



Hemchandracharya North Gujarat University, Patan

PH.D. COURSE WORK SYLLABUS

SUBJECT : BOTANY

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I - BOT-CW-101	Research Methodology	04	70+30
2.	Paper-II - BOT-CW-102	Advance course in Botany	04	70+30
3.	Paper-III - BOT-CW-103	Computer Applications to the subject	04	70+30
4.	Paper-IV - BOT-CW-104	Review of published research in the relevant field	04	70+30
6.	Paper-V - BOT-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
2. If candidate obtains 'F' or 'Ab.' grade in the course/ subject. He/ she will be treated to have failed in that course. He/ She has to reappear in the examination in the next semester.

Paper-I	BOT-CW-101	Research methodology	Credit-4	(70+30)
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- UNIT-1** Introduction, aims and objective of scientific research: Types of research Formulation of research problem. Hypothesis generation and testing. Data collection. Primary and secondary data.
- UNIT-2** Research Ethics : Ethical norms. Misconduct in research. Data management. Conflict of interest. Publication. Authoship. Peer review. Plagiarism and its detection Collaboration. Social responsibilities. Whistle blowing.
- UNIT-3** Quantitative analysis: Introduction and need of quantitative techniques. Data analysis and presentation. Frequency distribution. Measures of Central tendency and dispersion. Normal. Binomial and poisson distribution. Samling techniques. Testing of Significance.
- UNIT-4** Correlation and Regression T-test Chi square test. Experimental designs. R.B.D and other designs. Analysis of variance. Probability and its types.
- UNIT-5** Research Paper writing : Research paper wrtng, steps and process. Paper submission (off line and online) to journals. Types of Journals. Peer review process. Paper Presentation. Report writing. Thesis writing. Important considerations. Poster presentation.

Reference:

1. Garg, B.L. Kaeadia, R. Agrawal. F. anf Agrawal. U.K. 2002. An introduction to research methodology, RBSA Publishers.
2. Kothari. C.R. 1990 Research methodology and Techniques. New Age.
3. Sinha. S.C and Dhiman. A.K.2002. Research methodology. EssEss Publications. 2 volumes.
4. Teochim, W.M.K 2005 Research methos: the concise knowledge base, Atomic Dog Publishing. 270p
5. Suedecor. GW and Cochram. WG (1968) 'Statistical Methods' Oxford & IBH, Delhi.

Unit-1

1. Plant Tissue Culture techniques – types Media Preparation, Protocols for Different Culture. Aseptic Conditions. Sterilization methods.
2. Microbial Culture techniques – Media Preparations. Protocols for different culture Sterilization methods. MPN techniques.

UNIT-2

1. Cytological techniques- Pretreatment. Fixatives and Stains.
2. Recent Molecular cytological techniques- FISH. GISH etc.
3. Principles. Methods and types of Electrophoresis. Agarose and PAGE Electrophoresis.

UNIT-3

1. DNA Isolation technique from plant and animal tissue: Microbes.
2. PCR- Principles types and applications.
3. Basic Gene Cloning Techniques used in genetic transformation of plants.
4. DNA Chips, Microarray and newer techniques in genomics.

UNIT-4

1. Principles, Nature, Detection, Measurement and applications in biological sciences of Radioisotopes.
2. Introduction to Remote Sensing and Geographical Information System.
3. Basic enzymes assay methods.

UNIT-5

1. Sampling technique and analysis of air Pollution.
2. Techniques and analysis used in the study of water Pollution.
3. Herbarium preparation methods in ethno-botanical studies.

Paper-III BOT-CW-103 Computer Applications to the subject**Credit-4 (70+30)**

UNIT-1 Introduction to computers. Structural and functional aspects. Commonly used programmes and packages.

MS Word: Features and applications related to presentation of text in suitable format, saving the data.

UNIT-2 **MS Excel :** Features. Construction and applications. Preparation and presentation.

MS Power Point : Preparation of Power point presentation (insertion of text, figures, charts, photographs etc.) and its usefulness.

UNIT-3 Internet and its applications in research. Networking principle. Exploring various websites for collecting literature related to research work. Use of statistical tools like SPSS for analyzing and interpretation of data.

UNIT-4 Data mining from databases. Important software used in biology. New technologies. Mobile Computing Mobile Connectivity-Cells, mobile data networking, cellular data Communication, mobile computing application. Mobile database-Protocol, scope, tools and technology.

UNIT-5 Bioinformatic use of tools (FASTA, BIAST, RASMOI etc.). Important databases PUBMED. GEBAK etc.). Sequence alignment tools. Phylogenetic analysis.

References:

- I) Fundamentals of Computers by Rajaraman. Prentice Hall India Pvt. Limited
- II) Microsoft Office Word 2007: Complete Concepts and Techniques by Gary B. Shelly, Thomas Cashman, Misty E. Vermaat. Cengage Learning Inc.
- III) How to Do Everything with Microsoft Office Excel 2007 by Guy Hart-Davis. McGrawHill
- IV) Learning Microsoft PowerPoint 2007 by Catherine Skintik. Pearson Education
- V) H.H. Rashidi & LK Huchler (2002). Bioinformatics Basics: Applications in Biological Science and Medicine. CRC Press. London.

Paper-IV BOT-CW-104 Review of published research in the relevant field Credit-4 (70+30)

For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V BOT-CW-105 Comprchensive viva voce Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Botany and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.

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PH.D. COURSE WORK SYLLABUS

SUBJECT : CHEMISTRY

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I - CHE-CW-101	Research Methodology	04	70+30
2.	Paper-II - CHE-CW-102	Analytical Techniques	04	70+30
3.	Paper-III - CHE-CW-103	Computer Applications to the subject	04	70+30
4.	Paper-IV - CHE-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V - CHE-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
2. If candidate obtains 'F' or 'Ab.' grade in the course/ subject. He/ she will be treated to have failed in that course. He/ She has to reappear in the examination in the next semester.

Paper-I	CHE-CW-101	Research methodology	Credit-4	(70+30)
UNIT-1	Introduction to research methodology, design and implementation of research methods, types and steps in research, Objectives of research, Techniques of research formulating, reviewing the literature. Mode of approach of actual investigation, drawing inferences from data Qualitative and Quantitative research approaches, assessing the status of the problem, Characteristics and components of research problem.			
UNIT-2	Basic concepts of research Paper /Thesis writing and report generation, Writing research abstract, summary, Introduction, review of literature, materials and methods, presenting the results, writing the discussions and citing the references, Types of research studies and research methods, Data collection and data analysis. Writing scientific report: Planning, preparation, draft, revision and refining; writing project proposal to funding agency.			
UNIT-3	Testing of Hypothesis: Meaning, Basic concepts, Flow diagram, Power of a hypothesis test, Important Non-Parametric tests: Sign, Run, Kruskal-Wallis tests and Mann-Whitney test, Important parametric tests, Hypothesis Testing of Means, between variance, Comparing Two related samples, Testing of Proportion, Difference proportions, Comparing variance to hypothesized population Chi-square tests-ANOVA-One way and Two way, Equality of variances of two normal populations, hypothesis testing of Correlation coefficients, Limitations of Tests of hypothesis.			
UNIT-4	Ethical Issues : Code of Ethics in Research, Ethics and research process, Importance of ethics in research, Ethical committees, Commercialization, copy right, royalty, intellectual property and patent law, track related aspects of intellectual property rights, Reproduction of published material, Plagiarism, citation and acknowledgement, reproducibility and accountability, Editing			
UNIT-5	Sampling -introduction, definitions, theory of sampling, techniques of sampling, central limit theorem, Sandler's A test, statistical criteria of good sampling and required size, stratified sampling vs random sampling, minimization of variance in stratified sampling, transmission and storage of samples, Concept of standard error.			

