NATIONAL INSTITUTE OF AYURVEDA
Deemed to be University
Dean (Ph.D.) Office

Sr.No. F1/2022/NIADU/ 1460 - 68 Date: 01/11/25

OFFICE ORDER

It is notified as per the directions in pursuance of the recommendations made by the 11th meeting of the Academic Council vide Agenda Item No. AC 11.10 dated 30.09.2025.

The Academic council reviewed and approved the proposed modifications for revising Ph.D. coursework syllabus for batch 2025-26 and onwards to align with current and emerging domain-specific requirements in adherence to the directions & regulations notified by UGC.

Attached herewith – Copy of course work

Dean (Ph.D.)

Copy to:-

1. Vice Chancellor
2. Registrar I/C
3. All HOD
4. All Deans
5. Controller of Exams
6. Joint Director
7. Deputy Director
8. Academic Section
9. Notice Board

Dean (Ph.D.)

Research Methodology and Publication Ethics

Course objectives:

1. To help students in formulation of research aims and objectives in an appropriate manner.
2. To help the students in framing good research hypothesis.
3. To inculcate knowledge of scientific methodology in analyzing research data.
4. To impart the knowledge of sampling techniques and record scientific data in a proper way.
5. To acquaint the students with different software and online scientific databases.
6. To help students understand the philosophy of research integrity and publication ethics.
7. To impart hands-on-sessions to identify research misconduct and predatory publications.
8. To acquaint the students with Indexing and citation databases, open access publications, research metrics (citations, h-index, Impact Factor, etc.) and plagiarism tools.

Learning Outcomes:

On completion of this course the students will be able to:

1. Understand the aims and objectives research and formulate a research work plan in a scientific manner.
2. Generate good research hypothesis, design appropriate research protocols, collect and interpret the data to validate their research.
3. Process the data using computer software, analyze the data and critically examine the hypothesis and the conclusions.
4. Obtain and evaluate information from a variety of databases.
5. Communicate effectively in a variety of forms like research publications, patents, etc.
6. Understand the philosophy of ethics in science and scientific research, intellectual honesty and research integrity.
7. Learn to avoid scientific misconducts such as falsification, fabrication, and plagiarism.
8. Follow ethical practices in scientific publications, misrepresentation of data etc.
9. Use Indexing and citation data bases, understand the importance of research metrics.
10. Handle the plagiarism software for their research work.

1. **Introduction to Research Methodology:** An introduction to basics of scientific research: objectives of research, types of research- Research design observational and interventional descriptive & analytical , preclinical (knowledge of different animal models and in vitro assays) and clinical, quantitative and qualitative, Literature review different method including computer database, Synthetic matrix & research gap analysis and its types, Literary research introduction to manuscriptology, data mining techniques. Research process and steps involved. Identification, selection and formulation of research

problem, types and procedure for validation of tool and content designing.

2. **Drug Research and Safety aspects**- Quality control standardization aspects information of herbal preparations, Good manufacturing practices, Good laboratory practices. Safety aspects- Protocol for assessing acute, sub acute, chronic toxicity studies. Familiarization with AYUSH guidelines, CDCSO, OECD. Brief information on traditional drug discovery process.

3. **Sampling and Data Collection:** Sampling: design and types; steps involved in sampling; sample size; advantages and limitations. Data types and collection: qualitative and quantitative, data processing, data analysis. Measurement of central tendency , Fundamental of testing hypothesis Null hypothesis, Type 1 and 2 errors, Test of significance, Parametric test, Non parametric test , Level of significance, Power of test, P value, Data Presentation technique, Calculation of effect size, Statistical significance, Clinical significance, Practical knowledge of use of SPSS, Graph pad etc. Use of databases .

4. **Computational Methods for Data Analysis and Presentation:** Application of mean, mode, median; coefficient of correlation, standard deviation; least squares fitting methods (both linear and non-linear regression analyses). Usage of software packages for data analysis including MS Excel, knowledge of different reporting guidelines like CARE, STROBE etc.

5. **Scientific Report Writing and Publication Process:** Forms and types of scientific reports. Steps involved in scientific article writing. Publication process, selection of journals. Writing research proposals and steps involved. Dissertation/Thesis writing: format, content and chapterization. Bibliography and references, referencing styles. Preparing Research papers for journals, seminars and Conferences, Design of paper using TEMPLATE, Calculations of impact factors of a journal, Citation index, ISBN, Identification of predatory journals and ISSN, Knowledge of Advanced search methods, Booleans spector, mesh terms, AI based databases, Knowledge of various research database like Pubmed, Medline, Scopus, Google scholar, Ayush Portal, Dhara online, Namaste portal etc.

6. **Assignment:** Literature survey / review writing on selected topics.

7. **Ethics:** Ethical issues, Ethical committees, Commercialization Copy right, Royalty, IPR and patent law, Track related aspects of intellectual property rights, Reproduction of published material , Plagiarism, Citation, and Acknowledgement , Reproducibility and accountability.

8. **Scientific Conduct:** Ethics with respect to science and research. Intellectual honesty and research integrity. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP). Redundant publications: duplicate and overlapping publications, salami slicing. Selective reporting and misrepresentation of data.

9. **Publication Ethics:** Publication ethics: definition, introduction and importance. Best practices / standards setting initiative and guidelines: COPE, WAME, etc. Conflicts of interest. Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types. Violation of publication ethics, authorship and contributorship. Identification of publication misconduct, complains and appeals. Predatory publishers and journals.

PRACTICAL

10. **Open Access Publishing:** Open access publications and initiatives. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies. Software tools to identify predatory publications developed by SPPU. Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

11. **Publication Misconduct:** Group Discussions: Subject specific ethical issues, FFP, authorship. Conflicts of interest. Complaints and appeals: examples and fraud from India and abroad.
Software tools (2 Hrs.): Use of plagiarism software like Turnitin, Urkund and other open-source software tools.

12. **Databases and Research Metrics:** Databases: Indexing databases. Citation databases: Web of Science, Scopus, etc.
Research Metrics: Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score. Metrics: *h*-index, g index, i10 index, altmetrics.