

Devi Ahilya Vishwavidyalaya

Minutes of Meeting of Board of Studies (Pharmacy), Faculty of Technology

A meeting of Board of Studies in Pharmacy (Faculty of Technology) was held on 03/04/2021 at 3 pm. The following members were present:

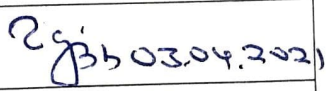
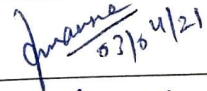

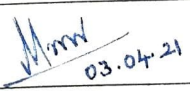
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|----------------------------|----------------------|
| 1. Dr. Rajesh Sharma | Dean and
Chairman |
| 2. Dr. Tamanna Narsinghani | Member |
| 3. Dr. Love Kumar Soni | Member |
| 4. Dr. E. Manivannan | Member |

The meeting started with welcome to all the members of Board of Studies by Chairman. The members were apprised about the Research and Publication Ethics – 2 Credit course prescribed by University Grants Commission, New Delhi for the Ph.D. Course Work. After a thorough discussion, a 2 credit course - Research and Publication Ethics was recommended to be included in Ph.D. Course Work from the academic session January-June 2021. The syllabus of Research and Publication Ethics as prescribed by UGC, New Delhi was adopted as such.

After inclusion of this 2 credit course, the new scheme for Ph.D. Course Work will be as follows:

Course	Title	Credits
Course-I	Research Methodology	4
Course-II	Review of Published Research in Pharmacy	3
Course-III	Computer Application	3
Course-IV	Research Methodology in Pharmacy	3
Course-V	Research and Publication Ethics	2
	Comprehensive Viva-voce	3
Total Credits		18

The meeting ended with thanks to the Chairman.

S.No.	Name	Signature
1	Dr. Rajesh Sharma	 03.04.2021
2	Dr. Tamanna Narsinghani	 03/04/21
3	Dr. Love Kumar Soni	 03/4/21
4	Dr. E. Manivannan	 03.04.21

DEVI AHILYA VISHWAVIDYALAYA, INDORE
SCHOOL OF PHARMACY
SYLLABUS: Ph.D. COURSE WORK (PHARMACY)

Course	Title	Credits
Course-I	Research Methodology	4
Course-II	Review of Published Research in Pharmacy	3
Course-III	Computer Application	3
Course-IV	Research Methodology in Pharmacy	3
Course-V	Research and Publication Ethics	2
-	Comprehensive Viva-voce	3
Total Credits		18

Course-I: Research Methodology

Objective: To gain knowledge in general about research, its methodologies and common tools and techniques adopted for pursuing research.	
Unit-I	Introduction to research, formal science and empirical science, scientific research, research types, research design process, errors in research, formulation of research problem;
Unit-II	Hypothesis, hypothesis generation, null and alternate hypothesis, hypothesis testing, data collection; Primary and secondary data, measurement of scales nominal, ordinal, ratio, interval and Sampling
Unit-III	Introduction, nature and purpose of research ethics, ethical norms, research misconduct, conflict of interest, plagiarism.
Unit-IV	Measures of central tendency and dispersion, probability distribution, test of significance, parametric test and non-parametric test (F-test, t-test, chi-square test, sign test, Wilcoxon signed rank test, Spearman rank correlation), analysis of variance, correlation and regression.
Unit-V	Research paper and thesis writing steps and process. Research paper. Presentation-oral and poster.

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Course-II: Review of Published Research in Pharmacy

The course on Review of Published Research in Pharmacy will be undertaken under the supervisor or the regular teacher of the center of course work and the candidate must consult the library or other resources to carry out the literature review. At the end of the semester the candidate must submit a brief report on the literature review for evaluation, which will be done by the two examiners.

Course-III: Computer Application

Objective: To gain knowledge and practical experience about the use of various computer software and statistical tools for application in research work.

Unit-I	MS word: Features and applications related to presentations of text in suitable format and saving the data for future applications.
Unit-II	MS-Excel: Construction of power point presentation from the experimental data. Design and application of formulae for calculation and their applications to the experimental data. Use of statistical tools in preparation of graphs, histograms, charts and diagrams. Use of various presentation techniques.
Unit-III	MS Power Point: Preparation of power point presentations based on topic of research. Insertion of figures, graphs, charts in presentation. Preparation of scientific posters for presentation. Use of various presentation techniques.
Unit-IV	Use of SPSS& Internet Application: Method of preparation of data sheets and entering the data according to its characteristics. Use of various statistical tools on SPSS. Overview of networking. Internet and its applications. Exploring various websites and search engines for collecting quality literature and secondary data related to research work.