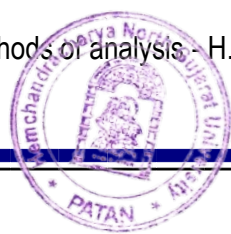


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- UNIT-1** IR and Raman spectroscopy, Instrumentation, preparation of samples and pellet making, Molecular vibrations, selection rules, force constant – band assignments, applications, organic structures, finger printing, identification of common functional groups, applications. Effect of isotopic substitution on the vibrational spectra of metal carbonyls with reference to the nature of bonding, geometry and number of C-O stretching vibrations (group theoretical treatment) Raman spectroscopy: Stokes and anti-Stokes lines, Polarizability ellipsoids, Rotational and Vibrational Raman spectroscopy, Selection rules, Polarization of Raman lines, Applications of Raman Spectroscopy, Photo electron spectroscopy-principle and applications, Auger electron spectroscopy, electron spectra in chemical analysis.
- UNIT-2** NMR spectroscopy Bloch equations, the quantum mechanical description of the NMR experiment, transition probabilities, Fourier transform NMR, Relaxation effects, measurements of T1 and T2. Spectral simplification and determination of signs of coupling constants, elementary aspects of Solid State NMR. ¹H NMR spectroscopy, coupling constant, first order and second order splitting spin, spin splitting, dependence of J on dihedral angle, vicinal and germinal coupling constants, Karplus equation, long range coupling constants, influence of stereo chemical factors on chemical shift of protons, simplification of complex spectra, double resonance techniques, shift reagents, chemical spin decoupling of rapidly exchangeable protons (OH, SH, COOH, NH, N₂, an elementary treatment of NOE phenomenon, 2D technique (COSY, N₂ESY and ROSY) ¹³C NMR spectroscopy. Basic theory of FT NMR, Relaxation, broad band decoupling. Off resonance decoupling and chemical shift correlations (CH, CH₂, /3, =CH₂, =C, aromatic), NMR in medicine.
- UNIT-3** UV Visible spectroscopy, Electronic excitation, origin of different bands, intensity of bands, selection rules - laws of photochemistry, correlation of electronic absorption with Molecular structure, chromophoric groups, conjugated systems, systems of extended conjugation, aromatic systems, empirical rules, experimental methods, photometric titration Jablonskii diagram, Fluorescence and phosphorescence and factors affecting these, Calculation of excited state life-times from absorption data, Quenching of fluorescence, Stern-Volmer equation
- UNIT-4** Mass Spectrometry Principles, Instrumentation, Different ionizing techniques (EI, CI, FD, FAB, ESI, M DI) - Various analysers (Magnetic sector, Quadrupole, Ion trap, ToF), factors affecting fragmentation, ion analysis. Ion abundance, Analysis of mass spectrum, simple cleavage, 1,3 cleavage, allylic cleavage, benzylic cleavage, Factors affecting fragmentation pathways, McLafferty rearrangement, ortho effect, Fragmentation patterns of common organic compounds. Problems based on UV, IR, NMR and Mass spectral data.
- UNIT-5** Separation Methods: Theory and applications of separation methods in analytical chemistry, liquid-liquid extraction: Distribution coefficient, distribution ratio, solvent extraction of metals, multiple batch extractions, countercurrent distribution., multiple extractions solvent extraction, ion exchangers including liquid ion exchangers. Introduction, fundamentals, principle, instrumentation and applications of gas chromatography, HPLC and other hyphenated Techniques: LC-MS, GC-MS, ICMS, HP-TLC, and ICP-MS Spectroscopy

Reference Books:

1. Spectrometric identification of organic compounds - R.M. Silverstein, G.C. Bassler and Morrill. John Wiley & Sons, New York 5th Edn (1991).
2. Physical methods in Inorganic chemistry - R. S. Drago Reinhold Pub. Corp., (1965)
3. Physical methods in Organic Chemistry - Scharz. Oliver & Boyd, (1964)
4. Applications of absorption spectroscopy of organic compounds - J. Dyer.
5. Organic spectroscopy - W. Kemp. Macmillan, (1987)
6. An introduction to spectrometric methods for the identification of organic compounds Vol. I & II - F. Schienmann. Pergamon Press, Oxford (1970)
7. Introduction to spectroscopy - A guide for students of organic chemistry - D.L. Pavia, G.M. Lampman and G.S. Kniz Jr.
8. Instrumental methods of analysis - H. Willard, L. Merritt Jr. and A. Dean, 4th Edn (1996)



9. Fundamentals of analytical chemistry-D.A.Skoog and M.West.7th Edu, Saunder s College Pub (1996)
10. Fundamentals of molecular spectroscopy - C.N.Banwell. 4th MC. GrawHill,(2008)
11. Basic principles of spectroscopy - R.Chang.
12. Spectroscopy of organic compounds - P.S Kalsi. New Age International 6th Edn (2009)
13. Practical Skills in Chemistry, J. R. Dean, A. M. Jones, D. Holmes, R. Reed, J. Weyers and A Jones, Pearson Education Ltd. [Prentice Hall] (2002)

Paper-III CHE-CW-103 Computer Applications to the subject Credit-4 (70+30)

- UNIT-1** Introduction to computers- history of development of computers Main frame mini, micro and super computer systems-computer hard ware CPU, input, output devices, auxiliary storage devices, interpreter, compiler, machine language, assembly language, high level languages.
- UNIT-2** Introductory Operatives-Package, MS Word: word basics, formatting text and documents, introduction to mail merge & macros. MS Excel: Excel basics, rearranging worksheets, working with charts and graphs, using worksheet as databases, Use formulas and functions, MS PowerPoint : PowerPoint basics, creating presentation MS Access: Database creation, screen/form design, generation using wizard, Preparation of a document, Editing of a document, Preparing a scientific manuscripts, Features of Acrobat Reader.
- UNIT-3** Programming with C: Character Set, Identifiers, Keywords, Variables, Character Strings, Qualifiers, Typcasting, Constants, Operator and Expression, Operator Precedence and Associativity, Input-Output Statements. Control Statements: if, if-else, nested if, if-else ladder, switch Statements, Loops: for, while do-while, break and continue statement, Arrays, Strings.
- UNIT-4** Literature Searching: On-line searching, Database, Scifinder, Scopus, Locating research article, Citation Index, Impact Factor Computer Software in Chemistry: Instrument Control, Instrument Maintenance and Calibration system, Graphical Display of Data and Molecular Structures, Chem Office, Chemdraw, Chemistry 4-D Draw Standard.
- UNIT-5** Introduction to Internet and its applications: web browsers - World Wide Web, Search Engines, e-journals, literature Survey, Popular journals and websites, literature searching and collection using e-journals.
 Preparing presentations:
 1) Research papers: Using word processing software - MS Word, Drawing graphs and diagrams - Excel. Paper writing for International Journals, Process for online submission
 2) Seminar presentations -Power poirit for oral and poster presentations

Paper-IV CHE-CW-104 Review of published research in the relevant field Credit-4 (70+30)

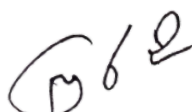
For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V CHE-CW-105 Comprchensive viva voce Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Chemistry and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.

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PH.D. COURSE WORK SYLLABUS

SUBJECT : COMMERCE

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I-COM-CW-101	Research Methodology	04	70+30
2.	Paper-II-COM-CW-102	Advance Course in Commerce	04	70+30
3.	Paper-III-COM-CW-103	Computer Applications to the subject	04	70+30
4.	Paper-IV-COM-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V-COM-CW-105	Comprehensive Viva	04	100

Notes:

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Paper-I COM-CW-101 Research methodology Credit-4 (70+30)

1. Meaning of research in Commerce : Type of Research (descriptive vs analytical, fundamental vs. applied qualitative vs. Quantitative conceptual vs. empirical, empirical vs. simulation based, conclusion oriented vs. decision oriented, historical vs. a historical etc.
2. Development of induction and deduction, scientific methods, Paradigm shift, Radical Thoughts, Objectivity in Research, Ethics in Research, analysis of historical records, participant or non participant observation, mass observation, questionnaires, personal interviews , group interviews, case studies, small group study.
3. Formulation of research problem- identification and rationalization of the problem, development of working hypothesis, preparation of research design, investigation in availability of information, sampling design, error, minimization, evaluation of time and cost, measurement scales collection of information.
4. Processing of collected information, interpretation and generalization, systemization of findings, writing of report, reference and bibliography.
5. Simple concept of probability and theoretical frequency distribution (Binomial. Normal & poison.)

Reading List:

1. J.K. Sachdeva; Business Research methodology, Himalaya Publication.
2. P.C.Tripathi; A textbook of research methodology in social Sciences, saltan Chand & Sons.
3. Goodie William Hatt Paul K; methods in Social Research, McGraw Hill Bokk Company.
4. Bhattacharya D.K. research methods, Excel Books.
5. Scother A Miller 2007 Development Research methods, Sage Publication.




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Course Content-

1. Understanding Review of Literature : Relevance, Approach and Applications ; Developing an outline for the literature review; Formulate Key questions for review.
2. Organizing the theoretical basis for the Research Question, Searching for locating and organizing relevant professional.
3. Conducting the Review: Abstract relevant information from appropriate studies in a systematic manner: Critically reviewing the literature, Rate the Scientific quality of each study and the level of evidence for each question;
4. Synthesizing the Review; create evidence tables and summary tables; interpret the pattern of evidence in terms of strength and consistency; summarize the Studies' findings.
5. Writing the review : Writing a first draft writing references and citations; obtaining giving and making productive use of feedback; the redrafting process, professional formatting.

Reference:

1. Sara Efrat Efron, Ruth Ravid; Writing the Literature Review; A Practical Guide, Guilford Press; addition 2018.
2. Ridley. The Literature Revire, Edition : 2 Rev ed. Publisher : Sage Publications..
3. Lawrence A Machi, Brenda t. McEvey: The Literature Review: Six Steps to Success, Corwin, SAGE Publication

Paper-III COM-CW-103 Computer Applications to the subject

Basic Knowledge of application softwares in MS-Office with focus on.

