on Emerging Challenges before Academia in Higher Education	IUCTE, BHU	31 Mar–1 Apr 2023
CPD Program for STEM Teaching Strategies	IUCTE, BHU	10–14 Oct 2023
FDP on NEP Implementation: Emerging Issues in Higher Education	IUCTE, BHU	17–22 Aug 2023
Leadership Development for College Principals	IUCTE, BHU & NIEPA, New Delhi	11–13 Mar 2024
Foundation Day Celebration	IUCTE, BHU	25–26 Dec 2023
National Consultative Meet on Pedagogical Innovation	IUCTE, BHU	5–6 Mar 2024
FDP on Bharatiya Gyan Parampara (IKS)	IUCTE, BHU	29 Dec 2023

International Day of Yoga	IUCTE, BHU	21 June 2024
FDP on Yoga for Mindfulness and Well-being	IUCTE, BHU & IUCYS, Bengaluru	16-21 June 2025
Expert Consultation Workshop on Life Sciences Pedagogy	IUCTE, BHU	27 June 2025

OTHER ACADEMIC ACHIEVEMENTS

• Successfully completed the Faculty Induction Program organised by Ramanujan College, University of Delhi, from 22 January to 20 February 2024, with an A+ grade.

• Completed the Faculty Induction Program on Statistical Analysis using Excel, organized by the Research Council of India, held from 21 to 26 August 2024.

• Co-chaired a technical session at the National Seminar on Peace and Sustainable Development in the Light of Gandhian Thought on Education, jointly organized by IUCTE and Gujarat Vidyapith on 2 October 2024.

• Presented a research paper titled "Awareness and Perception of University Faculties towards STEM Integration in Indian Higher Education" at the International Conference on Revamping Higher Education: Blending of Legacy & Advancement, jointly hosted by IUCTE and Gujarat Vidyapith, on 25–26 December 2024.

• Chaired brainstorming sessions on 26 and 27 November 2024 during the faculty training program "Pioneering Pedagogy: A Training Program for Life Sciences Educators of Higher Education", organized by the Inter-University Centre for Teacher Education (IUCTE), BHU, held from 25 to 30 November 2024.

• Successfully completed the Refresher Course on "Achieving Sustainable Development Goals Through Higher Education: Challenges and Advances" at the National Institute of Educational Planning and Administration (NIEPA), New Delhi, from 6 to 18 January 2025.

TECHNIQUES/INSTRUMENTS HANDLING

1. Molecular Biology Techniques: DNA and RNA isolation, purification, primer designing, Polymerase Chain Reaction (PCR), Western blotting, ELISA.
2. Protein and Nucleic Acid Analysis: Electrophoresis, SDS-PAGE, various staining methods, and immunoblotting.
3. Microbiological Procedures: Microbial culture preparation, biochemical and microbiological testing, immunological diagnostic assays.
4. Analytical and Separation Techniques: Chromatography (e.g., column, thin-layer), centrifugation, and related separation protocols.
5. Biotechnological Instrumentation: Skilled in operating and troubleshooting advanced instruments used in molecular diagnostics and life science research.

EXTRACURRICULAR ACTIVITIES

- Participated in Techno-Razz annual function at JNU, JAIPUR in 2007.
- Participated in poster and model presentation in Techno-Razz annual function of JNU, Jaipur 2008.
- Participated in the cultural dance programme Magical Creations organized by the Government of Rajasthan in September 2009.
- Participated in Antakshari competition in Techno-Razz held on 5th to 6th 0ct, 2007 at JNU, Jaipur.
- Participated in Taekwondo competition at Interschool level.

STRENGTHS

Quick learner, Co-operative, Result Oriented, Work Under strain, Trouble shooter, Aspiring, Ambitious, Self-confident, Team player, Decent Communication Skills, Temperance, Diligence, Willingness to learn.

TEACHING EXPERIENCE

From July 2018 to June 2021, I served as an Assistant Professor in the Department of Biotechnology at Dr. Ghanshyam Singh P.G. College, Varanasi, affiliated with Mahatma Gandhi Kashi Vidyapeeth. I was actively involved in teaching both undergraduate and postgraduate students, delivering core and elective courses in biotechnology. My responsibilities included academic mentoring, laboratory supervision, and fostering research-oriented learning across diverse life science disciplines.

*I hereby declare that the information provided above is accurate and true to the best of my knowledge and belief.