Unit-V	Bioinformatics: What is bioinformatics and its relation with molecular biology. Examples of related tools (FASTA, BLAST, RASMOL), Databases (GENBANK, Pubmed, PDB) and software (RASMOL, Ligand Explorer). Introduction to sequences alignment; Local alignment and Global alignment, Phylogenetic analysis.
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Course-IV: Research Methodology in Pharmacy

Objective: To gain knowledge and practical experience about various Methodologies commonly employed in research filed of pharmacy.	
Unit-I	Development and validation of analytical methods based on UV, HPLC and HPTLC.
Unit-II	Introduction of systematic approaches for isolation, identification, and structure elucidation of unknown impurities. Synthesis, purification, standardization, and quantification of impurities of active drug substances. Designing and optimization of different routes for synthesis of impurities. Case studies for impurity identification and structure elucidation
Unit-III	Principle, instrumentation, working and application of Differential scanning calorimetry, Transmission electron microscopy, Scanning electron microscopy
Unit-IV	Purification of solvents and compounds, Extraction and isolation of phytoconstituents.
Unit-V	Animals used in research, limitations of animal tests, CPCSEA guidelines for performing experiments on animals, anesthetics used in laboratory animals, anatomical specifications, advantage and limitations of various anatomical sites of blood collection in laboratory animals, maintenance and breeding of laboratory animals, protocol development for animal experimentation, transgenic animals.

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L. S. S.
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Course-V: RESEARCH & PUBLICATION ETHICS

Objective: To gain knowledge and practical experience about philosophy of science and ethics, research integrity, publication ethics, research misconduct, predatory publications, indexing, citation data base and plagiarism.

Unit-I (RPE-01)

Philosophy and Ethics

1. Introduction to philosophy: Definition, nature and scope, concept, branches
2. Ethics: Definition, moral philosophy, nature of moral judgements and reactions

Unit-II (RPE-02)

Scientific conduct

1. Ethics with respect to science and research
2. Intellectual honesty and research integrity
3. Scientific misconduct: Falsification, fabrication and plagiarism (FFP)
4. Redundant publications: Duplicate and overlapping publications, salami slicing
5. Selective reporting and misrepresentation of data

Unit-III (RPE-03)

Publication Ethics

1. Publication ethics; Definition, introduction and importance
2. Best practices/standards setting initiatives and guidelines: COPE, WAME etc.
3. Conflict of interest

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	4.	Publication misconduct: Definition, concept, problems that lead to unethical behavior and vice versa, types
	5.	Violation of publication ethics, authorship and contributions
	6.	Identification of publication misconduct, complaints and appeals
	7.	Predatory publishers and journals
Unit-IV (RPE-04)	Open access publishing	
	1.	Open access publications and initiatives
	2.	SHEPRA/RoMEO online resources to check publisher copyright and self-archiving policies
	3.	Software tool to identify predatory publications developed by SPPU
	4.	Journal finder/Journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal suggestions etc.
Unit-V (RPE-05)	Publication Misconduct	
	A.	Group Discussion 1. Subject specific ethical issues, FFP, authorship 2. Conflict of interest 3. Complaints and appeals: Examples and fraud from India and abroad
	B.	Software tools Use of plagiarism software like Turnitin, Urkund and other open sources software tools

Unit-VI (RPE-06)	Databases and Research Metrics	
	A.	<p>Databases</p> <ol style="list-style-type: none"> 1. Indexing databases 2. Citation databases: Web of Science, Scopus etc.
B.	<p>Research Metrics</p> <ol style="list-style-type: none"> 1. Impact factor of journal as per Journal Citation Reports, SNIP, SJR, IPP, Cite score 2. Metrics-h-index, g-index, i10 index, altmetrics 	

Comprehensive Viva-Voce

J. Anand
03/04/21

M. Anand
03.04.21

L. S. V.
03/04/21

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03.04.2021

Syllabus for Ph. D course work in Biochemistry 2021

Course Code BC9Z

Paper IV –Research Publication Ethics (2 Credits)

Philosophy and Ethics : Introduction to philosophy Definition, nature and scope, concept, branches. Ethics Definition, moral Philosophy, nature of moral judgements and reactions.