1. MS Word its features and applications related to presentation of text in decent formate and saving the same for further use. The practical knowledge of this software should enable the candidate to type and Prepare the thesis in a presentable format.
2. MS. Excel-construction of worksheet and inserting data according to its characteristics use of statistical tools and their presentation in the form of charta and graphs.
3. MS. Power point- Create power point presentation on topic related to the theme of thesis and use of different presentation techniques.
4. Use of SPSS- Method of preparing data sheet and entering data according its characteristics tools on SPSS.
5. Use of Internet for research work and exploding various websites and search engines for collecting quality literature review and secondary data etc related to thesis work.

Reference:-

1. Ashok Arora, Computer Funamentals and Applications Vikas Publication.
2. Satish Jain Basic Computer Made Sample, BPS Publication
3. Verma J.P. Data Analysis in Management with SPSS Software, Springer Publication.
4. William Edward Wagner: Using IBM SPSS Statistics for Social Statistics and Resarch Methods, SAGE Publication.
5. Advance ourse for Commerce Research

Course Content:-

1. Statistical tools/ methods for research- for university and bivariate analysis Measures of Central Tenencies, Measures of dispersion correiation regression.
2. Permutation of Hypothesis- Criteria of a good hypothesis, types of research hypothesis, Null hypothesis, alternative hypothesis, advantaged of Hypothesis testing Procedure, Types I and II Error.
3. Parametric & Non Parametric Test-Concept And Procedure one sample parametric tests, two sample parametric tests-Test of significance for large and and small samples- 't' Test, ANOVA-One way and two way.
4. Financial analysis tools and techniques ratio analysis BEP analysis,



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5. E-commerce tools & techniques : E-commerce framework, application Electronic Payment System (EPS) & Its types, smart cards and credit cards electronic data interchange (EDI). Value added network e-commerce catalog's or directories mobile commerce.

Reference:-

1. James D.Miller : Statistics for data Science Pacht.
2. Robert J.Woz : Data Analytics for Beginners : A Beginner's Guide to Learn and Master Data Analytics : kindle Edition.
3. Fundamental of mathematics statistics : S.K.Gupta and V.K. Kapoor.

Paper-IV COM-CW-104 Review of Published research in the relevant field Credit-4 (70+30)

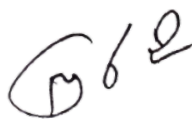
For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V COM-CW-105 Comprchensive viva voce Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Commerce and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.

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PH.D. COURSE WORK SYLLABUS

SUBJECT : EDUCATION

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I-EDU-CW-101	Research Methodology	04	70+30
2.	Paper-II-EDU-CW-102	Advance Course in Education	04	70+30
3.	Paper-III-EDU-CW-103	Computer Applications to the subject	04	70+30
4.	Paper-IV-EDU-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V-EDU-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
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Paper-I EDU-CW-101 Research Methodology Credit-4 (70+30)

PART: A

Unit-I Research in Education

- Essential Characteristics of Science and Scientific Method.
- Definition of Research & Educational research,
- Qualitative & Quantitative Research: Meaning, Definition Characteristics and Need.

Unit-II Descriptive Research

- Meaning, Definition, Characteristics, Nature of Descriptive Research and types.
- Survey: School Survey, Community Survey, Opinion Survey, Job Analysis survey and Document Analysis.
- Inter-Relation Studies : Correlation – Prediction Study, Causal-Comparative Study.
- Developmental Study : Growth Study-Longitudinal & Cross Sectional Study, Follow up and Trend Study.

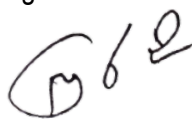
Unit-III (a) Experimental Research

- Experimental Design : Definition, Characteristics, Methods of control.
- Types of Experimental Design : Pre, True and Quasi experimental design.
- Internal and External Validity of Experimental design.

(b) Qualitative Research Approaches :

- Ethnography
- Phenomenology




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- Naturalistic Enquiry,
- Historical,
- Case Studies,
- Philosophical research,
- Analysis of Qualitative Data

Unit-IV **Sampling and Tools:**

(a) **Sampling**

- Population and Sample,
- Importance of Sampling, Sampling Unit, Sampling Frame, Sampling Error & Bias,
- Probability & Non Probability Sampling, Methods and Sample Size.

(b) **Tools & Process of development of tools :**

- Tools of Measurement.
- Characteristics of Tools, Reliability, Validity, Sensitivity,
- Types of Tools-Test, Scale, Interview, Schedule, Observation Schedule and Questionnaire.
- Steps of Developing Tools and standardization.

Unit-V **Planning of Good Research**

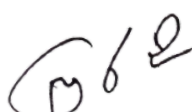
(a) **Preparing of Research Proposal**

- Formulation of the problem of research – Sources, Specification.
- Review of related literature, identifying the emerging trends from the review, building a strong rationale for selecting the problem.
- Practice of formulate the 'Problem' related to the area of interest of the researcher (it will include the exercise of writing the titles with various statements and getting it modified for correctness).
- Formulations of Objectives – Specifying Objectives and hypotheses of the Study.
- Choosing appropriate design and the procedure (Selecting appropriate methods)
- Instruments/tools/techniques, deciding about the Subjects for the study, conditions for conducting the study including procedures of data collection and data-processing) Operational definitions of the concepts and terms used (with the statements of underlying assumptions, perceived limitations and specific delimitations of the study).

(b) **Report Writing – General Guidelines:**

- Format of Research Report (Journal Article, Thesis and Dissertation, Paper at Professional Conferences) Preparation of the Manuscript.
- Writing style
- Bibliography and References, APA Reference style
- Preparation of summary and abstract
- Evaluating and Finalizing the Report (Including the process of converting dissertations and theses for publication as a journal article)
- **Research Ethics, Steps to avoid plagiarism in Research**




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PART: B

- Unit-I**
- Scales of Measurements: Nominal, Ordinal, Interval & Ratio.
 - Statistics permissible at each level of measurement. Scales-Parametric & Non-Parametric tests : Underlying assumptions, considerations for deciding appropriateness of Statistical tests.
- Unit-II**
- The Concept of Hypotheses testing: Null hypotheses, Alternative hypothesis: Directional & Non-directional hypothesis, One & Two tailed tests.
 - Significance of Statistics in terms of critical value & probability, Errors in hypothesis testing : Type I and II errors.
- Unit-III**
- One way ANOVA, Post Hoc tests of Varying powers, Two way ANOVA with equal and unequal cell size,
 - One & Two way ANOVA of equal & unequal cell size.
- Unit-IV**
- Non Parametric statistics : Mann Whitney test, Wilco test, Signed Ranks test, Chi Square test-one ant two samples.
- Unit-V**
- Use of SPSS in Data Analysis: Data entry, testing underlying assumptions, running the tests, editing and exporting the output, writing interpretation.

Paper-III EDU-CW-103 Advance Course in Education Credit-4 (70+30)

UNIT-I : (a) Educational Studies; Philosophical Perspective of Education-Indian and Western Philosophy.
(b) Sociological Perspective of Education.

UNIT-II : Education Policy : Committees and Commissions,

Contribution to Teacher Education–Secondary Commission (1953), Kothari Education Commission (1964-66), National Policy of Education (1986,1992), National Knowledge Commission (2007), Yashpal Committee Report (2009), National Curriculum Framework for Teacher Education (2009), Justice Verma Committee Report (2012), National Education Policy (2020)

UNIT-III : Innovative Strategies of Teaching and Learning

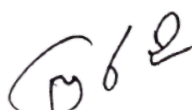
- Learning Approaches: Behaviorist Approach, Cognitive Approach and Constructivist Approach.
- Organizing Teaching: Memory Level, Understanding Level, Reflective Level.
- Competencies of Self-directed Learning and Self dependent Learning (Atmanirbhar Adigem)
- Models and Strategies in teaching-learning process, Learning Styles, Cooperative learning Strategies, Flipped Learning Strategy, Self- Regulated Learning Strategies, Peer Tutoring, Instructional Scaffolding, Integrated Instructional Strategy.

UNIT-IV : Use of Technology in Learning and updating, e portals-

Paper-IV EDU-CW-104 Computer Applications to the subject Credit-4 (70+30)

Unit I : Introduction to Computer System : Definition, Characteristics, Parts of Computer and their functions, Block Diagram of Computer System, Input and Output Devices, Operating System, Memory, Modern Components of different Hardware like laptop, tablet, smart Mobiles, Measure Application of Android.




