



Project Proposal for Ph.D.

Project Details (The research problem must clearly indicate the need for an interdisciplinary approach)

Project Title	AMRWorlds: When Rivers Carry More Than Just Water
Project Summary (Minimum 500 and maximum 2000 characters)	Environmental AMR, particularly concentrated in riverine systems, has emerged as one of the most urgent yet least visible drivers of antimicrobial resistance. Addressing this concern is a key research priority, which AMRWorlds will advance through an interdisciplinary approach. This PhD project aims to develop an integrated framework to understand how resistance accumulates and circulates in rivers through multiple, interrelated factors: pharmaceutical effluents, agricultural practices, animal and human waste, and everyday uses of river water such as bathing, grazing, and washing. To address this complexity, the research will focus on four core challenges: i) Identifying the social, environmental, and biomedical conditions that influence the emergence and spread of AMR in riverine environments; ii) Investigating how infrastructures of waste, water, and health contribute both to the persistence of AMR and to opportunities for mitigation; iv) Developing and adapting testing and surveillance frameworks for water quality—including AMR indicators and emerging contaminants—to capture hidden flows of resistance and support more equitable monitoring systems. The project will combine empirical research, and environmental monitoring to make visible the hidden geographies of AMR. Empirical work will focus on India’s bulk drug manufacturing hubs and their surrounding river systems, where industrial expansion and fragile ecologies intersect to generate profound but often invisible public health risks.

Ph.D. Supervisors* (Supervisor 1 and Supervisor 2 cannot be from the same department of IITD)			
Role	Name of Faculty	Academic Unit in IITD/Institute/University	Email ID (Official) & Contact Number
Supervisor 1*	Prof. Shaikh Ziauddin Ahammad	DBEB, IITD	zia@iitd.ac.in
Supervisor 2	Dr. Sanya Anees	ECE, NSUT, Delhi	sanya.anees@nsut.ac.in

*Supervisor 1 must be from IIT, Delhi.

+All cells in this table are mandatory fields that need to be filled by faculty for consideration of proposal.

\$The date of superannuation of supervisors should be at least three years from the date of registration of selected candidates.

Project requirements (Student qualifications, experience required, etc)

*The candidate will be shortlisted based on common shortlisting criteria decided by ScRC (SIRe)

- MTech in Environmental Engineering / Chemical Engineering / Civil Engineering / Electrical Engineering / Electronics and Communication Engineering

Source of fellowship/funding and project number

(CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)

Candidate should have own fellowship / IRD project

Role of Faculty Members involved:

Supervisor-1

To guide monitoring different water quality indicators including AMR indicators and various emerging contaminants. Estimating different key contributors of the environmental AMR.

Supervisor-2

To guide the development of an interdisciplinary framework for studying environmental AMR in riverine systems, environmental monitoring by developed sensor network, and to support the design of sustainable strategies to mitigate AMR proliferation.

Note :-

- 1. Approval from the respective DRC/CRC/ScRC of your Department/Centre/School will be required for using the "Full-time Institute Assistantship (Category-wise) (FIA)" for selecting the students in SRe.
- 2. Declaration:- Faculty members, please ensure that you have at least 3 years of service left before superannuation along with adequate sitting space & lab facilities for the SRe student.
- 3. PI/s are also encouraged to submit joint proposals with AIIMS, NII, JNU and institutes with which IITD has an existing MoU. If the Co-PI (Supervisor 2) is from outside IITD, kindly share his/her detailed CV.
- 4. If a research scholar is to be considered for selection under the project fellowship, then the project should have a minimum of two-year duration remaining.
- 5. A candidate applying with a valid JRF/INSPIRE/any national level fellowship should have at least two-year validity from the date of joining the Ph.D. program.
- 6. The third supervisor's name (if required) can be added only after the formation of Student Research Committee (SRC) subject to a strong recommendation of SRC and subsequent approval from the competent authority.
- 7. If Institute fellowship is being sought, then DRC approval of the parent department of Supervisor 1 is required at the time of selection.