SCIENTIFIC CONDUCT : Ethics with respect to science and research Intellectual honesty and research integrity Scientific misconduct: Falsification, fabrication and plagiarism (FFP) Redundant publications : Duplicate and overlapping publications, salami slicing Selective reporting and misrepresentation of data

PUBLICATION ETHICS; Definition, introduction and importance Best practices/standards setting initiatives and guidelines: COPE, WAME etc, Conflict of interest

Publication misconduct :: Definition, concept, problems that lead to unethical behavior and ce versa, types Violation of publication ethics, authorship and contributions Identification of ublication misconduct, complaints and appeals, Predatory publishers and journals

Open access publishing : Open access publications and initiatives, SHEPRA/RoMEO online resources to check publisher copyright and self-archiving policies Software tool to identify predatory publications developed by SPPU

1. Impact factor of journal as per Journal Citation Reports, SNIP, SJR, IPP, Cite score
2. Metrics-h-index, g-index, i10 index, altmetrics

Code - BC9Z V Title - Review of Literature (3 credits)

Student's skill will be evaluated by data collection, compilation and presentation from books/Journals. They will refer periodicals/ scientific databases (ex. Pubmed/ Protein /Genomics databases etc) or books. Student will be asked to submit the review and present in front of faculty.

Comprehensive viva voce (3 credits)

SCHOOL OF BIOTECHNOLOGY, D.A.V.V., INDORE.

SYLLABUS FOR Ph.D. COURSE WORK (BIOTECHNOLOGY)

COURSE	TITLE	CREDITS
COURSE-I	Research Methodology	4
COURSE-II	Advanced Biotechnology	3
COURSE-III	Computer Application	3
COURSE-III	Review of Literature	3
	Comprehensive Viva-Voce	3
	Total Credits	16

COURSE-I

Research Methodology

4 Credits

Objective: To gain knowledge about research in general, experimental approaches and analyses tools

Unit 1: Introduction to research

Concepts of research, discovery, innovation, invention. Concepts of blanks, controls and experimental designs of different nature of experimentations. Formulation of research problem, hypothesis, hypothesis generation, null hypothesis, alternate hypothesis, data collection and sampling methodologies.

Unit 2: Research ethics

Nature and purpose of ethics, Bioethics and biosafety protocols for biotechnological research; Animal ethical issues, IPR and patenting issues, conflict of interest, plagiarism, research misconduct, authorship, mentoring, social responsibilities of researchers.

Unit 3: Statistical methods

General overview of statistics- Mean, mode, median, standard deviation, standard errors, t-test, chi square test, multiple comparison tests (post hoc tests), ANOVA, correlation coefficient, level of significance, use of statistical tools (MS-EXCEL, Prism, SPSS) for different types of statistical tests. Probability distributions-Normal, Binomial and Poisson distribution. Parametric and non-parametric statistics.

Unit 4: Scientific and technical writing

Introduction to publications. Research Journals (types), Peer review process, paper submission (off and online mode). Paper writing steps and process. Paper presentations, Report writing (Including pre-writing considerations and thesis writing).

Unit 5: Soft skills and Personality development

Concept of happiness and the ways to become happy; Differentiation among dreams, goals and objectives; Johari's window model to convert unknown into known. Paraphrasing and features of a good presentation for lectures and research, importance of dialogues/communications & discussions- and the ways to improve them.

COURSE-II

Advance Biotechnology

3 Credits

Objective: To gain knowledge and applicability of advance tools and techniques used in biological research

Unit 1: General techniques used in Biotechnological research

Gel electrophoresis of DNA, RNA and protein. Southern, Northern and Western Blotting techniques. Fluorescent in situ hybridization (FISH), Electron microscopy- Transmission electron microscopy (TEM) and Scanning electron microscopy (SEM), Fluorescence microscopy and Inverted microscopy. Techniques used for protein/ antigen detection-Enzyme linked immunosorbent assay (ELISA), Radioimmuno assay (RIA), Fluorescence activated cell sorting (FACS). Animal tissue culture techniques- Culturing of the mammalian cells, their maintenance and experimentation using cell lines; Plant tissue culture techniques- Media preparation, Explant preparation and processing, artificial seeds preparation, anther culture, pollen culture, somatic embryogenesis, callus culture, sterilization and plating techniques.

Unit 2: Genomics based tools and techniques

Genome sequencing techniques and applications- Next-Generation sequencers, Sequencing strategies and the shotgun method, Massive parallel sequencing and their applications.