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Unit II : **MICROSOFT WINDOWS** : An Overview of different versions of Windows, Features of Windows, Creating Folders and Short cut Icons. Saving, Copying and Deleting Files, Loading software. Uses of Note Pad, Calculator, Dictionary and Paint Brush. Word Processing-Saving, Closing, Opening an Existing Document, Selecting Text, Editing Text Finding and Replacing text, Creating and Printing Merged Documents, Character and Paragraph Formatting, Page Design and Lay Out.

Unit III: **MS EXCEL:** Creating Worksheet and use of Simple Commands,

Unit VI : **Presentation Package** : Creating, Opening and Saving Presentation, Working in Text, Views, Working with Slides, Adding and Formatting Text, Making Notes, Pages and Handouts, Designing Slides show, Running and controlling presentation, Printing Presentations. Uses of Multimedia during Presentation : Meaning, Graphics, Animation, Audio Images, Video Survey and Text.

Unit V : Use of Web Based Instruction : Designing, Advantages and Limitations. Use of Educational Software and CD's. Use of Computers in Library, Internet : Meaning, Online Surfing, Use of a e-mail, Chat. Use of Search Engines. World Wide Web-Access information, reliability to information Web Page and Home Page, Use of Internet in Teaching-Learning Process. Downloading Information, Uses and Abuses of Internet.

PRACTICAL ACTIVITIES:

- MS-WORD,
- MS-EXCEL,
- POWER POINT,
- INTERNET,
- USE OF 2G AND 3G TOOL

Paper-II EDU-CW-103 Review of Published research in the relevant field Credit-4 (70+30)

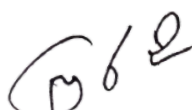
For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V EDU-CW-105 Comprhensive Viva Voce Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Education and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.

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PH.D. COURSE WORK SYLLABUS

SUBJECT : ENGLISH

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I-ENG-CW-101	Research Methodology	04	70+30
2.	Paper-II-ENG-CW-102	Advance Course in English	04	70+30
3.	Paper-III-ENG-CW-103	Computer Applications to the subject	04	70+30
4.	Paper-IV-ENG-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V-ENG-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
2. If candidate obtains 'F' or 'Ab.' grade in the course/ subject. He/ she will be treated to have failed in that course. He/ She has to reappear in the examination in the next semester.

Paper-I ENG-CW-101 Research Methodology Credit-4 (70+30)

- Unit-I**
- Meaning, Nature, Significance and Characteristics of Research
 - Research Objectives and Types
 - Preparation of Research Proposal
 - Methods of Research

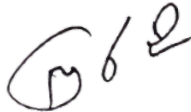
- Unit-II**
- Research Design and Hypothesis Design.
 - Sources of Research Material.
 - Planning, Organizing, Testing and Presentation of Research Material
 - Data Collection. Techniques of data collection
 - Primary and Secondary Data and sources. Tabular and graphical representations of data.

- Unit-III**
- Research Report Writing
 - Research Paper Writing
 - Documentation
 - Preface, Chapters, Appendices
 - Quotation-citing of quotations, names of authors, publishers, page numbers, year and edition.
 - Preparing Bibliography, References, End notes

- Unit-IV**
- Statistical Research Methods
 - Statistical Tools in Research

- Unit-V**
- **Research Ethics: definition, significance and issues.**




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Paper-IV ENG-CW-102 Advance Course in English Credit-4 (70+30)

Unit I : Background to the study of English Literature

- Literary Forms
- Literary Terms
- Major Literary Movements

Unit II : Twentieth Century Critical Theories

- Psychoanalytical
- Socio-Cultural
- Gender Studies

Unit III : Linguistics and Stylistics

- Stylistic Devices
- Stylistic Tools

Unit IV : World Englishes

- Growth and Development of Different varieties of English in the World.
- Emerging Literasry Trends.

Unit V : Indian Writing in English

- Origin, Development and Issues.

Paper-III ENG-CW-103 Computer Applications to the subject Credit-4 (70+30)

Unit-I • Computer-Meaning, significance in modern research.

Unit-II • Computer-Structure, maintenance and Uses

Unit-III • Using MS-Word for writing Dissertation/Thesis.
• Using Computer for tabulation & graphical presentation of data.

Unit-IV • Internet-Internet Explore and Web Publication.
• Portal, Link, Browsing on internet.

Unit-V • E-mail : Sending and Receiving of e-mails.
• Dos and Don'ts E-mailing.

Paper-IV ENG-CW-104 Review of Published research in the relevant field Credit-4 (70+30)

For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V ENG-CW-105 Comprchensive viva voce Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in English and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.




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PH.D. COURSE WORK SYLLABUS

SUBJECT: HOSPITAL MANAGEMENT

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I - HM-CW-101	Research Methodology	04	70+30
2.	Paper-II - HM-CW-102	Hospital Management	04	70+30
3.	Paper-III - HM-CW-103	Computer Applications to the subject	04	70+30
4.	Paper-IV - HM-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V - HM-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
2. If candidate obtains 'F' or 'Ab' grade in the course/ subject. He/ she will be treated to have failed in that course. He/ She has to reappear in the examination in the next semester.

Paper-I	HM-CW-101	Research methodology	Credit-4	(70+30)
UNIT-1	Introduction to research methodology, design and implementation of research methods, types and steps in research, Objectives of research, Techniques of research formulating, reviewing the literature. Mode of approach of actual investigation, drawing inferences from data Qualitative and Quantitative research approaches, assessing the status of the problem, Characteristics and components of research problem.			
UNIT-2	Basic concepts of research Paper /Thesis writing and report generation, Writing research abstract, summary, Introduction, review of literature, materials and methods, presenting the results, writing the discussions and citing the references, Types of research studies and research methods, Data collection and data analysis. Writing scientific report: Planning, preparation, draft, revision and refining; writing project proposal to funding agency.			
UNIT-3	Testing of Hypothesis: Meaning, Basic concepts, Flow diagram, Power of a hypothesis test, Important Non-Parametric tests: Sign, Run, Kruskal-Wallis tests and Mann-Whitney test, Important parametric tests, Hypothesis Testing of Means, between variance, Comparing Two related samples, Testing of Proportion, Difference proportions, Comparing variance to hypothesized population Chi-square tests-ANOVA-One way and Two way, Equality of variances of two normal populations, hypothesis testing of Correlation coefficients, Regression Multivariate Analysis, Factor Analysis, Structure Equation Modeling Limitations of Tests of hypothesis.			
UNIT-4	Ethical Issues : Code of Ethics in Research, Ethics and research process, Importance of ethics in research, Ethical committees, Commercialization, copy right, royalty, intellectual property and patent law, track related aspects of intellectual property rights, Reproduction of published material, Plagiarism, citation and acknowledgement, reproducibility and accountability, Editing			
UNIT-5	Sampling -introduction, definitions, theory of sampling, techniques of sampling, central limit theorem, Sandler's A test, statistical criteria of good sampling and required size, stratified sampling vs random sampling, minimization of variance in stratified sampling, transmission and storage of samples, Concept of standard error.			



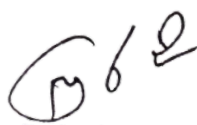
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- UNIT-1** Health and wellbeing, Principle of Health and Hospital Management, Healthcare delivery system, Healthcare settings, Healthcare function, public health surveillance, Healthcare promotion, Healthcare policy, healthcare infrastructure. Classification of Healthcare system in India, Types of Hospital in India. National Health Programme, Human behavior, Group behavior, Organisation behavior, Traditional approach, Frederic W Taylor's scientific management, Henry Fayol's principles of management Principle of Management, Theory of Motivation, Crisis management.
- UNIT-2** Health economics: Basic concept, Demand and Supply of Healthcare, DALY AND QALY Healthcare cost, cost benefit, cost effectiveness, cost minimisation, cost utility and Break even analysis. Healthcare finance, Healthcare financing model-Beveridge model, Bismarck model, Healthcare financial tools, National health insurance, Social health insurance, Community based health insurance, Private health insurance,
- UNIT-3** Demography and Epidemiology: Demographic transition theory, Demographic measures : Crude birth rate, Crude death rate, Infant mortality rate, maternal mortality rate, Fertility rate, communicable disease and non communicable diseases, census , national family health survey , National health account , National health mission , National rural health mission , National urban health mission, marketing of hospital services, marketing mix, holistic marketing, forecasting demand, segmentation , targeting and positioning, green hospital, nucleus hospital, patient satisfaction and patient experience
- UNIT-4** Financial Management and Accounting: Basic concept of accounting, Nominal account, Types of account: Nominal account, real account, personal account, rules of account, Profit and loss account, trial balance sheet and balance sheet. Basic concept of financial management: present value, future value, working capital management, cash inflow and outflow, capital budgeting and types leverag, material and inventory used in a hospital, inventory techniques, ABC/VED/SDE Analysis, Type of inventory cost.
- UNIT-5** Human Resources Management and Healthcare Laws : Role of HRM in hospital , human resource planning , recruitment policy, selection process, performance evaluation, promotion and transfer, labour laws applicable to hospital , employment state insurance act, 1948, the code on social security 2020, maternity benefit act, 1961, national food security act, 2013, work man compensation act, 1923, biostatistics: descriptive measure, Healthcare Laws.

