Research and Methodology

"If a child can't learn the way we teach, perhaps we should teach the way they learn," the course was inspired by these remarks. The Prime Minister Research Fellows (PMRF) of IIT Delhi have designed "a research methodology in physical sciences" specifically for undergraduate students. The course was taught to ANDC, University of Delhi students. The purpose of the course was to take students outside of the classroom and teach them something that was not in their curriculum but would help them connect more with the outside world and choose a better career path. Numerous students have the potential to conduct valuable research and possess extensive knowledge, but due to a lack of motivation and direction, they sometimes choose alternative career paths. PMR scholars, IITD in collaboration with AND college, have accepted this challenge and havehave introduced a 60-hour course with added value to the curriculum in an effort to teach or advise more and more students about the potential career in research.

Course work was taught by the 10 PMF Scholars of IITD. The course was comprised of 4 units which were as follows:

1. Essential Research related software and search engine **15 hours**
2. How to plan any General Reaction (Organic and Inorganic) **15 hours**
3. Electrochemistry (Theory + Practical Experience) **10 hours**
4. General Text book Name Reaction and their Practical Experiment (Synthesis) **20 hours**

Each unit was designed in such a way that each unit will provide students with new knowledge and also provide them with the flexibility to investigate every field of chemistry. Unit 1 "Essential Research-Related Software and Search Engines" provided students with the opportunity to study the fundamentals of software used by the majority of scientists worldwide. Unit 2: "How to Plan Any General Reaction (Organic and Inorganic)" was designed to teach students how to plan any new scheme and what fundamental items and knowledge are required to do so. The objective was to teach them not only how to think independently, but also how to execute the idea. Unit 3 "Electrochemistry (Theory + Practical Experience)" was selected specifically because it is a common curriculum unit, but students are still unaware of the practical potential and application of such chemistry. The primary objective of this subject was to provide students with practical electrochemistry experience. Unit 4: "General Textbook Name Reaction and Their Practical Experimentation (Synthesis)" As implied by the title, students were instructed on how laboratory reactions actually occur and what obstacles they faced. For this, well-known chemical reactions such as the Wittig reaction, Grignard reaction, and aldol condensation were utilised. All reactions were taught through online video lectures or brief videos.

Overall, it was a wonderful experience for both students and instructors. Every lecture was a learning opportunity for everyone. Due to the opportunity provided by Dr. Pooja Bhagat and Prof. Seema Makhija, Course coordinator, AND College, and Prof. Ravi Toteja, Principal, AND College, we (PMR Fellow, IITD) have attempted to motivate the students, assist them in overcoming these obstacles, and assist them in determining a better future.