Applications of gene structural components such as coding sequences (CDS), untranslated regions (UTR's), expressed sequence tags (EST) etc. Types of gene polymorphism and their effects. Gene-disease association and polygenic diseases.

Unit 3: Transcriptomics based tools and techniques

Insights into Microarray, Serial analysis of gene expression (SAGE), real time PCR and their applications in high throughput gene expression studies. Gene expression through epigenetic regulation, mi-RNA & si-RNA pathways, antisense RNA technology.

Unit 4: Proteomics based tools and techniques

Tools for proteome analysis such as isoelectric focusing (IEF); Two dimensional PAGE, Mass spectrometry (MS-MS; MALDI-TOF), multidimensional HPLC. Protein structural determination by X-Ray crystallography, NMR, circular dichroism (CD). Antibody-array, Yeast hybrid systems for protein-protein and protein RNA interactions, FRET, BRET, Co-immunoprecipitation.

Unit 5: Metabolic engineering and recombinant DNA technology

Extension and diversion of metabolic pathways for production of commercially important products. Expression vectors, plantibodies, bioreactors, edible vaccines, development of knockout animal models and animal cloning. Production of transgenic crops, diagnostics and therapeutics using recombinant DNA technology.

COURSE-III
Computer Applications

3 Credits

Objective: To gain theoretical background and practical experience of various computer software and statistical tools for research applications

Unit 1: MS Word

Features and applications related to presentation of text in suitable format and saving the data for future applications. Practical knowledge of MS Word to type the script, insert tables, figures, and graphs to prepare thesis and research papers in presentable format.

Unit 2: MS Excel

Use of worksheets to enter experimental data, edit data, copy data and move data in the excel sheet. Use of in built statistical functions for computations of means, standard deviation, correlation, regression coefficients etc. Preparation of bar diagram, histogram, charts, and scatter plots in EXCEL for presentation of data.

Unit 3: MS Power Point

Preparation of Power point presentations, insertion of figures, graphs, charts in presentation, preparation of scientific posters for presentations; Use of various formatting and presentation techniques.

Unit 4: Use of SPSS & Internet Applications

Methods of preparation of data sheets and entering the data according to its characteristics. Use of various statistical tools on SPSS. Overview of networking, Internet and its applications. Exploring various websites and search engines for collecting quality literature and secondary data related to research work.

Unit 5: Basic Bioinformatics

Bioinformatics and its relation with advanced biology. Examples of related tools (FASTA, BLAST, RASMOL), Databases (GENBANK, Pubmed, PDB) and software (RASMOL, Ligand Eplorer). Introduction to sequences and alignments; Local alignment and Global alignment, Phylogenetic analysis.

COURSE-IV

Review of Literature

3 Credits

Objective: To collect the available literature in the chosen field of research, preparation of chronological order about the development of research in the specific area, identification of gaps in knowledge and developing the planning and methodology to fill the gaps.

Sources of research material, literature survey, compiling records. Various types of scientific documents- Original research paper, review paper, book chapter, theses, project report and conferences.

Components of a research paper-IMRAD system, title, author, and addresses, abstract.

Dealing with publishers-submission and review process.

Oral and poster presentations of research work in conferences/ symposia.

Skill development for communication of research findings to scientific community and for general audience.

Comprehensive Viva-Voce: As per provision of Ordinance-14, student will have to appear for comprehensive Viva-Voce.

Syllabus
RESEARCH & PUBLICATION ETHICS

RPE-01	Philosophy and Ethics	
	1.	Introduction to philosophy: Definition, nature and scope, concept, branches
	2.	Ethics: Definition, moral philosophy, nature of moral judgements and reactions
RPE-02	Scientific conduct	
	1.	Ethics with respect to science and research
	2.	Intellectual honesty and research integrity
	3.	Scientific misconduct: Falsification, fabrication and plagiarism (FFP)
	4.	Redundant publications: Duplicate and overlapping publications, salami slicing
	5.	Selective reporting and misrepresentation of data
RPE-03	Publication Ethics	
	1.	Publication ethics; Definition, introduction and importance
	2.	Best practices/standards setting initiatives and guidelines: COPE, WAME etc.
	3.	Conflict of interest
	4.	Publication misconduct: Definition, concept, problems that lead to unethical behavior and vice versa, types
	5.	Violation of publication ethics, authorship and contributions
	6.	Identification of publication misconduct, complaints and appeals
	7.	Predatory publishers and journals
RPE-04	Open access publishing	
	1.	Open access publications and initiatives
	2.	SHEPRA/RoMEO online resources to check publisher copyright and self-archiving policies
	3.	Software tool to identify predatory publications developed by SPPU