Reference Books:

1. Kotler Philip, Gary Armstrong, Principles of Marketing, Prentice Hall, New Dehli, 1997.
2. Financial Management – Prasanna Chandra, Tata Mcgraw Hill Publication.
3. HRM in Hospital Goel R.C, Prentice Hall Of India.
4. Gupta S.P., Statistical methods, Sultan Chand , New Delhi , 1993.
5. Managing hospital material management – Kowalski-Dickow Associates, Inc Staff, AHA, American Society for Healthcare Materials Management.
6. Luck.J.David. Ronald S. Rubin , Market Research, Prentice Hall of India, New Delhi , 1999
7. Foundation of Epidemiology – Gilienfeld
8. Srinivasan A.V. (ed), Managing a modern hospital, Chapter 3, Response Books, New Delhi, 2000.
9. Stephen Robbins – Organizational Behaviour - Prentice Hall
10. A Handbook for Accounting for Hospital Management, By D. K. Chatterjee, Himalaya Publishing House Pvt., Ltd.
11. Health Economics and Policy- James W Henderson, South-Western, Thompson Asia Pvt. Ltd.




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Paper-III HM-CW-103 Computer Applications to the subject Credit-4 (70+30)

- UNIT-1** Introduction to computers- history of development of computers Main frame mini, micro and super computer systems-computer hard ware CPU, input, output devices, auxiliary storage devices, interpreter, compiler, machine language, assembly language, high level languages.
- UNIT-2** Introductory Operatives-Package, MS Word: word basics, formatting text and documents, introduction to mail merge & macros. MS Excel: Excel basics, rearranging worksheets, working with charts and graphs, using worksheet as databases, Use formulas and functions, MS PowerPoint : PowerPoint basics, creating presentation MS Access: Database creation, screen/form design, generation using wizard, Preparation of a document, Editing of a document, Preparing a scientific manuscript, Features of Acrobat Reader.
- UNIT-3** Hospital Management Information System: Database Management system, types of DBMS, Module of HMIS Clinical Information system, Patient information system, Laboratory information system, Radiological information system, Pharmacy information system, Nursing information system Administrative information system, support service technical information system etc.
- UNIT-4** Literature Searching: On-line searching, Database, Scifinder, Scopus, Locating research article, Citation Index, Impact Factor Computer Software in Hospital and Healthcare industry:Epi Info Electronic medical record, DICOM and PACS, Digital Health ID, E-governance in Healthcare: E-mamta.
- UNIT-5** Introduction to Internet and its applications: web browsers - World Wide Web, Search Engines, e-journals, literature Survey, Popular journals and websites, literature searching and collection using e-journals.
Preparing presentations:
1) Research papers: Using word processing software - MS Word, Drawing graphs and diagrams - Excel. Paper writing for International Journals, Process for online submission
2) Seminar presentations -Power ppoint for oral and poster presentations

Paper-IV HM-CW-104 Review of published research in the relevant field Credit-4 (70+30)

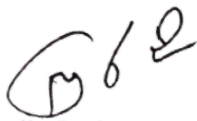
For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V HW-CW-105 Comprchensive viva voce Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Hospital Management and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.

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PH.D. COURSE WORK SYLLABUS

SUBJECT : LAW

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I-LAW-CW-101	Research Methodology	04	70+30
2.	Paper-II-LAW-CW-102	Advance Course in Law	04	70+30
3.	Paper-III-LAW-CW-103	Computer Applications to the subject	04	70+30
4.	Paper-IV-LAW-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V-LAW-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
2. If candidate obtains 'F' or 'Ab.' grade in the course/ subject. He/ she will be treated to have failed in that course. He/ She has to reappear in the examination in the next semester.

Paper-I LAW-CW-101 Research Methodology Credit-4 (70+30)

Research Methodology paper will be of 100 marks. The theory paper will be of 100 marks. The main objective of this paper is to acquaint the students of law with the scientific methods of legal research as well as socio-legal research.

This paper is expected to provide the basic knowledge of techniques of selection, collection and interpretation of primary and secondary dates and also promote legal research and law reforms. It will facilitate the students to develop a scientific approach towards socio-legal problems. The following shall be the course of the paper.

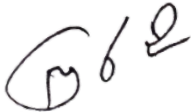
UNIT-I

1. Research — An Introductory Approach.
2. What is Research? Characteristics of Legal Research
3. Legal Research in India: Evolution and Development; Problems and Challenges
4. Interdisciplinary Perspective on Legal Research
5. Status of Legal Research in Contemporary India
6. Global Trends in Legal Research

UNIT-II

1. Identification of Research Problem
2. Formulation of Research Problem.
3. Source of Research Problem
4. Criteria of a good Research Problem.
5. Hypothesis formulation and its testing
6. Research Design.




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UNIT-III

1. Tools and Techniques of Legal Research
2. Doctrinal and Empirical Research
3. Interview Technique
4. Scaling technique of Socio-Legal Research
5. Determination of Sample Design

UNIT- IV

1. Source of Data Collection and Sampling.
2. Primary & Secondary Data
3. Questionnaire construction and design,
4. Precautions in the collection of data,
5. Sampling techniques, Sampling and non-sampling errors,
6. Interview and observation methods

UNIT-V

1. Data Analysis
2. Processing of Data and Statistical Techniques, Editing, Coding, Classification, Tabulation
3. Legal Writing Skill, Research Papers, Project Reports and Thesis Writing
4. Compiling a Working Bibliography

Select Bibliography

- ⇒ M.O. Prince, H.Bitner and Bysieqiez, Effective Legal Research (1978) Pauline V.Young, Scientific Social Survey and Research, (1962)
- ⇒ William J. Grade and Paul K. Hatt. Methods in Social Research, McGraw-Hill Book Co. London
- ⇒ H.M. Hyman, Interviewing in Social Research (1965) Pryane, The Art of Asking Questions (1965)
- ⇒ Erwin C.Surrency, B Fiefl and J.Crea, Aguide to Legal Research (1959) Morris L.Cohan, Legal Research in Nutshell, (1996), west Publishing Co. Havard Law Review Association, Uniform System of Citations,
- ⇒ ILI Publication, Legal Research and Methodology

Paper-II	LAW-CW-102 Advance in Law	Credit-4 (70+30)
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UNIT-I Law and Social Transformation -

- | | |
|-----------------------|-----------------|
| 1. Constitutional Law | 2. Criminal Law |
| 3. Human Rights | 4. Family Law |

UNIT-II Ethics, Mortality and Law Research Ethics

- | | |
|--------------------------------|----------------|
| 1. Authorship and Copy right ; | 2. Plagiarism; |
| 3. Data Fabrication; | 4. Peer Review |

UNIT-III

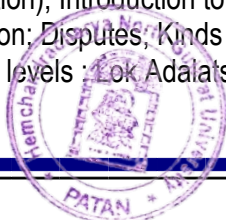
- | | |
|------------------------------------|------------------|
| 1. New Perspective on Legal Theory | 2. Human Rights |
| 3. Sustainable Development | 4. Globalization |

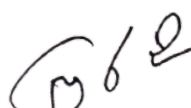
UNIT-IV

1. Emerging Regime of New Rights and Remedies,
2. Victimology
3. Reading Directive Principles and Fundamental Duties into Fundamental Rights
4. Principles relating to Good Governance
5. Law and Technology ; Information Technology Act, 2000

UNIT-V

1. ADR (Alternative Dispute Resolution); Introduction to ADR
2. Key concepts in Dispute Resolution: Disputes, Kinds of Disputes
3. Dispute Resolutions at grass root levels : Lok Adalats ; Nyaya Panchayats ; Legal Aid




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UNIT-I

- 1.1 Introduction to Computers and Classification of Digital Computer System
- 1.2 Anatomy of digital computer and Computer Architecture
- 1.3 Number System
- 1.4 Memory Units, Auxiliary Storage Devices, Input and Output devices.

UNIT-II

- 2.1 Introduction to Computer Software
- 2.2 Operating Systems
- 2.3 Programming Languages
- 2.4 General Software features and Trends

UNIT-III

- 3.1 Word: Basics, Making a document, Cut and Paste, Document Enhancement, Printing, Spell Check & Grammar and Mail Merge.
- 3.2 Power Point: Basics, Creating a Presentation, working with graphics and text in Power Point Show time: Transition and build effect, Showing slides and deleting slides, printing presentation elements,

UNIT-IV

- 4.1 Internet and Worldwide web
- 4.2 Electronic Mail
- 4.3 Multimedia Tools
- 4.4 Introduction to Virtual Reality

UNIT-V

- 5.1 Word processing and Research
- 5.2 Data processing and Graphical Processing
- 5.3 Use of Web tools, excel SPSS, Graphical Software and Multimedia tools in Research
- 5.4 Use of online Databases in Legal Research

Select Bibliography

- 1. Computer Fundamentals: Pradeep K. Sinha
- 2. Fundamentals of Computer: V. Rajaraman
- 3. Computer Fundamentals: Anita Goel
- 4. Fundamentals of Computer: E Balagurusamy


For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Law and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.

