Curriculum Plan (Odd Semester 2025-26)

Teacher Name: **Dr. Geeta Devi Yadav**

Course: B.Sc. (H) Chemistry, NEP-UGCF, Semester VII

Paper Name: Research and Methodology for Chemist (DSE) (3 periods per week)

UPC:

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| **S. No.** | **Contents** | **Allocation****of Lectures Total 30** | **Month wise****schedule to be followed** | **Assignments/ Presentations etc** |
| 1. | **Scope of the Research:** Introduction, overview of research process: define research problem, review literature, formulate hypothesis, design research/experiment, collect and analyse data, interpret and report, scope and importance. Literature Survey, Databases and Research metrics Print: Sources of information: Primary, secondary, tertiary sources; Journals: Journal abbreviations, Digital: Databases and their responsible use: Google Scholar, Web of science, Scopus, UGC INFONET, SciFinder, PubMed, ResearchGate, E-consortium, e-books; Search techniques: Phrase, Field, Boolean, Proximity, Concept, Limiting/Refining Search Results. Research metrics: Impact factor of Journal, h-index, i10 index, Altmetrics, Citation index. Author identifiers/or profiles: ORCID, Publons, Google Scholar, ResearchGate, VIDWAN  | **12** | **First week of August – Fourth week of August** | **Syllabus overview****Reference books suggestions****Question-Solving Doubt Session**  |
| 2. | **Communication in Science:** Types of technical documents: Full-length research paper, book chapters, reviews, short communication, project proposal, Letters to editor, and thesis. Thesis writing – different steps and software tools (Word processing, LaTeX, Chemdraw, Chemsketch etc) in the design and preparation of thesis, layout, structure (chapter plan) and language of typical reports, Illustrations and tables, bibliography, referencing: Styles (APA, Oxford etc), annotated bibliography, Citation management tools: Mendeley, Zotero and Endnote; footnotes.  | **12** | **First week of September – Fourth week of September** | **Question-Solving Doubt Session University Papers Discussion****Class Test** |

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| 3. | Oral presentation/posters – planning, software tools, creating and making effective presentations, use of visual aids, importance of effective communication, electronic manuscript submission, effective oral scientific communication and presentation skills.**Research and Publication ethics:** Scientific Conduct: Ethics with respect to science and research, Scientific Misconducts: falsification, fabrication and plagiarism, similarity index, software tools for finding plagiarism (Turnitin, Urkund etc), redundant dublications Publication Ethics: Introduction, COPE (Committee on Publication Ethics) guidelines; conflicts of interest, publication misconduct: problems that lead to unethical behaviour and vice versa, types, violation of publication ethics, authorship and contributorship, predatory publishers.  | **9** | **First and second week of October-fourth week of October** |  |
| 3. | journals IPR - Intellectual property rights and patent law, commercialization, copyright, royalty, trade-related aspects of intellectual property rights (TRIPS). **Statistical analysis for chemists:** Types of data, data collection-Methods and tools, data processing, hypothesis testing, Normal and Binomial distribution, tests of significance: t-test, F-test, chi-square test, ANOVA, multiple range test, regression and correlation. Features of data analysis with computers and software -Microsoft Excel, Origin, SPSS  |  **12** | **First week of November – Fourth week of November** | **Question-Solving Doubt Session****University Papers Discussion****Assignment Distribution** |

DR. GEETA DEVI YADAV

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