	4.	Journal finder/Journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal suggestions etc.
RPE-05	Publication Misconduct	
	A.	Group Discussion <ul style="list-style-type: none"> 1. Subject specific ethical issues, FFP, authorship 2. Conflict of interest 3. Complaints and appeals: Examples and fraud from India and abroad
	B.	Software tools Use of plagiarism software like Turnitin, Urkund and other open sources software tools
RPE-06	Databases and Research Metrics	
	A.	Databases <ul style="list-style-type: none"> 1. Indexing databases 2. Citation databases: Web of Science, Scopus etc.
	B.	Research Metrics <ul style="list-style-type: none"> 1. Impact factor of journal as per Journal Citation Reports, SNIP, SJR, IPP, Cite score 2. Metrics-h-index, g-index, i10 index, altmetrics

SCHOOL OF LIFE SCIENCES, D.A.V.V. INDORE.

SYLLABUS FOR Ph.D. COURSE WORK [LIFE SCIENCES]

COURSE	TITLE	CREDITS
COURSE-I	Research Methodology	4
COURSE-II	Research Methodology in Life Sciences	3
COURSE-III	Computer Application	3
COURSE-IV	Research and Publication Ethics	2
COURSE-V	Review of Literature	3
	Comprehensive Viva	3
	Total Credits	18

<u>COURSE - I- RESEARCH METHODOLOGY</u>		4 Credits
Objective: To gain knowledge in general about research and its methodologies and common tools and techniques adopted for pursuing research.		
Unit I Introduction to research	Introduction to Research, Formal Science and Empirical Science, Scientific Research, Research Types, Research Design Process, Errors in Research. Formulation of research problem.	
Unit II Hypothesis and data collection	Hypothesis, hypothesis generation, null and alternate hypothesis, Hypothesis testing, sample size and Power calculation. Data types: Scalar and Categorical, Data collection: Primary and secondary data, , Sampling	
Unit III Data Analysis	Measures of Central tendency and Dispersion, Parametric and Non-parametric tests, Confidence interval, Errors, Levels of significance, Regression and Correlation coefficient. Probability distribution- Normal, Binomial and Poisson distribution.	
Unit IV Statistical Techniques	Independent T Test, Mann Whitney Test, Paired T Test, Wilcoxon Signed rank test, One-way ANOVA, Kruskal-Wallis test, Two-way ANOVA, Multivariate Analysis, Chi-squared test, Odds and Relative Risk. ..	
Unit V Research Paper Writing	Introduction to publications. Research Journals (types), Peer review process, Paper submission (Offline and online submission). Research paper writing steps and process. IMRAD system, Paper presentations, Report writing (Including pre-writing considerations and Thesis writing).	

COURSE-II RESEARCH METHODOLOGY IN LIFE SCIENCES		3 credits
Objective: To gain theoretical knowledge and practical experience about various methodologies commonly employed in research field of Life Sciences.		
Unit-I Microbiological Methods	Solid and liquid culture media. Sources of types strains of microorganisms. Revival of culture from lyophilized ampoules. Preservation and maintenance of microbial cultures.	
Unit-II Analytical Methods	Chromatography: Principle, design and application of TLC, GC and HPLC. Electrophoresis: Agarose and Polyacrylamide Gel Electrophoresis (PAGE,SDS,PAGE) Centrifugation: Types of rotors, Ultracentrifugation. Spectroscopy : Basic principles and applications of UV-Visible Spectrophotometry	
Unit-III Methods in Physiology	Various assay procedures: Bioassay, hormones assay by RIA and ELISA. Safety evaluation of drug/compound. Basic principles of Management of laboratory animals. Plant hormone assays Methods to study photosynthesis in plants	
Unit-IV	Production of antibodies from laboratory animals. Monoclonal antibodies. Western blot methods of band detection. Isolation of various immune cells and their functional assays. Proteomics, methods and applications.	
Unit-V Methods in Molecular Biology.	Isolation, purification and separation of nucleic acids. Hybridization techniques-Southern and Northern Blotting. Polymerase chain reaction and its applications. Microarray, RT PCR.	