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PH.D. COURSE WORK SYLLABUS

SUBJECT : LIBRARY & INFORMATION SCIENCE

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I-LIB_SCI-CW-101	Research Methodology	04	70+30
2.	Paper-II-LIB_SCI-CW-102	Advance Course in Library & Information Science	04	70+30
3.	Paper-III-LIB_SCI-CW-103	Computer Applications in the subject	04	70+30
4.	Paper-IV-LIB_SCI-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V-LIB_SCI-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
2. If candidate obtains 'F' or 'Ab.' grade in the course/ subject. He/ she will be treated to have failed in that course. He/ She has to reappear in the examination in the next semester.

Paper-I LIB_SCI-CW-101 Research Methodology Credit-4 (70+30)

UNIT -I Fundamental of Research

- Research - Definition need and types.
- Qualities of researcher.
- Research methods - Historical, Descriptive, Survey, Experimental, Case study, Scientific, Spiral of scientific Method.
- Application of Research Methods to LiSc.

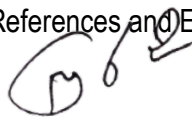
UNIT -II Research Design

- Meaning, definition need and steps of Research Design.
- Identification and formulation of a problem.
- Review of Literature and its importance.
- Hypothesis design.
- Data collection technique.
- Sampling and types of samples.
- Primary and secondary Data and sources, Tabular and graphical representation of data

UNIT - III Research Writing and Documentation

- Research Report writing
- Research paper writing
- Documentation : Preface, Chapters, Appendices
- Quotation -Citation Analysis, Bibliography, References and Ending notes.




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UNIT-IV Statistical Methods and tools, Bibliometrics and Webometrics -

- Measures of Central tendency , mean-mode-medium
- Statistical Research methods
- Bibliometrics and Webometrics : concept and definition
- Bibliometrics Factor
- Statistical tools in Research.

UNIT- V Research Ethics

- **Research Ethics: definition, significance and issue.**

Paper-II LIB_SCI -CW-102 Advance Course in Library & Information Science Credit-4 (70+30)

UNIT-I Ordinary Differential Equations, Numerical Method, Single Step Method, Multi-Step Methods, Predictor, Corrector Methods, Stability Analysis, Boundary Value Problems, Initial Value Methods, Finite Difference Methods.

UNIT-II Improvement of the Initial Solution by Using Method of Bisection, Regula Falsi and Newton-Raphson Method of Fixed Point Iterative Schemes. System of Linear Algebraic Equation and Eigen Value Problem and Errors.

UNIT-III Theory of Automata, Description of a Finite Automaton, Transition System, Properties of Transition Function, Acceptability of a String by a Finite Automaton, Non Deterministic Finite State Machines.

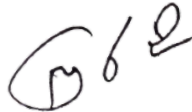
UNIT-IV Markov Analysis Introduction, Stochastic (Random) Process, Markov Process, Transition Probability, Transition Probability Matrix, First Order and Higher Order Markov Process, N-Step Transition Probabilities, Markov Chain, Steady State (Equilibrium) Condition, Markov Analysis (Illustrative Example).

Decision Theory: Introduction, Type of Decisions, Component of Decision Making, Decision Models, Types of Environment, The Expected Monetary Value (EMV), Steps for Calculating EMV, The Expected Value of Perfect Information (EVPI), The Expected Opportunity Loss (EOL), Decision Making Under Uncertainty, Decision Making Under Conflict, Decision Tree Analysis, Decision Making Under Utilities: Utility Function, Utility Curve, Construction of Utility Curve. Posterior Probabilities and Bayesian Analysis.

UNIT-V Sensitivity Analysis Introduction, An Important Lemma, Changes in the Coefficients 'Cj' of the Objective Function, Illustrative Example, Change in the Component 'bi' of Vector. New Variable, Deletion of Existing Variable, Addition of New Constraint, Deletion of Existing Constraint.

1. Kanti Swarup, Gupta, P.K. and Manmohan: Operations Research, Sultan Chand & Sons, New Delhi, India.
2. Sharma, S.D. (2003): Operations Research, Kedarnath Ram Nath & Co. Fourteen edition, Meerut, Indian
3. M.K. Jaio, R.R.K. Iyenger. R.K. Jain: Numerical Methods for Scientific and Engineering Computation, New Age International (P) Ltd.
4. K.L. P. Mishra, N. Chandrashekharan: Theory of Computer Science, PHI-EEE.
5. V. Rajaraman, Computer Oriented Numerical Methods, Printice Hall of India Pvt. Ltd, Delhi.
6. D.S. Heera and P K Gupta, Operations Research and Introduction, Sultan Chand & Sons, Delhi.
7. H. A. Taha, Operations Research-An Introduction, Macmillan Publishing Co.




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Paper-III LIB_SCI -CW-103 Computer Applications in the subject Credit-4 (70+30)

- UNIT-I** Introduction to Computer fundamental, Characteristics of Computers, Evolution of computers, Computer memory, computer generations, Basic computer organization; System software, Application software, introduction to operating system, single user, multi-user, multi-tasking single tasking, application of computer for business and research, MS-windows.
- UNIT-II** MS-Office and its application, File handling in window, various versions of MS-Office, Research publishing tool- MS-Word, Adobe acrobat, Graphics tool- MS-Excel, MS-POwer Point.
- UNIT-III** History of C Language, Identifiers in C, Variables and Data Types, Constants, Printf and Scanf, Control Flow - Conditional Branching, the Switch Statement. looping.nested loops, The Break and Continue statement . the goto statement infinite loops.
Operators and Expressions: Precedence and associativity. Unary plus and Minus operators. Binary Arithmetic operators arithmetic assignment operators. Increment and decrement operators. Comma Operator, Relational operators, logical operators, bit-Manipulation operators, Bitwise assignment operators. Cast operators size of Operators, Conditional Operators, Memory Operators.
- UNIT-IV** **Introduction:-** Latex and open office, Writing of simple article, letters and applications, Mathematical symbols and commands, arrays, formulas and equations, Spacing, Borders and Colors,Creating different templets, Writing of research article, repots etc. Preparation of templets of thesis and books. Preparation of ppt. poster, etc., Pictnres and Graphics.
- UNIT-V** **MATLAB introduction:** Arithmctic, functions,Jotting the of different functions, Matrix operations, finding roots of an equation, Finding roots of a system of equations, Solving differential eqnations. Basic 2-D plots and 3-D plots.

Recommended Books:

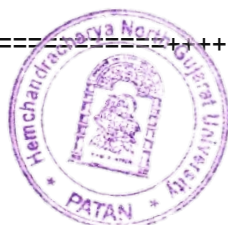
1. Balaguruswami, E.: Programming in C, Tata Mcgraw Hill. (2012)
2. Peter A Darnell and Philip E. Margolis, CA Software Engineering Approched narosa Publishing House (Springer International Student Edition) 1993.
3. Pratap, R.: Getting started with MATLAB, Oxford University Press, 2010.
4. Lynch,S.: Dynamical Systems with Applications using MATLAB, Birkhiuser, 2014.
5. Lamport, L.W.: LaTeX:A document Preparation Systems,Addison-Wesley Publishing Company, 1994.
6. Kopka, Daly, P.W.: Guide to LATEX, Fourth Edition, Addison Wesley, 2004

Paper-IV LIB_SCI-CW-104 Review of published research in the relevant field Credit-4 (70+30)

For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V LIB_SCI-CW-105 Comprhensive Viva Voce Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Library & Information Science and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.



62
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PH.D. COURSE WORK SYLLABUS

SUBJECT : MANAGEMENT

Scheme & Course

Sr.	Paper	Nomenclature	Credits	Marks
1.	Paper-I-MBA-CW-101	Research Methodology	04	70+30
2.	Paper-II-MBA-CW-102	Advance Course in Marketing Management	04	70+30
3.	Paper-III-MBA-CW-103	Computer Applications in the subject	04	70+30
4.	Paper-IV-MBA-CW-104	Review of published research in the relevant field	04	70+30
5.	Paper-V-MBA-CW-105	Comprehensive Viva	04	100

Notes:

1. The candidate has to obtain a minimum of 55% of marks or its equivalent grade points in aggregate in the course work in order to be eligible to continue in the Ph.D. programme.
2. If candidate obtains 'F' or 'Ab.' grade in the course/ subject. He/ she will be treated to have failed in that course. He/ She has to reappear in the examination in the next semester.

Paper-I MBA-CW-101 Research methodology Credit-4 (70+30)

1. Concept of Research, Scientific Approach to Research, Types of Research.
2. Research Process and Planning for Research. Review of Literature.
3. Defining Research Problem. Sampling. Hypotheses Formulation. Testing of Hypothesis.
4. Sources/ Methods of Collecting Primary and Secondary Data: Schedules &
5. Questionnaires, Interview, Observation, Scaling Techniques etc.
6. **Research Report Writing. Ethics in Research.**
7. Quantitative Techniques of Data Analysis I: Application of Mean, Mode, Median,
8. Geometric Mean, Harmonic Mean.
9. Quantitative Techniques of Data Analysis II: Coefficient of Correlation, Regression Analysis. Discriminant Analysis.
10. Quantitative Techniques of Data Analysis III: Application of ANOVA, ANOCOVA, Multivariate Analysis, T-test, z-test, F-test, Chi-square test.

Paper-II MBA-CW-102 Advance Course in Marketing Management Credit-4 (70+30)

1. Marketing Information System.
2. Market Segmentation and Targeting.
3. Buying Behaviour.
4. Models of Consumer Behaviour/ Buying Behaviour. Various Aspects of Consumer Behaviour.
5. Application of Consumer Behaviour, Issues in Formulation of Different Marketing Strategies.
6. Understanding Consumer & Industrial Markets
7. Product Decisions.



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8. Pricing Decisions.
9. Channel Management.
10. Sales Promotion Management
11. Advertising: Types of Media, Media Planning, Media Selection and Strategy.
12. Advertising Planning and Strategies.
13. Legal, Ethical and Social Aspects of Advertising.
14. Creative Advertising.
15. Advertising Firms in India and Abroad.
16. Marketing of Services.
17. Relationship Marketing.
18. Marketing of Retail Business.
19. B2B Marketing
20. Product : Definitions & Features, Product Levels, Classification of Products , Individual Product Decisions,
21. Different between Consumer Products and Industrial Products , Consumer Adoption Process, Product Differentiation
22. New Product Development: Factors contributing to a new Product Design, New Product Development Process,
23. Product Life Cycle, Factors Affecting Product Mix, Product Mix Strategies, Product Positioning
24. Brand Elements: Classification of Brands, Brand Identity,, Brand Image, Brand Personality, Brand Architecture, Brand Equity, Brand Loyalty Pyramid, Brand Equity, Factors Influencing Brand Equity, Different Methods of Brand Equity Measurement., Brand - Customer Relationship.
25. Successful Brands: Characteristics of Successful Brands, Brand Strategies, Consumer Perceptual Space & Clutter, Brand Positioning, Brand Extension Strategies, Brand - Product Relationship, Brand Revitalization.
26. Other Branding Issues: Concept and characteristics of Industrial Brands, Brand Building Issues in Services, Concept of a Retail Brand ,Key Issues in Building Retail Brands, Classification of Retail Brands, Ethics in Branding and Retailing, Marketing Research in Product and Brand Management Areas.
27. Analysis of International Marketing Environment. India's Current Export Import Policy, Recent Trends in India's Foreign Trade, Institutional set-up for Export Promotion, Export Houses, Export Documentation and Procedure.
28. International Marketing Research, Organizational Structures in Foreign Market, Managing International Marketing Communication and its Sales Force, Emerging Trends in International Retail Business.
29. Overseas Market- Product Strategy, International Product Life Cycle, Pricing Decisions, Distribution Channel Decisions and Promoting Products for Exports including Fairs and Exhibitions.
30. Letter of Credit, Credit Risk Insurance with Reference to ECGC- Functioning & Evaluation, Functioning of WTO, UNCTA

Paper-III	MBA-CW-103	Computer Application	Credit-4 (70+30)
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1. Computer Application in Research: Elementary knowledge of Statistical Analysis Using Software Packages such as SPSS, Minitab etc.
2. Computer Application in Research: Knowledge of MS Office Application.
3. Knowledge of Internet Application, and Knowledge of Application of Data-bases of research Publications such as EBSCO, PROQUEST, JSTOR, CENAGE LEARNING, Science Direct etc.
4. Management Information System: Basic Concepts.




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Paper-IV MBA-CW-104 Review of published research in the relevant field Credit-4 (70+30)

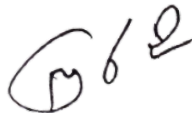
For this paper candidates will have to review literature in an area of research, prepare a research proposal and submit a report to the University at the end of the course work. The selection of the problem and preparation of the proposal will be in consultation with research guide.

Paper-V MBA-CW-105 Comprehensive Viva Credit-4 (100)

Candidate will face a Comprehensive Viva-Voce of 4 credits on the subject of Research Methodology, Advanced Course in Marketing Management and literature review report submitted to the university. The Presentation will have to be made by the candidate and it will need to be prepared in consultation with research guide.

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PATAN - 384 265 (N.G.)

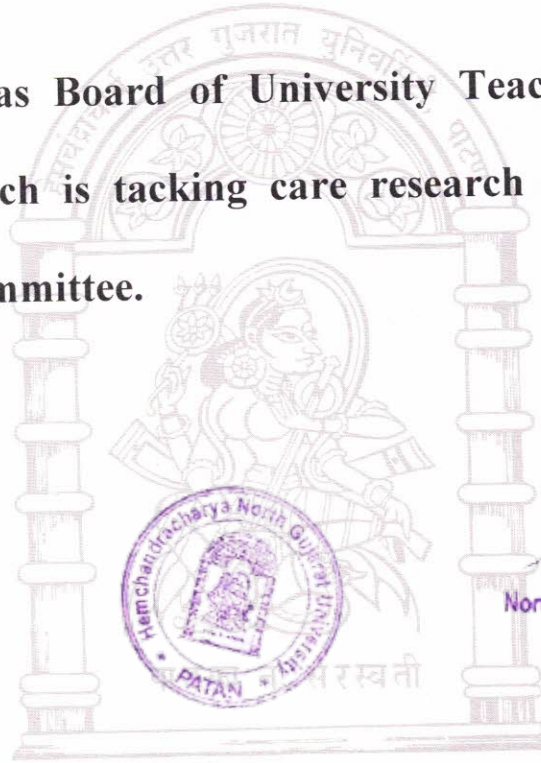
Accredited by NAAC with "A" Grade (CGPA 3.02)

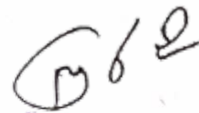
CERTIFICATE

University has Board of University Teaching and Research (BUTR) only which is taking care research ethics. There is no separate ethics committee.

Date : 09/01/2023

Place : Patan




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Members of Board University Teaching and Research

Statute-177(I) As on 08/06/2020

Sr.	Name of Member	Sr.	Name of Member
1.	<u>Vice-Chancellor</u> <u>Statute-177 (1-I)</u> Dr. J. J. Vora Hem. North Gujarat University Patan-384 265 Mo. 9426708995	2.	<u>Pro. Vice-Chancellor</u> <u>Statute-177 (1-II)</u> VACANT
3.	<u>Dean, Arts</u> <u>Statute-177 (1-III)</u> up to 23/12/2017 OR ડીન પદે રહે ત્યાં સુધી Dr. A. L. Sutariya Shrimati A. S. Chudhary Mahila Arts & Hom Science College, Near Arvind Bag, Mehsana – 384 001 Mo. - 9427698915	4.	<u>Dean, Science</u> <u>Statute-177 (1-III)</u> up to 23/12/2017 OR ડીન પદે રહે ત્યાં સુધી Pri. Dr. Jagdishkumar Hiralal Prajapati Government Science College College Cumpes, Mitha – Bhabhar Road, Tharad - Mo. - 8160084054
5.	<u>Dean, Commerce</u> <u>Statute-177 (1-III)</u> up to 23/12/2017 OR ડીન પદે રહે ત્યાં સુધી Prin. Dr. Rohitkumar Narpatbhai Desai Jethiba K. Patel Arts & D. B. Vyas Commerce College Ruppur-Chansma – 384 220 Dist :- Patan Mo. – 9426948801	6.	<u>Dean, Law</u> <u>Statute-177 (1-III)</u> up to 28/12/2020 OR ડીન પદે રહે ત્યાં સુધી Dr. Ashokbhai M. Shroff Shri N. . Patel Law College, College Campus, Dhansura Road, Modasa – 383 315 Dist – Arvalli Mo -9428062064
7.	<u>Dean, Management Studies</u> <u>Statute-177 (1-III)</u> up to 29/09/2017 OR ડીન પદે રહે ત્યાં સુધી Dr. Vishal Bhemvala Dept. of M.Sc. (C.A. & I.T.) Hem. North Gujarat University Patan-384 265 Mo. - 9725001569	8.	<u>Dean, Medicine</u> <u>Statute-177 (1-III)</u> up to 22/08/2017 OR ડીન પદે રહે ત્યાં સુધી Dr. Anil J. Nayak 9 – Syam Vihar Banglows Radhanpur Road, Highway Mehsana – 384 002 Mo. 9825051333
9.	<u>Dean, Education</u> <u>Statute-177 1-(III)</u> up to 28/12/2020 OR ડીન પદે રહે ત્યાં સુધી Shri Geetaben B. Patel Dean, Education Jivanjyot College of Education (B.Ed.) Valam Ta - Visnagar Dist – Mehsana Mo. 9978793041	10.	<u>Dean, Home science</u> <u>Statute-177 (1-III)</u> up to 28/12/2020 OR ડીન પદે રહે ત્યાં સુધી Shri Sushilaben Ishvarlal Patel Dean, Home science Mu. Arts & Urban Bank Science College Nagalpur Highway Mehsana-384 002 Mo. - 9375118666