<u>COURSE-III COMPUTER APPLICATIONS.</u>		3 credits
Objective: To gain theoretical knowledge and practical experience about the use of various Computer software and statistical tools for application in research work.		
Unit-I MS Word	Features and applications related to presentation of text in suitable format and saving the data for future applications.	
Unit-II MS Excel	Construction of power point presentation from the experimental data. Design and application of formulae for calculation and their application to the experimental data. Use of Statistical tools, in preparation of graphs, histograms, charts and diagrams. Use of various presentation techniques.	
Unit-III MS Power Point	Preparation of power point presentation based on the topic of research. Insertion of figures, graphs, charts in presentation. Preparation of scientific posters for presentation Use of various presentation techniques.	
Unit-IV Use of SPSS & Internet Applications.	Methods of preparation of data sheets and entering the data according to its characteristics. Use of various statistical tools on SPSS. Overview of networking, Internet and its applications. Exploring various websites and search engines for collecting quality literature and secondary data related to research work.	
Unit-V Bioinformatics	What is bioinformatics and its relation with molecular biology. Examples of related tools (FASTA, BLAST, RASMOL), Databases(GENBANK, Pubmed, PDB) and software(RASMOL, Ligand Explorer). Introduction to Sequences and alignments; Local alignment and Global alignment, Phylogenetic analysis.	

COURSE-IV RESEARCH AND PUBLICATION ETHICS.		2 credits
Objective: Course for awareness about the publication ethics and publication misconducts.		
Unit –I Philosophy and Ethics	<ol style="list-style-type: none"> 1. Introduction to Philosophy: definition, nature and scope, concept, branches 2. Ethics: definition, moral philosophy, nature of moral judgements and reactions 	
Unit-II Scientific Conduct	<ol style="list-style-type: none"> 1. Ethics with respect to science and research 2. Intellectual honesty and research integrity 3. Scientific misconduct: Falsification, Fabrication, and Plagiarism (FFP) 4. Redundant Publications: duplicate and overlapping publications, salami slicing 5. Selective Reporting and misrepresentation of data. 	
Unit-III Publication Ethics	<ol style="list-style-type: none"> 1. Publication Ethics: definition, introduction and importance 2. Best Practices/ standards setting initiatives and guidelines: COPE, WAME, etc. 3. Conflicts of interest 4. Publication misconduct: definition, concept, problems that lead to unethical; behavior and vice-versa, types. 5. Violation of Publication ethics, authorship and contributorship 6. Identification of publication misconduct, complaints and appeals 7. Predatory publishers and Journals 	
Unit- IV Open Access Publishing	<ol style="list-style-type: none"> 1. Open access Publications and initiatives 2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies 3. Software tool to identify predatory publications developed by SPPU 4. Journal Finder/ Journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc. 	
Unit-V Publication Misconduct	<p>A. Group Discussion</p> <ol style="list-style-type: none"> 1. Subject specific ethical issues, FFP, authorship 2. Conflicts of interest 3. Complaints and appeals: examples and fraud from India and abroad <p>B. Software tools</p> <p>Use of Plagiarism Software like Turnitin, Urkund and other open source software tools</p>	
Unit-VI Databases and Research Metrics	<p>A. Databases</p> <ol style="list-style-type: none"> 1. Indexing databases 2. Citation databases: Web of Science, Scopus, etc. <p>B. Research Metrics</p> <ol style="list-style-type: none"> 1. Impact factor of Journals as per Journal Citation Report, SNIP. SJR, IPP, Cite Score 2. Metrics: h-index, g index, i10 index, altmetrics 	

COURSE-V REVIEW OF LITERATURE

3 credits

Objectives : To collect the available literature in the chosen field of research, preparation of chronological order about the development of various sub-topics in the field, identification of gaps in the knowledge and preparation of objectives to bridge those gaps.

Sources of research material, literature survey, compiling records.

Kinds of scientific documents-research paper, review paper, book review, theses and conference and project reports.

Components of a research paper-IMRAD system, title, author and addresses, abstracts.

Dealing with publishers-submission of manuscripts and ordering reprints.

Oral and poster presentation of research papers in conference/symposia.

Preparation and submission of research projects proposal to funding agencies.

To develop communication skills for presentation of research findings.

To understand and follow ethical issues in research.

Respective supervisors will evaluate literature reviews submitted by the student and recommend the topic for registration. The supervisor will also help in developing communication skill and address ethical issues in research.

Comprehensive Viva: As per the provision of Ordinance-11, a student will appear for comprehensive viva.