11.	<u>Dean, Rural Studies</u> <u>Statute-177 (1-III)</u> up to 18/11/2019 OR ડીન પદે રહે ત્યાં સુધી Shri. Prabhatbhai V. Desai <u>Dean, Rural Studies</u> Nootal Bhartati Gram Seva Mahavidhyalay <u>Madanagadh</u> Dist - Banaskhatha Mo. – 9428757532	12.	<u>Professor & Head</u> <u>Statute-177 (1-IV)</u> અધ્યક્ષ પદે રહે ત્યાં સુધી Dr. M. B. Prajapati (<u>Professor & Head</u>) Department of Mathematics Hem. North Gujarat University <u>Patan-384 265</u> Mo. 9879875230
13.	<u>Professor & Head</u> <u>Statute-177 (1-IV)</u> અધ્યક્ષ પદે રહે ત્યાં સુધી Dr. S. A. Bhatt (<u>Professor & Head</u>) Department of Life Science Including Microbiology & Environmental Science Hem. North Gujarat University <u>Patan-384 265</u> Mo. 9723615324	14.	<u>Professor & Head</u> <u>Statute-177 (1-IV)</u> અધ્યક્ષ પદે રહે ત્યાં સુધી Dr. D. B. Rathva <u>Prof. & Head</u> Department of Sanskrit & Bhartiya Vidya Hem. North Gujarat University <u>Patan-384 265</u> Mo. 9427680744
15.	<u>Professor & Head</u> <u>Statute-177 (1-IV)</u> અધ્યક્ષ પદે રહે ત્યાં સુધી Dr. K. K. Patel <u>Head</u> Department of Hospital Management Hem. North Gujarat University <u>Patan-384 265</u> Mo. 9898458799	16.	<u>Professor & Head</u> <u>Statute-177 (1-IV)</u> અધ્યક્ષ પદે રહે ત્યાં સુધી Dr. Adesh Pal <u>Prof. & Head</u> Department of English Hem. North Gujarat University <u>Patan-384 265</u> Mo. 8511120255
17	<u>Professor & Head</u> <u>Statute-177 (1-IV)</u> અધ્યક્ષ પદે રહે ત્યાં સુધી Dr. Nishithkumar H. Bhatt Dept. of M.B.A. Hem. North Gujarat University <u>Patan-384 265</u>	18	<u>Principal</u> <u>Statute-177 (1-V)</u> up to 28/04/2024 Dr. Nareshbhai R. Patel Seth S.B.C. Shah Arts College, <u>Vadali</u> -383 235 Mo.
19	<u>Principal</u> <u>Statute-177 (1-V)</u> up to 12/03/2023 Dr. J. K. Patel Shri V. R. Patel Commerce College Nagalpur Road <u>Mehsana</u> Mo. 9824611004	20	<u>Principal</u> <u>Statute-177 (1-VI)</u> up to 15/03/2022 Prin. B. D. Patel B.D.Shah College of Education College Campus, <u>Modasa</u> Dist - Arvalli Mo. 9428199947



21	Principal up to 28/02/2023 Pri. Dr. Ajaybhai Gor P. S. Science & H. D. Patel Arts College <u>Kadi</u> Mo. 9426766703	Statute-177 (1-VI)	22	Principal up to 28/04/2024 Dr. Rajesh Chodhary Shrimati J.B.P. & Shrimati P.S.P. Science College, <u>Palanpur</u> – 385 001 Mo.	Statute-177 (1-VI)
23	Statute-177(1-VII) (Co-opt) up to 09/05/2021 Dr. N. V. Sastry Professor & Head Department of Chemistry Sardar Patel University <u>Vallabh Vidyanagar</u> – 388 120 Mo. 9824956978		24	Statute-177 (1-VII) (Co-opt) up to 14/12/2022 Prin. Dr. L. S. Patel Shri & Smt. P. K. Kotavala Arts Collge, <u>Patan</u> Mo. 9824075478	
25	Statute-177(1-VII) (Co-opt) up to 09/05/2021 Dr. Sanjay Bhayani Dean, Professor & Head Department of Business Management Saurashtra University <u>Rajkot</u> – 360 005 Mo.- 9687355199				



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North Gujarat University, Patan



INTERNAL QUALITY ASSURANCE CELL <iqac@ngu.ac.in>

Fw: Fwd: Usage of Anti-plagiarism Software ie. URKUND, by your University

1 message

PATEL KAMALESH <kkpatelmodasa@yahoo.com>
Reply-To: PATEL KAMALESH <kkpatelmodasa@yahoo.com>
To: INTERNAL QUALITY ASSURANCE CELL <iqac@ngu.ac.in>

Sun, Jan 15, 2023 at 5:21 PM

Sent from Yahoo Mail on Android

----- Forwarded Message -----

From: "Dr. Jay Y Trivedi" <visit2jay@gmail.com>
To: "kkpatelmodasa@yahoo.com" <kkpatelmodasa@yahoo.com>, "kkpatel@ngu.ac.in" <kkpatel@ngu.ac.in>
Sent: Thu, Jan 5, 2023 at 12:30
Subject: Fwd: Usage of Anti-plagiarism Software ie. URKUND, by your University

----- Forwarded message -----

From: **Shreyas Bhatt** <sabhatt9@gmail.com>
Date: Tue, Dec 6, 2022 at 5:46 PM
Subject: Fwd: Usage of Anti-plagiarism Software ie. URKUND, by your University
To: Jay Trivedi <visit2jay@gmail.com>

Hope this will do.

----- Forwarded message -----

From: **shodhganga@infiibnet.ac.in** <shodhganga@infiibnet.ac.in>
Date: Thu, 28 Jul 2016 at 13:02
Subject: Usage of Anti-plagiarism Software ie. URKUND, by your University
To: <sabhatt9@gmail.com>

Dear S.A. Bhatt,

As you are aware, after signing the MoU, we have already provided access to the anti plagiarism software 'URKUND' under Shodhganga from 1st August 2015. The credentials and invitation letters are personally sent to you by URKUND directly on your email id.

The **NO OF SUBMISSIONS** from your esteemed University ie. Hemchandracharya North Gujarat University, Patan, in URKUND anti-plagiarism software is **6** in the month of **June 2016**. If you have yet not activated let us know so that we can send you the credentials once again.

We request you to increase the submissions after promoting it among your research scholars and faculty members.

If you have any doubt, kindly check the link for FAQ and video tutorial at <http://shodhganga.infiibnet.ac.in/newmoredetails/faq-urkund.html> (FAQ)

and <https://www.youtube.com/watch?v=goKHcO4JbGs> for Video tutorial of URKUND on You tube.

The handbook is available at (http://static.urkund.com/manuals/URKUND_Plagiarism_Handbook_EN.pdf).

Thanks & Regards,

Manoj Kumar K



G. S. K.
Vc. Registrar
Hemchandracharya
North Gujarat University, Patan

for Shodhganga Team
INFLIBNET Centre, Gandhinagar
An Inter University Centre of University Grants Commission,
Infocity Gandhinagar - 382007. Gujarat, INDIA.
Phone : 079-23268000/8220 ,

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Thanks & Regards,

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INFLIBNET Centre, Gandhinagar
An Inter University Centre of University Grants Commission,
Infocity Gandhinagar - 382007. Gujarat, INDIA.
Phone : 079-23268000/8220 ,

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(S.A. Bhatt)
Prof. & Head
Dept. of Life Sciences
HNG University,
Patan
Mob. 9723615324

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Warm Regards,
Dr. Jay Y Trivedi

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Dr. Jay Y Trivedi
PhD (Management), MBA , B.Sc(Physics), B.Sc(Maths)
Assistant Professor (Marketing Area)
S K College of Business Management,
Hemchandracharya North Gujarat University, Patan (Gujarat) India.
Mobile: 08128684670 Web Ref :<http://www.ngu.ac.in/StaffDetail.aspx>
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G. J. D.
Vc. Registrar
Hemchandracharya
North Gujarat University, Patan